2019 ADSA® Annual Meeting

Integrating Dairy Science Globally

June 23–26

and Interbull Annual Meeting

June 22–24

Conference Information and Scientific Program

adsa.org/2019
ADSA 2019 Mobile App
An Easier Way to Plan Your Schedule

The ADSA 2019 mobile app gives attendees convenient access to the conference schedule and abstracts via most mobile devices. With the mobile app, you can

- View content offline
- Search abstracts by presenter or topic
- Create a personal schedule
- Access and share abstracts
- Make notes on presentations
- Read invited speaker bios
- Find exhibitors
- Contact fellow attendees ... and more.

Download and install the EventPilot app now and search for ADSA2019
Important Message

In the event that protestors interrupt the meetings, please ignore them. Their goal is to attract attention and any attention you give them will only help their cause. Convention staff have a plan in place to handle these situations, and they depend on our cooperation. If members of the media approach you for an interview about the disturbance, please politely decline and direct them to the convention's media room, where spokespersons will be available.

Thank you for your cooperation.
Welcome to ADSA 2019!

On behalf of the American Dairy Science Association, we welcome you to Cincinnati and the 2019 ADSA Annual Meeting: Integrating Dairy Science Globally. We’ll be off to a fast start on Sunday with a number of great premeeting events, such as the NANP Modeling Workshop, the 34th Discover Conference Mini-Symposium, and the Graduate Student Division symposium focused on grant writing. In addition, we honor the career of Dr. David Barbano with a symposium in recognition of his many contributions to dairy science. We’ll also have continued sessions of the Interbull meeting, which has partnered with ADSA to meet in Cincinnati. The late-breaking abstract session returns on Sunday afternoon, which is a great opportunity to hear the latest research in dairy science. I look forward to seeing you at the opening session to report on the state of our association.

Monday brings a full slate of platform sessions and student competitions. Be sure to wander through the exhibit hall, network with our exhibitors, and stop by the poster sessions. And remember that the exhibit hall is open all day Tuesday as well. We continue to welcome our meeting partner, Interbull, with a joint symposium on the impact of 10 years of genomic selection and there is a CSAS-sponsored session on data management. Don’t forget the ADSA awards program Monday evening, followed by the ever-popular ice cream social.

Tuesday brings another day packed with great sessions. The Lactation Biology Symposium—a tribute to Tony Capuco’s distinguished career—runs all day and ends with a wine and cheese social. In the Dairy Foods Division, we have a symposium on the intersection of plant and dairy proteins in today’s market. And this is your last chance to check out the exhibits – don’t miss out!

On Wednesday, we return to a full day of scientific programming, starting with the Teagasc-Moorepark symposium on the interaction of animal diet and dairy product quality. In the afternoon, the MILK symposium examines the challenges facing the dairy industry in developing countries. The Mixed Models Workshop returns this year and runs all day Wednesday through noon on Thursday.

Obviously we don’t get to this point without a fantastic effort by the Program Committee, volunteers, and staff! My sincere thanks to Mike VandeHaar (overall program chair) and his committee: Zey Ustunol, Mike Brouk, Paul Kindstedt, Emma Wall, and Mike Miller. Also, sincere thanks to the FASS staff, particularly Cara Tharp and former ADSA executive director Peter Studney, for their organizational skills and efforts in bringing the inputs together to create a great meeting. I would like to recognize our sponsors and volunteers for helping to deliver an outstanding meeting. And, of course, special thanks to our session chairs, speakers, presenters, sponsors, and exhibitors—we would not be able to have this event without you.

Finally, thank you for coming and attending the sessions, contributing to the discussions, and networking with other attendees; the dynamic nature of the meeting is a result of your initiative to attend and engage. If you are a long-time participant, I hope that this year’s meeting is the best yet; if this is your first time attending, I hope you leave excited to return in 2020.

Geoff Dahl
ADSA President
General Meeting Information

Location

The 2019 ADSA Annual Meeting will be held at the Duke Energy Convention Center and surrounding hotels in Cincinnati, Ohio.

Schedule of Events

Pre-conference symposia and workshops are scheduled for Sunday, June 23, and the opening session will be held on Sunday evening; scientific sessions will begin Monday morning, June 24, and run through 5:30 pm on Wednesday, June 26; please check the scientific program starting on page 37.

Opening Session

Please join us at the opening session for an address on the current status of our association by ADSA President Geoff Dahl. After the session, join us for a live “Roaring 20s” swing band, and food and drink at the opening reception.

Program Format for 2019

- Poster sessions (exhibit hall; Monday–Wednesday): 7:30 am – 9:30 am
- Morning scientific sessions: 9:30 am – 12:30 pm
- Lunch break: 12:30 pm – 2:00 pm
- Afternoon scientific sessions: 2:00 pm – 5:30 pm
- Afternoon ice cream break (exhibit hall; Monday–Wednesday): 3:30 pm – 4:00 pm

Meeting rooms will be equipped for electronic presentations and preloaded sessions.

Registration Hours

Registration for the Interbull Annual Meeting will be at the Hilton Netherland Plaza. Registration for the ADSA Annual Meeting will be located in the 5th Street South Concourse in the Convention Center. Registration hours are as follows:

Interbull:
- Thursday, June 20: 3:00 pm – 5:00 pm
- Friday, June 21: 7:30 am – 5:00 pm
- Saturday, June 22: 7:30 am – 5:00 pm

ADSA:
- Saturday, June 22: 3:00 pm – 5:00 pm
- Sunday, June 23: 7:00 am – 7:00 pm
- Monday, June 24: 7:00 am – 5:30 pm
- Tuesday, June 25: 7:00 am – 5:30 pm
- Wednesday, June 26: 7:00 am – 5:30 pm

Important Phone Numbers

- Hyatt Regency Downtown Cincinnati: (513) 579-1234
- Hilton Netherland Plaza: (513) 421-9100
- Westin Cincinnati: (513) 621-7700
- Hampton Inn & Homewood Suites Cincinnati: (513) 354-2430
Media Room

A media room will be available throughout the meeting to provide a space for media representatives to work. Meeting press releases will be available there. Complimentary registration is available for members of the media. For more information, please contact adsa@adsa.org.

Media Check-In

Please check in at the Registration Desk in the 5th Street South Concourse of the Duke Energy Convention Center.

Business Center

There is a FedEx Office near the convention center at 51 E. 5th St., Cincinnati, OH, 45202 (inside the Westin Hotel). Use of these services is at your own expense.

Job Resource Center

The Job Resource Center is located in the exhibit hall. Job announcements and CVs will be organized into the following categories for posting: Animal Behavior and Well-Being; Animal Health; Animal Breeding; Extension; Food Safety; Food Science; Forages and Pastures; Genetics; Growth and Development; International Animal Agriculture; Lactation; Pharmacology and Toxicology; Physiology and Endocrinology; Production and Management; Ruminant Nutrition; and Teaching.

Camera, Video Camera, and Cell Phone Policy

Use of cameras, video cameras, tablets, or smartphones for calls or audio/video recording is prohibited during oral and poster presentations to minimize disruption and unauthorized dissemination of data. Anyone found in violation of this policy will be asked to leave the session.

ARPAS Continuing Education Units

The 2019 ADSA Annual Meeting has been approved for up to 21 continuing education units (CEUs) for the American Registry of Professional Animal Scientists (ARPAS) certification requirements. Check the schedule of events for times and location of the ARPAS exams.

Family Room, hosted by the ADSA Graduate Student Division

Will you have a young child with you at the meeting? Take a break with your child in the GSD Family Room (room 235). We will have puzzles, games, coloring books, and a quiet place for you to hang out with your children between sessions. All children must be accompanied by their parent or guardian at all times.

Social Media

Follow the ADSA Annual Meeting on Twitter (@ADSAmtg) using the official conference hashtag #ADSA2019. Tweet about interesting posters and presentations, social events, or fun things to do and see while in Cincinnati.
Presentation Information

Oral and Invited Speakers: Onsite Upload Information

Oral sessions will begin at 9:30 am on Monday, Tuesday, and Wednesday.

Onsite upload: Onsite presentation upload will be available; files can be delivered to the Preload Room (234) at the convention center (Saturday: 3:00 to 5:00 pm; Sunday: 7:00 am to 5:00 pm; Monday to Wednesday: 7:00 am to 5:30 pm). Presentations must be uploaded by 5:00 pm on the day before your scheduled presentation. Files will not be accepted via email. No presentations will be loaded while the session is in progress or between presentations.

Poster Presentations

We have dedicated a two-hour block on Monday, Tuesday, and Wednesday to poster presentations. The “open poster” sessions will be from 7:30 to 9:30 am in Exhibit Hall A. Coffee, milk, yogurt, and pastries will be served in the hall from 8:00 to 9:00 am each day, and ice cream will be served from 3:30 to 4:00 pm each afternoon.

Each poster will be available for public viewing for the entire day, with the presenting authors in attendance during the open posters time (7:30–9:30 am). All posters must be mounted on the board 30 minutes before the beginning of the day’s session (poster sessions begin at 7:30 am so posters must be mounted on boards by 7:15 am) and must list the abstract number and corresponding day. The exhibit hall will open at 7:00 am on Monday, Tuesday, and Wednesday. Posters must be removed after 5:00 pm on Monday and Tuesday and after 4:00 pm on Wednesday. Any posters remaining after those times will be removed by the convention center staff and discarded.

Each poster board area is 48 inches high and 96 inches wide. Use of this space is determined by the presenter, with the following exceptions: the top of the poster space must include the abstract number with corresponding letter of the day it is being presented, title, authors, and affiliations. The lettering for this section should be at least 1 inch high.

Locating the Correct Poster Board

Each poster board number corresponds to the abstract number as noted in the program. Monday, Tuesday, and Wednesday poster board numbers are preceded by an M, T, or W, respectively. Refer to the Program at a Glance for layout of posters by session and abstract number.

Digital Poster Upload and Viewing

In addition to the traditional poster sessions and display, poster presenters are encouraged to upload a digital version of their poster (PDF only) online that can be viewed using the ADSA mobile app. Making your poster available in this way is optional; presenters are still required to display their printed poster in the exhibit hall on the designated day at time. Uploaded posters will be available to all app users and can be shared.

ADSA 2019 Mobile App—An Easier Way to Plan Your Schedule

Using the ADSA 2019 mobile app (for Android and iOS devices), you can browse sessions, read abstracts, build a personal schedule, view content offline, connect with other meeting attendees, share photos, and start discussions—all from within the app. To download the app, please visit the app store (Google or Apple), download and launch the “Event Pilot conference app,” and then search for “ADSA2019”. If you previously used this app for a different conference, click “... More” from the home screen, choose “Find Event” and then enter “ADSA2019”. You can also scan the QR codes on the inside front cover of this book to download the app to your device. Stop by the registration desk or the preload area if you have questions on how to use the app!
Cincinnati Information

Transportation in Cincinnati

The Duke Energy Convention Center is located within a more compact downtown yet easily visible and accessible from I-75, making it the ideal jumping-off point for enjoying your visit to Cincinnati. Cincinnati is also home to the Cincinnati / Northern Kentucky International Airport (CVG), a hub for Delta Airlines. That means that there are convenient flights to a wide variety of destinations. Cincinnati is also within 500 miles of 60% of the nation’s population.

Cincinnati Sightseeing Options

ADSA invites you to Cincinnati, Ohio, to experience the contagious energy pulsing throughout the city. When the day’s meetings conclude, Cincinnati’s compact convention footprint, recently made even more accessible by the new Cincinnati Bell Connector streetcar, allows attendees to explore and enjoy the cultural renaissance that is transforming the city. As one of the first great American cities, Cincinnati is rooted in deep tradition and a mix of vibrant cultures. Take time to embrace the living history pulsing through Cincinnati’s streets, whether it’s the architecture, the thriving arts and culture scene, or the beer tunnels 30 feet below.

The ADSA Annual Meeting will be held at the Duke Energy Convention Center (DECC). Located in the heart of downtown Cincinnati, the DECC is the largest, most comprehensive meeting facility in the city, with the Queen City’s vibrant culture, entertainment, delectable culinary experiences, and world-class attractions within blocks.

Check the Cincinnati area map on page 19 for attractions close to the convention center and meeting hotels.
Special Events

Events listed are at the Convention Center unless otherwise noted. Coffee, milk, yogurt, and pastries will be served from 8:00 to 9:00 am, and ice cream will be served from 3:30 to 4:00 pm in the exhibit hall on Monday, Tuesday, and Wednesday. Please make time to talk with our exhibitors on Monday and Tuesday while you are enjoying complimentary breakfast or afternoon ice cream.

SAD and GSD Dairy Tour
Saturday, June 22
12:00 – 5:00 pm
Young's Jersey Dairy in Yellow Springs, OH
Buses depart from Hampton Inn/Homewood Suites (student HQ)
Tickets: $21

Young's Jersey Dairy was established in 1946 with a focus on milking cows and row crop farming. They began selling their Jersey milk to the public in the late 1950s. That evolved into the opening of a convenience store featuring hand-dipped ice cream. Today, Young’s is a favorite Ohio destination, with two restaurants, a dairy store, and loads of family fun activities including a petting zoo, mini golf, giant slides, and more. They also host a multitude of special events including car shows, bike tours, and seasonal festivals. Young’s is a model for agri-tourism; their operating dairy is also a top family destination, offering more than 70,000 gallons of ice cream and 45,000 pounds of cheese to more than 1 million guests each year. Tour includes farm tour ticket and bus transportation. Students, both undergraduate and graduate, are given first opportunity. Tour will be offered to professional members on a remaining availability basis.

SAD Undergraduate Student Hospitality Room
Saturday, June 22
6:00 – 7:00 pm
Hampton Inn/Homewood Suites

The SAD Hospitality Room will be available on Saturday afternoon for members to gather and meet others as they arrive. Information about the SAD schedule will be available.

SAD Undergraduate Student Informal Mixer: SAD Dine Around Saturday, June 22
7:00 pm
Meet in SAD Hospitality Room, Hampton Inn/Homewood Suites

SAD officers will host a dine around event on Saturday for schools arriving early. Stop by the SAD hospitality room between 6:00 and 7:00 pm if your club would like to join. Students from participating schools are encouraged to join different dinner groups for a fun evening of networking and good food. Participants are responsible for the cost of their meal.

SAD Undergraduate Student Midday Mixer and Lunch
Sunday, June 23
11:00 – 12:00 pm
Tickets: $5

Join your fellow dairy clubs for a fun hour of getting reacquainted and making new friends, and get to know your 2019–2020 SAD officer candidates. Ticket price includes lunch. Note: Registration is limited to ADSA undergraduate student members and advisors.

GSD Symposium: Grant Writing
Sunday, June 23
2:00 – 4:00 pm

All ADSA graduate students are encouraged to attend this extremely valuable grant writing symposium. Jodi Williams, PhD, national program leader at USDA-NIFA, will share tips and tricks for successful grant writing. After the presentation, an open discussion will be held between the audience and a panel of academics in dairy science. Topics to be covered include finding funding, choosing a grant, what goes into a grant proposal, writing clearly and concisely, crafting a compelling first page, and making a timeline for planning and writing your proposal.

GSD Business Meeting and Open Forum
Sunday, June 23
4:15 – 5:00 pm

In addition to greeting the incoming GSD officer team, attend this meeting to voice your ideas and opinions about ADSA graduate student activities. While at the meeting, sign up for a GSD committee to become involved and help shape the future of our organization.

Dairy Quiz Bowl Final Round
Sunday, June 23
4:30 – 5:00 pm

University teams from across North America will compete in the ADSA-SAD Dairy Quiz Bowl. The event gives schools an opportunity to demonstrate their knowledge about dairy production, processing, and ADSA history. The Student Affiliate Division (SAD) invites you to join them for the excitement of the final round of competition as the top two schools go head to head for the title of 2019 Dairy Quiz Bowl Winning Team.

Opening Session and Reception
Sunday, June 23
6:00 – 8:15 pm

Join us at the Opening Session to hear from ADSA President Geoff Dahl with updates on the state of the association and celebrate the recipients of the ADSA Award of Honor and ADSA Distinguished Service Award and new ADSA Fellows. Reception to follow with a live “Roaring 20s” swing band.

GSD Mixer
Sunday, June 23
7:30 – 9:30 pm
16-Bit Bar and Arcade
Tickets: $10

Kick off the week with a fun night of entertainment and networking with your fellow dairy science graduate students at 16-Bit Bar and Arcade, located just a short walk or trolley ride from the Convention Center. Join us to enjoy trivia night, arcade games, and free drinks! Use this opportunity to meet other graduate students you can network with throughout the week at the annual meeting.

SAD Undergraduate Student Poster and Paper Competitions
Monday, June 24

Support the future of ADSA—plan time in your schedule to visit the undergraduate posters and oral presentations on Monday morning. See program for complete details.

Companion Event 1: Ultimate Under the Market Tour
Monday, June 24
9:30 am – 1:30 pm; meet at Convention Center
Tickets: $60

On the Under the Market Tour you will go underground to explore the newly rediscovered Linck Brewery tunnels and the tunnel under the Jackson Brewery. Next, you will visit the site where Johnny Cash filmed a movie. Then, you will visit the site of one of Cincinnati’s most important inclines and learn about Cincinnati’s connection to the famed McGuffey Readers. You will end this tour inside one of the last
remaining structures from the original Christian Moerlein Brewery complex that has been closed to the public for decades.

The tour is mostly a walking tour with a tour guide and some street car transportation to/from the Convention Center. Lunch is included with this tour at the end, at the Northern Row Brewery. Preregistration for this event is required. Register early — capacity is limited!

GSD Career Insights Lunch
Monday, June 24
12:30 – 2:00 pm
Tickets: $10

Graduate students — plan to join us for lunch and interact with a diverse panel of academia and industry professionals! Be prepared to question panel members about their experience moving from graduate school to the professional world. This lunch is intended to give students an informal environment in which to inquire about each professional’s personal journey and the challenges they encountered along the way. A $10 registration fee is required and a boxed lunch is included.

SAD Undergraduate Student Career Roundtable Lunch
Monday, June 24
12:45 – 2:15 pm
Tickets: $10

A program favorite, the Career Roundtable Lunch gives students the opportunity to dine and network with professional members representing a wide array of careers in the dairy industry. The program is conveniently scheduled during Monday’s lunch break. Participants will learn about careers in the industry, get useful tips on planning for their careers, and much more. Students are encouraged to dress professionally (business casual or better) and bring several copies of their resumes. Students should also plan time to visit industry reps in the exhibit hall for information about internships and job opportunities.

ADSA Awards Program
Monday, June 24
7:00 – 8:00 pm
Hyatt Regency

All meeting participants, families, and friends are welcome to attend the 2019 ADSA Awards program. Please join us at this special event to recognize and congratulate the 2019 award winners.

Ice Cream Social
Monday, June 24
8:15 – 9:30 pm
Hyatt Regency

All meeting participants, families, friends, award winners, and award donors are invited to join us for the always-popular ice cream social.

SAD Undergraduate Student Mixer: SAD Cowsino Night
Monday, June 24
9:00 – 11:00 pm
Hampton Inn/Homewood Suites, Vine St North
Tickets: $15

With the competitions behind you, join us for “Cowsino Night” at the student hotel. Whether you toss some cards or hit the dance floor, the evening is yours to enjoy with undergrads from across the country.

Virtual Fun Run, sponsored by Feed Components

Due to a scheduling conflict with local police, the Feed Components Fun Run will take place as a Virtual Run. Those who have signed up can compete against other ADSA 2019 attendees; winners (top three men and women) will be announced during the meeting. Those who signed up will receive a 2019 ADSA Virtual Run T-shirt. We hope to bring back the onsite Fun Run at the 2020 meeting!

Companion Event 2: “Cinci Top 10” Food and Culture Tour
Tuesday, June 25
9:00 am – 1:00 pm; meet at Convention Center
Tickets: $60

Discover the 5 mouth-watering dishes that Cincinnati is known for and visit all the must-see sites with a friendly local guide. How do we do it all? We hop aboard the Cincinnati Streetcar (all-day pass included). When the tour concludes, you have a pass, a streetcar guide, and knowledge of the city, so you can explore with confidence! Since we get an early start, you have the rest of the day to yourself to enjoy. Wear your walking shoes! We combine walking (2.5 miles total) and the Streetcar to explore the city. The streetcar is handicapped accessible, and the walk between sites is never more than 3 city blocks. Strollers are welcome. Our tastings are generous and enough for lunch. We sit and dine at one stop. Due to the fast-paced itinerary, the rest of the food is eaten on the go. Like typical city street food, it’s simple and handy.

Preregistration for this event is required. Register early — capacity is limited!

SAD Educational Workshop: Media Training
Tuesday, June 25
10:30 – 11:30 am

With the rapid growth of social media, we all have the ability and, some might argue, the responsibility, to be ambassadors for agriculture. This program will equip participants to interact effectively with traditional media and social media. Registration is free but required.

SAD Undergraduate Student Awards Luncheon
Tuesday, June 25
11:45 am – 2:00 pm
Tickets: $50 (professionals), $35 (students)

Plan to attend this year’s SAD awards luncheon. The afternoon will be capped with the presentation of student awards and announcement of new SAD officers. Both students and professionals are encouraged to attend. This is a wonderful chance to get to know the next generation of the dairy industry.

GSD Three-Minute Thesis Challenge
Tuesday, June 25
2:30 – 3:30 pm

ADSA graduate students are encouraged to participate in the return of the Three-Minute Thesis Challenge. This event will test the competitors’ ability to convey their research in a way that is understandable to all, in three minutes or less! Emphasis will be placed on the ability to explain research to a lay audience. Entry details will be released prior to the annual meeting, and competition will be limited to 10 students selected by a panel of judges based upon strength of CV and a 100-word interpretive summary. All ADSA members are invited to attend the challenge and watch students compete for cash prizes and present their research in a fun and exciting way!

GSD Mix and Mingle
Tuesday, June 25
7:00 – 9:00 pm

Register to attend the GSD Mix and Mingle with professional members. At this speed-networking event, graduate students will have the opportunity to mingle with industry professionals and faculty members looking for employees. Students are encouraged to bring copies of their CV as well as business cards. Professional ADSA members looking to hire graduate students or discuss research are encouraged to attend the mixer as a way to interact with graduate students outside of the typical poster session atmosphere. Light refreshments will be provided.
2019 ADSA Award Donors

Alltech Biotechnology Center
American Dairy Science Association
American Dairy Science Association Foundation
American Feed Industry Association
Cargill Animal Nutrition
Council on Dairy Cattle Breeding
DeLaval Inc.
Hoard's Dairyman
International Dairy Foods Association
Lallemand Animal Nutrition
Leprino Foods

National Dairy Council
National Milk Producers Federation Dairy Scholarship Fund
Novus International
Nutrition Professionals Inc.
Purina Animal Nutrition
Schreiber Foods
West Agro Inc.
Zinpro Corp.
Zoetis
Exhibit Schedule

Sunday, June 23
Set up exhibits .................................................. 10:00 am – 6:00 pm

Monday, June 24
Exhibits open ................................................... 8:00 am – 5:00 pm

Tuesday, June 25
Exhibits open .................................................. 8:00 am – 4:00 pm
Dismantle exhibits .......................................... 4:00 pm – 6:00 pm

Coffee, milk, yogurt, and pastries will be served from 8:00 to 9:00 am, and ice cream will be served from 3:30 to 4:00 pm on Monday, Tuesday, and Wednesday in the Exhibit Hall.
Thank you to Dean Foods for the milk, yogurt, and cheese sticks, and to Danone North America for the ice cream products.
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A special thank you to our 2019 ADSA Annual Meeting Exhibitors!
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Industrielaan 11b
9990 Maldegem
Belgium
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Booth(s): 613

World market leader Adifo Software develops and services a unique range of feed industry-specific software tools for least-cost feed formulation, precise feeding, quality data management, ration calculation, cloud services, and ERP. Six hundred customers in over 60 countries apply Adifo’s software to optimize their resources, achieve optimal animal performance, service their clients, and become more efficient and profitable. More than 90 dedicated employees, continuous input from users, over 40 years of experience, and state-of-the-art technology guarantee innovative products that make a difference. Stay on top of the latest developments, trends and legislation in feed production. Check out www.feedformulation.com.

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Ag Processing Inc.
12700 West Dodge Road
Omaha, NE 68154
www.aminoplus.com
Booth(s): 521

Ag Processing Inc. is the largest cooperative soybean processor in the world and producer of AminoPlus, the number one volume bypass soybean meal supplement in United States. The AminoPlus process utilizes soybean meal to provide high amino acid quality, rumen bypass, and intestinal digestibility without the addition of chemicals or non-soybean components.

Agri-King Inc.
PO Box 208
Fulton, IL 61252-0208
www.agriking.com
Booth(s): 611

We believe that capturing the nutritional value in feeds is the key to profit. We offer a fully integrated nutrition program, including forage and grain treatment (SiloKing), bioavailable trace minerals, feed enzymes, and a direct-fed microbial (Tri-Lution). Feed testing and custom ration formulation bring it all together.

Ajinomoto Animal Nutrition North America Inc.
8430 W Bryn Mawr Ave, Ste 650
Chicago, IL 60631-3421
www.AjiPro-L.com
Booth(s): 402

Ajinomoto Animal Nutrition North America Inc., formerly Ajinomoto Heartland Inc., manufactures and distributes AjiPro-L. A cost-effective, feed-grade, rumen protected lysine, AjiPro-L is used to balance amino acid levels in ruminant rations. Ajinomoto Animal Nutrition North America, a frontrunner in amino acid nutritional research and technical expertise, is one of five companies affiliated with the Ajinomoto Animal Nutrition Group.

American Dairy Science Association (ADSA)
1800 S Oak St, Ste 100
Champaign, IL 61820-6974
www.adsa.org
Booth(s): 700

Established in 1906, ADSA is an international organization of educators, scientists, industry, and government representatives who are committed to advancing the dairy industry. All are keenly aware of the vital role the dairy sciences play in fulfilling the economic, nutritive, and health requirements of the world’s population. Together, ADSA members have discovered new methods and technologies that have revolutionized the dairy industry. Please visit www.adsa.org for more information.

American Registry of Professional Animal Scientists (ARPAS)
1800 S Oak St, Ste 100
Champaign, IL 61820-6974
www.arpas.org
Booth(s): 501

All successful certification and licensing programs are targeted to serve and protect the public’s interest. More government regulations and controls require that practicing professionals establish accountability by means of registry and certification programs. In today’s business climate, producer and industry clients want assurance that they are getting advice from certified professionals who stay on the cutting edge. By completing the requirements for registration, maintaining your continuing education units, and adhering to the code of ethics, ARPAS registration provides you with a new level of recognition to help you distinguish yourself to your clients as a Professional Animal Scientist.

Balchem Corporation
52 Sunrise Park
New Hampton, NY 10958-0600
www.balchem.com
Booth(s): 505, 604

Balchem provides state-of-the-art solutions and the finest quality products for a range of industries worldwide, including human nutrition, animal nutrition, and industrial applications. We apply proven science and industry-leading technologies backed by years of success in the feed industry. You will not find a more experienced...
and committed team of scientists and researchers strategically aligned to identify and develop high-quality, innovative, proprietary products designed to meet your animal nutrition, productivity and wellness needs. But in the end, it all comes down to results — real results you can count on, results that help you meet your goals.

BIOMIN America Inc.
1846 Lockhill Selma Rd, Ste 101
San Antonio, TX 78213-1551
www.biomin.net
Booth(s): 414

BIOMIN is a leading research company and producer of feed additives in the ruminant, poultry, and swine markets, operating in over 130 countries. Well known for closely examining and identifying mycotoxins, BIOMIN offers sophisticated technologies to deliver natural and profitable solutions. BIOMIN experts also partner with customers to explore gut health challenges and offers a line of products in the phylogenics, probiotics, organic acids, and yeast categories. For the past 30 years, BIOMIN has been committed to pioneering solutions that will help to maximize animal health and performance.

Bioprocess Control AB
Scheelevagen 22
223 63 Lund
Sweden
www.bioprocesscontrol.com
Booth(s): 718

Bioprocess Control is a market leader in the area of low gas flow analytical instruments for biotechnology-related applications. We invest in innovation and development of smart instruments that allow for more efficient, reliable, and higher quality research and analysis, leading to significant reductions in time and labor. We ensure the highest product quality throughout our portfolio, and focus on being service minded and always meeting the needs of our customers.

C-Lock Inc.
2525 W Main St, Ste 211
Rapid City, SD 57702-2439
www.c-lockinc.com
Booth(s): 710

Precision feeding, metabolic gas analysis, and micro supplement control, combined with great analysis tools, make C-Lock Inc. a great choice.

Catachem
353 Christian Street, Ste 2
Oxford, CT 06478
www.catacheminc.com
Booth (s): 715

Catachem is a leading manufacturer of diagnostic chemistry reagents and immunoassays for use in veterinary and human laboratories. Catachem is exhibiting our efficient, inexpensive, and flexible clinical chemistry analyzer which is particularly suited for research. Catachem continues to work closely with its customers to design specialty chemistry tests and tailor these to the specific needs and demands of the veterinary laboratory. Catachem also provides veterinarians with easy-to-perform, accurate point-of-care (POC) tests.

Central Life Sciences
1501 E Woodfield Rd, Ste 200 West
Schaumburg, IL 60173-6052
www.centrallifesciences.com
Booth(s): 620

Central Life Sciences, whose founders pioneered biorational pest control more than 40 years ago, offers unique and effective pest management solutions to make life better for people, plants, and animals. By affecting the insects’ own chemistry, Central Life Sciences’ products inhibit the life cycle of numerous pest species to reduce destructive populations. The Altosid, ClariFly, and Starbar lines of products decrease nuisance and disease-spreading flies from livestock and poultry operations, which helps increase animal performance and producer profitability.

Chemlock Nutrition
9078 Union Centre Blvd.
Cincinnati, Ohio 45069
www.chemlocknutrition.com
Booth(s): 721

Chemlock Nutrition, a subsidiary of Chemlock Metals Corp., was co-founded by former MIT chemists to focus on mineral innovation, and was recently identified by INC as one of the fastest growing private companies in America. Last year, Chemlock developed a higher-purity/lower cost chromium propionate, made in Ohio. More recently, Chemlock has created Nutricow CalSafe to eliminate milk fever and common herding headaches in transition cows.

Chr. Hansen
99015 W Maple St
Milwaukee, WI 53214
www.chr-hansen.com
Booth(s): 400

Rooted in science, grounded in agriculture since 1874. It all started in a rural Danish farming community in 1874. Today, thanks to our team of scientific specialists, Chr. Hansen has the largest collection of microbial strains for probiotics and silage inoculants in the world. So we can help you boost profitability, while meeting all regulatory requirements for safety, stability and efficacy. Chr. Hansen manufactures Probios, SiloSolve, BioPlus, and GalliPro.

Cumberland Valley Analytical Services
14515 Industry Dr
Hagerstown, MD 21742-2410
www.foragelab.com
Booth(s): 519, 618

Cumberland Valley Analytical Services is a full-service forage and feed testing laboratory serving the US, Canada, and the world. We specialize in providing contract support for the establishment and operation of NIR feed labs. We are focused on serving the analytical needs of the research community.

Dairy One Forage Lab
730 Warren Rd
Ithaca, NY 14850-1242
www.dairyone.com
Booth(s): 405

The Dairy One Forage Lab excels in providing you with high-quality analyses and customer service. Our goal is to provide you with...
analytical services designed to meet the expanding demands of modern agriculture.

**Dairy Records Management Systems**  
313 Chapaneoke Rd, Ste 100  
Raleigh, NC 27603-3435  
www.drms.org  
Booth(s): 603, 605

Dairy Records Management Systems provides innovative dairy information products and services for producers, DHIA staff, consultants and other dairy industry professionals. Comprehensive processed reports include Heifer Genomics Guide, Transition Cow Management, and MUN Profile. Leading-edge software and web tools include PCDART, PocketDairy Android, Herd Detective, DairyMetrics, WebReports, and Reports On-Demand.

**Diamond V**  
2525 60th Ave SW  
Cedar Rapids, IA  52404  
www.diamondv.com  
Booth(s): 600

Diamond V is a leading global nutrition and health company that conducts research in dairy cattle and other species and manufactures natural, precision fermentation products to support animal health, animal performance, and food safety worldwide. Global headquarters and all manufacturing is located in Cedar Rapids, Iowa. Diamond V also has offices in five other countries and markets products in more than 60 countries. More than 70 years of science, innovation, technology, and quality have earned Diamond V the reputation of The Trusted Experts in Nutrition and Health.

**E. I. Medical Imaging**  
110 12th Street SW, Unit 102  
Loveland, CO  80537  
www.eimedical.com  
Booth(s): 711

E.I. Medical Imaging (EIMI) is a world leader and the only US manufacturer of portable ultrasound solutions specifically engineered for veterinary use. For the past 34 years, the company's core values have remained intact: putting the customer first and delivering solid, effective ultrasound solutions. EIMI provides the Ibex portable ultrasound systems.

**Elsevier**  
Radarweg 29  
1043 NX Amsterdam  
Netherlands  
www.elsevier.com  
Booth(s): 701

Elsevier is a world-leading provider of information solutions that enhance the performance of science, health, and technology professionals, empowering them to make better decisions, deliver better care, and sometimes make groundbreaking discoveries that advance the boundaries of knowledge and human progress. Elsevier is a world-leading multiple media publisher of science, technology, and health information products and services. We are proud to publish the *Journal of Dairy Science*® (JDS), the official journal of the American Dairy Science Association.

**Energy Feeds International**  
2831 Merced St, Bldg B  
San Leandro, CA  94577  
www.energyfeeds.com  
Booth(s): 619

Energy Feeds International is a leading provider of by-pass fats and mineral supplements to the dairy industry. Through the use of EFI’s full suite of supplements, nutritionists and progressive dairy producers are able to customize their rations to maximize profits and feeding efficiency.

**FASS Inc.**  
1800 S Oak St., Ste 100  
Champaign, IL 61820-6974  
www.fass.org  
Booth(s): 702

Since 1998, FASS has provided shared management services to not-for-profit animal science and related organizations. FASS services include accounting, conference planning and event management, membership and administration, publication services, and information technology services. FASS is a 501(c)(3) support organization. Our tax-exempt status allows us to serve our clients at very reasonable rates. Currently, we provide services to more than 10,000 professionals in animal agriculture and other sciences. FASS has the staff resources, talent, and experience your organization needs to let your leadership focus on driving your organization forward.

**Feed Components**  
1988 Energy Dr  
East Troy, WI  53120  
www.feedcomponents.com  
Booth(s): 712, 714

Feed Components was established in 2008 with the vision to bring innovative and well-researched products to market. By investing in research, technology, and support, we lead the market in innovation with a state-of-the-art dairy research and development center associated with a world-class commercial dairy farm. We are a progressive company comprising dairy producers, nutritionists, salespeople, researchers, and veterinarians who offer support and technical service in all areas of your business. Over the past several years, we have grown our business, our company, and our relationships to bring advancements in technologies that directly affect our customers’ bottom line.

**Feed the Future Innovation Lab for Livestock Systems**  
Institute of Food and Agricultural Sciences, University of Florida  
PO Box 110910  
Gainesville, Florida 32611-0910  
livestocklab.ifas.ufl.edu  
Booth(s): 601

The Feed the Future Innovation Lab for Livestock Systems is a program funded by the US Agency for International Development and led by the University of Florida and the International Livestock Research Institute with the aim to sustainably intensify smallholder livestock systems in order to improve the nutrition, health, livelihoods, and incomes of the poor. This five-year initiative (October 2015 to September 2020) works in eight countries in Africa and Asia, and involves over 35 competitively awarded projects on animal feeds, dairy production, marketing of livestock products, disease
management, human health and nutrition, human and institutional capacity development and enabling policies.

**Feedstuffs**  
12400 Whitewater Dr, Ste 160  
Minnetonka, MN  55343-4158  
www.Feedstuffs.com  
**Booth(s): 403**  
Animal agriculture's news and information leader.

**Förster-Technik North America**  
56 Yates Avenue  
Cambridge, ON  N1P 0A3  
Canada  
www.foerster-technik.com  
**Booth(s): 520**  
We have automatic calf feeders for group housing and single housing, and we can measure activity in calves while they are in pens. We have activity sensors at nipple stations, with fully automatic cleaning of nipple and hoses to and from the feed stations. We also have the 40FIT program to feed the right amount to each calf all day long.

**HerdStrong**  
3115 35th Avenue  
Greeley, CO  80634-9415  
herdstrong.com  
**Booth(s): 503**  
HerdStrong’s TruCore technology provides automatic temperature and activity monitoring for large ruminant animals. This is the perfect product for research organizations desiring automated collection of temperature and activity from within the animal’s core. Our TruCore technology delivers highly accurate, reliable core body temperature and activity data, and our browser-based software can optionally take advantage of HerdStrong’s proprietary algorithms. Data is secure, automatically backed up, can be exported on demand, and is accessible via browser or Android/iOS app. Join the growing list of academic and commercial organizations using our technology!

**Hoard’s Dairyman**  
28 Milwaukee Avenue West, POS Box 801  
Fort Atkinson, WI  53538  
www.hoards.com  
**Booth(s): 418**  
*Hoard’s Dairyman* is the most read and trusted dairy industry magazine. Since 1885, *Hoard’s Dairyman* has provided dairy producers of every size and type, as well as veterinarians, nutritionists, and other decision makers insights with expertise on feeding, breeding, animal health, and milk quality. Online, hoards.com is the dairy producer’s top resource for headline news, industry updates, market trends, and more to help them be more efficient and profitable.

**Innovative Additives Inc.**  
33 Eagle Drive  
Rehoboth Beach, DE  19971  
www.innovad-global.be  
**Booth(s): 412**  
Innovative Additives Inc. is a group and a brand that combines long-term experience in the field of animal feed additives, an innovative approach and dedication to animal well-being, and a healthy environment. With corporate headquarters and licensed state-of-the-art production facilities close to Antwerp in Belgium, Innovad is in a position to serve the global feed and animal industry. Fine products are produced with strict adherence to EU directives and regulations, and GMP+ certified.

**KTG North America**  
8 Yinxing Road  
Ren He Jie Dao, Yuhang District  
Hangzhou, Zhejiang  311107  
China  
www.kingtechina.com  
**Booth(s): 420**  
KTG North America is a provider of innovative specialty feed products for livestock and aquaculture producers worldwide. The company utilizes patented Intelligent Microcapsule coating technology for species-specific, targeted release of key nutrients. For dairy cows, the result is a proven bypass nutrient with excellent stability and high bioavailability for higher milk production and components. Dairy nutritionists are assured of maximum safety thanks to rigorous, independent testing and continual analysis at North America’s leading feed laboratories. Proud member of the American Registry of Professional Animal Scientists (ARPAS), which provides certification through examination, continuing education, and commitment to a code of ethics.

**MS Biotec**  
1300 Kaw Valley Road  
Wamego, KS 66547  
www.msbiotec.com  
**Booth(s): 705**  
MS Biotec is proud to be the world’s only provider of *Megasphaera elsdenii*, a highly prolific, lactic acid utilizing bacteria commercially marketed as Lactipro advance. MS Biotec provides high performance products and innovative solutions for the feedlot and dairy markets. The company has strong synergies with feedlots, dairies, animal health entities, nutritionists and veterinarians. Since late 2010, Lactipro advance has provided a unique management tool to dairy and beef producers for improving the bottom line.

**National Animal Nutrition Program (NANP)**  
Department of Animal Science, University of Kentucky  
609 W. P. Garrigus Bldg.  
Lexington, KY 40546  
www.animalnutrition.org  
**Booth (s): 313**  
The National Animal Nutrition Program (NANP) serves as a forum to identify high-priority animal nutrition issues and provides an integrated and systemic approach to sharing, collecting, assembling, synthesizing, and disseminating science-based information, educational tools, and enabling technologies on animal nutrition that facilitate high-priority research among agricultural species. NANP is a National Research Support Project supported, in part, by the Experiment Station Committee on Organization and Policy, the State Agricultural Experiment stations, and Hatch funds provided and administered by the US Department of Agriculture’s National Institute of Food and Agriculture.
Noldus Information Technology
1503 Edwards Ferry Rd NE, Ste 310
Leesburg, VA  20176
www.noldus.com
Booth(s): 410

Noldus develops research tools for dairy scientists in close collaboration with universities and organizations, such as the Dairy Campus and WUR, Wageningen, the Netherlands. Scientists around the globe use our solutions to study behavioral processes, automate experiments, and improve the quality and efficiency of their research. One of our flagship products is The Observer XT, behavioral coding and analysis software, used by 20,000 researchers. To track the location and movement of animals and get insight into their behavior, health, and welfare, we recommend using TrackLab, developed for the recognition, analysis, and visualization of spatial behavior in farm animals.

NovaVive Inc.
15 Dairy Avenue
Napanee, ON, K7R 1M4
Canada
www.NovaVive.ca
Booth (s): 719

NovaVive offers an advanced veterinary immunotherapeutic platform based on mycobacterium cell wall fraction (MCWF) technology with 5 regulator-approved products in the United States. Amplimune is USDA-approved and OMRI listed for the treatment of bacterial calf scours—an alternative to antibiotics. The company’s development plan is to identify additional livestock diseases that may be effectively treated with its immunotherapeutic technology platform.

Novus International
20 Research Park Drive
St. Charles, MO 63304
www.novusint.com
Booth(s): 621

Novus International, headquartered in St. Charles, Missouri, creates feed additive solutions for livestock and poultry production systems. Novus believes in their vision to help feed the world affordable, wholesome food and achieve a higher quality of life for all of our direct and indirect customers. Novus operations include corporate offices, research and development laboratories and manufacturing facilities in more than 35 countries, as well as smaller offices with field staff in an additional 60 countries.

Origination Inc.
1300 McKnight Road North
Maplewood, MN  55119
www.OriginationO2D.com
Booth(s): 704

Origination Inc. (O2D), is a premier distributor of animal feed ingredients, fertilizers, industrial products and ice melt to the upper Mississippi region of the United States. Our world-class, proprietary DCAD supplements for dairy cattle have been providing effective and economic nutrition solution to producers both domestically and internationally with research proven results. Over the company’s seven-decade-long history, it has been an innovative provider of quality products and value-added services to the agriculture market.

PortaCheck Inc.
1 Whittendale Dr, Ste E
Mooresstown, NJ 08057
www.portacheck.com
Booth(s): 713

PortaCheck Inc. was founded in 2004 to focus on the marketing and sale of portable testing devices for the dairy industry. Our on-farm tests that screen for scours, IgG, mastitis, SCC, and ketosis are now sold in over 65 countries.

Poultry Protein & Fat Council
1530 Cooledge Rd
Tucker, GA  30084-7303
www.poultryrenderers.org
Booth(s): 504

The Poultry Protein & Fat Council is a consortium of 13 member companies that produce high-quality poultry meal, feather meal and poultry fat. The Council sponsors research relating to the rendering industry to develop new and increased utilization of these products by demonstrating their efficacy in poultry, aquaculture, livestock, and companion animal rations.

Randox Food Diagnostics
55 Diamond Road
Crumlin, BT29 4QY
United Kingdom
www.randoxfood.com
Booth(s): 602

Randox Food Diagnostics was created to meet the needs of the growing food industry and to ensure the protection of its end consumers. We are responsible for the distribution of drug residue and mycotoxin analysis technology as well as a wide range of wine and honey quality test kits and analysers. Our extensive and expanding range of diagnostics consisting of 37 ELISAs, 21 multiplex screening platforms, and 20 enzymatic/colorimetric reagents for the testing of milk, feed, meat, seafood, honey, and wine.

SoyBest
PO Box 157
West Point, NE 68788-0157
www.soybest.com
Booth(s): 401, 500

SoyBest is a high-bypass soybean meal manufactured using a mechanical screwpress.

Stuhr Enterprises LLC
2210 Hwy 34
Waco, NE 68460
www.stuhrenterprises.com
Booth(s): 404

Stuhr Enterprises LLC is a global company based in Marshall, Minnesota, with manufacturing plants in Iowa and Missouri. The company is research- and technology-based with innovative manufacturing process applications. It makes and markets two transition cow feed additives: Anion Booster and Glucose Booster. Anion Booster is the most palatable anion additive available in the market and is commonly the best value compared with other anion sources. Glucose Booster is the most effective glucose precursor.
available on the market, with recent research proving its efficacy at the University of California–Davis School of Veterinary Medicine and Research Center (Tulare, CA) proving its efficacy.

United Animal Health Inc.
322 S. Main Street
Sheridan, IN 46069
www.unitedanh.com
Booth(s): 311

United Animal Health, formerly JBS United, was founded in 1956 and is dedicated to providing research-based solutions that create value for its partners in animal agriculture. United Animal Health offers livestock nutrition and health products globally through the United Animal Health or affiliate brands. The company, originally known as United Feeds, set itself apart from the competition by intimately getting to know customers and understanding what they needed to be more successful. That guiding principle has been the foundation as United Animal Health has grown from that one-room office company to an organization employing over 340 people.

Vetagro Inc.
230 S Clark St, #320
Chicago, IL 60604-1406
www.vetagro.com
Booth(s): 615

Vetagro specializes in the microencapsulation of feed additives and nutrients tailored to match the digestive capacity and intestinal transit time of poultry, swine, and ruminants. We are present globally, with international patents evidencing our novelty and innovation. Our dairy products include Timet, rumen-protected methionine to improve milk yield and quality; Mecovit, a synergistic combination of rumen-protected methionine, choline, betaine, and B vitamins, targeting the metabolism of the transition dairy cow; and AviPremium, rumen-protected tributyrin, the most concentrated source of butyric acid currently available.
ADSA Corporate Sustaining Members

Ag Processing Inc.
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Diamond V
DuPont Pioneer
Elanco Animal Health
Global Agri-Trade Corporation

Grande Cheese Company
Lallemand Animal Nutrition
Pioneer
Quali Tech Inc.
Renaissance Nutrition Inc.
Zinpro
Zoetis
Zook Nutrition and Management Inc.

Thank you for your support!
The better you take care of your cows, the better they take care of you.

Feeding them the right levels of omega-3 fatty acids means a balanced immune system and more energy for milk and reproduction.

Healthier cows are more profitable cows with protected EPA/DHA omega-3s.
Downtown Cincinnati area

1. Hyatt Regency (ADSA HQ)
2. Hilton Netherland Plaza (Interbull HQ)
3. Westin
4. Hampton Inn/Homewood Suites (Student HQ)
Duke Energy Convention Center
First Floor (Exhibit Hall Level)
Hyatt Regency
Meeting Rooms
Hilton Hotel (Interbull)
Meeting Rooms
Thank you to the 2019 ADSA Annual Meeting Sponsors!

**Gold Level**

Alltech  
Balchem Corporation  
Danone North America  
Dean Foods  
EAAP  
Merck Animal Health  
National Dairy Council  
USDA-NIFA  

**Silver Level**

Chr. Hansen  
Feed Components  

**Bronze Level**

Ajinomoto Animal Nutrition  
Bayer  
Biomin America Inc.  
Elanco Animal Health  
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Jefo  
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Zoetis

Thank you to the 2019 Interbull Annual Meeting Sponsors!

**Silver Level**

Council on Dairy Cattle Breeding

**Bronze Level**

Select Sires/World Wide Sires
Schedule of Events

Scheduling and locations are subject to change without notice. All Interbull events take place at the Hilton Netherland Plaza unless otherwise noted. All ADSA events take place at the Duke Energy Convention Center (DECC) unless otherwise noted.

Interbull Schedule of Events

Thursday, June 20

3:00 pm – 5:00 pm  Registration open ................................................... Hilton, 4th floor

Friday, June 21

7:30 am – 5:00 pm  Registration open ................................................... Hilton, 4th floor
8:00 am – 2:00 pm  Technical Committee Meeting 1* .................................... Salons DE
2:30 pm – 7:00 pm  Steering Committee Meeting 1* ..................................... Salons DE

Saturday, June 22

7:30 am – 5:00 pm  Registration open ................................................... Hilton, 4th floor
8:30 am – 12:30 pm Open Meeting ...................................................... Pavillion
1:30 pm – 3:30 pm  Business Meeting 1........................................................ Rookwood
4:00 pm – 6:00 pm  Open Meeting ...................................................... Pavillion
7:00 pm – 10:00 pm Interbull Dinner ..................................................... Continental

Sunday, June 23

8:30 am – 12:00 pm Open Meeting ...................................................... Pavillion
1:00 pm – 3:00 pm  Business Meeting 2.................................................... Rookwood
3:15 pm – 5:00 pm  Technical Committee Meeting 2* .................................... Pavillion
5:00 pm – 6:00 pm  SNPMACE WG Meeting* ............................................. Rookwood
6:00 pm – 6:45 pm  ADSA Opening Session .............................................. DECC, Grand Ballroom A
6:45 pm – 8:15 pm  ADSA Opening Reception ........................................... DECC, Grand Ballroom B

Monday, June 24

9:30 am – 12:30 pm Joint Interbull/ADSA Session ...................................... DECC, Junior Ballroom C
2:00 pm – 5:30 pm  Joint Interbull/ADSA Session ...................................... DECC, Junior Ballroom C

Tuesday, June 25

8:30 am – 10:30 am Steering Committee Meeting 2* ..................................... DECC, 252

*Closed meeting (committee or working group members only)
## ADSA Schedule of Events

### Saturday, June 22

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:00 pm – 5:00 pm</td>
<td>SAD and GSD Dairy Tour: Young's Jersey Dairy Tour</td>
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<tr>
<td></td>
<td>Yellow Springs, OH (leave from Hampton/Homewood)</td>
</tr>
<tr>
<td>3:00 pm – 5:00 pm</td>
<td>Registration open</td>
</tr>
<tr>
<td>3:00 pm – 5:00 pm</td>
<td>Preload open</td>
</tr>
<tr>
<td>6:00 pm – 7:00 pm</td>
<td>SAD Undergraduate Student Hospitality Room open</td>
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<tr>
<td></td>
<td>Hampton/Homewood</td>
</tr>
<tr>
<td>7:00 pm</td>
<td>SAD Undergraduate Student Informal Mixer: SAD Dine Around</td>
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<tr>
<td></td>
<td>Leave from Hampton/Homewood</td>
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### Sunday, June 23

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 am – 7:00 pm</td>
<td>Registration open</td>
</tr>
<tr>
<td>7:00 am – 5:00 pm</td>
<td>Preload open</td>
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<tr>
<td>7:00 am – 5:30 pm</td>
<td>Family room open</td>
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<tr>
<td>7:30 am – 10:00 am</td>
<td>New Board Orientation</td>
</tr>
<tr>
<td>8:00 am – 12:00 pm</td>
<td>Workshop: Dairy Records Analysis, Session 1</td>
</tr>
<tr>
<td>8:15 am – 9:15 am</td>
<td>SAD Undergraduate Student Officers and Advisors Meeting</td>
</tr>
<tr>
<td>9:00 am – 5:00 pm</td>
<td>Workshop: NANP Nutrition Models</td>
</tr>
<tr>
<td>9:30 am – 10:15 am</td>
<td>SAD First Business Meeting</td>
</tr>
<tr>
<td>10:00 am – 11:00 am</td>
<td>SAD Undergraduate Student Quiz Bowl Officials Meeting</td>
</tr>
<tr>
<td>10:00 am – 6:00 pm</td>
<td>Exhibit setup (exhibitors and student dairy clubs)</td>
</tr>
<tr>
<td>10:30 am – 11:00 am</td>
<td>SAD Undergraduate Student Quiz Bowl Seating Test</td>
</tr>
<tr>
<td>11:00 am – 12:00 pm</td>
<td>SAD Undergraduate Student Midday Mixer and Lunch</td>
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<tr>
<td>12:00 pm – 1:00 pm</td>
<td>2020 Program Committee Meeting</td>
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<tr>
<td>12:00 pm – 5:00 pm</td>
<td>Media Room open</td>
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<tr>
<td>12:00 pm – 5:00 pm</td>
<td>JDS Editors and Journal Management Committee</td>
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<tr>
<td></td>
<td>Lunch and Meeting</td>
</tr>
<tr>
<td>12:15 pm – 4:15 pm</td>
<td>SAD Undergraduate Student Quiz Bowl Seating/Preliminary Rounds</td>
</tr>
<tr>
<td>1:00 pm – 4:00 pm</td>
<td>Workshop: Teaching</td>
</tr>
<tr>
<td>1:00 pm – 5:00 pm</td>
<td>Workshop: Dairy Records Analysis, Session 2</td>
</tr>
<tr>
<td>2:00 pm – 3:00 pm</td>
<td>Production Division Council Meeting</td>
</tr>
<tr>
<td>2:00 pm – 3:30 pm</td>
<td>ADSA Foundation Board of Trustees Meeting</td>
</tr>
<tr>
<td>2:00 pm – 4:00 pm</td>
<td>GSD Symposium: Grant Writing</td>
</tr>
<tr>
<td>2:00 pm – 4:00 pm</td>
<td>34th ADSA Discover Conference Mini Symposium</td>
</tr>
<tr>
<td>3:00 pm – 4:00 pm</td>
<td>Production Division Nominating Committee</td>
</tr>
<tr>
<td>3:00 pm – 5:00 pm</td>
<td>Late-Breaking Original Research Session (open to all attendees)</td>
</tr>
<tr>
<td>4:15 pm – 5:00 pm</td>
<td>GSD Business Meeting and Open Forum</td>
</tr>
<tr>
<td>4:30 pm – 5:00 pm</td>
<td>Dairy Quiz Bowl Final Round</td>
</tr>
<tr>
<td>5:00 pm – 5:45 pm</td>
<td>First-Time Attendees’ Reception</td>
</tr>
<tr>
<td>5:00 pm – 6:00 pm</td>
<td>Dairy Foods Division Council Meeting</td>
</tr>
<tr>
<td>6:00 pm – 6:45 pm</td>
<td>Opening Session</td>
</tr>
<tr>
<td>6:45 pm – 8:15 pm</td>
<td>Opening Reception</td>
</tr>
<tr>
<td>7:00 pm – 10:00 pm</td>
<td>Graduate Student Mixer</td>
</tr>
</tbody>
</table>

### Monday, June 24

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:30 am – 7:00 am</td>
<td>SAD Undergraduate Student Posters setup</td>
</tr>
<tr>
<td>6:30 am – 8:00 am</td>
<td>Production Division Extension Breakfast</td>
</tr>
<tr>
<td>7:00 am – 5:30 pm</td>
<td>Registration open</td>
</tr>
<tr>
<td>7:00 am – 5:30 pm</td>
<td>Preload open</td>
</tr>
<tr>
<td>Time</td>
<td>Event Description</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>7:00 am – 5:30 pm</td>
<td>Family room open.</td>
</tr>
<tr>
<td>7:15 am – 8:30 am</td>
<td>Turn in yearbooks and scrapbooks.</td>
</tr>
<tr>
<td>7:30 am – 9:30 am</td>
<td>SAD Undergraduate Student Poster Presentation Competition.</td>
</tr>
<tr>
<td>7:30 am – 9:30 am</td>
<td>Poster presentations.</td>
</tr>
<tr>
<td>8:00 am – 9:00 am</td>
<td>Coffee, milk, yogurt, and pastries.</td>
</tr>
<tr>
<td>8:00 am – 9:00 am</td>
<td>Introduction to S-PAC.</td>
</tr>
<tr>
<td>8:00 am – 5:00 pm</td>
<td>Media Room open.</td>
</tr>
<tr>
<td>8:00 am – 5:00 pm</td>
<td>Commercial exhibits open.</td>
</tr>
<tr>
<td>8:00 am – 9:00 pm</td>
<td>Job Resource Center open.</td>
</tr>
<tr>
<td>8:15 am – 9:15 am</td>
<td>SAD Undergraduate Student Interviews for Outstanding Student and Advisor Awards.</td>
</tr>
<tr>
<td>8:15 am – 9:30 am</td>
<td>SAD Undergraduate Student Judging of Yearbooks, Scrapbooks, Annual Reports.</td>
</tr>
<tr>
<td>9:30 am – 10:45 am</td>
<td>SAD Undergraduate Student Original Research Oral Competition.</td>
</tr>
<tr>
<td>9:30 am – 11:00 am</td>
<td>SAD Undergraduate Student Production Oral Presentation Competition.</td>
</tr>
<tr>
<td>9:30 am – 1:30 pm</td>
<td>Companion Tour 1: Ultimate Under the Market Tour.</td>
</tr>
<tr>
<td>9:30 am – 5:30 pm</td>
<td>Scientific Sessions.</td>
</tr>
<tr>
<td>10:30 am – 12:30 pm</td>
<td>ARPAS Exam.</td>
</tr>
<tr>
<td>11:15 am – 12:30 pm</td>
<td>SAD Undergraduate Dairy Foods Oral Competition.</td>
</tr>
<tr>
<td>12:30 pm – 2:00 pm</td>
<td>GSD Career Insights Lunch.</td>
</tr>
<tr>
<td>12:45 pm – 3:00 pm</td>
<td>SAD Undergraduate Student Small Group Mentoring Session 1.</td>
</tr>
<tr>
<td>3:30 pm – 4:00 pm</td>
<td>Ice cream break.</td>
</tr>
<tr>
<td>4:00 pm – 5:00 pm</td>
<td>SAD visits with commercial exhibitors.</td>
</tr>
<tr>
<td>5:00 pm – 6:00 pm</td>
<td>Award Donor Dinner.</td>
</tr>
<tr>
<td>6:00 pm – 8:00 pm</td>
<td>Awards Program and Ceremony.</td>
</tr>
<tr>
<td>8:15 pm – 9:30 pm</td>
<td>Ice Cream Social.</td>
</tr>
<tr>
<td>9:00 pm – 11:00 pm</td>
<td>SAD Mixer: Cowsino Night—A Mooooving Event.</td>
</tr>
</tbody>
</table>

**Tuesday, June 25**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:30 am – 8:00 am</td>
<td>JDS Editorial Board Breakfast/Meeting.</td>
</tr>
<tr>
<td>6:30 am – 8:00 am</td>
<td>Dairy Foods Division Milk Proteins and Enzyme Breakfast.</td>
</tr>
<tr>
<td>7:00 am – 5:30 pm</td>
<td>Registration open.</td>
</tr>
<tr>
<td>7:00 am – 5:30 pm</td>
<td>Preload open.</td>
</tr>
<tr>
<td>7:00 am – 5:30 pm</td>
<td>Family room open.</td>
</tr>
<tr>
<td>7:30 am – 9:30 am</td>
<td>Poster presentations.</td>
</tr>
<tr>
<td>8:00 am – 9:00 am</td>
<td>Coffee, milk, yogurt, and pastries.</td>
</tr>
<tr>
<td>8:00 am – 9:00 am</td>
<td>ADSA Spokesperson Q&amp;A.</td>
</tr>
<tr>
<td>8:00 am – 9:00 am</td>
<td>SAD Undergraduate Student Business Meeting – Election of Officers.</td>
</tr>
<tr>
<td>8:00 am – 4:00 pm</td>
<td>Commercial exhibits open.</td>
</tr>
<tr>
<td>8:00 am – 4:00 pm</td>
<td>Job Resource Center open.</td>
</tr>
<tr>
<td>8:00 am – 5:00 pm</td>
<td>Media Room open.</td>
</tr>
<tr>
<td>9:15 am – 10:15 am</td>
<td>SAD Undergraduate Student Small Group Mentoring Session 2.</td>
</tr>
<tr>
<td>9:30 am – 1:15 pm</td>
<td>Companion Tour 2: “Cinci Top 10” Food and Culture Tour.</td>
</tr>
</tbody>
</table>
9:30 am – 5:30 pm  Scientific Sessions ................................................................. Convention Center
10:00 am – 11:00 am  Discover Conference Steering Committee Meeting ....................... 209
10:30 am – 11:30 am  SAD Undergraduate Student Educational Workshop: Media Training .. 230/231
10:30 am – 12:30 pm  ARPAS Exam ................................................................. 212
11:45 am – 2:00 pm  SAD Undergraduate Student Awards Luncheon ....................... Junior Ballroom B
12:30 pm – 2:00 pm  Dairy Foods Division Program Planning Lunch .......................... 209
12:30 pm – 2:00 pm  Production Division Business Meeting (boxed lunch for purchase) .... 260/261
2:00 pm – 4:00 pm  ARPAS Exam ................................................................. 212
2:00 pm – 4:00 pm  SAD Undergraduate Student Exhibits – Pick up yearbooks
                     and scrapbooks ................................................................. Exhibit Hall, SAD booth
2:00 pm – 5:30 pm  ADSA Southern Branch Symposium and Business Meeting ............. 232
2:30 pm – 3:30 pm  SAD Undergraduate Student Committee Meeting –
                     Old and New Officers and Advisors ................................ Junior Ballroom B
2:30 pm – 3:30 pm  GSD Three-Minute Thesis Challenge ...................................... 264
3:30 pm – 4:00 pm  Ice cream break ................................................................. Exhibit Hall A
4:00 pm – 6:00 pm  Dismantling of commercial exhibits ..................................... Exhibit Hall A
5:30 pm – 7:30 pm  Informal Calf Gathering ..................................................... Hyatt, Regency Ballroom E
7:00 pm – 9:00 pm  GSD Mix and Mingle .......................................................... Junior Ballroom A and B
7:00 pm – 9:00 pm  Iowa State Alumni and Friends Reception ......................... Hyatt, Bluegrass B
7:00 pm – 10:00 pm Canadian Society of Animal Science (CSAS) Wine and Cheese Social .. Hilton, 708/710

Wednesday, June 26

7:00 am – 5:30 pm  Registration open ............................................................. 5th St. South Concourse
7:00 am – 5:30 pm  Preload open .................................................................. 234
7:00 am – 5:30 pm  Family room open ......................................................... 235
7:30 am – 9:30 am  Poster presentations ......................................................... Exhibit Hall A
8:00 am – 9:00 am  Coffee, milk, yogurt, and pastries ..................................... Exhibit Hall A
8:00 am – 5:00 pm  Workshop: Mixed Models .................................................. 204
8:00 am – 5:00 pm  Media Room open .......................................................... 250
8:30 am – 9:30 am  ADSA Business Meeting and Open Forum ......................... 237/238
8:45 am – 5:00 pm  Teagasc-Moorepark Symposium and Reception .................... 201/202
9:30 am – 5:30 pm  Scientific Sessions ............................................................. Convention Center
12:30 pm – 2:30 pm  ADSA Board of Directors Meeting ................................... Hyatt, Bluegrass AB
3:30 pm – 4:00 pm  Ice cream break ................................................................. Exhibit Hall A

Thursday, June 27

8:00 am – 12:00 pm  Workshop: Mixed Models ................................................. 204
Saturday, June 22

**SAD and GSD Dairy Tour**
12:00 – 5:00 pm
Young’s Jersey Dairy in Yellow Springs, OH
Buses depart from Hampton Inn/Homewood Suites (student HQ)
Tickets: $21

Young’s Jersey Dairy was established in 1946 with a focus on milk-
cows and row crop farming. They began selling their Jersey milk
to the public in the late 1950s. That evolved into the opening of a
convenience store featuring hand-dipped ice cream. Today, Young’s
is a favorite Ohio destination, with two restaurants, a dairy store, and
loads of family fun activities including a petting zoo, mini golf, giant
slides, and more. They also host a multitude of special events includ-
ing car shows, bike tours, and seasonal festivals. Young’s is a model
for agri-tourism; their operating dairy is also a top family destination,
offering more than 70,000 gallons of ice cream and 45,000 pounds
of cheese to more than 1 million guests each year. Tour includes farm
tour ticket and bus transportation.

**SAD Undergraduate Student Hospitality Room**
6:00 – 7:00 pm
Hampton Inn/Homewood Suites

The SAD Hospitality Room will be available on Saturday afternoon
for members to gather and meet others as they arrive. Information
about the SAD schedule will be available.

**SAD Undergraduate Student Informal Mixer: SAD Dine Around**
7:00 pm
Meet in SAD Hospitality Room, Hampton Inn/Homewood Suites

SAD officers will host a dine around event on Saturday for schools
arriving early. Stop by the SAD hospitality room between 6:00 and
7:00 pm if your club would like to join. Students from participating
schools are encouraged to join different dinner groups for a fun
evening of networking and good food. Participants are responsible for
the cost of their meal.

Sunday, June 23

**SAD Undergraduate Student Midday Mixer and Lunch**
11:00 am – 12:00 pm
Tickets: $5

Join your fellow dairy clubs for a fun hour of getting reacquainted
and making new friends, and get to know your 2019–2020 SAD off-
cer candidates. Ticket price includes lunch. Note: Registration is lim-
ited to ADSA undergraduate student members and advisors.

**Dairy Quiz Bowl Final Round**
4:30 – 5:00 pm

University teams from across North America will compete in the
ADSA-SAD Dairy Quiz Bowl. The event gives schools an opportunity
to demonstrate their knowledge about dairy production, process-
ing, and ADSA history. The Student Affiliate Division (SAD) invites
you to join them for the excitement of the final round of competi-
tion as the top two schools go head to head for the title of 2019
Dairy Quiz Bowl Winning Team.

**Opening Session and Reception**
6:00 – 8:15 pm

Join us at the Opening Session to hear from ADSA President Geoff
Dahl with updates on the state of the association and celebrate the
recipients of the ADSA Award of Honor and ADSA Distinguished
Service Award and new ADSA Fellows. Reception to follow with a
live “Roaring 20s” swing band.

Monday, June 24

**SAD Undergraduate Student Poster and Paper Competitions**
Convention Center
Support the future of ADSA—plan time in your schedule to visit the
undergraduate posters and oral presentations on Monday morning.
See program for complete details.

**SAD Undergraduate Student Career Roundtable Lunch**
12:45 – 2:15 pm
Convention Center
Tickets: $10
A program favorite, the Career Roundtable Lunch gives students the
opportunity to dine and network with professional members repre-
senting a wide array of careers in the dairy industry. The program is
conveniently scheduled during Monday’s lunch break. Participants
will learn about careers in the industry, get useful tips on planning
for their careers, and much more. Students are encouraged to dress
professionally (business casual or better) and bring several copies
of their resumes. Students should also plan time to visit industry
reps in the exhibit hall for information about internships and job
opportunities.

**ADSA Awards Program and Ice Cream Social**
7:00 – 8:00 pm; 8:15 – 9:30 pm
Convention Center
All meeting participants, families, and friends are welcome to attend
the 2019 ADSA awards program. Please join us at this special event
to recognize and congratulate the 2019 award winners. Everyone is
invited to join us for the always-popular ice cream social that imme-
diately follows the awards program.

**SAD Undergraduate Student Mixer: SAD CowSino Night—A
Moooving Event**
9:00 – 11:00 pm
Hampton Inn/Homewood Suites, Vine St. North Room
Tickets: $15
With the competitions behind you, join us for CowSino/Country
Night at the student hotel. Whether you toss some cards or hit the
dance floor, the evening is yours to enjoy with undergrads from
across the country.

Tuesday, June 25

**SAD Educational Workshop: Media Training**
10:30 – 11:30 am
With the rapid growth of social media, we all have the ability and,
some might argue, the responsibility, to be ambassadors for agri-
culture. This program will equip participants to interact effectively
with traditional media and social media. Registration is free but
required.

**SAD Undergraduate Student Awards Luncheon**
11:45 am – 2:15 pm
Convention Center
Tickets: $30 (professionals), $35 (students)
Plan to attend this year’s SAD awards luncheon. The afternoon will
be capped with the presentation of student awards and announce-
ment of new SAD officers. Both students and professionals are
encouraged to attend. This is a wonderful chance to get to know
the next generation of the dairy industry.

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SAD Schedule of Events

Rooms listed below are in the Duke Energy Convention Center (DECC) unless otherwise noted. Consult the meeting website (https://www.adsa.org/sad) for the latest program information.

Saturday, June 22

12:00 pm – 5:00 pm  SAD and GSD Dairy Tour: Young’s Jersey Dairy Tour  ……………… Yellow Springs, Ohio (leave from Hampton/Homewood)
3:00 pm – 5:00 pm  Registration open  ……………………………………………………….. 5th St. South Concourse
6:00 pm – 7:00 pm  SAD Undergraduate Student Hospitality Room open  ……………… Hampton/Homewood lobby
7:00 pm  SAD Undergraduate Student Informal Mixer: SAD Dine Around  ………… Depart from Hampton/Homewood

Sunday, June 23

7:00 am – 7:00 pm  Registration open  ……………………………………………………….. 5th St. South Concourse
8:15 am – 9:15 am  SAD Undergraduate Student Officers and Advisors Meeting  … 209
9:30 am – 10:15 am  SAD First Business Meeting  ………………………………………… 203
10:00 am – 11:00 am  SAD Undergraduate Student Quiz Bowl Officials Meeting  … 209
10:30 am – 11:00 am  SAD Undergraduate Student Quiz Bowl Seating Test  ………… Junior Ballroom B
11:00 am – 12:00 pm  SAD Undergraduate Student Midday Mixer and Lunch ………… Junior Ballroom B
12:15 pm – 4:15 pm  Dairy Quiz Bowl Seating/Preliminary Rounds  …………………… 263, 264
4:30 pm – 5:00 pm  Dairy Quiz Bowl Final Round  ………………………………………… 264
6:00 pm – 6:45 pm  Opening Session  ……………………………………………………….. Grand Ballroom A
6:45 pm – 8:15 pm  Opening Reception  ……………………………………………………… Grand Ballroom B

Monday, June 24

6:30 am – 7:00 am  SAD Undergraduate Student Posters setup  ………………………… Exhibit Hall A
7:00 am – 5:30 pm  Registration open  ……………………………………………………….. 5th St. South Concourse
7:15 am – 8:30 am  Turn in yearbooks and scrapbooks  ………………………………… Exhibit Hall, SAD booth
7:30 am – 9:30 am  SAD Undergraduate Student Poster Presentation Competition  … Exhibit Hall A
7:30 am – 9:30 am  Poster presentations  …………………………………………………… Exhibit Hall A
7:30 am – 4:00 pm  Posters available for viewing  ………………………………………… Exhibit Hall A
8:00 am – 9:00 am  Coffee, milk, yogurt, and pastries  …………………………………… Exhibit Hall A
8:00 am – 5:00 pm  Commercial exhibits open  …………………………………………… Exhibit Hall A
8:00 am – 5:00 pm  Job Resource Center open  …………………………………………… Exhibit Hall A
8:15 am – 9:15 am  SAD Undergraduate Student Interviews for Outstanding Student and Advisor Awards  ……………………………………………………………………………… 209
8:15 am – 9:30 am  SAD Undergraduate Student Judging of Yearbooks, Scrapbooks, Annual Reports  …………………………………………………………………………………… Exhibit Hall, SAD booth
9:30 am – 10:45 am  SAD Undergraduate Student Original Research Oral Competition  ……………………………………………………………………………………………… 264
9:30 am – 11:00 am  SAD Undergraduate Student Production Oral Presentation Competition  ……………………………………………………………………………………………… 263
9:30 am – 5:30 pm  Scientific Sessions  ………………………………………………………….. Convention Center
10:30 am – 12:30 pm  ARPAS Exam  …………………………………………………………… 212
11:15 am – 12:30 pm  SAD Undergraduate Dairy Foods Oral Competition  …………… 264
12:45 pm – 2:15 pm  SAD Undergraduate Student Career Roundtable Lunch  ………… Junior Ballroom B
2:00 pm – 4:00 pm  ARPAS Exam  …………………………………………………………… 212
2:30 pm – 3:45 pm  SAD Undergraduate Student Small Group Mentoring Session 1  … 201/202 (meetup room)
### Tuesday, June 25

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<thead>
<tr>
<th>Time</th>
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</tr>
</thead>
<tbody>
<tr>
<td>7:00 am – 5:30 pm</td>
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<td>5th St. South Concourse</td>
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<td>Coffee, milk, yogurt, and pastries</td>
<td>Exhibit Hall A</td>
</tr>
<tr>
<td>8:00 am – 9:00 am</td>
<td>SAD Undergraduate Student Business Meeting – Election of Officers</td>
<td>203</td>
</tr>
<tr>
<td>8:00 am – 4:00 pm</td>
<td>Commercial exhibits open</td>
<td>Exhibit Hall A</td>
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<tr>
<td>8:00 am – 4:00 pm</td>
<td>Job Resource Center open</td>
<td>Exhibit Hall A</td>
</tr>
<tr>
<td>9:15 am – 10:15 am</td>
<td>SAD Undergraduate Student Small Group Mentoring Session 2</td>
<td>201/202 (meetup room)</td>
</tr>
<tr>
<td>9:30 am – 5:30 pm</td>
<td>Scientific Sessions</td>
<td>Convention Center</td>
</tr>
<tr>
<td>10:30 am – 11:30 am</td>
<td>SAD Undergraduate Student Educational Workshop: Media Training</td>
<td>230/231</td>
</tr>
<tr>
<td>10:30 am – 12:30 pm</td>
<td>ARPA Exam</td>
<td>212</td>
</tr>
<tr>
<td>11:45 am – 2:00 pm</td>
<td>SAD Undergraduate Student Awards Luncheon</td>
<td>Junior Ballroom B</td>
</tr>
<tr>
<td>2:00 pm – 4:00 pm</td>
<td>ARPA Exam</td>
<td>212</td>
</tr>
<tr>
<td>2:00 pm – 4:00 pm</td>
<td>SAD Undergraduate Student Exhibits – Pick up yearbooks and scrapbooks</td>
<td>Exhibit Hall, SAD booth</td>
</tr>
<tr>
<td>2:30 pm – 3:30 pm</td>
<td>SAD Undergraduate Student Committee Meeting – Old and New Officers and Advisors</td>
<td>Junior Ballroom B</td>
</tr>
<tr>
<td>3:30 pm – 4:00 pm</td>
<td>Ice cream break</td>
<td>Exhibit Hall A</td>
</tr>
</tbody>
</table>

Thank you to sponsors and donors for their generous support of SAD and GSD events at ADSA 2019!

#### SAD Sponsors and Donors
- DeLaval
- Novus International
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- Provimi
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- Select Sires
- Schreiber
- STgenetics
- Zinpro

#### GSD Event Sponsors and Donors
- AgSource Dairy
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- Daisy Brand
- Lallemand Animal Nutrition
- Southeast Milk Inc.
- Zinpro
Thank you to the ADSA 2019 Program Committees

**Overall Program Committee**
Mike VandeHaar
Zey Ustunol
Mike Brouk
Michael Miller
Paul Kindstedt
Emma Wall

**Animal Behavior and Well-Being**
Peter Krawczel
Emily Miller-Cushon
Amber Adams-Progar

**Animal Health**
Barry Bradford
Andres Contreras
Eduardo de Souza Ribeiro

**Breeding and Genetics**
Filippo Miglior
Christine Baes
Daniela Lourenco
Francisco Penagaricano
Brad Hein

**Dairy Foods**
Mike Miller
Dave Everett
Rani Govindasamy-Lucey
Sam Alcaine
Sanjeev Anand
Rohit Kapoor

**Extension Education**
Mike Schutz
Lindsay Ferlito
Noa Roman-Muniz

**Forages and Pastures**
Andre Brito
Daryl Kleinschmit
Matt Akins

**Growth and Development**
Kristy Daniels
Gustavo Cruz
Peter Erickson

**Lactation Biology**
Theresa Casey
Jimena LaPorta
FenQi Zhao
Sha Tao

**Milk Protein and Enzymes**
Dave Everett
Don McMahon
Lloyd Metzger
Yves Pouliot

**Physiology and Endocrinology**
Rob Rhoads
Ronaldo Cerri
Massimo Bionaz

**Production, Management, and the Environment**
Victor Cabrera
Todd Callaway
Jennifer Heguy

**Reproduction**
Stephen Butler
Alan Ealy
Stephen LeBlanc

**Ruminant Nutrition**
Stephanie Ward
Hugo Ramirez Ramirez
Jill Anderson

**Small Ruminant**
Ahmed Salama
Guido Invernizzi
Noemi Castro

**Teaching/Undergraduate and Graduate Education**
Cathleen Williams
Elizabeth Karcher
Abigail Carpenter

**ADSA Multidisciplinary and International Keynote (MILK) Symposium**
Rafael Jimenez-Flores

**ADSA Southern Section Symposium**
Jillian Fain Bohlen

**ADSA Graduate Student Symposium**
Marie Lawton
Holly Miller

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Filippo Miglior
Christine Baes
Daniela Lourenco
Francisco Penagaricano
Brad Hein
Graduate Student Competition: ADSA Dairy Foods
Oral
Laura Colby
Don Otter
Beth Briczinski

Graduate Student Competition: ADSA Dairy Foods
Poster
Sam Alcaine
Liz Ng
Ashraf Hassan

Graduate Student Competition: ADSA Production
Oral (MS/PhD)
Maris McCarthy
Peter Krawczel
Dan Cooke
Luis Moraes
Lorraine Sordillo-Gandy

Graduate Student Competition: ADSA Production
Poster (MS/PhD)
Keena Mullen
Agustin Rius
Benjamin Wenner
Kees Plaizier
Kamal Mjoun
Jeff Weyers

ADSA SAD Undergraduate Oral and Poster Competitions
Stephanie Ward
Molly Kelley

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Teaching: Planning, Implementing, and Evaluating Classroom Discussion
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Dairy Records Analysis
Kas Ingawa
NANP Nutrition Models
Tim Hackmann
Mixed Models
Nora Bello
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All symposia at the 2019 ADSA Annual Meeting are being recorded and will be available free of charge to meeting attendees shortly after the meeting ends for a period of 60 days. Please note that individual presentations may be excluded from a symposium recording if presenter permission was not granted. The REC icon in the scientific program indicates that a presentation is being recorded.
Sunday, June 23

SYMPOSIA AND ORAL SESSIONS

NANP Nutrition Models Workshop
Chair: Timothy Hackmann, University of California, Davis
Sponsors: USDA, AFRI, and McNamara Research Fund in Agriculture Firm

201/202

9:00 AM  1  Welcoming remarks.
J. McNamara*, McNamara Research in Agriculture Firm, Pullman, WA.

9:10 AM  2  Tutorial on R software.
T. Hackmann*, University of California, Davis, Davis, CA.

9:25 AM  3  Estimation of parameter values: Lecture and exercises.
M. D. Hanigan*1 and V. L. Daley1,2, 1Virginia Tech, Blacksburg, VA, 2National Animal Nutrition Program, University of Kentucky, Lexington, KY.

10:55 AM Break

11:05 AM  4  Cross validation and bootstrapping: Part I (lecture).
J. A. D. R. N. Appuhamy*1 and L. E. Moraes2, 1Department of Animal Science, Iowa State University, Ames, IA, 2Department of Animal Science, The Ohio State University, Columbus, OH.

11:35 AM  5  Cross validation and bootstrapping: Part II (exercises).
J. A. D. R. N. Appuhamy*1 and L. E. Moraes2, 1Department of Animal Science, Iowa State University, Ames, IA, 2Department of Animal Science, The Ohio State University, Columbus, OH.

12:35 PM Lunch

V. L. Daley*1, T. J. Hackmann2, and M. D. Hanigan3, 1National Animal Nutrition Program (NANP), University of Kentucky, Lexington, KY, 2University of California, Davis, CA, 3Virginia Tech, Blacksburg, VA.

1:55 PM  7  Automated model selection: Part II (exercises).
V. L. Daley*1, T. J. Hackmann2, and M. D. Hanigan3, 1National Animal Nutrition Program (NANP), University of Kentucky, Lexington, KY, 2University of California, Davis, CA, 3Virginia Tech, Blacksburg, VA.

2:55 PM Break

3:05 PM  8  Molly and other dynamic models: Part I (lecture).
H. A. Rossow*, University of California, Davis, Davis, CA.

3:35 PM  9  Molly and other dynamic models: Part II (exercises).
H. A. Rossow*, University of California, Davis, Davis, CA.

4:35 PM Reception follows
34th ADSA Discover Conference Mini Symposium
Chair: Jeffrey Firkins, The Ohio State University

2:00 PM
Discover Conference program overview.
Larry Miller, ADSA Discover Conferences.

2:15 PM
Mini-symposium on Discover 34—Re-examining amino acid and energy interactions in the dairy cow.
G. A. Broderick*, J. A. Metcalf**, J. L. Firkins†, and L. R. Miller*, 1Broderick Nutrition & Research LLC, Madison, WI, 2Trouw Nutrition Agresearch, Guelph, ON, Canada, †The Ohio State University, Columbus, OH, *ADSA Discover Conference Series, Centreville, MD.

3:15 PM
Chair-led discussion.

David M. Barbano Recognition Symposium
Chair: Rafael Jimenez-Flores, The Ohio State University
Sponsor: Danone North America

2:00 PM
Introductory remarks on a biographical presentation of our honoree, Professor David Barbano.
R. Jimenez-Flores*, The Ohio State University, Columbus, OH.

2:15 PM
Milk composition testing: From dairy farmer payment to dairy processor efficiency to dairy farm and animal diagnostics.
L. Metzger*, South Dakota State University, Brookings, SD.

2:45 PM
The Mozzarella/pasta filata years: From pizza cheese to traditional Sicilian Ragusano.
J. Yun1 and P. Kindstedt*, 1Parmlat Canada, Toronto, ON, Canada, 2University of Vermont, Burlington, VT.

3:15 PM
The milk filtration revolution: Pioneering “milk refining”.
B. Nelson*, Daisy Brand, Dallas, TX.

3:45 PM
Reflections of a life immersed in the science of milk.
David M. Barbano.

ADSA GSD Symposium: Grant Writing
Chair: Marie Lawton, Cornell University

2:00 PM
Grantsmanship: Top ten tools for success in grant writing.
J. Williams*, USDA National Institute of Food and Agriculture, Washington, DC.

2:45 PM
Panel discussion.
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Workshop: Dairy Records Management: Session 1
Chair: Kas Ingawa, North Carolina State University
Room 212
8:00 AM to 12:00 PM

Teaching Workshop:
Planning, Implementation, and Evaluating Classroom Discussion
Chair: Michel Wattiaux, University of Wisconsin-Madison
Room 210
1:00 to 4:00 PM

Workshop: Dairy Records Management: Session 2
Chair: Kas Ingawa, North Carolina State University
Room 212
1:00 to 5:00 PM

Late-Breaking Original Research Session
Room 205
3:00 to 5:00 PM
**ADSA Graduate Student Dairy Foods Poster Competition**

M1  
The role of sweeteners and protein source on high-protein low-carbohydrate bar shelf life.  
H. Keefer*, S. Nishku, and M. A. Drake, North Carolina State University, Raleigh NC.

M2  
Developing a blood glucose meter-based method for the rapid measurement of lactose in dairy ingredients.  
C. Wagner*1,2, J. Amamcharla1, A. Rao1, and L. Metzger1, 1Kansas State University, Manhattan, KS, 2Agropur Ingredients, La Crosse, WI, 3South Dakota State University, Brookings, SD.

M3  
Characterization of milk and soy phospholipid liposomes and their effects on inflammation using an adipocyte model.  
E. Kosmerl*, D. Rocha-Mendoza, I. García-Cano, O. Ziouzenkova, and R. Jiménez-Flores, The Ohio State University, Columbus, OH.

M4  
Forward osmosis concentration of skim and whole milk at different temperatures: effect on flux and milk powder quality.  
A. Beldie* and C. I. Moraru, Cornell University, Ithaca, NY.

M5  
Utilization of acid whey as a fermentation aid to developing an enriched feed ingredient.  
A. Mayta-Apaza*, I. García-Cano, D. Rocha-Mendoza, and R. Jiménez-Flores, The Ohio State University, Columbus, OH.

M6  
A natural antimicrobial from *Bacillus subtilis*, a predominant constituent of membrane biofilms.  
P. Verma*1,2 and S. Anand1,2, 1Midwest Dairy Foods Research Center, Brookings, SD, 2Dairy and Food Science Department, South Dakota State University, Brookings, SD.

M7  
Manufacturing low-spore-count skim milk powders by combining optimized raw milk holding conditions and hydrodynamic cavitation.  
N. Awasti*, P. Chaudhary, and S. Anand, Department of Dairy and Food Science, South Dakota State University, Brookings, SD.

M8  
Effect of lactic acid and galactose on the physical, chemical, and thermal properties of deproteinized whey powders.  
P. Thorakkattu* and J. Amamcharla, Kansas State University, Manhattan, KS.

**ADSA Graduate Student (MS) Production Poster Competition**

M9  
Experimental heat stress alters the fecal microbiome of lactating dairy cows.  

M10  
Rectal temperature, respiration rate, and heart rate of slick-hair and wild-type lactating Holstein cows under heat stress.  

M11  
Evaluating the impact of stage of life on anti-Müllerian hormone in dairy cattle.  
K. Alward*, W. Graves1, R. Palomares2, A. Nelson2, and J. Bohlen3, 1Animal and Dairy Science, University of Georgia, Athens, GA, 2College of Veterinary Medicine, University of Georgia, Athens, GA.

M12  
Effects of timing of artificial insemination and use of semen extenders on fertility of dairy heifers subjected to timed artificial insemination.  
C. C. Figueiredo*1, D. Z. Bisinotto1, R. C. Chebel1, R. Le Boucher1, S. Camugli1, E. Schimitt1, C. Arnoult1, W. W. Thatcher1, and R. S. Bisinotto1, 1University of Florida, Gainesville, FL, 2IMV-Technologies, L’Aigle, France, 3University of Grenoble Alpes, Grenoble, France.

M13  
Using 30-h in vitro NDF digestibility of feedstuffs in ration formulation: evaluation of predictions for milk and methane production in lactating dairy cows.  
K. C. Krogstad*1, D. L. Morris1, P. J. Kononoff1, and K. J. Herrick1, 1Department of Animal Science, University of Nebraska-Lincoln, Lincoln, NE, 2POET Nutrition, Sioux Falls, SD.
M14  Ruminal degradation and intestinal digestibility of hydrolyzed feather meal with and without blood.  
K. Buse*, D. Morris, and P. Kononoff, University of Nebraska-Lincoln, Lincoln, NE.

M15  Effect of feeding switchgrass hay to dairy cows during the dry period.  
J. F. Rivera*, J. C. DeBruyn, A. Heeg, M. Thimmanagari, and A. J. Carpenter, 1Department of Animal Biosciences, University of Guelph, Ridgetown, ON, Canada, 2Ontario Ministry of Food, Agriculture, and Rural Affairs, Guelph, ON, Canada.

M16  Effect of weaning and supplemental butyrate on nutrient transporter expression in Holstein calves.  
R. Hiltz*, D. McCurdy1, K. Klanderman2, S. Moreland2, and A. H. Laarman1, 1Department of Animal and Veterinary Science, University of Idaho, Moscow, ID, 2Nutriad Inc., Hampshire, IL.

M17  Supplementation of serotonin or fluoxetine impacts bioenergetics in dairy calves.  
S. L. Field*, M. G. Marrero, A. L. Skibielski, B. Dado-Senn, and J. Laporta, Department of Animal Sciences, University of Florida, Gainesville, FL.

M18  Comparison of IgG absorption in calves fed a commercial colostrum replacer or supplement maternal colostrum.  
A. J. Lopez*, C. M. Jones1, A. J. Geiger2, and A. J. Heinrichs3, 1Department of Animal Science, The Pennsylvania State University, University Park, PA, 2Department of Dairy Science, The University of Wisconsin, Madison, WI, 3Zinpro Corporation, Eden Prairie, MN.

M19  Alfalfa establishment: Evaluating the effects of underseeding sudangrass and ryegrass on forage yields and chemical composition under drought conditions.  
C. Matteau*, B. Baurhoo1, A. Mustafa2, and P. Seguin1, 1McGill University, Sainte-Anne-de-Beauhésippe, QC, Canada, 2Belisles Solution Nutrition Inc., Saint-Mathias-sur-Richelieu, QC, Canada.

**ADSA Graduate Student (PhD) Production Poster Competition**

M20  Effect of duration of exposure to diets differing in DCAD on calcium metabolism after a parathyroid hormone challenge in dairy cows.  

M21  Nitrogen metabolism in lactating dairy cows supplemented with N-acetyl-l-methionine as a source of rumen-protected methionine.  
F. X. Amaro*, E. J. C. DuvalSaint, D. Kim1, R. Restelatto1, P. Carvalho1, A. Oyebade1, Y. Jiang1, A. P. Cervantes1, K. G. Arriola1, L. F. Ferraretto1, A. T. Adesogan1, J.-S. Eun1, J. S. Park2, S. H. Lee2, D. Vyas1, 1Department of Animal Sciences, University of Florida, Gainesville, FL, 2Institute of Integrated Technology, CJ CheilJedang, Suwon, South Korea.

M22  Feeding rumen-protected choline to prepartum Holstein cows in negative energy balance increases circulating lipoprotein phosphatidylcholine and triglyceride levels while preventing hepatic triglyceride accrual.  

M23  Amino acid composition of cattle tissue and milk, and various feeds used in ruminant diets using multiple hydrolysis times.  
A. F. Ortega*, D. A. Ross, and M. E. Van Amburgh, Cornell University, Ithaca, NY.

E. Liu* and M. J. VandeHaar, Michigan State University, East Lansing, MI.

M25  The effects of citral as a therapeutic treatment for Escherichia coli mastitis in lactating dairy cattle.  
C. M. Scholle*, A. M. Fischer, H. M. Mader, D. Biswas, and K. M. Moyes, University of Maryland, College Park, MD.

M26  Starch content of the close-up dry cow diet can affect insulin sensitivity of newborn dairy calves early in life.  
J. Haisan*, Y. Inabu2, W. Shi1, and M. Oba1, 1Department of Agricultural Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada, 2The Research Center for Animal Science, Graduate School of Biosphere Science, Hiroshima University, Higashi-Hiroshima, Japan.

M27  Managing feed deficits in early lactation—The effect of restricted pasture allowance on dairy cow production.  
A. Claffey*, L. Delaby1, T. M. Boland1, E. Lewis1, and E. Kennedy1, 1Teagasc Animal and Grassland Research and Innovation Centre, Moorepark, Fermoy, Co. Cork, Ireland, 2INRA, AgroCampus Ouest, UMR Physiologie, Environnement et Génétique pour l’Animal et les Systèmes d’Elevage, Saint Gilles, France, 3School of Agriculture and Food Science, University College Dublin, Belfield, Dublin, Ireland, 4Devenish Nutrition Limited, Belfast, UK.
α_-Casein (CSN1S1) suppresses β-casein expression via JAK2/STAT5a signaling pathway in goat mammary epithelial cells. N. Song* and J. Luo, College of Animal Science and Technology, Northwest A&F University, Yangling, Shaanxi, China.

Effects of feeding moderate- or high-starch close-up diet to cows on response of newborn calves to intravenous injection of glucagon-like peptide 1. Y. Inabu*1, J. Haisan2, M. Oba2, and T. Sugino1, 1Department of Bioresource Science, Graduate School of Biosphere Science, Hiroshima University, Higashi-Hiroshima, Japan, 2Department of Agricultural Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada.

Effects of recent and ancient inbreeding on performance of Dutch Holstein Friesian dairy cattle. H. P. Doekes*1,2, R. F. Veerkamp1, P. Bijma1, S. J. Hiemstra2, G. de Jong1, and J. J. Windig2,1 Animal Breeding and Genomics, Wageningen University & Research, Wageningen, the Netherlands, 2Centre for Genetic Resources the Netherlands, Wageningen University & Research, Wageningen, the Netherlands, 1Cooperation CRV, Arnhem, the Netherlands.

Effect of air and probiotics on in vitro fermentation. R. Y. Rha*, S. L. Ratiff, J. S. Scott, and R. A. Kohn, University of Maryland, College Park, MD.

Fecal nutrient content of slick-hair and wild-type dairy cows under heat stress. C. G. Ríos-Solís, N. L. Rosa-Padilla*, and G. Ortiz-Colón, University of Puerto Rico, Mayagüez, PR.


Co-dispersion of chia plant protein and casein micelles in milk. S. Tieu*, A. Mayta-Apaza, J. Ortega-Anaya, and R. Jimenez-Flores, The Ohio State University, Columbus, OH.


The effects of regrouping dairy cattle in pairs or individually on fecal cortisol metabolite concentrations. P. L. Knickerbocker* and J. M. Huzzey, California Polytechnic State University, San Luis Obispo, CA.

Acute behavioral effects of regrouping postpartum dairy cattle in pairs or individually. K. A. Mazer* and J. M. Huzzey, California Polytechnic State University, San Luis Obispo, CA.

Effect of postpartum milking strategy on plasma calcium concentration and risk of subclinical hypocalcemia in dairy cows.  
A. Valdecabres*, 1, R. Lopes1, A. Lago2, C. Blanc3, and N. Silva-del-Rio1, 1Veterinary Medicine Teaching and Research Center, University of California Davis, Tulare, CA, 2DairyExperts Inc., Tulare, CA, 3GTV Dairies, Tipton, CA.

The effect of prepartum negative dietary cation-anion difference and serum calcium concentration on blood neutrophil function in the transition period.  
R. Couto Serrenho*, E. I. Morrison, O. Bogado Pascottini, and S. J. LeBlanc, University of Guelph, Guelph, ON, Canada.

Factors that contribute to ketosis in early lactation Holstein dairy cattle.  
C. Sousa* and H. Rossow, School of Veterinary Medicine, University of California, Davis, Davis, CA.

Evaluation of the economic costs of ketosis and their prevention strategies in dairy cattle.  

Effect of automating health monitoring on detection of health disorders and performance of lactating dairy cows.  
M. M. Perez*, E. M. Cabrera, and J. O. Giordano, Department of Animal Science, Cornell University, Ithaca, NY.

Characterization of peripartum circulating metabolites in cows with varying degrees of liver triglyceride accumulation.  

Prevalence of subclinical ketosis and its effects on milk production and blood chemistry in high-yielding dairy cattle.  

Haptoglobin critical thresholds for predicting health disorders during the transition period.  

Evaluation of reproduction and behavior of dairy cows treated with Pegbovigrastim.  
M. X. da Silva Oliveira*, 1 D. D. McGee2, J. A. Brett1, and A. E. Stone1, 1Animal and Dairy Science, Mississippi State University, Mississippi State, MS, 2Elanco Animal Health, Greenfield, IN, 3College of Veterinary Medicine, Mississippi State University, Mississippi State, MS.

Impact of a liposome-TLR agonist stimulant on macrophage bactericidal activity against Staphylococcus aureus and on intramammary immune responses.  
L. Caixeta*1, 2, S. Scheu1, V. Rosso2, W. Wheat1, and S. Dow1, 1Department of Veterinary Population Medicine, University of Minnesota, St. Paul, MN, 2Department of Clinical Sciences, Colorado State University, Fort Collins, CO, 3Laporte Therapeutics, Inc., Fort Collins, CO.

The probability of subclinical mastitis and isolated organisms in organic dairy herds varies between years.  
E. K. Luc*, L. G. Schneider1, V. L. Couture3, H. R. Bailey4, P. D. Krawczel5, S. R. Smith1, A. G. Rius1, and G. M. Pighetti1, 1The University of Tennessee, Knoxville, TN, 2University of Kentucky, Lexington, KY.

Isolated microorganisms from mammary quarters milk of buffaloes in automatic milking system.  
D. C. Sales1, H. Tonhati2, J. F. Borges3, R. D. S. Gomes1, I. L. S. Oliveira1, H. A. P. Lopes1, A. H. N. Rangel*1, and J. G. B. Galvão Jr3, 1Universidade Federal do Rio Grande do Norte, Macaíba, RN, Brazil, 2Instituto Federal de Educação do Rio Grande do Norte, Ipanguaçu, RN, Brazil, 3Universidade Estadual Paulista, Jaboatobal, SP, Brazil, 4Universidade Federal Rural do Semiárido, Mossoró, RN Brazil.

Survey of Clostridium populations from dairies across the United States.  

Molecular characterization of Escherichia coli isolates obtained from bovine clinical mastitis.  
Biofilm production by *Escherichia coli* isolates obtained from bovine clinical mastitis.

Distribution and factors associated with antimicrobial usage for cows and preweaned calves in large dairy farms.

## Breeding and Genetics 1

Associations between serum total protein and genomic predicted transmitting abilities for production, fitness, and conformation in organic Holstein calves.
I. Haagen*, L. Han¹, L. Hardie¹, B. Heins², and C. Dechow¹, 1The Pennsylvania State University, University Park, PA, 2University of Minnesota, Morris, MN.

Genetic polymorphism of κ-casein on Coalho cheese yield from Zebu cows.
I. L. S. Oliveita¹, R. C. Madruga², R. D. S. Gomes¹, E. P. E. Silva¹, E. G. S. O. Silva¹, J. S. Bezerra³, M. F. Bezerra³, D. C. Sales⁴, L. H. F. Borba³, J. G. B. Galvão Jr.¹, and A. H. N. Rangel*¹, 1Universidade Federal do Rio Grande do Norte, Macaíba, RN, Brazil, 2Associação Brasileira dos Criadores de Zebu, Parnamirim, RN, Brazil, 3Universidade Federal Rural de Pernambuco, Recife, PE, Brazil, 4Universidade do Estado de São Paulo, Jaboticabal, SP, Brazil, 5Instituto Federal de Educação do Rio Grande do Norte, Ipanquaçu, RN, Brazil.

High-resolution purity analysis of sex-sorted sperm and correlation with field results.

Impact of accounting for parent and genotypes’ average in the estimation of deregressed estimated breeding values used in multiple-step genomic evaluations.
H. R. de Oliveira*, L. F. Brito*, M. Sargolzaei*, F. Fonseca e Silva¹, J. Jamrozik¹, D. A. L. Lourenço*, and F. S. Schenkel*, 1Universidade Federal de Viçosa, Viçosa, Minas Gerais, Brasil, 2University of Guelph, Guelph, ON, Canada, 3Purdue University, West Lafayette, IN, 4Select Sires Inc., Plain City, OH, 5Canadian Dairy Network, Guelph, ON, Canada, 6University of Georgia, Athens, GA.

Understanding the impact of technologies and novel phenotypes on breeding strategies for genetic progress in dairy cattle.
C. Lynch*, F. Schenkel*, K. Houllahan¹, G. de Oliveira Junior¹, L. Alcantara¹, and C. Baes¹, 1Centre for Genetic Improvement of Livestock, University of Guelph, Guelph, ON, Canada, 2Institute of Genetics, Vetsuisse Faculty, University of Bern, Bern, Bern, Switzerland.

Approximate generalized least squares method for large-scale genome-wide association study.
L. Ma¹, J. Jiang¹, D. Prakapenka², J. Cole³, and Y. Da*, 1University of Maryland, College Park, MD, 2University of Minnesota, Saint Paul, MN, 3USDA/ARS, Beltsville, MD.

Computing pipeline for genomic prediction and estimation using haplotypes and SNP markers.
D. Prakapenka* and Y. Da, University of Minnesota, Saint Paul, MN.

Changes of genomic predictions with the algorithm of proven and young (APY) using different core animals in dairy cattle.
S. Tsuruta*, D. A. L. Lourenço*, Y. Masuda¹, I. Misztal¹, and T. J. Lawlor², 1University of Georgia, Athens, GA, 2Holstein Association USA, Brattleboro, VT.

Plasma cholesterol and show-ring success of cholesterol deficiency carriers.

The lactation curve of the Italian river buffalo.
M. Fioretti¹, A. Cesarani², R. Negrini¹, and N. Macciotta*, 1Associazione Italiana Allevatori, Rome, Italy, 2Università di Sassari, Dipartimento di Agraria, Sassari, Italy.

Haplotype-based methods to select animals to sequence for later accurate imputation.
A. M. Butty¹, M. Sargolzaei¹, F. Miglior², P. Stothard², F. S. Schenkel¹, B. Gredler-Grandl*², and C. F. Baes*¹, 1University of Guelph, Guelph, ON, Canada, 2Select Sires Inc., Plain City, OH, 3University of Alberta, Edmonton, AB, Canada, 4Qualitas AG, Zug, Switzerland, 5Wageningen University, Wageningen, the Netherlands, 6University of Bern, Bern, Switzerland.
Dairy Foods: Cheese

M70  
Comparison of different types of acidity values of three phases of caprine cheese milk during Cheddar cheese manufacture.  
R. Paswan*, A. Siddique, and Y. W. Park, Fort Valley State University, Fort Valley, GA.

M71  
Fatty acid profiles of control and iron-fortified caprine milk Cheddar cheeses stored under different time and temperature.  
A. Siddique* and Y. W. Park, Fort Valley State University, Fort Valley, GA.

M72  
Physicochemical, textural and sensory characteristics of control and rice powder-added Camembert cheeses during 4 weeks of aging.  
J. H. Nam1, H. C. Bae1, Y. W. Park2, and M. S. Nam3, 1Chungnam National University, Daejeon, Chungnam, Korea, 2Fort Valley State University, Fort Valley, GA.

M73  
Effect of storage of high concentrated micellar casein on the functional properties of process cheese.  
A. R. A. Hammam*, S. L. Beckman, V. Sunkesula, and L. E. Metzger, Dairy and Food Science Department, South Dakota State University, Brookings, SD.

M74  
Effect of delactose permeate fraction addition and direct acidification on low moisture part skim mozzarella composition.  
D. Grossbier* and T. Schoenfuss, University of Minnesota, St Paul, MN.

M75  
Effect of basil (Ocimum basilicum Lamiaceae) on technological properties of buffalo fresh cheeses.  
B. R. Saraiva1, B. C. Agustinho**, J. C. R. Ribas1, A. C. P. Vital1, L. Zeoula2, and P. T. Matumoto-Pinto1,1 Programa de Pós-Graduação em Ciência de Alimentos, Universidade Estadual de Maringá, Maringá, Paraná, Brazil, 1Programa de Pós-Graduação em Zootecnia, Universidade Estadual de Maringá, Maringá, Paraná, Brazil.

M76  
Effect of breed on the physicochemical and textural characteristics of South African artisanal cheese.  
F. Nyamakwere1, E. Raffrenato, M. Bust1, P. A. Gouws1, K. Dzama1, and G. Esposito1,1 Department of Animal Sciences, Stellenbosch University, Stellenbosch, South Africa, 1Department of Food Sciences, Stellenbosch University, Stellenbosch, South Africa, 2Caseificio della famiglia Busti, Fauglia, Pisa, Italy.

M77  
A survey on commercial US manufactured direct-salted block Gouda cheeses.  
Y. Gong*, S. Govindasamy-Lucey1, J. J. Jaeggi2, M. E. Johnson2, and J. A. Lucey1,1 University of Wisconsin–Madison, Madison, WI, 2Wisconsin Center for Dairy Research, Madison, WI.

M78  
Development of a rapid method using near-infrared spectroscopy to quantify starch and cellulose present in shredded Asiago, Parmesan, and Romano cheeses.  
L. Vázquez-Portalatín* and T. C. Schoenfuss, University of Minnesota, Saint Paul, MN.

M79  
Manufacture and physicochemical characteristics of milk protein hybrid probiotics delivery systems produced by chymosin-induced gelation.  
L. A. Istifiani1, D.-H. Yang*, H.-K. Ha1, W.-J. Lee1, and M.-R. Lee1,1 Daegu University, Daegu, South Korea, 2Sunchon National University, Sunchon, South Korea, 3Gyeongsang National University, Jinju, South Korea.

Dairy Foods: Chemistry

M80  
Stability of algae oil against oxidation by microencapsulation with blends of caprine milk protein, β-glucan, and maltodextrin.  
A. Mora-Gutierrez*, R. Attaie, M. T. Nuñez de González, J. M. Kirven, and S. Woldesenbet, Prairie View A&M University, Prairie View, TX.

M81  
F. Wang1,4, Y. Zhang1,2, Q. Wang1,1, G. Huang1,2, K. Liu1,2, J. Wang1,2, N. Zheng1,1, and J. Wang1,2,1 State Key Laboratory of Animal Nutrition, Institute of Animal Sciences, Chinese Academy of Agricultural Sciences, Beijing, China, 1Key Laboratory of Quality & Safety Control for Milk and Dairy Products of Ministry of Agriculture and Rural Affairs, Institute of Animal Sciences, Chinese Academy of Agricultural Sciences, Beijing, China, 1Laboratory of Quality and Safety Risk Assessment for Dairy Products of Ministry of Agriculture and Rural Affairs, Institute of Animal Sciences, Chinese Academy of Agricultural Sciences, Beijing, China, 1Institute of Quality Standard and Testing Technology for Agro-Products, Shandong Academy of Agricultural Sciences, Jinan, Shandong, China.
Evaluation of an ELISA-based visualization microarray chip technique for the detection of veterinary antibiotics in milk.
B. Du, F. Wen, Y. Zhang, N. Zheng, S. Li, S. Zhao, H. Liu, L. Meng, F. Li, and J. Wang, Key Laboratory of Quality & Safety Control for Milk and Dairy Products of Ministry of Agriculture and Rural Affairs, Institute of Animal Sciences, Chinese Academy of Agricultural Sciences, Beijing, China, College of Pastoral Agriculture Science and Technology, Lanzhou University, Lanzhou, China.

Detection of adulteration in milk using infrared spectroscopy and machine learning.
H. Asseiss Neto, D. C. S. Z. Ribeiro, J. S. Lima, S. V. A. Campos, and L. M. Fonseca, Instituto Federal de Mato Grosso do Sul, Três Lagoas, MS, Brazil, Veterinary School, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil, Department of Computer Science, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil.

Oxidation kinetics of bioactive milk lipids using differential scanning calorimetry.
S. Cheng, L. Wei, K. Muthukumarappan, and S. Martinez-Monteagudo, South Dakota State University, Brookings, SD.

Use of infrared spectroscopy to estimate the lactose content in hydrolyzed milk.

Machine learning applied to Fourier-transform infrared spectroscopy for detection of cheese whey addition to raw milk.
J. S. Lima, D. C. S. Z. Ribeiro, W. L. F. Tavares, H. Asseiss Neto, S. V. A. Campos, and L. M. Fonseca, Veterinary School, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil, Instituto Federal de Mato Grosso do Sul, Três Lagoas, MS, Brazil, Department of Computer Science, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil.

Quality study of UHT milk for four months of storage under laboratory conditions.
A. R. Santos, C. M. Vasconcelos, M. O. Nogueira, B. P. M. Carvalho, C. F. A. M. Penna, and L. M. Fonseca, Veterinary School, Federal Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil.

Seasonal variations of pasture fed bovine milk and their impact on heat stability of the skimmed milk.
H. Zheng, A. Habteghiorghis, R. Goonaratne, and M. Morgenstern, Dairy Innovation Institute, Department of Animal Science, California Polytechnic State University, San Luis Obispo, CA, Faculty of Agriculture and Life Sciences, Lincoln University, Lincoln, New Zealand, Plant & Food Research, Lincoln, New Zealand.

Using isoconversional methods to study the effect of antioxidants on oxidation kinetics of milk fat.
K. A. Alsaleem, S. Cheng, K. Muthukumarappan, and S. I. Martinez-Monteagudo, Dairy and Food Science Department, South Dakota State University, Brookings, SD, Food and Human Nutrition Department, Qatar University, Al-Qassim, Saudi Arabia, Agricultural and Biosystems Engineering Department, South Dakota State University, Brookings, SD.

Subcritical hydrolysis: An approach to valorize ice cream wastewater.
M. Enteshari and S. I. Martinez-Monteagudo, South Dakota State University, Brookings, SD.

Dairy Foods: Microbiology 1

Evaluation of commercial protective cultures efficacy against yeast in cottage cheese.
G. Makki and S. D. Alcaine, Cornell University, Ithaca, NY.

A comparative study of extraction techniques for maximum recovery of lactase from Lactobacillus delbrueckii ssp. bulgaricus.

Modelling population dynamics of Listeria monocytogenes strain in lactic soft cheese following acid and osmotic stress exposures.
T. Sibanda and E. Buys, University of Pretoria, Pretoria, South Africa.

Virulence and molecular typing of methicillin-resistant (MRSA) and methicillin-susceptible (MSSA) Staphylococcus aureus isolated from bovine subclinical mastitis and Egyptian cheese samples.
M. Zayda, A. Elbagory, K. Honjoh, A. Hammad, Y. Masuda, and T. Miyamoto, Department of Food Hygiene and Control, Faculty of Veterinary Medicine, University of Sadat City, Sadat City, Monofiya Governorate, Egypt, Department of Food Hygiene and Control, Faculty of Veterinary Medicine, Monofiya University, Shebin Elkom, Monofiya Governorate, Egypt, Department of Bioscience and Biotechnology, Division of Food Science and Biotechnology, Faculty of Agriculture, Kyushu University, Fukuoka city, Japan.
**Dairy Foods: Processing**

**M95**

**Bacteriophage identification from dairy environments.**
R. H. Pittsley*, 1 T. Zubkov2, D. A. Sanders4, V. M. Blake3, K. G. Kornilow1, K. L. Adamson*, and J. L. McKillip*, 1Department of Biology, Ball State University, Muncie, IN, 2Department of Chemistry, Ball State University, Muncie, IN, 3Markey Center for Structural Biology, Department of Biology, Purdue University, West Lafayette, IN, 4Elanco Animal Health, Clinton, IN.

**M96**

**Phage-based forensic tool for spatial visualization of bacterial contaminants in camel milk.**
S. M. Kozak* and S. D. Alcaine, Cornell University, Ithaca, NY.

**M97**

**The effect of different ultraviolet light exposure times on microbial reduction and the components of camel milk.**
N. Dhahir* and A. AbuGhazaleh, Southern Illinois University, Carbondale, IL.

**M98**

**The use of microbiological methods to reduce aflatoxin M contamination in cheese produced in Sao Paulo State, Brazil.**
B. Gonçalves, J. Henk, R. Uliana, C. Oliveira, and C. Corassin*, Department of Food Engineering, College of Animal Science and Food Engineering, University of São Paulo, Pirassununga, Sao Paulo, Brazil.

**M99**

**Screening, identification, and analysis of lactic acid bacterial strains grown in milk phospholipids-supplemented minimal medium and MRS medium.**
L. Zhang*, I. García-Cano, D. Rocha-Mendoza, J. Ortega-Anaya, and R. Jiménez-Flores, Department of Food Science and Technology, The Ohio State University, Columbus, OH.

**M100**

**Using nitrous acid-modified MRS medium to selectively isolate and culture lactic acid bacteria from food.**
M. A. Renschler1, A. Wyatt1, N. Anene1, R. Robinson-Hill1, E. S. Pickerill1, N. E. Fox1, J. A. Griffith1, and J. L. McKillip*, 1Ball State University, Muncie, IN, 2Earle A. Chiles Research Institute, Portland, OR, 3West Virginia University, Morgantown, WV.

**M101**

**An evaluation of rep-PCR primers for the differentiation of Lactococcus lactis starter strains.**
J. Johnson*, C. Curtin, and J. Waite-Cusic, Oregon State University, Corvallis, OR.

**M102**

**Quantitative PCR coupled with sodium dodecyl sulfate and propidium monoazide for detection of viable Escherichia coli in milk.**
L. Dong1,2, H. Liu1,2, L. Meng1,2, N. Zheng1,2, and J. Wang*,1,3, 1State Key Laboratory of Animal Nutrition, Institute of Animal Sciences, Chinese Academy of Agricultural Sciences, Beijing, China, 2Key Laboratory of Quality & Safety Control for Milk and Dairy Products of Ministry of Agriculture and Rural Affairs, Institute of Animal Sciences, Chinese Academy of Agricultural Sciences, Beijing, China.

**M103**

**The protective effects of enriched citrulline fermented milk with Lactobacillus helveticus on the intestinal epithelium integrity against Escherichia coli infection.**
S. W. Ho* and N. Shah, The University of Hong Kong, Hong Kong.
Physical-chemical analysis of donkey milk yogurt mixed with milk added from other species.

Evaluating ElastoSens, a novel instrument for gelation measurements, on yogurt fermentation.
K. He* and S. Alcaine, Cornell University, Ithaca, NY.

Effect of cavitation and nanofiltration temperature on the production of MPC80.
A. Mishra* and L. Metzger, South Dakota State University, Brookings, SD.

Development of a benchtop method to make process cheese using a Thermomix.
L. Chou*, University of Minnesota-Twin Cities, Falcon Heights, MN.

Flavor compounds and quality parameter changes during extended refrigerated storage of goat milk butter.
J. H. Lee*1, A. Discua1,2, and B. B. Lemma1, 1Fort Valley State University, Fort Valley, GA, 2FreshDirect Co., New York, NY.

Effects of polymerized whey protein prepared directly from cheese whey as fat replacer on physicochemical, texture, microstructure, and sensory properties of low-fat set yogurt.
T. Fang1, C. Wang*1,2, J. Hou2, and M. Guo3,4, 1Department of Food Science, College of Food Science and Engineering, Jilin University, Changchun, Jilin Province, China, 2Department of Food Science, Northeast Agriculture University, Harbin, Heilongjiang Province, China, 3Department of Nutrition and Food Sciences, College of Agriculture and Life Sciences, University of Vermont, Burlington, VT.

Engineering innovative dairy emulsion droplets to mimic native milk fat globules.
H. Zheng*1, L. Ingram2, J. A. Ortiz Salazar3, J. Lu4, and R. Fernando5, 1Dairy Innovation Institute, Department of Animal Science, California Polytechnic State University, San Luis Obispo, CA, 2Department of Biomedical Engineering, California Polytechnic State University, San Luis Obispo, CA, 3Department of Chemistry and Biochemistry, California Polytechnic State University, San Luis Obispo, CA, 4Dairy Processing group, Institute of Food Science and Technology, Chinese Academy of Agricultural Science, Beijing, China.

Effect of cavitation and nanofiltration temperature on the functionality of MPC80.
A. Mishra* and L. Metzger, South Dakota State University, Brookings, SD.

Heat-stable whey protein isolate made without microfiltration.
G. Y. Subbiah Prabhakaran*, J. A. Lucey, and M. Molitor, University of Wisconsin, Madison, WI.

Sensory evaluation and intent-to-purchase of milk yogurts mixed with milk from other species.

Influence of β-galactosidase and temperature treatment to milk on functional and reconstitution properties of low-lactose milk powders by spray drying.
S. Ditudompo*, J. P. Peenanich7, S. Jarnpim1, T. Kunanopparat2, and S. Rungchang3, 1Faculty of Agricultural Product Innovation and Technology, Srinakharinwirot University, Nakhon Nayok, Thailand, 2Department of Food Engineering, King Mongkut’s University of Technology Thonburi, Bangkok, Thailand, 3Department of Agro-Industry, Naresuan University, Phitsanulok, Thailand.

Use of polymerized whey protein as a gelation agent for symbiotic almond yogurt formulation.
H. Shi*, X. Zhang2, and M. Guo1, 1University of Vermont, Burlington, VT, 2Northeast Agricultural University, Harbin, Heilongjiang, China.
Growth and Development: Starter and Forage

M121 Chopped grass hay, cottonseed hull pellets, or oat hull pellets as roughage sources for 2- to 4-month-old calves and the effects on performance and digestion.
T. S. Dennis*, F. X. Suarez-Mena, T. M. Hill, W. Hu, and J. D. Quigley, Nurture Research Center, Provim, Cargill Animal Nutrition, Brookville, OH.

M122 Effects of physical form of starter and forage provision in the diet of dairy calves during the preweaning period.
A. E. Leão1, C. F. A. Lage*, M. M. Campos2, F. S. Machado3, J. G. Laguna1, A. L. Ferreira1, L. G. R. Pereira1, T. R. Tomich1, S. F. Costa1, M. A. Machado1, D. R. L. Reis1, and S. G. Coelho1, 1Univesidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil, 2Alta Genetics, Uberaba, MG, Brazil, 3EMBRAPA, Juiz de Fora, MG, Brazil, 4Michigan State University, East Lansing, MI, 5Univesidade Federal de Lavras, Lavras, MG, Brazil.

M123 Effects of fatty acid supplementation and calf starter form on intake, growth and digestion of calves from 0 to 4 months of age.
L. L. Deikun*, J. D. Quigley, T. M. Hill, T. S. Dennis, and F. X. Suarez-Mena, Nurture Research Center, Provim, Cargill Animal Nutrition, Brookville, OH.

M124 Effects of feeding calf starter mixed with hay on sorting behavior, dry matter intake, and growth performance of calves during the first 3 months of life.
A. Saegusa*, T. Matsuba1, K. Murayama1, K. Inouchi1, and M. Oba1, 1Dairy Technology Research Institute, Feed-Livestock and Guidance Department, The National Federation of Dairy Co-operative Associations (ZEN-RAKU-REN), Nishi-shirakawa, Fukushima, Japan, 2Department of Animal, Food and Nutritional Science, Faculty of Agricultural, Life and Environmental Sciences, University of Alberta, Edmonton, AB, Canada.

M183 Effects of fatty acid supplementation and calf starter form on starch digestion and fecal starch in calves from 0 to 4 months of age.
J. D. Quigley*, T. M. Hill, T. S. Dennis, L. L. Deikun, and F. X. Suarez-Mena, Nurture Research Center, Provim, Cargill Animal Nutrition, Brookville, OH.

Production, Management, and the Environment 1

M125 Daily data characteristics of automatic milking system in free-flow farms in the Upper Midwest.
M. Peiter*, E. Irwin2, B. Groen3, J. A. Salfer4, and M. I. Endres1, 1Department of Animal Science, University of Minnesota, St. Paul, MN, 2Department of Animal Science, Iowa State University, Ames, IA, 3Form-A-Feed, Stewart, MN, 4University of Minnesota Extension, St. Cloud, MN.

M126 The association between robot time budget and milk production per robot in free-flow automatic milking system dairy farms.
M. Peiter*, J. A. Salfer*, and M. I. Endres1, 1Department of Animal Science, University of Minnesota, St. Paul, MN, 2University of Minnesota Extension, St. Cloud, MN.

M127 The association between milking interval and milk production per visit, milk fat, and milk protein of cows housed in free-flow automated milking system farms.
M. Peiter*, J. A. Salfer*, and M. I. Endres1, 1Department of Animal Science, University of Minnesota, St. Paul, MN, 2University of Minnesota Extension, St. Cloud, MN.

M128 Updating Holstein and Jersey lactation curve parameters for the Rumination Farm System Model (RuFaS).
M. Li*, V. E. Cabrera1, and K. F. Reed2, 1Department of Dairy Science, University of Wisconsin-Madison, Madison, WI, 2Department of Animal Science, Cornell University, Ithaca, NY.

M129 Modelling evaporation of water from a bedded pack using random forest regression.
L. Leso, L. Porcinai, and M. Barbari*, Department of Agriculture, Food, Environment and Forestry (DAGRI), University of Florence, Florence, Italy.

M130 Milk yield in pasture-based automatic milking systems is negatively affected by variability in concentrate fed in the robot.
N. Lyons*, F. Bargo1, J. Gargiulo1, and A. Palladino1, 1NSW Department of Primary Industries, Narellan, NSW, Australia, 2The University of Sydney, Camden, NSW, Australia, 3Universidad de Buenos Aires, Capital Federal, Buenos Aires, Argentina, 4IIPAS-CONICET, Lomas de Zamora, Buenos Aires, Argentina.

M131 Interactions among pregnancy rate, turnover ratio, and herd structure.
W. Li* and V. Cabrera, University of Wisconsin-Madison, Madison, WI.
Comparing multiple regression with two machine learning methods in a case study predicting individual survival to second lactation in Holstein cattle.
E. M. M. van der Heide*1, R. F. Veerkamp1, M. L. Pelt2, C. Kamphuis1, I. Athanasiadis3, and B. J. Ducro1, 1Wageningen University and Research, Animal Breeding and Genomics, Wageningen, the Netherlands, 2Cooperation CRV, Arnhem, the Netherlands, 3Wageningen University, Information Technology Group, Wageningen, the Netherlands.

Potential for artificial neural network application to predict the fatty acid content of feedstuffs using near-infrared spectroscopy.
J. R. R. Dorea*1, J. Goeser3, A. L. Lock2, and J. Heinrichs2, 1Department of Animal Sciences, College of Agriculture Luiz de Queiroz (ESALQ), University of Sao Paulo, Piracicaba, SP, Brazil, 2Department of Animal Nutrition, University of Veterinary and Animal Sciences, Ravi Campus, University of Veterinary and Animal Sciences, Ravi Campus, Lahore, Pakistan, 3Department of Population Medicine, University of Guelph, Guelph, ON, Canada.

The use of integrated data to identify first-lactation cows at high risk of clinical mastitis.
H. Delgado, L. Gadul-Pacheco, and V. E. Cabrera*, University of Wisconsin, Madison, WI.

Validation of on-farm milk leukocyte differential tester to identify subclinical mastitis in dairy cows.
D. Nolan*, C. Fendley, H. Stokley, T. France, and J. Costa, University of Kentucky, Lexington, KY.

Effect of OmniGen-AF feeding during the dry period and early lactation on performance and health in cows.

Use of the Integrated Farm System Model to determine economic and environmental impacts of double cropping winter annuals with corn.
E. J. Ranck1, L. A. Holden1, J. A. Dillon1-2, C. A. Rotz2, and R. Goodling*1, 1The Pennsylvania State University, University Park, PA, 2USDA Agricultural Research Service, University Park, PA.

Effect of different water source manner on performance and social behavior of dairy calves after weaning.
J. Broucek*1, M. Uhrincat1, P. Kisac1, A. Hanus1, and M. Soch2, 1Department of Animal Sciences, University of Veterinary and Animal Sciences, Ravi Campus, University of Veterinary and Animal Sciences, Ravi Campus, Lahore, Pakistan, 2Department of Animal Nutrition, University of Veterinary and Animal Sciences, Ravi Campus, Lahore, Pakistan.

Ruminant Nutrition: Calf and Heifer Nutrition

Effect of weaning program and milk feeding level on the solid feed intakes and growth of dairy calves.
S. D. Parsons*1, K. E. Leslie2, M. A. Steele1, D. L. Renaud1, and T. J. DeVries1, 1Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada.

Whole corn grain or hay as fiber source on ruminal fermentation and performance of milk-fed dairy calves.
A. F. Toledo*2, M. Poczynski, A. P. Silva, M. G. Coelho, M. E. Reis, D. N. Polizel, R. C. Silva, E. A. Fioruci, and C. M. M. Bittar, Department of Animal Sciences, College of Agriculture Luiz de Queiroz (ESALQ), University of Sao Paulo, Piracicaba, SP, Brazil.

Behavior, ruminal and metabolic indicators of transition in calves fed different levels of NDF in the solid diet.
M. Poczynski2, G. F. Virginio Jr1, A. P. Silva1, A. F. Toledo*1, D. Mizael2, J. A. Gomes1, L. F. Savino1, and C. M. M. Bittar1, 1Department of Animal Sciences, College of Agriculture Luiz de Queiroz (ESALQ), University of Sao Paulo, Piracicaba, SP, Brazil, 2Department of Animal Sciences, Federal University of Paraiba, João Pessoa, PB, Brazil.

Effects of increasing dietary hay inclusion on performance and digestion of Holstein calves from 2 to 4 months of age.
K. Aragona*, T. Dennis, F. Suarez-Mena, J. Quigley, T. Hill, and R. Schlotterbeck, Nurture Research Center, Provimi, Brookville, OH.
M145 Maternal supplementation of rumen-protected lysine and methionine during the close-up period improves the nutritional status of Holstein calves.

M146 Fluid- and solid-associated rumen microbial ecology changes with heifer age.

M147 The effects of supplementation of sodium butyrate on growth performance of newborn calves.
W. H. Liu, L. Ma, Y. Ma, Z. T. Yu, and D. P. Bu*, Institute of Animal Science, State Key Laboratory of Animal Nutrition, Chinese Academy of Agricultural Sciences, Beijing, China, Department of Animal Sciences, The Ohio State University, Columbus, OH, CAAS-ICRAF Joint Lab on Agroforestry and Sustainable Animal Husbandry, World Agroforestry Centre, East and Central Asia, Beijing, China.

M148 Effect of supplementation of Schizochytrium sp. on the growth performance of dairy calves.
A. L. T. Zhu, L. Ma, Y. Ma, Z. T. Yu, and D. P. Bu*, Institute of Animal Science, State Key Laboratory of Animal Nutrition, Chinese Academy of Agricultural Sciences, Beijing, China, Department of Animal Sciences, The Ohio State University, Columbus, OH, CAAS-ICRAF Joint Lab on Agroforestry and Sustainable Animal Husbandry, World Agroforestry Centre, East and Central Asia, Beijing, China.

M149 Offering drinking water from birth increased species richness in the gut of neonate dairy heifer calves.

M150 Application of partial least squares regression to predict feed intake using feeding behavior traits in growing Holstein heifers.
J. R. Johnson*, G. E. Carstens, C. Heuer, and N. Deeb, Texas A&M University, College Station, TX, STgenetics, Navasota, TX.


M152 Effects of dietary 25-hydroxyvitamin D3 on vitamin D status and growth of dairy heifer calves.

M153 Effect of different times of super-conditioning in pelleted starter on nutrient digestibility and performance of pre-weaned calves.
E. Soltani, A. Naserian, R. Valizadeh, A. Tahmasebi, M. Malekkhani, B. Kim*, and A. Rahimi, Animal Science Department, Faculty of Agriculture, Ferdowsi University of Mashhad, Mashhad, Iran, Dordaneh Razavi, Mashhad, Iran, College of Animal Life Sciences, Kangwon National University, Chunchun, Republic of Korea.

M154 Effects of feeding 25-hydroxyvitamin D3 versus vitamin D3 to dairy calves: Effects on growth and serum concentrations of vitamin D metabolites and minerals.

M155 Evaluation of milk replacer feeding rates on Holstein calves via a meta-analytical approach: 1. Effect on digestion and growth from 0 to 2 months of age.
W. Hu*, T. M. Hill, T. S. Dennis, F. X. Suarez-Mena, and J. D. Quigley, Nurture Research Center, Provimi, Cargill Animal Nutrition, Brookville, OH.

M156 Body weight and skeletal growth in pre-weaned dairy calves fed organic-certified milk replacer.

M157 Evaluation of milk replacer feeding rates on Holstein calves via a meta-analytical approach: 2. Carry-over effect on digestion and growth from 2 to 4 months of age.
W. Hu*, T. M. Hill, T. S. Dennis, F. X. Suarez-Mena, and J. D. Quigley, Nurture Research Center, Provimi, Cargill Animal Nutrition, Brookville, OH.
Ruminant Nutrition: Protein and Amino Acid Nutrition 1

Pre- and post-weaning performance and health of dairy calves fed milk replacers formulated with alternative blended protein and fat sources at different levels of protein.
D. Ziegler1, H. Chester-Jones2, C. Soderholm2, and B. Hansen2, 1University of Minnesota, Waseca, MN, 2Milk Specialties Global, Eden Prairie, MN.

Gene expression analysis of milk proteins and fatty acid synthesis genes in goat milk fat fed with linseed and chia oils.
R. K. Choudhary1, J. S. Hundal2, M. Wadhwa1, S. Choudhary2, and Neetika1, 1School of Animal Biotechnology, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab, Pakistan, 2Department of Animal Nutrition, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab, Pakistan.

M. Ghelichkhani*, D. Williams, L. H. P. Silva, and A. F. Brito, University of New Hampshire, Durham, NH.

Interactions between iodine and protein sources: Effects on milk iodine and thyroid hormones in Jersey cows.
M. Ghelichkhani*, D. Williams, L. H. P. Silva, and A. F. Brito, University of New Hampshire, Durham, NH.

Effect of cobalt source on nutrient digestibility, microbial protein production and efficiency and $B_{12}$ synthesis in dual-flow continuous culture fermentors—Summary of 4 studies.

Partial replacement of starch and protein sources in dairy cows rations with sustainable feeds: Effects on milk production, rumen health, and digestibility of fiber.
L. M. E. Mammi1, D. Cavallini2*, A. Palmonari1, E. Giaretta1, G. Canestrari1, V. Massa2, and A. Formigoni1, 1Department of Veterinary Medical Sciences, University of Bologna, Italy, 2Dolma Mangimi, S.p.a, Marene (CN), Italy.

Feeding rumen-protected choline to prepartum Holstein cows in negative energy balance increases circulating lipoprotein phosphatidylcholine and triglyceride levels while preventing hepatic triglyceride accrual.
M170 Characterization of the very low density lipoprotein lipidome exported from primary bovine hepatocytes supplemented with choline and methionine.

M171 Fast determination of intestinal protein digestibility with vibrational molecular spectroscopic techniques for dairy cows.
H. Shi1,2, and P. Yu*, 1Department of Animal and Poultry Science, College of Agriculture and Bioresources, University of Saskatchewan, Saskatoon, SK, Canada, 2College of Life Science and Engineering, Foshan University, Foshan, Guangdong, China.

M172 Pre- and post-weaning performance and health of dairy calves fed texturized calf starters formulated with a combination of sunflower meal, linseed meal, or soybean meal compared with a starter with multiple protein sources.
D. Ziegler*, H. Chester-Jones3, B. Ziegler4, and A. Manthey5, 1University of Minnesota, Waseca, MN, 2Hubbard Feeds, Inc., Mankato, MN.

M173 Effects of the interaction between cow phenotypic milk urea nitrogen and dietary crude protein on milk production responses and efficiency.
P. Letelier*, F. Contreras-Góvea2, B. Albarrán-Portillo3, F. Gomes6, and M. Wattiaux1, 1University of Wisconsin-Madison, Madison, WI, 2Universidad Autónoma del Estado de México, Temascaltepec, Mexico.

M174 Impact of replacing canola meal with solvent-extracted distillers grain with solubles as a protein source on milk production.
R. Edwards*, D. Ledgerwood2, D. Waldner3, and H. Rossow4, 1University of California, Davis, Tulare CA, 2Novita, Brookings, SD, 3Valley Nutrition, Visalia, CA.

M175 Effects of a yeast-derived microbial protein supplement on transition dairy cow performance.
G. Mazon*, M. R. Campler, and J. H. C. Costa, Dairy Science Program, University of Kentucky, Lexington, KY.

M176 Differential gene expression analysis of the effects of a negative energy and protein balance induced by feed restriction in mid-lactation dairy cows.
I. Ansia*, Y. Ohta1,2, T. Fujieda1,2, and J. K. Drackley1, 1University of Illinois, Urbana, IL, 2Ajinomoto Co. Inc., Tokyo, Japan.

M177 Effects of abomasal infusions of amino acids or glucose on expression of genes during an induced negative energy and protein balance.
I. Ansia*, Y. Ohta2, T. Fujieda2, and J. K. Drackley1, 1University of Illinois, Urbana, IL, 2Ajinomoto Co. Inc., Tokyo, Japan.

M178 Milk production of organic dairy cattle is influenced by altering supplemental feed protein content.
A. Ayers*, H. Darby1,2, J. Colby1,2, J. Alvez1,3, S. Bosworth1,2, J. Kraft1, and S. L. Greenwood1, 1University of Vermont, Burlington, VT, 2University of Vermont Extension, Burlington, VT, 3Center for Sustainable Agriculture, Burlington, VT.

M179 Meta-analysis of the effects of prepartum dietary metabolizable protein (MP) on performance of dairy cows.
A. Husnain* and J. E. P. Santos, University of Florida, Gainesville, FL.

M180 In vitro ruminal dry matter degradability and volatile fatty acid and gas production of carinata meal compared with other protein sources.
R. D. Lawrence*, K. B. Choudek, and J. L. Anderson, South Dakota State University, Brookings, SD.

M181 Effects of a high-protein corn product on production responses in mid-lactation dairy cows.
W. E. Brown* and B. J. Bradford, Kansas State University, Manhattan, KS.

M182 Assessment of the capacity of certain mycotoxin binders to adsorb amino acids.

M183 The effect of supplemental amino acids and fatty acids on the yield of milk and milk components of mid- to late-lactation dairy cows.
A. N. Negreiro*, M. M. Western1, J. de Souza2, and A. L. Lock1, 1Michigan State University, East Lansing, MI, 2Perdue Agribusiness, Salisbury, MD.

M184 Effects of precision essential amino acid formulation on a metabolizable energy basis for lactating dairy cows.
P. A. LaPierre*, M. M. McCarthy2, D. A. Ross1, and M. E. Van Amburgh1, 1Cornell University, Ithaca, NY, 2Adisseo, Alpharetta, GA.

M185 Rumen-protected methionine supplementation on productive performance and plasma amino acids concentration on early lactation of high-producing dairy cows.
V. Chiogna Junior*, F. Lopes*, M. Toledo2, and E. Collao-Saenz*, 1Universidade Federal de Goias, Jataí, Goias, Brazil, 2Adisseo SA, Sao Paulo, Sao Paulo, Brazil, 3University of Wisconsin, Madison, WI.
Effect of biochanin A on urea and amino acid hydrolysis and bacteria community in rumen.
S. Liu, Z. Zhao, Z. Zhang, N. Zheng, and J. Wang, State Key Laboratory of Animal Nutrition, Institute of Animal Sciences, Chinese Academy of Agricultural Sciences, Beijing, China, Key Laboratory of Quality & Safety Control for Milk and Dairy Products of Ministry of Agriculture and Rural Affairs, Institute of Animal Sciences, Chinese Academy of Agricultural Sciences, Beijing, China.

Effects of rumen-protected amino acids supplementation during prepartum and postpartum periods on performance of transition dairy cows.
C. Lee, W. P. Weiss, and N. E. Lobos, Department of Animal Sciences, OARDC, The Ohio State University, Wooster, OH, Key Industries Inc., Des Moines, IA.

Further evaluating the plasma free amino acid dose-response technique as a method to assess the metabolizable methionine contributions of analogues of 2-hydroxy-4-(methylthio)butanoic acid.
N. Whitehouse, B. Veilleux, S. Hollister, L. Silva, and C. Schwab, University of New Hampshire, Durham, NH, Schwab Consulting LLC, Boscobel, WI.

Effect of amino acid supplementation on performance of Jersey cows grazing ryegrass pasture.
R. van Heerden, L. Erasmus, R. Meeske, and R. Coertze, Department of Animal and Wildlife Sciences, University of Pretoria, Pretoria, South Africa, Department of Agriculture Western Cape, Outeniqua Research Station, George, South Africa.

Effects of absorbed amino acids on the milk fat yield: A meta-analytic approach.
V. L. Daley, T. F. V. Bompadre, and M. D. Hanigan, National Animal Nutrition Program (NANP), University of Kentucky, Lexington, KY, Center of Nuclear Energy in Agriculture (CENA), University of São Paulo (USP), Piracicaba, SP, Virginia Tech, Blacksburg, VA.

Comparison of two sources and levels of rumen-protected methionine on plasma concentration and mammary clearance of methionine and milk production in dairy cows.

Teaching/Undergraduate and Graduate Education

Overcoming language barriers in animal and veterinary science education: Practical and innovative solutions.
E. Vargas-Bello-Pérez and L. E. Hernández-Castellano, Department of Veterinary and Animal Sciences, Faculty of Health and Medical Sciences, University of Copenhagen, Frederiksberg, Denmark, Department of Animal Science, AU Foulum, Aarhus University, Tjele, Denmark.
CSAS Symposium: From Data to Decisions—The Next Step for Technology in Dairy Production
Chair: Michael Steele, University of Guelph

9:30 AM 16 Precision feeding in automated milking systems: Current gaps and future needs.
G. B. Penner*, University of Saskatchewan, Saskatoon, SK, Canada.

10:00 AM 17 The use of precision technologies to monitor, selectively treat, and manage nutrition of dairy calves.

10:30 AM 18 The integration of sensor technologies to optimize reproductive management on dairy farms.
R. L. A. Cerri*, T. A. Burnett, A. M. L. Madureira, J. Bauer, B. F. Silper, L. B. Polsky, M. Kaur, P. P. Souto, W. A. Gomes, K. Pohler, R. F. Cooke, S. J. LeBlanc, and J. L. M. Vasconcelos, 1Applied Animal Biology, University of British Columbia, Vancouver, BC, Canada, 2Department of Animal Sciences, Texas A&M University, College Station, TX, 3Department of Animal Production, São Paulo State University, Botucatu, Brazil, 4Department of Population Medicine, University of Guelph, Guelph, ON, Canada.

11:00 AM 19 Integration of big data from multiple sources to improve dairy herd performance and sustainability.
R. Lacroix and D. M. Lefebvre*, Valacta, Ste-Anne-de-Bellevue, QC, Canada.

11:30 AM 20 Monitoring dairy cow feeding behavior to optimize nutritional management.
T. J. DeVries*, Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada.

12:00 PM Discussion

ADSA Graduate Student Dairy Foods Oral Competition
Chair: Laura Colby, Land O’Lakes, Inc.

9:30 AM 21 Hydrodynamic cavitation: A clean label approach for ice-cream formulation.
J. Sim*, H. Bonnemann, L. Metzger, and S. I. Martinez-Monteagudo, Dairy and Food Science Department, South Dakota State University, Brookings, SD.

9:45 AM 22 Improving the functionality of lower protein dairy streams for enhanced emulsion stability.
C. Hinnenkamp*, S. Drusch, G. Reineccius, and B. P. Ismail, 1University of Minnesota, Saint Paul, MN, 2Technical University of Berlin, Berlin, Germany.

10:00 AM 23 Manufacturing of process cheese without emulsifying salt using acid curd.
A. R. A. Hammam* and L. E. Metzger, Dairy and Food Science Department, South Dakota State University, Brookings, SD.

10:15 AM 24 Clean label: The naturalness perception and acceptance of dairy ingredients.
S. Maruyama*, N. Streletskaia, L. Goddik, and J. Lim, Oregon State University, Corvallis, OR.
10:30 AM 25 Cloudy vs. foggy: Mystery behind high pressure-induced aggregates of milk proteins for the valorization of cheese whey.
A. Marciniak*2,1, S. Suwal4,1, G. Brisson1, M. Britten1,1, Y. Pouliot1, and A. Doyen1, 1Department of Food Sciences, Université Laval, Institute of Nutrition and Functional Foods (INAF)/Dairy Science and Technology Research Centre (STELA), Quebec, QC, Canada, 2Department of Food Science and Technologies, Ohio State University, Columbus, OH, 3Saint-Hyacinthe Research and Development Centre, St Hyacinthe, QC, Canada, 4Department of Food Science, Faculty of Science, University of Copenhagen, Copenhagen, Denmark.

10:45 AM Break

11:00 AM 26 Developing a dairy-based health formulation by combining the bioactive properties of whey protein hydrolysates and probiotic organisms.
S. Minj*1,2 and S. Anand1,2, 1Midwest Dairy Foods Research Center, Brookings, SD, 2Dairy and Food Science Department, South Dakota State University, Brookings, SD.

11:15 AM 27 Study of the interaction between whey proteins and anthocyanins using fluorescence spectroscopy.
G. Miyagusuku-Cruzado*, R. Jimenez-Flores, and M. M. Giusti, The Ohio State University, Columbus, OH.

11:30 AM 28 Impact of stretching temperature in a waterless cooker on the functionality of Mozzarella cheese.
E. K. Aversa*, S. Govindasamy-Lucey*, M. E. Johnson1, J. J. Jaeggi1, and J. A. Lucey1,1, University of Wisconsin-Madison, Madison, WI, 2Wisconsin Center for Dairy Research, Madison, WI.

11:45 AM 29 Relationship between probiotics, their lipolytic activity on milk phospholipid in buttermilk fermentation and potential health contribution.
K. Wang*, I. García-Cano, D. Rocha-Mendoza, J. Ortega-Anaya, and R. Jiménez-Flores, Department of Food Science and Technology, The Ohio State University, Columbus, OH.

12:00 PM 30 A cross-cultural study of the sensory perception of skim milk powder between Ireland, America, and China.
C. Zeng*, K. Kilcawley, D. O’Sullivan1, M. Drake3, and S. Miao1,4, 1Teagasc Food Research Centre, Moorepark, Fermoy, Co. Cork, Ireland, 2The Sensory Group, School of Food and Nutritional Sciences, University College Cork, University College Cork, Cork, Ireland, 3Department of Bioprocessing and Nutrition Science, Southeast Dairy Foods Research Centre, Raleigh, NC, 4College of Food Science, Fujian Agriculture and Forestry University, Fujian Agriculture and Forestry University, Fuzhou, Fujian, China.

ADSA Graduate Student (MS) Production Oral Competition
Chair: Maris McCarthy, Adisseo

9:30 AM 31 Effects of a methionine analog and branch chain volatile fatty acids on rumen fermentation and biohydrogenation of linoleic acid in vitro.
J. E. Copelin*, P. A. Dieter, J. L. Firkins2, M. T. Socha3, and C. Lee1, 1Department of Animal Sciences, OARDC, The Ohio State University, Wooster, OH, 2Department of Animal Sciences, The Ohio State University, Columbus, OH, 3Zinpro Corporation, Eden Prairie, MN.

9:45 AM 32 Palmitic, stearic, and oleic acids differently alter NDF digestibility in a continuous culture system.
A. Sears*, J. de Souza1, B. Wenner3, and F. Batistel1, 1Department of Animal, Dairy, and Veterinary Sciences, Utah State University, Logan, UT, 2Perdue Agribusiness, Salisbury, MD, 3Department of Animal Sciences, The Ohio State University, Columbus, OH.

10:00 AM 33 Effects of orally dosed lipopolysaccharide and sodium butyrate, in combination and alone, on rumen development in dairy calves.
C. A. Ceh*, C. M. Parsons, T. T. Yohe, M. L. McGilliard, M. D. Ellett, H. H. Hanling, S. E. Baynard, and K. M. Daniels, Virginia Polytechnic Institute and State University, Blacksburg, VA.

10:15 AM 34 Colostrum supplementation with omega-3 fatty acids and α-tocopherol decreases indicators of oxidative stress and alters plasma fatty acid profile in newborn calves during the first week of life.
J. Opgenorth*, L. M. Sordillo, and M. J. VandeHaar, Michigan State University, East Lansing, MI.
10:30 AM  35  Metabolic profile of dairy calves supplemented with flax oil or soy oil.  
C. R. Schossow* and J. L. Anderson, South Dakota State University, Brookings, SD.

10:45 AM  36  Factors affecting dairy cattle protective grouping behavior, also known as bunching, against Stomoxys calcitrans (L.) on California dairies.  
W. R. El-Ashmawy1,2, D. R. Williams1, A. C. Gerry1, J. D. Champagne1, T. W. Lehenbauer1,4, and S. S. Aly1,4, 1Veterinary Medicine Teaching and Research Center, School of Veterinary Medicine, University of California Davis, Tulare, CA, 2Department of Internal Medicine and Infectious Diseases, Faculty of Veterinary Medicine, Cairo University, Giza, Egypt, 3Department of Entomology, University of California Riverside, Riverside, CA, 4Department of Population Health and Reproduction, School of Veterinary Medicine, University of California Davis, Davis, CA.

11:00 AM  37  Effect of molasses-based liquid feed supplementation through robotic milking systems on fresh cow behavior, health, and production.  
S. M. Moore*, M. T. M. King, A. J. Carpenter, and T. J. DeVries, Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada.

11:15 AM  38  Impact of commercial direct-fed microbial on cow performance during the calving transition.  
M. R. Steelreath*, R. L. Hiltz1, A. Aguilar2, H. Nielsen2, and A. H. Laarman1, 1University of Idaho, Moscow, ID, 2Lallemand Animal Nutrition, Milwaukee, WI.

ADSA-SAD Undergraduate Dairy Production Oral Competition  
Chair: Stephanie Ward, North Carolina State University  

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9:30 AM  39  Immune response to Escherichia coli-induced bovine mastitis in lactating dairy cows.  
H. Mader*, C. Scholte, D. Biswas, and K. Moyes, University of Maryland, College Park, MD.

9:45 AM  40  Twinning in dairy cattle.  
M. Travis*, C. Becker, and A. Stone, Mississippi State University, Mississippi State, MS.

10:00 AM  41  Evaluating the potential impact of a slick gene on reducing heat stress in dairy cattle.  
M. Hillis* and J. Bohlen, University of Georgia, Athens, GA.

10:15 AM  42  Balancing production and rumen health: Implementing precision technologies to manage subacute rumen acidosis.  
B. M. Winslow* and D. R. Olver, Pennsylvania State University, University Park, PA.

10:30 AM  43  Probiotic supplements as a low-cost solution to bolster calf performance.  
K. Ciaston*, K. Daniels, and D. Winston, Virginia Tech, Blacksburg, VA.

10:45 AM  44  Salmonella Heidelberg in dairy calves.  
J. Pittman* and C. Williams, Louisiana State University, Baton Rouge, LA.

ADSA-SAD Undergraduate Original Research Oral Competition  
Chair: Peter Erickson, University of New Hampshire  

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9:30 AM  45  Impact of maternal direct-fed microbial on immunoglobulin concentration in dairy calves.  
M. N. Degenshein*, R. L. Hiltz1, M. R. Steelreath1, H. Nielsen2, A. Aguilar2, and A. H. Laarman1, 1Department of Animal and Veterinary Science, University of Idaho, Moscow, ID, 2Lallemand Animal Nutrition, Milwaukee, WI.
Semen quality in lost Holstein Y-chromosome lineages.
S. E. Jewell*1, J. M. DeJarnette2, H. Blackburn3, W. S. Liu4, C. G. Sattler2, and C. D. Dechow1, 1Pennsylvania State University, University Park, University Park, PA, 2Select Sires Inc., Plain City, OH, 3National Animal Germplasm Program, Fort Collins, CO.

Are implantable microchips a reliable way to continuously measure body temperature in dairy calves?
M. Woodrum*, M. Cantor, and J. H. Costa, Dairy Science Program, Animal and Food Sciences, University of Kentucky, Lexington, KY.

Impact of concentrate location on the behavior and performance of dairy cows milked in a free-traffic robotic system.
A. J. Schwanke*1, K. M. Dancy1, T. Didry1, G. B. Penner2, and T. J. DeVries1, 1Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, 2Department of Animal and Poultry Science, University of Saskatchewan, Saskatoon, SK, Canada.

Effects of feeding alfalfa or grass hay and corn or wheat grain on production performance and income over feed cost of high-producting Holstein cows.
C. L. Rudd*, C. N. Bollinger, and G. Ferreira, Department of Dairy Science, Virginia Tech, Blacksburg, VA.

Animal Behavior and Well-Being: Focus on Behavior
Chair: Peter Krawczel, The University of Tennessee

Measurements of behavior are essential components in the assessment of animal welfare.
J. Rushen*, University of British Columbia, Vancouver, BC, Canada.

Making stall beds more comfortable: The effect of longitudinal space on lying behavior and leg injuries on dairy cows housed in deep-bedded tie-stalls.
S. McPherson* and E. Vasseur, McGill University, Sainte-Anne-de-Bellevue, QC, Canada.

Effect of pre-milking waiting time on the activity behavior of dairy cows.
D. Manriquez*, S. Zuniga1, G. Solano1, S. Paudyal1,2, and P. Pinedo1, 1Department of Animal Sciences, Colorado State University, Fort Collins, CO, 2Texas A&M University, College Station, TX.

Rumination time and metritis in grazing dairy cows.
R. Held*1 and P. Sepúlveda-Varas1, 1Escuela de Graduados, Facultad de Ciencias Veterinarias, Universidad Austral de Chile, Valdivia, Chile, 2Instituto de Ciencias Clínicas Veterinarias, Universidad Austral de Chile, Valdivia, Chile.

Effect of hot-iron disbudding on rest and rumination in dairy calves.

Age affects Holstein cow behavioral responses to hoof disorders.
C. Toet1 and A. Adams Progar*, 1Wageningen University and Research Centre, Wageningen, the Netherlands, 2Washington State University, Pullman, WA.

The effect of access to an outdoor pack on lameness and estrus expression.
A. Smid*, M. von Keyserlingk, and D. Weary, University of British Columbia, Vancouver, BC, Canada.

Development of an automated computer vision system to monitor behavior of dairy calves.

Deriving intake from multiple 3-dimensional accelerations in peripartal Holstein dairy cows.
N. Carpinelli*1, J. Hafelf1,2, and J. Osorio1, 1South Dakota State University, Brookings, SD, 2Universidade Federal de Pelotas, Pelotas, Rio Grande do Sul, Brazil.
Animal Health: ADSA-NMC Platform Session:
Milk Quality and Mastitis Control in a Changing Dairy Industry
Chair: David Kelton, University of Guelph

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9:30 AM 59  Rethinking milking efficiency in a dynamic dairy industry.
R. Erskine*, Michigan State University, East Lansing, MI.

10:15 AM 60  Automated mastitis detection for robotic milking systems using deep learning and recurrent neural networks.
M. T. M. King*, S. A. Naqvi1, M. Champigny1, R. Deardon2, H. W. Barkema3, and T. J. DeVries4, 1Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, 2Department of Production Animal Health, University of Calgary, Calgary, AB, Canada, 3PhenoLogic Co., Toronto, ON, Canada.

10:30 AM 61  Detection of bovine mastitis biomarkers in milk by porous silicon optical biosensors.
N. Pinker*1 and G. Shtenberg2, 1The Hebrew University, Rehovot, Israel, 2The Volcani Center, Bet Dagan, Israel.

10:45 AM  Break

11:00 AM 62  Insights into the relationships among dairy farmers, milk quality, and farm closure in the southeastern United States.
S. M. Schexnayder*, K. L. DeLong, J. Ellis, P. Krawcel, G. M. Pighetti, and S. P. Oliver, University of Tennessee, Knoxville, TN.

11:45 AM 63  Comparative efficacy of teat sealant protocols: A systematic review and network meta-analysis.
C. B. Winder*, J. M. Sargeant1,2, A. M. O’Connor1, and D. F. Kelton1, 1Department of Population Medicine, University of Guelph, Guelph, ON, Canada, 2Centre for Public Health and Zoonoses, University of Guelph, Guelph, ON, Canada, 3Department of Veterinary Diagnostic and Production Animal Medicine, College of Veterinary Medicine, Iowa State University, Ames, IA.

12:00 PM 64  Antimicrobial resistance of Klebsiella species from milk submitted to Wisconsin Veterinary Diagnostic Laboratory for mastitis testing, 2008–2018.
E. Furmaga*, N. Aulik, and M. F. Valenzuela, Wisconsin Veterinary Diagnostic Laboratory, Madison, WI.

Breeding and Genetics Symposium: Joint ADSA/Interbull Session:
Ten Years of Genomic Selection
Chair: Filippo Miglior, University of Guelph
Junior Ballroom C

9:30 AM 65  From sequence of Dominette to 10K and 50K SNP chips.
D. Bickhart*, USDA Agricultural Research Service Dairy Forage Research Center, Madison, WI.

10:00 AM 66  How to implement genomic selection.
P. M. VanRaden*, USDA Animal Genomics and Improvement Laboratory, Beltsville, MD.

10:30 AM 67  The role of Interbull in the successful implementation of genomic selection in breeds other than Holstein.
E. C. Santus*, ANARB, Bussolengo, Italy.

11:00 AM 68  Exploiting homozygosity in the era of genomics—Runs of homozygosity, inbreeding, and genomic mating programs.
C. Maltecca*1, C. Baes2, and F. Tiezza1, 1North Carolina State University, Raleigh, NC, 2University of Guelph, Guelph, ON, Canada.

11:30 AM 69  Single-step genomic evaluations.
E. A. Mäntysaari*, M. Koivula, and I. Strandén, Natural Resources Institute Finland (Luke), Jokioinen, Finland.

12:00 PM 70  What’s next for dairy cattle breeding?
G. Gorjanc*, The Roslin Institute, University of Edinburgh, Edinburgh, UK.
Dairy Foods Symposium:
Advances in Spore Control Throughout the US Dairy Value Chain
Chair: Annie Bienvenue, U.S. Dairy Export Council
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9:30 AM  Opening remarks

9:45 AM  How the US dairy industry increased production of low-spore dairy products and ingredients.

10:15 AM  Spores in milk powders—Practical solutions for improved detection and important insights for predictability of spoilage of reconstituted products.
R. T. Eijlander1, R. van Hekezen1, A. Bienvenue2, V. Girard3, E. Hoornstra4, N. Johnson5, R. Meyer5, A. Wagendorp1, D. C. Walker6, and M. H. J. Wells-Bennik*1, 1NIZO, Ede, the Netherlands, 2U. S. Dairy Export Council, Arlington, VA, 3BioMérieux, R&D Microbiology, La Balme-les-Grottes, France, 4FrieslandCampina, Laboratory & Quality Services, Leeuwarden, the Netherlands, 5Nestec Ltd., Nestlé Research, Konolfingen, Switzerland, 6Abbott Laboratories, Columbus, OH.

10:45 AM  Interventions for reduction of spore-forming bacteria at the farm level.
A. Bianchini*, University of Nebraska-Lincoln, Lincoln, NE.

11:15 AM  Strategies for minimizing sporeformers and spores during milk powder processing.
S. Anand*, Midwest Dairy Foods Research Center, Dairy and Food Science Department, South Dakota State University, Brookings, SD.

11:45 AM  Recurrence frequency and required intervention cleaning in place (CIP) of persistent populations of thermophilic sporeformers in milk powder production.
T. Erickson*, Ecolab, Eagan, MN.

12:15 PM  Closing remarks

Extension Education 1
Chair: Mike Schutz, University of Minnesota
260/261

9:30 AM  Consumer perception and willingness to pay for milk in Tennessee.

J. Prestegaard*, V. Daley1,2, and M. Hanigan3, 1Virginia Polytechnic Institute and State University, Blacksburg, VA, 2National Animal Nutrition Program, University of Kentucky, Lexington, KY.

10:00 AM  Microlearning courses are effective at increasing the feeling of confidence and the feeling of accuracy in the work of dairy personnel.
W. Heuwieser*1, P. Ospina2, M. Wieland2, F. Leal Yepes3, B. Nguyen4, and A. Hesse1, 1Clinic for Animal Reproduction, Faculty of Veterinary Medicine, Freie Universität Berlin, Berlin, Germany, 2Quality Milk Production Services, Cornell University, College of Veterinary Medicine, Ithaca, NY, 3Department of Population Medicine and Diagnostic Sciences, Cornell University, College of Veterinary Medicine, Ithaca, NY.

10:15 AM  The impact of corn silage harvesting and feeding decisions on milk margins.
T. J. Beck2, R. C. Goodling*, M. A. Haan1, V. A. Ishler1, and A. M. Rosales4, 1the Pennsylvania State University, University Park, PA, 2Penn State Extension, Carlisle, PA, 3Penn State Extension, Leesport, PA, 4Penn State Extension, Lancaster, PA.
Research and educational priorities of California’s North Bay dairies.
R. Black*, University of California Agriculture and Natural Resources, Santa Rosa, CA.

Forages and Pastures 1
Chair: Matt Akins, University of Wisconsin

Influence of cutting height on nutrient composition and yield of whole-plant corn silage through a meta-analysis.
E. M. Paula*, B. A. Saylor1, J. Goeser2-3, and L. F. Ferraretto1, 1Department of Animal Sciences, University of Florida, Gainesville, FL, 2Department of Dairy Science, University of Wisconsin, Madison, WI, 3Rock River Laboratory Inc., Watertown, WI.

The effects of a silage inoculant on aerobic stability and quality of grass/legume mixture fermented for 8 days and the impact on total mixed ration stability.
G. Copani*, K. Witt1, I. Eissner1, V. Vrotniakiene2, and J. Jatkauskas2, 1Chr. Hansen Animal Health & Nutrition, Hørsholm, Denmark, 2Institute of Animal Science of Lithuanian University of Health Sciences, Baisogala, Lithuania.

Effect of irrigation on fiber concentration and digestibility of corn plant tissues.
L. Martin*, G. Ferreira2, C. L. Teets2, S. Hines3, G. Shewmaker4, M. de Haro Martí4, and M. Chahine3, 1Department of Animal and Veterinary Science, University of Idaho, Twin Falls, Twin Falls, ID, 2Department of Dairy Science, Virginia Tech, Blacksburg, VA, 3University of Idaho, Jerome, Jerome, ID, 4Kimberly R & E Center, University of Idaho, Kimberly, ID, 5University of Idaho, Gooding, Gooding, ID.

Milk yield and CH₄ emission in Jersey cows grazing forage canola.
L. H. P. Silva*, Y. Zang1, M. Ghelickhan1, Y. C. Geng2, E. M. Meyer1, and A. F. Brito3, 1University of New Hampshire, Durham, NH, 2Chinese Academy of Agricultural Sciences, Beijing, China.

Effect of microbial inoculation and particle size on fermentation profile, aerobic stability, and ruminal in situ starch disappearance of high-moisture corn.
B. A. Saylor*, F. Casale, H. Sultana, and L. F. Ferraretto, University of Florida, Gainesville, FL.

Effect of a dual-purpose bacterial inoculant and recombinant bacterial expansin-like protein on fermentation profile and digestibility of whole-plant corn silage.
A. A. Pech-Cervantes*, S. Ramirez2, K. G. Arriola1, E. M. Paula1, C. Heinzen Jr.1, F. X. Amaro1, Y. Jiang1, C. F. Gonzalez2, D. Vyas1, L. F. Ferraretto1, and A. T. Adesogan1, 1Department of Animal Sciences, University of Florida, Gainesville, FL, 2Instituto de Ciencias Agropecuarias, Universidad del Papaloapan, Oaxaca, Mexico, 3Department of Microbiology and Cell Science, University of Florida, Gainesville, FL.

The impact of zero-grazing versus conventional grazing in early lactation autumn-calving dairy cows in Ireland.
C. Holohan*, C. Grace1, F. J. Mulligan2, J. Somers2, K. M. Pierce3, and M. B. Lynch4, 1Lyons Research Farm, Lyons Estate, University College Dublin, Celbridge, Co. Kildare, Ireland, 2School of Veterinary Medicine, University College Dublin, Dublin, Ireland.

Diagnostics tool for corn silage: Development, validation, and characterization index using principal component analysis from Québec, Canada.
A. Gallo1, F. Gihladerlli2, P. Drouin3, and M. Leduc4, 1Department of Animal Science, Food and Nutrition, Facoltà di Scienze Agrarie, Alimentari e Ambientali, Università Cattolica del Sacro Cuore, Piacenza, Italy, 2Lallemand Specialities Inc., Milwaukee, WI, 3Department of Animal Science, McGill University, Montreal, QC, Canada, 4Valacta, Dairy Production Centre of Expertise, Ste-Anne-de-Bellevue, QC, Canada.

Effect of hybrid on performance, digestion, and nitrogen balance of lactating cows fed whole-plant corn silage.
R. P. Melo1, J. P. Santos2, W. R. Silva3, R. B. Silva4, R. A. N. Pereira5-6, and M. N. Pereira*1-2, 1Universidade Federal de Lavras, Lavras, MG, Brazil, 2Better Nature Research Center, Ijaci, MG, Brazil, 3Empresa de Pesquisa Agropecuaria de Minas Gerais, Lavras, MG, Brazil.

A meta-analysis examining the effects of herb species inclusion in grazing swards for dairy cows.
K. M. McCarthy*, C. G. McAloon1, K. M. Pierce2, M. B. Lynch2, and F. J. Mulligan3, 1School of Veterinary Medicine, University College Dublin, Belfield, Dublin, Ireland, 2School of Agriculture and Food Science, University College Dublin, Belfield, Dublin, Ireland.
Establishment of perennial forages with annual sudangrass or sorghum-sudangrass hybrids improved forage yields and in vitro total-tract NDF digestibility.

S. Thevakumaran\textsuperscript{1}, C. Matteau\textsuperscript{2}, B. Baurhoo\textsuperscript{1,3}, P. Seguin\textsuperscript{4}, and A. Mustafa\textsuperscript{*1,3}; \textsuperscript{1}McGill University, Sainte-Anne-de-Bellevue, QC, Canada, \textsuperscript{2}Belisle Solution Nutrition Inc., Saint-Mathias-sur-Richelieu, QC, Canada.

Effect of using fresh ryegrass-berseem clover as forage basis for TMR during the winter period on dairy cow performance and nitrogen utilization.

D. Enriquez-Hidalgo\textsuperscript{*1}, F. Pereira\textsuperscript{1,2}, A. Almeida Torres\textsuperscript{1}, M. Fernandez Donoso\textsuperscript{1}, E. Vargas-Bello-Pérez\textsuperscript{3}, and D. Lemos Teixeira\textsuperscript{1}; \textsuperscript{1}Departamento de Ciencias Animales, Facultad de Agronomía e Ingeniería Forestal, Pontificia Universidad Católica de Chile, Santiago, Región Metropolitana, Chile, \textsuperscript{2}Laboratório de Etologia Aplicada e Bem-estar Animal (LETA), Departamento de Zootecnia e Desenvolvimento Rural, Universidade Federal de Santa Catarina, Florianópolis, Santa Catarina, Brazil, \textsuperscript{3}Department of Veterinary and Animal Sciences, Faculty of Health and Medical Sciences, University of Copenhagen, Copenhagen, Denmark.

Production, Management, and the Environment 1
Chair: Jennifer Heguy, University of California Cooperative Extension

Early lifetime information enhances calf selection by improving accuracy of predictions with machine learning algorithms and regression.

M. Schmitt, F. Maunsell, and A. De Vries\textsuperscript{*}, University of Florida, Gainesville, FL.

Machine learning algorithms for early prediction of clinical mastitis.

L. Fadul-Pacheco\textsuperscript{*}, H. Delgado, and V. E. Cabrera, University of Wisconsin, Madison, WI.

Development of a prediction equation for body weight change in early-lactating dairy cows by Fourier-transform infrared predicted fatty acid profiles in milk.

D. Warner\textsuperscript{*1}, F. Dettmann\textsuperscript{1,2}, A. J. Buitenhuis\textsuperscript{1}, M. Kargo\textsuperscript{1,3}, A. M. Hostrup Kjeldsen\textsuperscript{3}, N. H. Nielsen\textsuperscript{4}, D. M. Lefebvre\textsuperscript{1}, and D. E. Santschi\textsuperscript{1}; \textsuperscript{1}Valacta, Dairy Production Centre of Expertise Quebec-Atlantic, Sainte-Anne-de-Bellevue, QC, Canada, \textsuperscript{2}LKV Niedersachsen e.V, Leer, Germany, \textsuperscript{3}Aarhus University, Center for Quantitative Genetics and Genomics, Department of Molecular Biology and Genetics, Tjele, Denmark, \textsuperscript{4}SEGES, Aarhus, Denmark, \textsuperscript{5}RYK, Aarhus, Denmark.

A stochastic animal life-cycle simulation model and its herd structure.

M. Li\textsuperscript{*1}, V. E. Cabrera\textsuperscript{1}, and K. F. Reed\textsuperscript{2}; \textsuperscript{1}Department of Dairy Science, University of Wisconsin-Madison, Madison, WI, \textsuperscript{2}Department of Animal Science, Cornell University, Ithaca, NY.

Environmental benefits of alternatives in dairy farm management in the changing climate of the northeastern United States.

K. Velman\textsuperscript{1}, A. Rotz\textsuperscript{*1}, L. Chase\textsuperscript{4}, J. Copper\textsuperscript{1}, C. Forest\textsuperscript{5}, P. Ingraham\textsuperscript{1}, C. Izaurralde\textsuperscript{3}, C. Jones\textsuperscript{1}, R. Nicholas\textsuperscript{1}, M. Ruark\textsuperscript{6}, W. Salas\textsuperscript{6}, G. Thoma\textsuperscript{3}, and O. Jolliet\textsuperscript{9}; \textsuperscript{1}University of Maryland, College Park, MD, \textsuperscript{2}University of Washington, Seattle, WA, \textsuperscript{3}Penn State University, University Park, PA, \textsuperscript{4}Applied Geosolutions, Durham, NH, \textsuperscript{5}University of Maryland, College Park, MD, \textsuperscript{6}University of Wisconsin-Madison, Madison, WI, \textsuperscript{7}University of Arkansas, Fayetteville, AR.

Executing a better nutritional grouping strategy in commercial dairy farms.

J. A. Barrientos Blanco\textsuperscript{*}, V. E. Cabrera, and R. D. Shaver, University of Wisconsin-Madison, Madison, WI.

Keeping the most profitable cow and not the most yielding one: Lifetime cost-benefit assessment as a decision-making support tool in dairy management.

D. Warner\textsuperscript{*1,3}, R. Lacroix\textsuperscript{1}, R. I. Cue\textsuperscript{2}, and E. Vasseur\textsuperscript{2}; \textsuperscript{1}Valacta, Dairy Production Centre of Expertise Quebec-Atlantic, Sainte-Anne-de-Bellevue, QC, Canada, \textsuperscript{2}Department of Animal Science, McGill University, Sainte-Anne-de-Bellevue, QC, Canada.

Development of a decision support tool for optimal allocation of nutritional resources in a dairy herd.

A. Bellingeri\textsuperscript{*1,2}, A. Gallo\textsuperscript{1}, D. Liang\textsuperscript{1}, F. Masoero\textsuperscript{1}, and V. Cabrera\textsuperscript{1}; \textsuperscript{1}Università Cattolica del Sacro Cuore, Piacenza, Italy, \textsuperscript{2}University of Wisconsin-Madison, Madison, WI.
Reproduction 1
Chair: Richard Pursley, Michigan State University
207/208

9:30 AM 104 Using automated data collection systems to identify factors that affect the magnitude and duration of increased activity at estrus in Holstein cows.
M. C. Lucy*, B. Liao*, J. M. Christensen*, and F. G. Kumro*, 1Department of Animal Sciences, Colorado State University, Fort Collins, CO, 2Texas A&M University, College Station, TX.

9:45 AM 105 Activity before artificial insemination and conception in dairy cows in grazing and non-grazing conditions.
S. Paudyal*1,2, and P. Pinedo*, 1Department of Animal Sciences, Colorado State University, Fort Collins, CO, 2Texas A&M University, College Station, TX.

10:00 AM 106 Characterization of behavior biometrics using 3D-kinematic analysis as ovulation approaches in dairy cows in tiestall housing.
H. J. Perez Marquez*, M. J. Guesgen, and C. J. Bench, Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada.

10:15 AM 107 Investigating reproductive traits in cows with high and low genetic merit for fertility in a seasonal, pasture-based system.
S. Meier*, B. Kuhn-Sherlock1, P. R. Amer2, J. Bryant1,3, J. R. Roche1,4, and C. R. Burke1, 1DairyNZ Limited, Hamilton, New Zealand, 2AbacusBio Limited, Dunedin, New Zealand, 3AgResearch, Hamilton, New Zealand, 4Ministry of Primary Industries, Wellington, New Zealand.

10:30 AM 108 Early genomic prediction of daughter pregnancy rate is associated with improved fertility outcomes in Holstein dairy cows.
F. S. Lima*, F. T. Silvestre*, F. Penagaricano*, and W. W. Thatcher*, 1Department of Veterinary Medicine, University of Illinois, Urbana, IL, 2Zoetis Inc., Kalamazoo, MI, 3Department of Animal Sciences, University of Florida, Gainesville, FL.

10:45 AM 109 Break

11:00 AM 109 Genetic merit for fertility and type of reproductive management strategy affected the reproductive performance of primiparous lactating Holstein cows.

11:15 AM 110 Plasma progesterone is associated with individual genetic traits and likelihood of conception in seasonal-calving pasture-based dairy cows.
E. Rojas Canadas*1,2, M. M. Herlihy*, J. Kenneally*, F. Kearney*, P. Lonergan*, and S. T. Butler*1, 1Animal and Grassland Research and Innovation Centre, Teagasc, Moorepark, Fermoy, Co. Cork, Ireland, 2School of Agriculture and Food Science, University College Dublin, Dublin, Ireland, 3Irish Cattle Breeding Association, Bandon, Co. Cork, Ireland.

11:30 AM 111 Fertility of fresh and frozen sex-sorted semen in dairy cows and heifers in seasonal-calving pasture-based herds.
11:45 AM 112 Fertility of frozen sex-sorted semen at 4 x 10⁶ sperm per dose in lactating dairy cows in seasonal-calving pasture-based herds.  
C. Maicas¹,², S. Holden¹, E. Drake¹, A. Cromie¹, P. Loneragan², and S. Butler¹, ³Teagasc, Animal and Grassland Research and Innovation Centre, Moorepark, Fermoy, Co. Cork, Ireland, ²School of Agriculture and Food Science, University College Dublin, Belfield, Dublin, Ireland, ³Irish Cattle Breeding Federation, Bandon, Co. Cork, Ireland.

12:00 PM 113 The genetic components of sexed semen production.  
C. Heuer*, T. Gilligan, J. Moreno, and R. Vishwanath, STGenetics, Navasota, TX.

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Ruminant Nutrition 1: Protein and Amino Acid 1  
Chair: Ranga Appuhamy, Iowa State University  
Junior Ballroom D

9:30 AM 114 Assessing essential amino acid availability in lactating dairy cows infused with methionine, lysine, and histidine or leucine and isoleucine.  
X. Huang*¹, P. Yoder²,³, and M. Hanigan¹, ¹Virginia Polytechnic Institute and State University, Blacksburg, VA, ²Perdue AgriBusines LLC, Salisbury, MD.

9:45 AM 115 Effects of jugular infused methionine, lysine, and histidine or leucine and isoleucine on protein expression and post-translational modification.  
P. S. Yoder*¹², W. K. Ray³, R. F. Helm², X. Huang, C. Schumacher³, E. Huang², I. A. M. A. Teixeira⁴, and M. D. Hanigan¹, ¹Department of Dairy Science, Virginia Tech, Blacksburg, VA, ²Perdue AgriBusiness LLC, Salisbury, MD, ³Department of Biochemistry, Virginia Tech, Blacksburg, VA, ⁴UNESP-Universidade Estadual Paulista, Jaboticabal, SP, Brazil.

10:00 AM 116 Effect of grouping by genetic merit on the response to dietary protein in first-lactation cows.  
G. I. Zanton* and D. M. Bickhart, USDA-Agricultural Research Service, Madison, WI.

10:15 AM 117 Effect of rumen-protected lysine supplementation to total mixed rations differing in crude protein concentration in lactating cows.  
S. W. Gee*¹, N. E. Lobos², and A. J. Carpenter², ¹University of Guelph, Ridgetown, ON, Canada, ²Kemin Industries, Inc., Des Moines, IA.

10:30 AM 118 Amino acid utilization by mammary glands in response to dietary protein and insulin.  
L. M. Campos*¹, A. G. Rius¹, J. A. D. R. N. Appuhamy², D. Kirovski², T. F. V. Bompadre¹,³, and M. D. Hanigan¹, ¹Virginia Polytechnic Institute and State University, Blacksburg, VA, ²University of Belgrade, Beograd, Serbia, ³University of Sao Paulo, Piracicaba, Sao Paulo, Brazil.

10:45 AM 119 Evaluation of rumen-protected lysine prototypes on plasma amino acid concentrations of lactating Holstein cows.  
M. I. Rivelli*¹, M. J. Cecava², P. H. Doane², and F. C. Cardoso¹, ¹University of Illinois, Urbana, IL, ²ADM Research Division, Decatur, IL.

11:00 AM 120 Succinate dehydrogenase activity and protein levels in liver of dairy cows fed TMR or in a pasture-based system.  
M. Garcia-Roche*¹,², M. Carriquiry³, D. A. Mattiauda¹, M. Ceriani¹, A. Jasinsky¹, A. Cassina², and C. Quijano², ¹Departamento de Producción Animal y Pasturas, Facultad de Agronomía, Universidad de la República, Montevideo, Uruguay, ²Centro de Investigaciones Biomédicas, Departamento de Bioquímica, Facultad de Medicina, Universidad de la República, Montevideo, Uruguay, ³Centro de Investigaciones Biomédicas, Departamento de Bioquímica, Facultad de Medicina, Universidad de la República, Montevideo, Uruguay.

11:15 AM 121 Essential amino acids influence milk fat synthesis in mammary epithelial cells.  
I. A. M. A. Teixeira*¹,², P. S. Yoder²,³, E. Huang³, X. Huang², and M. D. Hanigan¹, ¹Department of Animal Science, Unesp, Jaboticabal campus, Jaboticabal, SP, Brazil, ²Department of Dairy Science, Virginia Tech, Blacksburg, VA, ³Perdue AgriBusiness LLC, Salisbury, MD.

11:30 AM 122 Modeling milk protein yield responses to amino acid supply of dairy cows fed silage-based diets.  
A. Vanhatalo¹, T. Kokkonen¹, and P. Huhtanen*¹, ¹University of Helsinki, Helsinki, Finland, ²Swedish University of Agricultural Sciences, Umed, Sweden.

11:45 AM 123 Effects of oscillating dietary crude protein concentration on production in lactating cows.  
A. W. Tebbe* and W. P. Weiss, Ohio Agricultural Research and Development Center, The Ohio State University, Wooster, OH.
12:00 PM 124 Histidine dose-response effects on lactational performance and plasma amino acid concentrations in lactating dairy cows.
S. E. Räisänen*1, C. F. A. Lage1,2, J. Oh1, A. Melgar1, K. Nedelkov1,2, X. Chen1,3, M. Miura1, C. Parys4, and A. N. Hristov1,
1The Pennsylvania State University, University Park, PA, 2Universidade Federal de Minas Gerais, Belo Horizonte, Minas Gerais, Brazil, 3Trakia University, Stara Zagora, Bulgaria, 4University of Ulster, Belfast, UK, 5Ajinomoto Co., Inc., Kawasaki, Japan, 6Evonik Nutrition & Care GmbH, Hanau-Wolfgang, Germany.

12:15 PM 125 Effects of soybean meals versus canola meal on the lactational performance, enteric gas emission, and plasma amino acid profile in dairy cows.
C. F. A. Lage*1,2, S. E. Räisänen1, A. Melgar1, X. Chen1,3, J. Oh1, D. M. Kniffen1, R. A. Fabin4, M. E. Young1, and A. N. Hristov1,
1The Pennsylvania State University, University Park, PA, 2Universidade Federal de Minas Gerais, Belo Horizonte, Minas Gerais, Brazil, 3College of Pastoral Agriculture Science and Technology, Lanzhou University, China, 4Fabin Bros. Farms, Indiana, PA.

Ruminant Nutrition Symposium:
Mycotoxins—Recognizing Their Presence and Dealing with Them in Ruminant Nutrition
Chair: Jill Anderson, South Dakota State University
Sponsor: Alltech
Junior Ballroom A

9:30 AM 126 Ruminants—Are they as resilient to mycotoxicosis as we think?
D. Diaz*, University of Arizona, Tucson, AZ.

10:15 AM 127 Use of technology to better understand multi-mycotoxin and emerging mycotoxin challenges.
A. Weaver*, Alltech Inc., Nicholasville, KY.

11:00 AM 128 Applying fungicide on corn plants to improve the composition of corn silage for dairy cows diets.
F. Cardoso*, University of Illinois, Urbana, IL.

11:45 AM 129 Fusarium mycotoxins deoxynivalenol and fumonisins affect milk production and liver health in dairy cows.
A. Gallo1, A. Minuti1, F. Piccioli Cappelli1, B. Doupovec2, J. Faas*2, D. Schatzmayr2, and E. Trevisi1,
1Department of Animal Sciences, Food and Nutrition (DIANA), Faculty of Agriculture, Food and Environmental Science, Università Cattolica del Sacro Cuore, Piacenza, Italy, 2BIOMIN Research Center, Tulln, Austria.

12:00 PM 130 Silicoglycidol clay for the reduction of aflatoxin M1 in urine and its effects on inflammatory biomarkers in dairy cows.
E. Branstad*1, C. McCarthy1, B. Dooley1, M. O’Neill1, L. King1, C. Domenech2, J. Pié3, G. Rottinghaus3, E. Bowers1, L. Baumgard1, and H. Ramirez-Ramirez2,
1Iowa State University, Ames, IA, 2Biovet S.A, Tarragona, Spain, 3University of Missouri, Columbia, MO.

12:15 PM 131 Reduction of aflatoxin M1 in milk of Holstein cows administrated an aluminosilicate clay.
S. C. Allen*1, K. N. Russo2, D. M. Paulus Compart2, and S. H. Ward1,
1North Carolina State University, Raleigh, NC, 2PMI Nutrition Additives, Arden Hills, MN.
**Small Ruminant Platform Session: Omics Application in Small Ruminants**

**Current Situation, Limitations, and Opportunities for the Future**

Chair: Ahmed A. K. Salama, Universitat Autonoma de Barcelona

### 9:30 AM

**Introduction.**

### 9:35 AM

**The use of different omic tools: Applications and benefits to production and health.**
J. S. Osorio*, South Dakota State University, Brookings, SD.

### 10:20 AM

**Maternal nicotinamide supplementation during the perinatal period affects milk metabolomics and modifies the development and transcriptomics of small intestine of their kids.**
X. S. Wei*, Q. Y. Yin, J. J. He, H. H. Zhao, and J. H. Yao, northwest Agriculture and Forest University, Yangling, Shaanxi, China.

### 10:50 AM

**Rumen microbiome and fermentation interaction in dairy ewes under different supplementation using 16S rRNA Illumina amplicon sequencing.**
F. E. Miccoli*1,2, D. Colombatto2,3, and R. A. Palladino1,2, 1School of Agriculture Science, National University of Lomas de Zamora, Buenos Aires, Argentina, 2Department of Animal Production, University of Buenos Aires, Buenos Aires, Argentina, 3Consejo Nacional de Investigaciones Cientificas (CONICET), Buenos Aires, Argentina.

### 11:05 AM

**Identification of mastitis pathogens using MALDI-ToF and its association with somatic cell count in dairy goats.**
K. Santos1, G. de Moura2, M. Marques2, D. Diaz-Campos3, L. Guifarro3, M. Rovali3, and L. da Costa4; 1University of São Paulo, São Paulo, SP, Brazil, 2Federal Rural University of Pernambuco, Recife, PE, Brazil, 3South Dakota State University, Brookings, SD, 4The Ohio State University, Columbus, OH.

### 11:20 AM

**1H-NMR based-metabolomics of milk produced from heat-stressed goats with induced mammary inflammation.**
S. Love1, A. Contreras-Jodar2, N. Mehaba2, X. Suchi2, G. Caja2, and A. Salama*2; 1Institute of Infection, Immunity and Inflammation, University of Glasgow, Glasgow, UK, 2Research Group in Ruminants (G2R), Universitat Autonoma de Barcelona, Barcelona, Spain.

### 11:35 AM

**Current situation and new insights of omics applied to small ruminants.**
N. Castro*1, A. Salama2, L. Hernández-Castellano3, and A. Argüello1; 1Universidad de Las Palmas de Gran Canaria, Campus Universitario de Arucas, Gran Canaria, Spain, 2Universitat Autonoma de Barcelona, Bellaterra, Barcelona, Spain, 3Aarhus University, Tjele, Denmark.

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**ADSA-SAD Undergraduate Dairy Foods Oral Competition**

Chair: Leanne Berning, Cal Poly University

### 11:15 AM

**A2 Milk: Where are we now?**
E. Brown* and C. Williams, Louisiana State University, Baton Rouge, LA.

### 11:30 AM

**Don’t ditch the dairy: Lactose-free milk.**
H. Torrealba* and J. Laporta, Department of Animal Sciences, University of Florida, Gainesville, FL.

### 11:45 AM

**Cheese processing: Opportunities and considerations for dairy farmers.**
B. Jones*, A. Hawkins, and J. Costa, University of Kentucky, Lexington, KY.

### 12:00 PM

**Benefits of enzyme-modified cheese production.**
K. M. MacRae* and D. R. Olver, Pennsylvania State University, University Park, PA.

### 12:15 PM

**A2 milk and the potential impact on consumer markets.**
A. Rauton* and J. Bohlen, University of Georgia, Athens, GA.
ADSA Graduate Student (PhD) Production Oral Competition
Chair: Maris McCarthy, Adisseo

2:00 PM 143 Effect of supplementing rumen-protected methionine or methionine analogs in calf starter on growth and efficiency of Holstein calves from 14 to 91 days of age.
R. A. Molano*, A. Saito, N. D. Luchini, and M. E. Van Amburgh, Department of Animal Science, Cornell University, Ithaca, NY, Zen-Raku-Ren, Tokyo, Japan, Adisseo North and Central America, Alpharetta, GA.

2:15 PM 144 Effect of pre- and postnatal heat stress on dairy calf thermoregulation and productivity.
B. Dado-Senn*, L. Vega Acosta, M. Torres Rivera, S. L. Field, M. G. Marrero, S. Tao, T. F. Fabris, G. Ortiz-Colon, G. E. Dahl, and J. Laporta, Department of Animal Sciences, University of Florida, Gainesville, FL, Department of Animal Sciences, University of Puerto Rico, Mayagüez, Department of Animal and Dairy Science, University of Georgia, Tifton, GA.

2:30 PM 145 Early-life fecal microbiota transplantation affects systemic and polymorphonuclear leukocyte mRNA biomarkers of inflammation and liver function in neonatal dairy calves.
F. Rosa*, E. Trevisi, and J. S. Osorio, Dairy and Food Science Department, South Dakota State University, Brookings, SD, Department of Animal Science, Food and Nutrition, Università Cattolica del Sacro Cuore, Piacenza, Italy.

2:45 PM 146 Effects of a high-protein corn product on production responses in mid-lactation dairy cows.
W. E. Brown* and B. J. Bradford, Kansas State University, Manhattan, KS.

3:00 PM 147 Association of mid-infrared predicted milk and blood constituents with early lactation negative outcomes in Holstein cows.
K. Bach*, D. Barbano, and J. McArt, Department of Population Medicine and Diagnostic Sciences, College of Veterinary Medicine, Cornell University, Ithaca, NY, Department of Food Science, College of Agriculture and Life Sciences, Cornell University, Ithaca, NY.

3:15 PM 148 Relationship between serum lipid-soluble vitamins during the periparturient period and health measures in the Pacific Northwest dairy herds.
C. Y. Tsai*, H. H. Hung, W. J. Price, and P. Rezamand, Department of Animal and Veterinary Science, University of Idaho, Moscow, ID, Statistical Programs, College of Agricultural and Life Sciences, Moscow, ID.

3:30 PM 149 Dietary restriction improved feed efficiency of inefficient lactating cows.

3:45 PM 150 Development of a robust, net energy-based measure of feed efficiency in dairy cattle.
D. I. Seymour*, A. Cánovas, T. C. S. Chud, J. P. Cant, V. R. Osborne, F. S. Schenkel, and F. Miglior, Centre for Nutrition Modelling, Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, Centre for Genetic Improvement of Livestock, Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada.

Animal Behavior and Well-Being: Focus on Physiological Response
Chair: Emily Miller Cushon, University of Florida

2:00 PM 151 Utilizing a multidisciplinary approach to assess livestock welfare.
J. Johnson*, USDA-ARS Livestock Behavior Research Unit, West Lafayette, IN.

2:30 PM 152 Using drool as an indicator of heat load in dairy cattle.
A. M. Drwencke*, G. Tresoldi, and C. B. Tucker, Center for Animal Welfare, Department of Animal Science, University of California, Davis, CA, College of Agriculture, California State University, Chico, Chico, CA.

2:45 PM 153 Efficacy of pain control for caustic paste disbudding in very young calves.
C. N. Reedman*, T. F. Duffield, T. J. DeVries, K. D. Lissemore, N. Karrow, Z. Li, and C. B. Winder, Department of Population Medicine, University of Guelph, Guelph, ON, Canada, Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada.
<table>
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<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
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<tr>
<td>3:00 PM</td>
<td>154</td>
<td>Effects of environmental enrichment on behaviors, growth, and stress in limit fed Holstein heifers.</td>
<td>K. M. Kelly*, S. H. Ward¹, J. H. C. Costa², G. W. Smith³, and A. J. Geiger⁴, ¹North Carolina State University, Raleigh, NC, ²University of Kentucky, Lexington, KY, ³Zinpro Corporation, Eden Prairie, MN.</td>
</tr>
<tr>
<td>3:15 PM</td>
<td>155</td>
<td>Integration of productive, reproductive, and health variables with activity behavior data as welfare indicators in dairy cows.</td>
<td>D. Manriquez* and P. Pinedo, Department of Animal Sciences, Colorado State University, Fort Collins, CO.</td>
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<td>3:30 PM</td>
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<td>Ice cream break in Exhibit Hall</td>
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<tr>
<td>4:00 PM</td>
<td>156</td>
<td>The impact of heat stress on individual cows in a Pennsylvania dairy herd.</td>
<td>L. Han* and C. Dechow, Department of Dairy and Animal Science, The Pennsylvania State University, State College, PA.</td>
</tr>
<tr>
<td>4:30 PM</td>
<td>158</td>
<td>Provision of shelter during the prepartum period: Effects on behavior and non-esterified fatty acid concentrations of dairy cows in a pasture-based system.</td>
<td>D. Cartes**, A. Strappini², R. Held¹, and P. Sepúlveda-Varas³, ¹Escuela de Graduados, Facultad de Ciencias Veterinarias, Universidad Austral de Chile, Valdivia, Chile, ²Instituto de Ciencia Animal, Universidad Austral de Chile, Valdivia, Chile, ³Instituto de Ciencias Clinicas Veterinarias, Universidad Austral de Chile, Valdivia, Chile.</td>
</tr>
<tr>
<td>4:45 PM</td>
<td>159</td>
<td>Validation of a multiple accelerometer sensor system to estimate dry matter intake in lactating dairy cows.</td>
<td>N. Carpinelli*, F. Rosa, R. C. B. Grazziotin, and J. Osorio, South Dakota State University, Brookings, SD.</td>
</tr>
<tr>
<td>5:00 PM</td>
<td>160</td>
<td>Nutrient intake, feeding patterns of growing bulls fed different concentrate levels and a single fiber source.</td>
<td>A. u. R. Muhammad*¹,², C. Q. Xia¹, B. Cao¹, and H. Su¹, ¹State Key Laboratory of Animal Nutrition, Beijing, China, ²Institute of Animal and Dairy Sciences, University of Agriculture, Faisalabad, Faisalabad, Pakistan.</td>
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**Animal Health 1: Metabolic Health and Disease**  
Chair: Andres Contreras, Michigan State University  
232

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<th>Time</th>
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<tr>
<td>2:00 PM</td>
<td>161</td>
<td>The dynamics of BCS during the far-off and close-up period impacts postpartum diseases in Holstein cows.</td>
<td>P. Melendez*¹, F. Bargo¹, G. Tuñon¹, and J. Grigera⁴, ¹College of Veterinary Medicine, University of Georgia, Tifton, GA, ²University of Buenos Aires, Buenos Aires, Argentina, ³INIA, Uruguay, Montevideo, Uruguay, ⁴Bovine Practitioner, Buenos Aires, Argentina.</td>
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<tr>
<td>2:15 PM</td>
<td>162</td>
<td>Incidence of subclinical and clinical ketosis in the California Central Valley: Similarities among commercial herds.</td>
<td>M. Wukadinovich* and H. Rossov, University of California, Davis, Davis, CA.</td>
</tr>
<tr>
<td>2:30 PM</td>
<td>163</td>
<td>β-Hydroxybutyrate measurements in bovine milk compared between known standards, a clinical pathology analyzer, and Fossomatic high-throughput testing.</td>
<td>D. Wilson*¹ and G. Goodell², ¹Utah State University, Logan, UT, ²The Dairy Authority, Greeley, CO.</td>
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<tr>
<td>2:45 PM</td>
<td>164</td>
<td>Association between hyperketonemia during the first 10 days postpartum and productive parameters throughout lactation in dairy cows.</td>
<td>Z. Rodriguez*, J. Lukach, E. Wynands, P. Cecilio Ferro, G. Cramer, and L. Caixeta, Department of Veterinary Population Medicine, University of Minnesota, St. Paul, MN.</td>
</tr>
<tr>
<td>3:00 PM</td>
<td>165</td>
<td>High concentrations of fatty acids induce hepatic lipid accumulation by activating endoplasmic reticulum stress in dairy cows with severe fatty liver.</td>
<td>Y. Zhu and X. Li*, Jilin University, Changchun, Jilin, China.</td>
</tr>
</tbody>
</table>
Herbal formula CHF03 attenuates high-fat diet-induced nonalcoholic fatty liver disease by regulating nuclear factor-κB in mice.
Y. Cui*1, R. Chang3, T. Zhang3, X. Zhou3, Q. Wang3, H. Gao1, L. Hou1, and C. Xu1, 1College of Animal Science and Veterinary Medicine, Heilongjiang Bayi Agricultural University, Daqing, Heilongjiang, China, 2Beijing University of Agriculture, Beijing, China, 3China Animal Health and Epidemiology Center, Laboratory of Zoonosis, Beijing, China.

Ice cream break in Exhibit Hall

Effect of hypocalcemia prevention using an anion-supplemented diet on rumination behavior in periparturient dairy cows.
J. Goff*, A. Hohman, and L. Timms, Iowa State University, Ames, IA.

Effects of carprofen in a pain management protocol in dairy cows with abomasal displacement undergoing left flank omentopexy.
H. Meyer1, S. Kaestner2, and J. Rehage*, 1Clinic for Cattle, University of Veterinary Medicine Hannover, Hannover, Germany, 2Clinic for Small Animals, University of Veterinary Medicine Hannover, Hannover, Germany.

Impaired hepatic autophagic activity in dairy cows with severe fatty liver.
X. Du, G. Liu, and X. Li*, Jilin University, Changchun, Jilin, China.

A fluorescence resonance energy transfer approach to determine intracellular zinc bioavailability in bovine mammary epithelial cells.
R. Mohan*, F. Rosa, and J. S. Osorio, Dairy and Food Science Department, South Dakota State University, Brookings, SD.

Breeding and Genetics Symposium: Joint ADSA/Interbull Session
Data Pipelines for Implementation of Genomic Evaluation of Novel Traits
Chair: Christine Baes, University of Guelph
Junior Ballroom C

International collaborations for breeding for novel traits.
Y. de Haas*, Animal Breeding and Genomics of Wageningen University and Research, Wageningen, the Netherlands.

Genetic relationships between different measures of feed efficiency and the implications for dairy cattle selection indexes.
R. J. Tempelman*1 and Y. Lu2, 1Michigan State University, East Lansing, MI, 2Axio Research, Seattle, WA.

Multiple-trait single-step genomic evaluation for hoof health.
F. Malchiodi*12, J. Jamrozik23, A.-M. Christen4, A. Fleming5, G. J. Kistemaker5, C. Richardson23, V. Daniel6, D. F. Kelton7, F. S. Schenkel8, and F. Miglior, 1Semex Alliance, Guelph, ON, Canada, 2Centre for Genetic Improvement of Livestock, Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, 3Canadian Dairy Network, Guelph, ON, Canada, 4Valacta, Sainte-Anne-De-Bellevue, QC, Canada, 5School of Applied Systems Biology, La Trobe University, Bundoora, VIC, Australia, 6Vic’s Custom Clips, Arvo, ON, Canada, 7Department of Population Medicine, OVC, University of Guelph, Guelph, ON, Canada.

Ice cream break in Exhibit Hall

Pooling data for international evaluations for feed intake and efficiency.
J. Lassen*, Viking Genetics, Randers, Denmark.

K. L. Parker Gaddis*, 1, P. M. VanRaden1, J. B. Cole2, E. Nicolazzi3, and J. W. Dürr3, 1Council on Dairy Cattle Breeding, Bowie, MD, 2Animal Genomics and Improvement Laboratory, Agricultural Research Service, USDA, Beltsville, MD.

Implementation of genomic selection for heat tolerance.
T. T. T. Nguyen1, P. J. Bowman12, M. Haile-Mariam1, B. J. Hayes1, and J. E. Pryce*, 1Agriculture Victoria, Bundoora, VIC, Australia, 2La Trobe University, Bundoora, VIC, Australia, 3University of Queensland, Brisbane, QLD, Australia.
Dairy Foods: Cheese, Yogurt, and Ice Cream
Chair: Stephanie Clark, Iowa State University

2:00 PM
Effect of different aging conditions on the physicochemical and textural characteristics of an artisanal cheese produced in South African rural communities.
F. Nyamakwere1, M. Busti2, E. Raffrenato*, P. A. Gouws1, K. Dzama1, and G. Esposito1, 1Department of Animal Sciences, Stellenbosch University, Stellenbosch, South Africa, 1Caseificio della Famiglia Busti, Fauglia, Italy, 1Department of Food Science, Stellenbosch South Africa.

2:15 PM
Nanofiltration as sustainable approach to controlling cheese acidity by adjusting lactose to casein content of milk.
J. A. Stankey, Y. Lu*, S. Govindasamy-Lucey, M. Molitor, J. J. Jaeggi, M. E. Johnson, and J. A. Lucey, Center for Dairy Research, University of Wisconsin-Madison, Madison, WI.

2:30 PM
Minimizing moisture migration in large 291-kg blocks of Cheddar cheese.
C. E. Collins*, M. E. Johnson1, S. Govindasamy-Lucey1, J. J. Jaeggi1, and J. A. Lucey12, 1University of Wisconsin-Madison, Madison, WI, 2Wisconsin Center for Dairy Research, Madison, WI.

2:45 PM
From’Innov: A new concept to improve efficiency and sustainability of the cheesemaking process.
J. Chamberland*, S. Benoit2, M. Harel-Oger1, Y. Pouliot1, R. Jeantet3, and G. Garric1, 1INRA, UMR 1253 Science and Technology of Milk and Eggs, Rennes, France, 2STELA Dairy Research Center, Institute of Nutrition and Functional Foods (INAF), Department of Food Science, Université Laval, Quebec City, QC, Canada, 3Agrocampus Ouest, UMR 1253 Science and Technology of Milk and Eggs, Rennes, France.

3:00 PM
Emotions evoked by cheese odors.
C. Licon*, C. Manesse1, A. Fournel1, and M. Bensafi1, 1Lyon Neuroscience Research Center, Lyon, France, 2Fresno State University, Fresno, CA.

3:15 PM
Application of partial calcium-depleted milk protein concentrate in protein-fortified stirred yogurt for improving the gel water-holding capacity and product processability.
J. A. Ortiz Salazar*, R. H. Fernando2, and H. Zheng1, 1Dairy Innovation Institute, Department of Animal Science, California Polytechnic State University, San Luis Obispo, CA, 2Department of Chemistry and Biochemistry, California Polytechnic State University, San Luis Obispo, CA.

3:30 PM
Ice cream break in Exhibit Hall

4:00 PM
Texture defects of fermented milk products caused by vibrations—Impact of amplitude and different process parameters.
A. Körzendörfer*, P. Temme2, E. Schlücker2, and J. Hinrichs2, 1University of Hohenheim, Stuttgart, BW, Germany, 2University of Erlangen–Nuremberg, Erlangen, BY, Germany.

4:15 PM
Dynamic structural breakdown behavior of a model Maasdam-style cheese under tensile deformation as studied using confocal scanning laser microscopy.
P. Lamichhane12, M. A. E. Aty1, A. L. Kelly2, and J. J. Sheehan*, 1Teagasc Food Research Centre Moorepark, Fermoy, Cork, Ireland, 2University College Cork, Cork, Ireland, 1Mondelez International Ltd., Reading, UK.

4:30 PM
Differentiating between the effects of chymosin-mediated proteolysis, coagulant type, ripening temperature and calcium solubilization on fracture behavior of Maasdam-style cheese.
P. Lamichhane12, P. Sharma1, D. Kennedy2, A. L. Kelly2, and J. J. Sheehan*, 1Teagasc Food Research Centre Moorepark, Fermoy, Cork, Ireland, 2University College Cork, Cork, Ireland.

4:45 PM
Prototype protein characterization unit (PCU) to study the dissociation of casein micelles by sodium and potassium citrates and tartrates.
E. Mahdinia*, C. Hettiarachchi, and F. Harte, Pennsylvania State University, University Park, PA.
Ice cream from milk from cows supplemented with unsaturated fatty acid sources: Physicochemical and sensory characteristics.
E. Vargas-Bello-Pérez1,2, N. Cancino-Padilla1, C. Geldsetzer-Mendoza1, M. S. Morales1, J. Romero1, P. C. Garnsworthy1, and R. A. Ibáñez2. 1Departamento de Ciencias Animales, Facultad de Agronomía e Ingeniería Forestal, Pontificia Universidad Católica de Chile, Santiago, Chile, 2Department of Veterinary and Animal Sciences, Faculty of Health and Medical Sciences, University of Copenhagen, Frederiksberg C, Denmark, 3Departamento de Fomento de la Producción Animal, Facultad de Ciencias Veterinarias y Pecuarias, Universidad de Chile, Santiago, Chile, 4Laboratorio de Biotecnología, Instituto de Nutrición y Tecnología de los Alimentos, Universidad de Chile, Santiago, Chile, 5Sutton Bonington Campus, The University of Nottingham, Loughborough, UK.

Dairy Foods: Products
Chair: Sanjeev Anand, South Dakota State University
237/238

Catalytic synthesis of lactose derivatives from whey permeate.
M. Enteshari* and S. I. Martínez-Monteagudo, South Dakota State University, Brookings, SD.

A two-step process for the production of sweetening syrup from lactose.
S. Cheng, L. Metzger, and S. Martínez-Monteagudo*, South Dakota State University, Brookings, SD.

Valorization of sweet and acid whey: Enzymatic generation of prebiotic lactulose for the scale up towards robust processing.

Separation of phospholipids from whey protein phospholipid concentrate.
A. V. Swaminathan1, D. Otter2, M. Molitor2, K. J. Burrington3, and J. A. Lucey1,2, 1University of Wisconsin-Madison, Madison, WI, 2Wisconsin Center for Dairy Research, Madison, WI.

Extraction of dairy phospholipids using switchable solvents: A feasibility study.
K. Rathnakumar*, S. Cheng, and S. I. M. Monteagudo, South Dakota State University, Brookings, SD.

Characterization of high-pressure-jet-dried skim milk powders.
C. A. Hettiarachchi, G. L. Voronin*, and F. Harte, Pennsylvania State University, University Park, PA.

The effect of milk predicted transmitting ability and concentrate supplementation level on selected milk quality and processability parameters in late-lactation spring-calving grazing dairy cows.
M. J. Doran*, F. J. Mulligan1, M. B. Lynch1, A. G. Fahey1, E. L. Brady1, C. Grace1, M. O’Sullivan1, M. O’Rourke1, G. Rajauria1, and K. M. Pierce1, 1School of Agriculture and Food Science, University College Dublin Lyons Farm, Naas, Co. Kildare, Ireland, 2School of Veterinary Medicine, University College Dublin, Veterinary Science Centre, Belfield, Dublin, Ireland, 3Institute of Food and Health, School of Agriculture and Food Science, University College Dublin, Belfield, Dublin, Ireland.

High-pressure-jet alterations in ice cream mix physiochemical properties and its potential to replace non-dairy emulsifiers and stabilizers.
G. L. Voronin*, R. Roberts, and F. Harte, Pennsylvania State University, University Park, PA.

Coating spent coffee grounds with whey protein: A valorization study.
J. Osorio-Arias*, O. Vega-Castro2,3, and S. Martínez-Monteagudo1, 1Universidad de Antioquia, Medellín, Antioquia, Colombia, 2Corporación Universitaria Americana, Medellín, Antioquia, Colombia, 3South Dakota State University, Brookings, SD.

Comparison of micellar casein isolate and nonfat dry milk for the production of acid milk drinks.
D. Wilbanks*, M. Lee1, J. Lucey1, and Y. Rahimi3, 1University of Wisconsin-Madison, Madison, WI, 2Daegu University, Gyeongsan, North Gyeongsan, South Korea, 3Arla Foods, Viby J, Denmark.
Forages and Pastures Symposium: Silage Conservation Practices and Management
Effects on Forage Quality, Farm Profitability, and Feed Efficiency
Chair: Andre F. Brito, University of New Hampshire
Sponsor: Lallemand Animal Nutrition
206

2:00 PM 198 Silage additives: Effects on silage fermentation and animal production.
L. Kung Jr.*, University of Delaware, Newark, DE.

2:45 PM 199 Quantification of the emission reduction benefits of mitigation strategies for dairy silage.
F. M. Mitloehner*, Department of Animal Science, University of California, Davis, Davis, CA.

3:30 PM Ice cream break in Exhibit Hall

4:00 PM 200 Utilization of silages in the diets of high-producing dairy cows: Effects on milk production and feed efficiency.
K. F. Kalscheur*, USDA-ARS, US Dairy Forage Research Center, Madison, WI.

4:45 PM 201 Baled silage management: Effects on silage fermentation, forage quality, and animal production.
W. Coblentz*, US Dairy Forage Research Center, Marshfield, WI.

Lactation Biology 1
Chairs: T. Casey, Purdue University, and J. Laporta, University of Florida
263

2:00 PM 202 Attenuation of melatonin and serotonin circadian rhythms during the dry period is related to increased milk yield.
A. Suarez-Trujillo*, H. Sun1, J. Franco1, K. Huff*, T. Steckler1, J. Boerman1, M. Grott1, J. Townsend1, J. Johnson1, K. Plaut1, and T. Casey1, 1Department of Animal Sciences, Purdue University, West Lafayette, IN, 2Department of Statistics, Purdue University, West Lafayette, IN, 3Metabolite Profiling Facility, Bindley Bioscience Center, Purdue University, West Lafayette, IN, 4Animal Sciences Research and Education Center, Purdue University, West Lafayette, IN, 5Department of Veterinary Clinical Sciences, Purdue University, West Lafayette, IN, 6USDA-ARS Livestock Behavior Research Unit, West Lafayette, IN.

2:15 PM Circadian clock gene BMAL1 regulates mammary epithelial cell growth and milk protein expression.
K. Huff*, S. Cummings2, M. Brown2, A. Suarez-Trujillo2, K. Plaut2, and T. Casey2, 1Department of Biochemistry, Purdue University, West Lafayette, IN, 2Department of Animal Sciences, Purdue University, West Lafayette, IN.

2:30 PM Effect of a single high dose of dexamethasone on milk production, composition, and mammary gland gene expression.
A. Sadovnikova1, A. Mathews1, S. Garcia1, J. Trott1, and R. Hovey*, 1University of California, Davis, Davis, CA, 2University of Sydney, Sydney, NSW, Australia.

2:45 PM The mechanistic target of rapamycin complex 1 plays a central role in dietary amino acid regulation of murine lactation.
V. Pszczolkowsky1, A. Lin1, E. Meyer1, and S. Arriola Apelo*, 1Endocrinology and Reproductive Physiology Graduate Training Program, University of Wisconsin-Madison, Madison, WI, 2Department of Dairy Science, University of Wisconsin-Madison, Madison, WI.

3:00 PM Heat stress reduces total mammary blood flow and trans-mammary disappearance of metabolites in lactating dairy cows.
R. O. Rodrigues*, J. R. Scaliante Jr, E. M. Shangraw, L. K. Hirtz2, P. R. F. Adkins1, and T. B. McFadden1, 1University of Missouri, Columbia, MO, 2Sao Paulo State University, Araçatuba, SP, Brazil.

3:15 PM The mechanistic target of rapamycin complex 1 controls lipid and lactose synthesis in bovine mammary epithelial cells.
M.-A. Guesthier*, J. Huang, and S. A. Burgos, Department of Animal Science, McGill University, St-Anne-de-Beauregard, QC, Canada.

3:30 PM Ice cream break in Exhibit Hall
2:00 PM 213 Choline supply during negative nutrient balance alters molecular components and intermediate metabolites in the hepatic methionine cycle and transsulfuration pathway. D. N. Coleman*1, A. Alharthi2, V. Lopreiato2, E. Trevisi3, M. Miura4, Y. X. Pan1, and J. J. Loor1, 1University of Illinois, Urbana, IL, 2Magna Græcia University, Catanzaro, Italy, 3Università Cattolica del Sacro Cuore, Piacenza, Italy, 4Ajinomoto Co. Inc., Tokyo, Japan.

2:15 PM 214 Hepatic 1-carbon metabolism, methionine cycle, and transsulfuration pathway intermediates in neonatal Holstein calves are altered by maternal postruminal supply of methionine during late pregnancy. A. S. Alharthi*1, M. Abdelmeged2, R. Yambo2, A. Elolimy3, Y.-X. Pan1, C. Parys4, and J. J. Loor1, 1Department of Animal Sciences and Division of Nutritional Sciences, University of Illinois, Urbana, IL, 2Department of Animal Medicine, Faculty of Veterinary Medicine, Kafrelsheikh University, Kafr El-Shaik, Egypt, 3Food Science and Human Nutrition, Division of Nutritional Sciences, University of Illinois, Urbana, IL, 4Evonik Nutrition & Care GmbH, Hanau, Germany.

2:30 PM 215 Influence of prepartum dietary cation-anion difference and the decline of calcium at the onset of lactation. M. K. Connelly*1, R. M. R. Harris5, F. S. Andrade6, J. P. Nascimento Andrade6, J. Kuehnl1, A. Beard1, E. Block4, I. J. Lean2, and L. L. Hernandez1, 1Department of Dairy Science, University of Wisconsin-Madison, Madison, WI, 2Scibus, Camden, NSW, Australia, 3School of Life and Environmental Sciences, Faculty of Veterinary Science, University of Sydney, Camden, NSW, Australia, 4Arm & Hammer Animal Nutrition, Princeton, NJ, 5National Centre for Epidemiology and Population Health, Research School of Population Health, Australian National University, Canberra, Australia, 6Federal Rural University of Rio de Janeiro, Seropédica, RJ, Brazil.

2:45 PM 216 Maternal body condition score during late-pregnancy is associated with in utero development and neonatal growth of Holstein calves. A. S. Alharthi*1, E. Abdel-Hamied2, H. Dai3, Y. Liang4, V. Lopreiato5, A. Elolimy6, E. Trevisi7, and J. J. Loor1, 1Department of Animal Sciences and Division of Nutritional Sciences, University of Illinois, Urbana, IL, 2Animal medicine department, Beni-Suef University, Beni-Suef, Egypt, 3College of Veterinary Medicine, Nanjing Agricultural University, Nanjing, China, 4Interdepartmental Services Centre of Veterinary for Human and Animal Health, Department of Health Science, Magna Graecia University, Catanzaro, Italy, 5Department of Animal Sciences, Food and Nutrition Faculty of Agriculture, Food and Environmental Science, Università Cattolica del Sacro Cuore, Piacenza, Italy.
Association of prepartum urine pH and postpartum disorders in Holstein cows fed anionic diets.
P. Melendez*, J. Bartolome, and B. Soto, College of Veterinary Medicine, University of Georgia, Tifton, GA.

SexedULTRA sperm sorting: A method to improve the quality of ejaculates with below standard characteristics.
C. González-Marín, C. E. Góngora, K. M. Evans, J. F. Moreno, and R. Vishwanath, STGenetics, Navasota, TX.

Production, Management, and the Environment 2
Chair: Jennifer Heguy, University of California Cooperative Extension

Validation of the RumiWatchSystem to monitor feeding and locomotive behaviors in a grazing dairy herd.
G. M. Pereira*, B. J. Heins, and K. T. Sharpe, University of Minnesota, West Central Research and Outreach Center, Morris, MN.

Validation of an ear tag for grazing behavior in Minnesota and Ireland.
G. M. Pereira*, B. J. Heins, B. O’Brien, A. McDonagh, L. Lidauer, and F. Kickinger, University of Minnesota, West Central Research and Outreach Center, Morris, MN, Teagasc, Animal & Grassland Research and Innovation Centre, Moorepark, Fermoy, Co. Cork, Ireland, Smartbow GmbH, Wiribien, Austria.

Association of management practices, housing, milking speed and robot visits with milk production per cow on free-flow automatic milking system farms.
M. Peiter*, E. Irwin, B. Groen, J. A. Salfer, and M. I. Endres, Department of Animal Science, University of Minnesota, St. Paul, MN, Department of Animal Science, Iowa State University, Ames, IA, Form-A-Feed, Stewart, MN, University of Minnesota Extension, St. Cloud, MN.

Utilizing data collected via automated sensors as proxies for feed intake in dairy cattle and the impact of health status.
C. Siberski*, M. S. Mayes, P. Gorden, A. Copeland, B. M. Goetz, L. H. Baumgard, and J. E. Koltes, Department of Animal Science, Iowa State University, Ames, IA, Vet Diagnostic & Production Animal Medicine, Iowa State University, Ames, IA.

Growth, health, and economics of dairy calves fed organic milk replacer versus whole milk in an automated feeding system.
K. Sharpe* and B. Heins, University of Minnesota, West Central Research and Outreach Center, Morris, MN.

Milk and reproductive performance in Holstein cows experiencing hyperketonemia in early lactation.
Y. Schuermann, D. Warner, R. Cue, F. Lefebvre, and D. Santschi, Valacta, Ste-Anne-de-Bellevue, QC, Canada, McGill University, Ste-Anne De Bellevue, QC, Canada, University of Guelph, Guelph, ON, Canada.

Combining milk and body weight perturbations as proxies for robustness in primiparous dairy cows.

The association between MUN and protein efficiency across protein content and lactation stage.
E. Liu* and M. J. VandeHaar, Michigan State University, East Lansing, MI.
Reproduction Symposium:
The Etiology of Pregnancy Failure in Cattle—The When and Why
Chair: Stephen Butler, Teagasc
Sponsor: Merck Animal Health
207/208

2:00 PM 228 Pivotal periods of pregnancy loss in cattle.
M. C. Wiltbank*,1,2, M. A. Mezera1,2, A. Garcia-Guerra3, G. M. Baez4, J. N. Drum3,5, and R. Sartori1,5, 1Department of Dairy Science, University of Wisconsin-Madison, Madison, WI, 2Endocrinology & Reproductive Physiology Program, University of Wisconsin-Madison, Madison, WI, 3Department of Animal Sciences, The Ohio State University, Columbus, OH, 4Department of Agricultural and Animal Sciences, Universidad Francisco de Paula Santander, Cucuta, Colombia, 5Department of Animal Science, University of Sao Paulo, ESALQ, Piracicaba, SP, Brazil.

2:45 PM 229 Progesterone effects on early embryo development.
P. Lonergan*, University College Dublin, Dublin, Ireland.

3:30 PM Ice cream break in Exhibit Hall

3:45 PM 230 Maternal control of embryo competence for pregnancy success—The role of embryokines.
P. Hansen*, University of Florida, Gainesville, FL.

4:15 PM 231 Uterine influences on pregnancy success.
T. E. Spencer*,1, J. G. N. Moraes1, S. Ortega1, T. W. Geary2, H. L. Neibergs3, and P. J. Hansen4, 1Division of Animal Sciences, University of Missouri, Columbia, MO, 2Fort Keogh Livestock and Range Research Laboratory, USDA Agricultural Research Service, Miles City, MT, 3Department of Animal Sciences and Center for Reproductive Biology, Washington State University, Pullman, WA, 4Department of Animal Sciences, University of Florida, Gainesville, FL.

5:00 PM 232 Early diagnosis of pregnancy loss.
A. Ealy*, Virginia Polytechnic Institute and State University, Blacksburg, VA.

Ruminant Nutrition 2: Protein and Amino Acid 2
Chair: Mark Hanigan, Virginia Tech
Junior Ballroom D

2:00 PM 233 Effect of dietary forage source and rumen undegradable protein on growth and nutrient use in dairy heifers.
E. E. Corea-Guillén*,1, M. V. Mendoza1, F. López1, A. Martínez1, M. Alvarado1, C. Moreno1, G. A. Broderick2, J. Castro-Montoya1, and U. Dickhöfer1, 1Facultad de Ciencias Agronómicas, Universidad de El Salvador, San Salvador, El Salvador, El Salvador, 2Broderick Nutrition and Research LLC, Madison, WI, 3Institute of Agricultural Sciences in the Tropics, University of Hohenheim, Stuttgart, Germany.

2:15 PM 234 Quantifying the relation between diet branched-chain AA and production responses: A meta-analysis.
Y. Roman-García*,1, L. E. Moraes1, M. Socha1, and J. L. Firkins1, 1Department of Animal Science, The Ohio State University, Columbus, OH, 2Zinpro Corporation, Eden Prairie, MN.

2:30 PM 235 Effects of feeding floury and brown midrib whole-plant corn silage varieties from corn treated with foliar fungicide to lactating Holstein cows on nitrogen utilization.
L. J. Wente*,1, M. S. Akins2, and F. C. Cardoso1, 1Department of Animal Sciences, University of Illinois, Urbana, IL, 2Department of Dairy Science, University of Wisconsin-Madison, Marshfield, WI.

2:45 PM 236 Nitrogen partitioning and microbial protein synthesis in lactating dairy cows with different residual feed intake.

3:00 PM 237 Effects of rumen-protected methionine fed during a heat stress challenge on physiological and production parameters of lactating Holstein cows.
R. T. Pate*,1, D. Luchini2, and F. C. Cardoso1, 1Department of Animal Sciences, University of Illinois, Urbana, IL, 2Adisseo, Alpharetta, GA.
Effects of dietary nitrogen levels on the expression of urea transporter mRNA in liver and rumen epithelium of 5-month-old Holstein calves.
X. X. Gong*, J. Huang, K. Zhan, M. Lin, and G. Q. Zhao, Institute of Animal Culture Collection and Application, College of Animal Science and Technology, Yangzhou University, Yangzhou, JiangSu, China.

Effects of dietary starch level and rumen-protected AA on milk production and plasma AA concentration in dairy cows.

Effects of dietary inclusion of hydroponic barley grass on the performance of dairy cows when fed two protein levels.

Sources of variation in milk yield, milk fat, and protein responses to exogenous feed enzymes.
H. Rossow, H. Golder, and I. Lean, Scibus, Camden, NSW, Australia, Veterinary Medical Teaching and Research Center, Tulare, CA.

L-Glutamine improves weight gain and starter intake in Holstein heifer calves weaned early from a high volume of milk.
H. K. J. P. Wickramasinghe, C. A. Kaya, and J. A. D. R. N. Appuhamy, Iowa State University, Ames, IA, Dicle University, Diyarbakir, Turkey.

Effects of dietary addition of N-carbamoylglutamate on milk compositions in mid-lactating dairy cows.

Effect of N-acetyl-l-methionine supplementation on lactation performance and plasma variables in mid-lactating dairy cows.

Ruminant Nutrition Platform Session:
Probiotics, Prebiotics, and Postbiotics: Gut Health and Beyond
Chair: Stephanie Ward, North Carolina State University
Junior Ballroom A

Pre- and probiotics, your cows, and their microbial balance.
R. S. Hampton, J. M. Lourenco, and T. R. Callaway, Department of Animal and Dairy Science, University of Georgia, Athens, GA.

The strategic use of microbial-based solutions in calf production.
C. Villot, D. L. Renaud, E. Chevaux, F. Chaucheys-Durant, and M. A. Steele, Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada, Department of Population Medicine, University of Guelph, Guelph, ON, Canada, Lallemand SAS, Blagnac, France, Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada.

Effects of in-feed enzymes on milk production and constituents, reproduction, and health in dairy cows.
H. Golder, H. Rossow, and I. Lean, Scibus, Camden, NSW, Australia, Veterinary Medical Teaching and Research Center, Tulare, CA.
Effects of calcium nitrate on dry matter intake, milk yield, milk composition, and ruminal parameters in dairy cows.

K. V. de Almeida*1,2, J. A. C. Osorio1, F. E. de Marchi1, T. Durman1, J. F. Cabral1, K. L. Guimarães1, Universidade Estadual de Maringá, Maringá, PR, Brazil, 1University of Florida, Gainesville, FL, 2Universidade de São Paulo, Pirassununga, SP, Brazil.

Inflammatory responses in the mammary gland after intrauterine infusion of lipopolysaccharide in goats.

F. Purba*, T. Nii, Y. Yoshimura, and N. Isobe, Graduate School of Biosphere Science, Hiroshima University, Hiroshima, Japan.

Effects of calcium nitrate on dry matter intake, milk yield, milk composition, and ruminal parameters in dairy goats.

K. V. de Almeida*1,2, J. A. C. Osorio1, F. E. de Marchi1, T. Durman1, J. F. Cabral1, K. L. Guimarães1, M. R. Sippert1, J. C. S. Lourenço1, C. R. Alcalde1, R. C. de Araújo3, and G. T. de Santos1, 1Departamento de Zootecnia, Universidade de São Paulo, Pirassununga, SP, Brazil, 2Departamento de Zootecnia, Universidade Estadual do Oeste do Paraná, Marechal Cândido Rondon, PR, Brazil, 3Departamento de Zootecnia, Universidade Estadual de Maringá, Maringá, PR, Brazil.

Changes in key blood metabolites and insulin in late-pregnant prolific Afec-Assaf ewes drenched with several doses and mixtures of propylene glycol and glycerol.

U. Moallem*1,2, T. Alon1,2, A. Rozov1, L. Lifshitz1, H. Dvir1, and E. Gootwine1, 1Department of Ruminant Science, ARO, Volcani Center, Rishon LeZion, Israel, 2Department of Animal Science, University of Jerusalem, Rehovot, Israel.

Characterization of plasmatic oxidative and metabolic profile in Italian goat breeds.

C. L. Manuelian*1, A. Maggiolino1, G. Neglia1, M. De Marchi1, and P. De Paoli1, 1Department of Agronomy, Food, Natural resources, Animals and Environment (DAFNAE), University of Padova, Legnaro, Italy, 2Department of Veterinary Medicine, University of Bari Aldo Moro, Valenzano, Italy, 3Department of Veterinary Medicine and Animal Production (DMVPA), University of Naples Federico II, Napoli, Italy.

Effects of sodium bicarbonate and chromium propionate supplementation on growth performance, blood and rumen indices of Beetal bucks under heat stress conditions.

M. A. Rashid*1, A. Jamal1, M. I. Malik1, A. B. Nisar1, Z. A. Qamar1, H. Rehman2, and M. S. Yousaf2, 1Department of Animal Nutrition, University of Veterinary and Animal Sciences, Lahore, Pakistan, 2Department of Physiology, University of Veterinary and Animal Sciences, Lahore, Pakistan.
# Teaching/Undergraduate and Graduate Education Symposium: Strategies for Assessing Student Learning

**Chair:** Cathleen Williams, Louisiana State University

## 2:00 PM 258

**Do grades reflect student learning?**

K. Machtmes*, Patton College of Education, Ohio University, Athens, OH.

## 2:30 PM 259

**Are “learning styles” real and do they impact learning assessment?**

T. Kitchel*, The Ohio State University, Columbus, OH.

## 3:00 PM 260

**Why do we assess?**

D. Guberman*, Purdue University, West Lafayette, IN.

## 3:30 PM

Ice cream break in Exhibit Hall

## 4:00 PM 261

**Methods of assessing learning utilized by university faculty in animal and dairy science programs.**

A. J. Carpenter*, E. L. Karcher1, and C. C. Williams2, 1Department of Animal Biosciences, University of Guelph, Ridgetown, ON, Canada, 2Department of Animal Sciences, Purdue University, West Lafayette, IN, 3School of Animal Sciences, Louisiana State University, Baton Rouge, LA.
Tuesday, June 25

POSTER PRESENTATIONS

Animal Behavior and Well-Being 1

T1 Evaluation of a commercial accelerometer for remote monitoring of lying and standing events in dairy calves in Puerto Rico.
I. Colón-Rodríguez*, G. Soriano-Varela, M. Rivera-Barreto, C. Golderos-Trujillo, K. Domenech-Pérez, and H. Sánchez-Rodríguez, University of Puerto Rico, Mayaguez Campus, Mayaguez, PR.

T2 Deworming influences feeding and lying behavior in Holstein cows.
M. Q. Shahid*, Q. Ali, I. Mohsin, and H. Mustafa, Department of Livestock Production, Ravi Campus, University of Veterinary and Animal Sciences, Lahore, Pakistan.

T3 Effect of heifers rearing in early age on their behavior during first lactation.

T4 Standing behavior during transition is associated with sole lesions at peak lactation.

T5 Detecting welfare status in a milk sample: Effects of tie-rail placement on milk composition by Fourier transform infrared spectroscopy.

T6 Youth preferences for dairy calf housing options.
R. Perttu*, B. Ventura, and M. Endres, Department of Animal Science, University of Minnesota, St. Paul, MN.

T7 Effects of disbudding on feeding behavior, lying time, and use of a shelter in group-housed calves.
K. Gingerich*, L. M. Coll-Roman, and E. K. Miller-Cushon, University of Florida, Gainesville, FL.

T8 Effects of showers in the parlor on reducing heat stress.
R. Salter*, K. Reuscher, M. Mondaca, and J. Van Os, University of Wisconsin-Madison, Madison, WI.

Animal Health 2

T9 Effect of pulsed alternating wavelengths on melatonin, cortisol, and serotonin concentrations in Holstein heifers.
P. Pinedo**, D. Manriquez*, G. Solano*, S. Paudyal**, A. Velasquez**, and J. Velez**, Department of Animal Sciences, Colorado State University, Fort Collins, CO, Texas A&M University, College Station, TX, Aurora Organic Dairy, Platteville, CO.

T10 Effects of a nutritional and handling stress challenge in Parmigiano Reggiano lactating dairy cows.

T11 Assessment of the DQ-ovalbumin method, and comparison of neutrophil function assays in dairy cows.
O. Bogado Pascottini**, M. Baquero*, R. Couto Serrenho*, S. Van Schyndel**, D. Bienzle**, and S. LeBlanc**, Department of Population Medicine, University of Guelph, Guelph, ON, Canada, Department of Pathobiology, University of Guelph, Guelph, ON, Canada.

T12 Biomarkers associated with granulocyte oxidative burst in uterus of cows in early lactation.

T13 OmniGen-AF alters metabolic profile and blood cell populations after 28 days of supplementation in LPS-challenged heifers.
Effects of a new preventative strategy with acetylsalicylic acid on metabolic status and inflammation in dairy cows after calving.
A. A. Barragan*, E. Hovingh1, S. Bas2, A. Ludwikowski1, S. Takitch1, J. Zug4, and S. Hann5, 1Department of Veterinary and Biomedical Sciences, Penn State University, University Park, PA, 2Phytobiotics Futterzusatzstoffe GmbH Bvd, Córdoba, Argentina, 3Department of Animal Science, Penn State University, University Park, PA, 4Zugstead Farm, Mifflintown, PA.

Growth and health of recently transported dairy heifers fed a novel antibody to interleukin-10.
A. Grisham1, D. Schaefer2, C. Nolden2, and M. Akins*, 1Department of Dairy Science, University of Wisconsin-Madison, Madison, WI, 2Department of Animal Science, University of Wisconsin-Madison, Madison, WI.

Early life fecal microbiota transplantation affects systemic and polymorphonuclear leukocytes mRNA biomarkers of inflammation and liver function in neonatal dairy calves.
F. Rosa1, E. Trevisi1, and J. S. Osorio1, 1Dairy and Food Science Department, South Dakota State University, Brookings, SD, 2Department of Animal Science, Food and Nutrition, Università Cattolica del Sacro Cuore, Piacenza, Italy.

Differences in hematological values by sex and age of Holstein and Jersey calves.

Effects of vaccinating against brucellosis and clostridia simultaneously or not on the immune response of dairy calves.
H. C. Diniz Neto1, C. F. A. Lage1, M. C. Lombardi1, W. A. Carvalho2, F. S. Machado1, L. G. R. Pereira1, T. R. Tomich2, M. M. Campos2, C. P. Ramos1, R. A. Assisi1, R. O. S. Silva1, F. C. F. Lobato1, E. M. S. Dorneles1, A. P. Lage1, S. G. Coelho1, 1Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil, 2Empresa Brasileira de Pesquisa Agropecuária (EMBRAPA), Juiz de Fora, MG, Brazil, 3Universidade Federal de Lavras, Lavras, MG, Brazil, 4Universidade Federal Rural de Lavras, Lavras, MG, Brazil.

Supplementing dairy calves with colostral immunoglobulins for 14 days reduces death loss and antibiotic usage.

Mitigating environmental mastitis microbes with the novel use of paper mill byproducts.
D. C. Reyes*, S. A. Rivera1, Z. X. Ma2, H. M. Dubuc1, A. Y. Leon-Tinoco1, A. B. Lichtenwalner1, A. Bryant1, D. P. Marcinkowski1, K. C. Jeong2, and J. J. Romero1, 1Animal and Veterinary Sciences, School of Food and Agriculture, University of Maine, Orono, ME, 2Department of Animal Sciences, University of Florida, Gainesville, FL.

Lactoperoxidase potential in the diagnosis of subclinical mastitis in cows via image processing.
E. P. E. Silva1, E. P. Moraes1, Y. M. O. Silva1, E. G. S. O. Silva1, H. A. P. Lopes1, J. S. Bezerra1, J. G. B. Galvão Jr.2, K. M. S. Rocha1, and A. H. N. Rangel*1, 1Universidade Federal do Rio Grande do Norte, Macaíba, RN, Brazil, 2Instituto Federal de Educação, Ciência e Tecnologia do Rio Grande do Norte, Ipanguacu, RN, Brazil, 3Universidade Federal do Rio Grande do Norte, Natal, RN, Brazil, 4Universidade Federal Rural de Pernambuco, Recife, PE, Brazil.

Prevalence, antimicrobial susceptibility, and virulence genes of Klebsiella spp. from bovine mastitis in China.
M. Gu1, H. Liu1, L. Meng1, N. Zheng1, and J. Wang1, 1State Key Laboratory of Animal Nutrition, Institute of Animal Sciences, Chinese Academy of Agricultural Sciences, Beijing, China, 2Key Laboratory of Quality & Safety Control for Milk and Dairy Products of Ministry of Agriculture and Rural Affairs, Institute of Animal Sciences, Chinese Academy of Agricultural Sciences, Beijing, China.

Biofilm production by Streptococcus agalactiae isolated from milk of cows with subclinical mastitis.

Dairy Foods: Microbiology 2

Formulation of a selective medium for the isolation and enumeration of Lactobacillus bulgaricus.
A. Oyeniran*, R. Gyawali1, T. Zimmerman1, A. Krastanov1, and S. A. Ibrahim1, 1North Carolina Agricultural and Technical State University, Greensboro, NC, 2University of Food Technologies, Plovdiv, Bulgaria.

Evaluation of inhibition of Listeria monocytogenes by lactic acid bacteria in fresh cheese.

Identification, subtyping, and tracking of dairy spoilage-associated Pseudomonas by sequencing the iles gene.
S. J. Reichler*, S. I. Murphy, N. H. Martin, and M. Wiedmann, Cornell University, Ithaca, NY.
Effect of temperature variation on raw whole milk density and its impact on milk payment system for Irish dairy industry.

P. Parmar*, J. T. Tobin1, J. Grant3, J. A. O'Mahony2, and L. Shalloo1, 1University College Cork, Cork, Ireland.

Impact of ultrasound processing on some milk-borne microorganisms and the components of camel milk.

N. Dhahir* and A. AbuGhazaleh, Southern Illinois University, Carbondale, IL.

Effect of thermosonication in a batch system on the survival of thermophilic spoilage bacteria in milk.

V. Deshpande* and M. Walsh, Utah State University, Logan, UT.

Competitive exclusion study demonstrates Bacillus subtilis as a predominant constitutive microorganism of reverse osmosis membrane biofilms.

P. Verma*1, N. Singh1,2, and S. Anand1,2, 1Midwest Dairy Foods Research Center, Brookings, SD, 2Dairy and Food Science Department, South Dakota State University, Brookings, SD.

Recovery potential of heat-injured cells of Listeria under ice cream temperature abuse conditions versus simulated gastrointestinal fluids.

N. Singh*1,2, S. Anand1,2, B. Kraus1, and S. Sutariya1, 1Midwest Dairy Foods Research Center, Brookings, SD, 2Department of Dairy and Food Science, South Dakota State University, Brookings, SD, 3Wells Enterprises Inc., Le Mars, IA.

Comparison of nucleic acid dyes for flow cytometric enumeration of bacteria in cultured milk.

R. Poudel*, D. Larson, M. Lefevre, and D. McMahon, Department of Nutrition, Dietetics and Food Sciences, Utah State University, Logan, UT.

Determination of biofilm material released from a laboratory-scale HTST heat exchanger during long processing times.

B. Tattersall*1; D. McMahon1, A. Vollmer1, and C. Oberg2, 1Utah State University, Logan, UT, 2Weber State University, Ogden, UT.

Predicting catabolic pathways in Lactobacillus wasatchensis using metabolic modeling.

S. Young1, M. Domek1, M. Culumber1, D. McMahon1, and C. Oberg1, 1Utah State University, Logan, UT, 2Weber State University, Ogden, UT.

Growth and gas formation by Lactobacillus wasatchensis WDC04 when ribose:galactose ratios were varied.

I. Green*, D. McMahon1, and C. Oberg2, 1Utah State University, Logan, UT, 2Weber State University, Ogden, UT.

Influence of salt concentration on diacetyl production by Lactococcus and Leuconostoc in broth and cheese.

M. M. Motawee1,2,3, D. Gardner1, M. Domek2, C. J. Oberg1, and D. J. McMahon*, 1Western Dairy Center, Utah State University, Logan, UT, 2Department of Microbiology, Weber State University, Ogden, UT, 3Department of Nutritional Evaluation and Food Sciences, National Organization for Drug Control and Research, Giza, Egypt.

Dairy Foods: Milk Quality

Relationships between Pb, As, Cr, and Cd in soil and water in agricultural and industrial areas with heavy metals contents from individual cow milks.

X. W. Zhou1, H. Soyeurt2, N. Zheng1, C. Y. Su1, and J. Q. Wang1, 1Key Laboratory of Quality & Safety Control for Milk and Dairy Products of Ministry of Agriculture and Rural Affairs, Institute of Animal Sciences, Chinese Academy of Agricultural Sciences, Beijing, China, 2TERRA Research and Teaching Centre, Gembloux Agro-Bio Tech, University of Liège, Gembloux, Belgium.

A mycotoxin deactivator improves milk coagulation properties in dairy cows challenged with Fusarium mycotoxins deoxynivalenol and fumonisins in TMR.

A. Gallo1, P. Bani1, T. Bertuzzi1, B. Doupovec2, J. Faas1,2, D. Schatzmayr1, and E. Trevisi1, 1Department of Animal Sciences, Food and Nutrition (DIANA), Faculty of Agriculture, Food and Environmental Science, Università Cattolica del Sacro Cuore, Piacenza, Italy, 2BIOMIN Research Center, Tulln, Austria.

Effect of temperature variation on raw whole milk density and its impact on milk payment system for Irish dairy industry.

P. Parmar*, J. T. Tobin1, J. Grant1, J. A. O'Mahony2, and L. Shalloo1, 1Teagasc Food Research Centre, Moorepark, Fermoy, Co. Cork, Ireland, 1University College Cork, Cork, Ireland, 2Teagasc Food Research Centre, Ashtown, Dublin, Ireland.
Evaluation of influences of mycotoxin-contaminated diets on milk profiles and metabolites in dairy cows.
Q. Wang1,2, Y. D. Zhang1,2, N. Zheng1,2, S. G. Zhao1,2, and J. Q. Wang*1,2, 1State Key Laboratory of Animal Nutrition, Institute of Animal Sciences, Chinese Academy of Agricultural Sciences, Beijing, China, 2Key Laboratory of Quality & Safety Control for Milk and Dairy Products of Ministry of Agriculture and Rural Affairs, Institute of Animal Sciences, Chinese Academy of Agricultural Sciences, Beijing, China.

Use of principal component analysis for revealing and understanding differences in milk fatty acid profile in different ruminant species.
F. Correddu1, A. Cesarani1, G. Gaspa2, A. Pauciullo2, G. Cosenza3, A. Nudda1, N. Macciotta*, 1Dipartimento di Agraria, University of Sassari, Sassari, Italy, 2Dipartimento di Scienze Agrarie Alimentari e Forestali, University of Torino, Grugliasco, Italy, 3Dipartimento di Agraria, University of Napoli, Portici, Italy.

The effect of casein genetic variants and diet composition on Holstein milk proteome.
M. I. Rivelli*, J. E. Wessels, A. L. Roca, and F. C. Cardoso, University of Illinois, Urbana, IL.

Effect of sonication combined with heat to improve the microbial quality of milk.
V. Deshpande* and M. Walsh, Utah State University, Logan, UT.

Jersey cattle milk-derived exosomes: Isolation and characterization.
S. J. Fan1, L. Ma1, Z. Zhou1, and D. P. Bu*, 1Institute of Animal Science, State Key Laboratory of Animal Nutrition, Chinese Academy of Agricultural Sciences, Beijing, China, 2CAAS-ICRAF Joint Lab on Agroforestry and Sustainable Animal Husbandry, World Agroforestry Centre, East and Central Asia, Beijing, China, 3Department of Animal Science, Michigan State University, East Lansing, MI.

Dairy Foods: Probiotics, Bioactives, and Health

Effect of milk fat globule membrane phospholipids in the adherence of probiotic lactic acid bacteria—Modelling interactions in the human gut.
J. Ortega-Anaya*, D. Rocha-Mendoza, I. Garcia-Cano, and R. Jimenez-Flores, The Ohio State University, Columbus, OH.

Effects of supplementation of citrulline and Lactobacillus helveticus ASCC 511 on the intestinal epithelial cell integrity.
S. W. Ho and N. Shah*, The University of Hong Kong, Hong Kong.

Incorporation of bigels into yogurt to improve survival of probiotics.
X. Zhuang*, S. Clark, and N. Acevedo, Iowa State University, Ames, IA.

Growth and short-chain fatty acid production by potential probiotic lactobacilli.
J. Renye*, A. Hotchkiss, and A. White, Dairy and Functional Foods Research Unit, ERRC, ARS, USDA, Wyndmoor, PA.

Preparation of γ-aminobutyric acid-enriched fermented compound beverage by Lactobacillus plantarum J26.
K. Zhuang1, H. Li1, Z. Zhang1, X. Feng1, S. Fu1, T. Li1, Y. Jiang1,2, H. Zheng*, and C. Man1, 1Key Laboratory of Dairy Science, Ministry of Education, College of Food Science, Northeast Agricultural University, Harbin, China, 2California Polytechnic State University, San Luis Obispo, CA, 3Yangda Kangyuan Dairy Company Limited, Yangzhou, China.

Lactoferrin induces the synthesis of vitamin B6 and protects human umbilical vein endothelial cell (HUVEC) functions by activating PDXP and the PI3K/AKT/ERK1/2 pathway.
Y. Wang1,2, H. Li1,2, H. Yang1,2, J. Wang*1,2, and N. Zheng1,2, 1State Key Laboratory of Animal Nutrition, Institute of Animal Science, Chinese Academy of Agricultural Sciences, Beijing, China, 2Key Laboratory of Quality & Safety Control for Milk and Dairy Products of Ministry of Agriculture and Rural Affairs, Institute of Animal Science, Chinese Academy of Agricultural Sciences, Beijing, China.

Investigation and comparison of the anti-tumor effects of lactoferrin, α-lactalbumin, and β-lactoglobulin in A549, HT29, HepG2, and MDA231-LM2 models.
H. Li1,2, P. Li1,2, H. Yang1,2, Y. Wang1,2, G. Huang1,2, J. Wang*1,2, and N. Zheng1,2, 1State Key Laboratory of Animal Nutrition, Institute of Animal Science, Chinese Academy of Agricultural Sciences, Beijing, China, 2Key Laboratory of Quality & Safety Control for Milk and Dairy Products of Ministry of Agriculture and Rural Affairs, Institute of Animal Science, Chinese Academy of Agricultural Sciences, Beijing, China.
Table S3: Modulation of intestinal epithelial permeability and mucin mRNA (MUC2, MUC5AC, and MUC5B) expression and protein secretion in Caco-2/HT29-MTX co-cultures exposed to aflatoxin M1, ochratoxin A, and zearalenone individually or collectively. C. Wu1,2, N. Zheng1,2, Y. Gao1,2, and J. Wang1,2, 1State Key Laboratory of Animal Nutrition, Institute of Animal Sciences, Chinese Academy of Agricultural Sciences, Beijing, China, 2Key Laboratory of Quality & Safety Control for Milk and Dairy Products of Ministry of Agriculture and Rural Affairs, Institute of Animal Sciences, Chinese Academy of Agricultural Sciences, Beijing, China.

Dairy Foods: Processing 2

Table S4: Changes in the structure and stability of whey protein in milk as a marker for homogenization and pasteurization processing.

Table S5: Application of biochip array technology for the fast (under 19 minutes) multi-contaminant screening of milk samples using the fully automated Evidence MultiSTAT analyser.

Table S6: Effect of temperature on IgM-milk fat globule-mediated agglutination.

Table S7: Effect of pilot-scale ultrasonication on the physical, coagulation, and microbial properties of raw milk.

Table S8: Contribution of pressure-driven membrane separation operations to dairy processing eco-efficiency.

Table S9: Application of zinc and calcium acetate to precipitate milk fat globule membrane components from a dairy by-product.

Table S10: Reclaiming water in dairy plants by reverse osmosis: Impact of type of fluid on overall process efficiency.

Table S11: High-protein yogurt from milk concentrates—Impact of final pH and the application of power ultrasound on texture properties.

Table S12: Microencapsulation of probiotic organisms within a conjugated whey protein hydrolysate matrix.

Table S13: Feasibility of soluble soybean polysaccharide for improving the drying ability and powder properties of Greek yogurt acid whey.

Extension Education 1

Table S44: Improving culling decision using lifetime cost-benefit analysis: An interactive dairy management tool to assess herd profitability.

Table S45: A standardized method for characterizing ventilation in freestall dairy facilities.
Assessing dairy employees' health status in South Dakota: Vision care.
L. Guifarro*1, P. da Rosa2, and M. Rovai1, 1Dairy and Food Science Department, South Dakota State University, Brookings, SD, 2College of Nursing, South Dakota State University, Brookings, SD.

Assessing dairy employees' health status in South Dakota: Eating habits and general health care.
R. Ward*1, D. R. Mertens2, and D. Ye1, 1Dairy and Food Science Department, South Dakota State University, Brookings, SD, 2College of Nursing, South Dakota State University, Brookings, SD.

Survey about the use of allopathic treatments and sources of information for organic livestock farms in France.
M. De Marchi1, H. Bugaut2, C. L. Manuelian*1, J. Renard2, F. Righi3, and S. Valleix4, 1Department of Agronomy, Food, Natural resources, Animals and Environment (DAFNAE), University of Padova, Legnaro, Italy, 2VetAgro Sup, ABioDoc department, Lempdes, France, 3Department of Veterinary Science, University of Parma, Parma, Italy.

Forages and Pastures 1

Comparisons of fiber digestibility for triticale forages at two different sample sizes using the Ankom Daisy Incubator II System.
W. Coblenz*1 and M. Akins2, 1US Dairy Forage Research Center, Marshfield, WI, 2University of Wisconsin, Madison, WI.

Milk performance of dairy cows as affected by the inclusion of corn silage or corn shredlage in a total mixed ration.
A. Bach*1,2, G. Elcoso3, I. Joulie4, and E. Chevaux5, 1ICREA (Institució Catalana de Recerca i Estudis Avançats), Barcelona, Spain, 2Department of Ruminant Production, IRTA (Institut de Recerca i Tecnologia Agroalimentàries), Caldes de Montbui, Spain, 3Blanca from the Pyrenees, Hostalets de Tost, Spain, 4Lallemand Animal Nutrition, Toulouse, France.

Effects of environment, genotype, maturity, and plant height on in vitro fiber digestibility of corn vegetative tissues.
G. Ferreira*, S. Thomas, and C. L. Teets, Department of Dairy Science, Virginia Tech, Blacksburg, VA.

Bacterial microbiota of rehydrated corn and sorghum grain silages.

Fungal microbiota of rehydrated corn and sorghum grain silages.

Effect of particle size on ruminal in situ dry matter and starch disappearance of sorghum kernels.

Effect of hybrid and planting density on yield and nutritive value of whole plant sorghum forage.
C. L. McCary*, C. Heinzen Jr., L. Brown1, E. M. Paula1, D. M. Taysom1, and L. F. Ferraretto1, 1University of Florida, Gainesville, FL, 2Advanta Seeds, Irving, TX, 3Dairyland Laboratories Inc., Arcadia, WI.

Aerobic stability of total mixed ration with added microbial growth inhibitors.
J. P. Santos1, V. C. Souza1, E. F. Barbosa1, R. B. Silva1, C. L. S. Avila1, R. A. N. Pereira1,2, D. N. Lobato4, and M. N. Pereira*1,2, 1Universidade Federal de Lavras, Lavras, MG, Brazil, 2Better Nature Research Center, Ijaci, MG, Brazil, 3Empresa de Pesquisa Agropecuária de Minas Gerais, Lavras, MG, Brazil, 4Altech do Brasil, Aracuara, PR, Brazil.

Efficacy of chemical additives on microbial growth and aerobic stability of total mixed ration.
J. P. Santos1, V. C. Souza1, E. F. Barbosa1, R. B. Silva1, R. A. N. Pereira1,2, C. L. S. Avila1, L. F. Greco4, and M. N. Pereira*1,2, 1Universidade Federal de Lavras, Lavras, MG, Brazil, 2Better Nature Research Center, Ijaci, MG, Brazil, 3Empresa de Pesquisa Agropecuária de Minas Gerais, Lavras, MG, Brazil, 4Kemin do Brasil, Indaiatuba, SP, Brazil.

Effect of multiple fermentation times on NDF digestion kinetics in alfalfa hay.
R. Ward*1, D. R. Mertens2, and D. Ye1, 1Cumberland Valley Analytical Service Inc., Waynesboro, PA, 2Mertens Innovation & Research LLC, Belleville, WI.

The difference of chemical composition and NDF digestibility of corn stalk treated with different fungus.
Y. J. Tian1,2, L. Ma1, D. P. Bu*1, and Z. L. Fu1, 1State Key Laboratory of Animal Nutrition. Institute of Animal Science, Chinese Academy of Agricultural Sciences, Beijing, China, 2Department of Animal Science, College of Animal Science and Veterinary Medicine, Tianjin Agricultural University, Tianjin, China.
European grass silage in vitro rumen undigestible NDF measures at 30-, 120- and 240-hour comparisons between two laboratories.
Z. Meyer1 and J. Goeser*1,2,1 Rock River Laboratory Inc., Watertown, WI,2University of Wisconsin-Madison, Madison, WI.

The effects of Lactobacillus diolivorans on fermentation characteristics and aerobic stability of corn silage.
K. Z. Moyer*, E. A. Hellings3, D. M. Costa1,3, E. M. Santos2,3, N. A. Moyer1,2, and L. Kung1,1Universidade Federal de Lavras, Lavras, MG, Brazil,2Universidade Federal da Paraiba, Joao Pessoa, Paraiba, Brazil,3University of Delaware, Newark, DE.

Comparison of growth and relationship with genomic body size for dairy heifers managed in confinement or on pasture.
C. Hribar*, J. C. Cavadinii, and M. S. Akins1,1University of Wisconsin-Madison, Madison, WI,2University of Wisconsin Marshfield Research Station, Marshfield, WI.

Use of nylon bag technique in fistulated cattle to assess forage nutrient profiles.
M. A. Snider*, S. E. Ziegler, H. M. Darby, and S. L. Greenwood, University of Vermont, Burlington, VT.

Effect of different levels of waste dates on the chemical composition and quality of alfalfa silage.
M. Ghorbani1, A. Naserian1, R. Valizadeh1, S. H. Ebrahimi1, B. Kim1,2, and A. Rahimi1,1Animal Science Department, Faculty of Agriculture, Ferdowsi University of Mashhad, Mashhad, Iran,2College of Animal Life Sciences, Kangwon National University, Chuncheon, Republic of Korea.

Effects of foliar fungicide application on floury and brown midrib corn varieties for whole-plant corn silage on silage temperature and fermentation parameters.
L. J. Wente*, T. A. Damery, and F. C. Cardoso, Department of Animal Sciences, University of Illinois, Urbana, IL.

An evaluation on the effect of a microbial inoculant on the fermentation of alfalfa silage ensiled at two dry matters.
Y. Li1,2, E. da Silva1, K. Moyer1, E. Hellings1, and L. Kung Jr.*1,1University of Delaware, Newark, DE,2Heilongjiang Bayi Agricultural University, Daqing, Heilongjiang, China.

Effect of corn planting population on phosphorus concentration and extraction in the forage (study 3).
G. Ferreira1, J. B. Huffard2, and C. L. Teets*1,1Department of Dairy Science, Virginia Tech, Blacksburg, VA,2Huffard Dairy Farms, Rural Retreat, VA.

Effects of feeding two different types of sorghum-sudangrass silage based diets on nutrient intake and digestibility and growth of Holstein dairy heifers.
L. Li1, N. Esser2, R. Ogden2, W. Coblenz1, and M. Akins*1,1Heilongjiang Bayi Agricultural University, College of Animal Science and Veterinary Medicine, Daqing, Heilongjiang, China,2Marshfield Agricultural Research Station, University of Wisconsin-Madison Stratford, WI,1USDA Dairy Forage Research Center, Marshfield, WI,1Department of Dairy Science, University of Wisconsin-Madison, Marshfield, WI.

Growth and Development: Colostrum and Transition Milk

Evaluation of passive transfer of calves receiving maternal colostrum or colostrum replacer.
A. P. Silva1, A. F. Toledo*1,2, A. M. Cezar1, M. Poczynek1, M. G. Coelho1, M. D. Silva1, M. Campos2, and C. M. M. Bittar1,1Department of Animal Sciences, College of Agriculture Luiz de Queiroz (ESALQ), University of Sao Paulo, Piracicaba, SP, Brazil,2Department of Clinical Research, The Saskatoon Colostrum Company Ltd, Saskatoon, Canada.

Performance and diarrhea occurrence of suckling calves supplemented with colostrum replacer.
V. Chiogna Junior, M. Rodrigues, and E. Collao-Saenz*, Universidade Federal de Goias, Jatai, Goias, Brazil.

Effect of feeding transition milk on growth and health of dairy calves.
B. Van Soest1,2, F. Cullens2, M. VandeHaar3, and M. Weber-Neilsen1,1Michigan State University, East Lansing, MI,2Michigan State University Extension, St. John, MI.

Prenatal choline supplementation programs the metabolome of the fetus after birth.

Plasma concentrations of biotin, folic acid, and vitamin B12 of calves fed with colostrum from cows receiving those vitamins before calving.
M. Duplessis* and C. L. Girard, Agriculture and Agri-Food Canada, Sherbrooke, QC, Canada.
Physiology and Endocrinology 1

T94 Effect of fatty acid profile shifts on bovine primary hepatocyte gluconeogenic and oxidative gene expression.
K. Weld*, S. Erb, and H. M. White, University of Wisconsin-Madison, Madison, WI.

T95 Coordinated responses of hepatic lipid-associated proteins in cows with high or low liver lipid content peripartum.
H. T. Holdorf*, R. Caputo Oliveira, R. S. Pralle, and H. M. White, University of Wisconsin-Madison, Madison, WI.

T96 Actions of recombinant bovine somatotropin revisited: Characterization of the plasma metabolome and lipidome.
A. N. Davis*, W. A. Myers, C. Chang, B. N. Tate, J. E. Rico, and J. W. McFadden, Cornell University, Ithaca, NY.

T97 Body condition score in late pregnancy is associated with abundance of hepatic microRNA involved in energy metabolism.
R. E. Bucktrout*, H. Xia¹, E. Trevisi¹, M. Vailati-Riboni¹, and J. J. Loor², ¹Department of Animal Sciences and Division of Nutritional Sciences, University of Illinois at Urbana-Champaign, Urbana, IL, ²College of Animal Science and Technology, Yangzhou University, Yangzhou, Jiangsu, China.

T98 Effects of butyrate supplementation on blood glucagon-like peptide-2 concentration and gastrointestinal function in lactating dairy cows fed diets differing in starch content.
R. Fukumori*, K. Izumi², S. Oikawa³, and M. Oba², ¹Rakuno Gakuen University, Ebetsu, Hokkaido, Japan, ²University of Alberta, Edmonton, AB, Canada.

T99 Characterization of metabolic and oxidative status in Italian Mediterranean water buffalos during the peripartum period.
H. Sauerwein*, B. Heitkönig¹, U. Müller¹, S. Dänicke², J. Frahm², A. Caffi², and F. Ceciliani², ¹Institute of Animal Science, Physiology and Hygiene Unit, University of Bonn, Bonn, Germany, ²Institute of Animal Nutrition, Friedrich-Loeffler-Institute (FLI), Federal Research Institute for Animal Health, Braunschweig, Germany, ³L’azienda Caffi S.r.l. Societa Agricola, Grumello Cremonese Ed Uniti, Italy, ²Dipartimento di Medicina Veterinaria, Università degli Studi di Milano, Milan, Italy.

T100 Gene expression of hepatic lipid metabolism in primiparous dairy cows with different feeding strategies during early lactation.

T101 Rumen-protected choline acts directly in the liver regulating expression of genes involved in reduction of fatty liver in dairy cattle.
M. Zenobi¹, P. Tribulo²*, B. Barton³, J. Santos¹, P. Hansen¹, and C. Staples¹, ¹University of Florida, Gainesville, FL, ²Instituto de Reproduccion Animal Cordoba, Cordoba, Argentina, ³Balchem Corp., New Hampton, NY.

T102 Physiologic responses to induced subclinical hypocalcemia in different lactational stages of Holstein dairy cows.

T103 Hepatic pyruvate carboxylase expression at parturition differed in cows that subsequently developed hyperketonemia.

T104 Using path analysis to explore short-term herbage intake of dairy cows under grazing temperate pasture.
A. I. Trujillo*, J. P. Soutto, O. Bentancor, and P. Chilibroste, UDELAR, Facultad de Agronomía, Montevideo, Uruguay.

T105 Intravenous lipopolysaccharide infusion modifies the bovine metabolome and lipidome.
J. W. McFadden*, J. E. Rico¹, E. A. Horst³, L. M. van den Brink², and L. H. Baumgard², ¹Cornell University, Ithaca, NY, ²Iowa State University, Ames, IA.

T106 Lipopolysaccharide induces lipolysis and reduces insulin sensitivity in subcutaneous adipose tissue from transition dairy cows.
M. Chirivi¹, J. Laguna³, L. Worden¹, C. Prom², A. Lock², and G. Contreras¹, ¹Department of Large Animal Clinical Sciences, Michigan State University, East Lansing, MI, ²Department of Animal Science, Michigan State University, East Lansing, MI.

T107 Effects of rumen-protected methionine fed to lactating Holstein cows during a heat stress challenge on mammary mechanistic target of rapamycin (mTOR) signaling.
D. N. Coleman¹, M. Vailati-Riboni¹, R. T. Pate¹, D. Luchini², F. C. Cardoso¹, and J. J. Loor¹, ¹University of Illinois, Urbana, IL, ²Adisseo, Alpharetta, GA.
Physiological responses to heat stress of dry dairy cows receiving a negative DCAD diet during the entire dry period.

Production, Management, and the Environment 2

Measurement of the carbon footprint in dairy production systems in Chile.
P. Toro-Mujica*1,2, L. Robles3, and D. Enríquez-Hidalgo2, 1Instituto de Ciencias Agronómicas y Veterinarias, Universidad de O’Higgins, San Fernando, Chile, 2Departamento de Ciencias Animales, Facultad de Agronomía e Ingeniería Forestal, Pontificia Universidad Católica de Chile, Santiago, Chile, 3Departamento de Nutrición Animal, Universidad Autónoma del Estado de México, Toluca, México, México.

Effect of the supplementation level with concentrate on milk and methane production in crossbreed tropical dairy cows grazing tropical pastures.
L. E. Robles-Jimenez2, A. Xochitemol3, M. Benaaouda1, L. Corona2, E. Castillo1, O. A. Castelan-Ortega1, and M. Gonzalez-Ronquillo*, 1Universidad Autónoma del Estado de México, Toluca, México, Mexico, 2Universidad Nacional Autónoma de México, Ciudad de México, Mexico.

Investigation of supplementing a methionine derivative, N-acetyl-L-methionine, on lactational performance and economic returns of dairy cows during early to mid-lactation.
J.-S. Eun*, F. X. Amaro1, D. Vyas1, S. H. Lee1, and J. O. Moon1, 1Institute of Integrated Technology, CI Cheil Jedang, Suwon, South Korea, 2Department of Animal Sciences, University of Florida, Gainesville, FL.

Effect of cow stocking density and milk yield on milk production by square meter in compost bedding pack dairy farms.
J. L. Monge1, F. Bargo*2, F. Damasceno3, and G. Frossasco1, 1Universidad Nacional de Villa María, Villa María, Córdoba, Argentina, 2Universidad de Buenos Aires, Buenos Aires, Argentina, 3Universidade Federal Lavras, Lavras, MG, Brazil.

Deviation between the formulated target and the real weight loaded into the mixer in dairy farms in Argentina.
B. Mancilla1, C. Fernández2, L. Rubies1, and P. Turiello*, 1Universidad Nacional de Río Cuarto, Río Cuarto, Córdoba, Argentina, 2Universidad Nacional de Río Cuarto, Río Cuarto, Córdoba, Argentina, 3Nutrín+, Arias, Córdoba, Argentina, 4Universidad Nacional de Río Cuarto, Río Cuarto, Córdoba, Argentina.

Effects of long-term postbiotic supplementation on dairy heifer calves: Performance and metabolic indicators.
M. Rovai*, L. Guijarro1, J. Anderson1, and A. A. K. Salama2, 1Dairy and Food Science Department, South Dakota State University, Brookings, SD, 2Universitat Autònoma de Barcelona, Bellaterra, Barcelona, Spain.

Early lactation feeding behavior as a predictor of feed intake and lactation performance.
H. Fujan*, T. H. Swartz, and B. J. Bradford, Kansas State University, Manhattan, KS.

Effects of storing temperature on dissipation of ceftiofur and antibiotic-resistance genes in dairy manure slurry.
M. Li*, C. Teets1, P. Ray2, and K. Knowlton1, 1The Department of Dairy Science, Virginia Tech, Blacksburg, VA, 2Animal, Dairy and Food Chain Sciences, School of Agriculture, Policy and Development, University of Reading, Reading, UK.

Early lactation management strategies and blood β-hydroxybutyrate concentration on pasture-based dairy farms in Colombia.

The effects of supplementing butafosfan plus cyanocobalamin and calcium formate in postparturient dairy cows.
G. Negro1, J. E. R. R. Silva2, D. R. Ribeiro1, J. E. P. Santos2, and R. Almeida**, 1Universidade Federal do Paraná, Curitiba, PR, Brazil, 2University of Florida, Gainesville, FL.

Effect of measures of milk yield and dry period length on prediction of milk loss in the subsequent lactation.
P. Pattamanont*, M. I. Marcondes1,2, A. Bach1, J. S. Clay2, and A. De Vries1, 1Department of Animal Sciences, University of Florida, Gainesville, FL, 2Department of Animal Science, Federal University of Vicsosa, Vicsosa, MG, Brazil, 3ICREA and Department of Ruminant Production, IRTA, Barcelona, Spain, 4Dairy Records Management Systems, North Carolina State University, Raleigh, NC.
T121 Comparison of rumen microbiome structure in samples collected using an oro-esophageal probe, and solid, liquid and combined solid-liquid fractions collected using a rumen fistula in Holstein dairy cows. 
L. Cunha1, P. M. G. Peixoto*1,2, A. A. Elolimy2, I. F. Canisso1, F. C. Cardoso1, R. C. Bicalho1, and F. S. Lima1, 1Department of Veterinary Medicine, University of Illinois, Urbana, IL, 2Department of Animal Sciences, University of Illinois, Urbana, IL, 3Department of Population Health and Diagnostic Science, Cornell University, Ithaca, NY.

T122 Probiotics supplementation for dairy calves: A systematic review. 
R. Branco Lopes* and N. Silva-del-Rio, Veterinary Medicine Teaching and Research Center, University of California-Davis, Tulare, CA.

T123 Effects of long-term postbiotic supplementation on dairy heifer calves: Health status and wound healing after dehorning. 
M. Rovai1, L. Guifarro1, and A. A. K. Salama2, 1Dairy and Food Science Department, South Dakota State University, Brookings, SD, 2Universitat Autonoma de Barcelona, Bellaterra, Barcelona, Spain.

T124 Production, economic viability, and risks associated to switching from drylots to compost barns. 
M. I. Marcondes*1,2, W. H. Mariano1, and A. De Vries3, 1Federal University of Vicsa, Vicsa, MG, Brazil, 2University of Florida, Gainesville, FL.

Ruminant Nutrition: Carbohydrates

T125 Nitrogen and energy balance of primiparous Holstein and Jersey cows fed 2 levels and 2 sources of forage neutral detergent fiber. 
M. E. Uddin*1, O. I. Santana1,2, and M. A. Wattiaux1, 1University of Wisconsin-Madison, Madison, WI, 2INIFAP, Aguascalientes, México.

T126 Switchgrass (Panicum virgatum) as a replacement for wheat straw in high-starch lactating cow rations. 
R. L. Nagle*1, B. R. Lemay1, J. C. DeBruyn2, A. Heeg1, M. Thimmanagari2, and A. J. Carpenter4, 1Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, 2Ontario Ministry of Food, Agriculture, and Rural Affairs, Guelph, ON, Canada, 3Ontario Ministry of Food, Agriculture, and Rural Affairs, Woodstock, ON, Canada, 4Department of Animal Biosciences, University of Guelph, Ridgetown, ON, Canada.

T127 Effects of aflatoxin with or without binders on in vitro rumen fermentation dynamics. 
Y. Jiang*1, I. M. Ogunade2, K. G. Arriola3, A. A. Pech-Cervantes1, D. H. Kim1, Y. L. Xue1, X. Li4, D. Vyas1, and A. T. Adesogan1, 1Department of Animal Sciences, University of Florida, Gainesville, FL, 2Division of Food and Animal Science, Kentucky State University, Frankfort, KY, 3Inner Mongolia Academy of Agriculture and Animal Husbandry Science, Hohhot, Inner Mongolia, China, 4School of Agriculture and Biology, Shanghai Jiao Tong University, Shanghai, China.

T128 Effects of particle size on ruminal in situ dry matter and starch disappearance of processed corn. 
E. M. Paula*1, T. Fernandes1,2, G. S. Dias Junior1,2, R. D. Shaver3, and L. F. Ferraretto1, 1Department of Animal Sciences, University of Florida, Gainesville, FL, 2Departamento de Zootecnia, Universidade Federal de Lavras, Lavras, MG, Brazil, 3Department of Dairy Science, University of Wisconsin, Madison, WI.

T129 Dietary starch level does not interact with parity and level of milk production in mid-lactation dairy cows fed isoenergetic diets. 
P. Piantoni*, C. J. Canale, B. D. Strang, and G. F. Schroeder, Cargill Animal Nutrition Innovation Center, Elk River, MN.

T130 The effects of varying undigested NDF and physically effective NDF content of fresh cow rations on hepatic metabolism and gene expression in multiparous Holstein cows. 

T131 Effects of drying method and in vitro or in situ technique on starch digestibility. 
N. Schlau*1, D. R. Mertens3, B. Steinlicht1, and D. Taysom1, 1Dairyland Laboratories Inc., Arcadia, WI, 2Mertens Innovation and Research LLC, Belleville, WI.

T132 Following up the efficacy of bacterial inoculants from corn silage fermentation quality to performance of dairy cows. 
M. Moghimi Kandelousi1, A. Assadi Alamouti1, and R. Abdollahi-Arpanahi*3, 1University of Tehran, Tehran, Iran, 2Department of Animal Sciences, University of Florida, Gainesville, FL.

T133 Effects of butyrate supplementation on productivity of lactating dairy cows fed diets differing in starch content. 
K. Izumi*, R. Fukumori1, S. Oikawa1, and M. Oba3, 1Rakuno Gakuen University, Ebetsu, Hokkaido, Japan, 2University of Alberta, Edmonton, AB, Canada.
Effect of enzyme extracts from *Aspergillus oryzae* and *Aspergillus niger* on in situ neutral-detergent fiber degradability in dairy cows.

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**Ruminant Nutrition: Digestion and Metabolism**

**T135** Estimating daily energy flows in freestall-housed dairy cattle with automated data collection.
P. M. Kedzierski, G. C. Reyes, A. van der Hout, S. Mellors, L. E. Wright, D. I. Seymour, V. R. Osborne, and J. P. Cant. *University of Guelph, Guelph, ON, Canada, Wageningen University and Research, Wageningen, the Netherlands.*

**T136** Evaluation of two pH strips on urine from multiparous Holstein cows fed a partially acidified diet prepartum.
L. K. Fehlberg and F. C. Cardoso. *University of Illinois, Urbana, IL.*

**T137** Evaluation of the effects of feeding solvent-extracted carinata meal to dairy cows on lactation performance.
R. D. Lawrence and J. L. Anderson. *South Dakota State University, Brookings, SD.*

**T138** Effect of fresh unsalable grocery waste substituted for corn grain on production in lactating dairy cows.
R. Bomberger, E. Barnoff, M. Froetschel, and K. Harvatine. *Penn State University, University Park, PA, Ruminant Nutrition Consulting LLC, Athens, GA.*

**T139** The rumen degradability of palm date seeds when treated with sodium hydroxide and ultrasound processing.
A. Aboragah, M. Embaby, and A. AbuGhazaleh. *Southern Illinois University, Carbondale, IL.*

**T140** Liver composition of dairy cows in two contrasting feeding strategies.

**T141** Effects of increasing exogenous carbohydrases levels on intake, milk yield and composition, and production efficiency of dairy cows.

**T142** Addition of grape marc to dairy sheep diet improves milk yield and composition and affects oxidative status of animals.
A. Nudda, G. Buffa, E. Tsiplakou, M. Cappai, G. Battacone, N. Macciotta, and G. Pulina. *Dipartimento di Agraria, University of Sassari, Sassari, Italy, Agricultural University of Athens, Athens, Greece, Dipartimento di Medicina Veterinaria, University of Sassari, Sassari, Italy.*

**T143** Switchgrass (*Panicum virgatum*) as a replacement for wheat straw in lactating dairy cow rations.

**T144** Effects of metritis treatment strategies on metabolites and rumination and activity of dairy cows.

**T145** Energy utilization in lactating Jersey cows consuming a mixture of distillers dried grains with solubles and straw in replacement of alfalfa hay.
A. L. Knoll, J. V. Judy, H. C. Wilson, K. J. Herrick, S. C. Fernando, and P. J. Kononoff. *University of Nebraska-Lincoln, Lincoln, NE, POET Nutrition LLC, Sioux Falls, SD.*

**T146** Differences in mammary gland uptake of post-absorptive energy metabolites may contribute to residual feed intake variation.
Methyl donor supplementation strategy in fresh cows.
A. Van De Kerchove1, A. Delaguiz2, F. Mueller3, T. Steen4, J. Guyader5, and A. Park6, 1Federated Co-operatives Limited, Saskatchewan, SK, Canada, 1La Coop fédérée, Montréal, QC, Canada, 1Kalmbach Feeds, Inc., Upper Sandusky, OH, 1Tennessee Farmers Cooperative, La Vergne, TN, 1Neovia, Saint-Nolff, France, 1Cooperative Research Farms, Richmond, VA.

Effect of adding water to a high-straw dry cow diet on the intake and behavior of Holstein dairy cows.
C. Havekes*1, T. F. Dufffield2, A. J. Carpenter1, and T. J. DeVries1, 1Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, 2Department of Population Medicine, University of Guelph, Guelph, ON, Canada.

Effect of wheat straw chop length in high-straw dry cow diets on intake, behavior, and health of dairy cows across the transition period.
C. Havekes*1, T. F. Dufffield2, A. J. Carpenter1, and T. J. DeVries1, 1Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, 2Department of Population Medicine, University of Guelph, Guelph, ON, Canada.

Using National Research Council equations to estimate respiratory carbon dioxide output in dairy cattle.
G. C. Reyes*1, P. Kedzierski1, A. van der Hout1, L. Wright1, S. Mellors1, and J. P. Cant1, 1Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, 2Department of Animal Sciences, Wageningen University and Research, Wageningen, the Netherlands, 3Dairy Research and Innovation Centre-Elora Dairy, Centre Wellington, ON, Canada.

Effect of feeding blend pellet products (based on pulse screenings, feed additive, carinata meal, and canola meal) on lactational performance in high-producing dairy cows.
A. Ismael, B. Refat, D. A. Christensen, J. J. McKinnon, and P. Yu*, Department of Animal and Poultry Science, College of Agricultural and Bioresources, University of Saskatchewan, Saskatoon, Canada.

Ruminant Nutrition: Feed Additives 1

Bacillus subtilis and Bacillus licheniformis used as probiotics to enhance lactation performance and milk branched-chain fatty acids in dairy cows.
J. Lamontagne*1, D. Rico1,2, R. Gervais1, and P. Chouinard1, 1Université Laval, Québec, QC, Canada, 2Centre de recherche en sciences animales de Deschambault, Deschambault, QC, Canada.

A postbiotic from Aspergillus oryzae decreased the inflammation response of lactating dairy cows exposed to heat stress.
J. Kaufman*1, H. Bailey1, P. De Toledo Shimoda1, F. Bargo1,2, I. Ipharraguerre1, G. Pighetti1, and A. Rius1, 1University of Tennessee, Knoxville, TN, 1BioZyme Inc., St. Joseph, MO, 1Universidad de Buenos Aires, Buenos Aires, Argentina, 4University of Kiel, Kiel, Germany.

A commercially available yeast culture alters VFA production in a ruminal in vitro fermentation system.

Supplementation of dairy cows with a blend of direct-fed microbes: Performance and digestion.
L. N. Resende1, R. B. Silva2, R. A. N. Pereira1,2, and M. N. Pereira1,2, 1Universidade Federal de Lavras, Lavras, MG, Brazil, 2Better Nature Research Center, Ijaci, MG, Brazil, 3Empresa de Pesquisa Agropecuaria de Minas Gerais, Lavras, MG, Brazil.

Supplementation of dairy cows with a blend of direct-fed microbes: Thermoregulation and immunity.
L. N. Resende1, R. B. Silva1, A. P. Peconick1, R. A. N. Pereira1,2, and M. N. Pereira1,2, 1Universidade Federal de Lavras, Lavras, MG, Brazil, 2Better Nature Research Center, Ijaci, MG, Brazil, 3Empresa de Pesquisa Agropecuaria de Minas Gerais, Lavras, MG, Brazil.

Evaluation of supplemental autolyzed yeast on ruminal pH, fecal pH, and VFA response from Holstein cows fed a high starch diet.
S. E. Knollinger*1, B. Miller2, I. Mueller2, and F. C. Cardoso1, 1University of Illinois, Urbana, IL, 2BIOMIN America Inc., Overland Park, KS, 3BIOMIN Holding GmbH, Getzersdorf, Austria.

Evaluation of supplemental autolyzed yeast on the presence of inflammatory biomarkers from Holstein cows fed a high starch diet.
S. E. Knollinger*1, B. Miller2, I. Mueller2, and F. C. Cardoso1, 1University of Illinois, Urbana, IL, 2BIOMIN America Inc., Overland Park, KS, 3BIOMIN Holding GmbH, Getzersdorf, Austria.

Efficacy of exogenous amylases at increasing in vitro dry matter digestibility of dent corn.
A. Oyebade*1, K. Arriola1, D. Kim1, Y. Jiang1, A. Pech-Cervantes1, E. Duvalsaaint1, F. Amaro1, C. McCary1, C. Heinzen1, Y. Xue1,2, B. Saylor1, A. Adesogan1, and D. Vyas1, 1Department of Animal Sciences, University of Florida, Gainesville, FL, 2Inner Mongolia Academy of Agriculture and Animal Husbandry Sciences, Hohhot, Inner Mongolia, China.
T160  Effect of withdrawing OmniGen-AF from lactating cow diet on performance and peripheral blood mononuclear cells proliferation.
T. N. Marins*, 1, J. O. S. Calix, 1, R. M. Orellana, 1, J. K. Bernard, 1, M. Garcia, 2, D. J. McLean, 2, J. D. Chapman, 2, D. J. Kirk, 2, and S. Tao, 1, 1University of Georgia, Tifton, GA, 2Phibro Animal Health Corp., Teaneck, NJ.

T161  Effects of an additive designed to improve nutrient digestibility on production by lactating Holstein cows.
L. J. Wente*, 1, J. Rous, 2, and J. K. Drackley, 1, 1Department of Animal Sciences, University of Illinois, Urbana, IL, 2AB Agri Ltd., Peterborough, UK.

T162  Sodium acetate and sodium bicarbonate increase milk fat yield through different mechanisms.
C. I. Matamoros* and K. J. Harvatine, Department of Animal Science, The Pennsylvania State University, University Park, PA.

T163  Effect of daily feeding of a direct-fed microbial to dairy cows during midlactation on production performance and milk composition.
M. O'Neil*, E. Branstad, C. McCarthy, B. Dooley, D. Beitz, and H. Ramirez-Ramirez, Iowa State University, Ames, IA.

T164  Effects of garlic extract and citrus flavonoid feed additive on dairy cow performance.
B. W. Jones*1,2, W. B. Smith1, C. R. Travis1,2, B. D. Lambert1,2, and E. Kan1,2, 1Tarleton State University, Stephenville, TX, 2Texas A&M AgriLife Research, Stephenville, TX.

T165  Effects of additives based on phytogens, yeast products, and direct-fed microbials in milk replacers and starters for Holstein calves.
K. N. Brost*, 1, D. P. Compart2, and J. K. Drackley, 1University of Illinois, Urbana, IL, 2Land O'Lakes Inc., Arden Hills, MN.

Ruminant Nutrition: Protein and Amino Acid Nutrition 2

T166  Effects of methionine coated with vegetable fat on performance and feed intake of mid-lactation dairy cows fed a low-protein diet.
J. M. Ruiz-Rodriguez1, M. Puyalto2, J. J. Mallo2, G. Elcoso2, and A. Bach*, 1Universidad Politécnica de Madrid, Madrid, Spain, 2Norel S.A, Madrid, Spain, 3blanca from the Pyrenees, Hostalets de Tost, Spain, 4Department of Ruminant Production, IRITA, Barcelona, Spain, 5Institució Catalana de Recerca i Estudis Avançats, Barcelona, Spain.

T167  Effects of methionine sources on rumen fermentation and biohydrogenation of linoleic acid in vitro.
J. E. Copelin*, 1, P. A. Dieter1, J. L. Firkins2, and C. Lee1, 1Department of Animal Sciences, OARDC, The Ohio State University, Wooster, OH, 2Department of Animal Sciences, The Ohio State University, Columbus, OH.

T168  Associations of early lactation rumen-protected methionine supplementation with herd level health and production performance in the northeastern United States.

T169  Methionine, lysine, and histidine supplementation at low and high net-energy supply in dairy cows.
C. Omphalius*, 1, H. Lapierre2, L. Bahloul*, 3, and S. Lemosquet1, 1PEGASE, INRA, Agrocampus Ouest, Paris, France, 2Agriculure and Agri-Food Canada, Sherbrooke, QC, Canada, 3Adisseo France S.A.S, Antony, France.

T170  Rumen-protected methionine supplementation on blood metabolites of transition dairy cows.
G. F. M. Leão*, 1, S. K. Santos3, E. J. Askel1, T. C. Michelotti3, G. Negro1, F. Lopes1, and R. Almeida2, 1Universidade Federal do Paraná, Curitiba, PR, Brazil, 2Pontificia Universidade Católica do Paraná, Curituba, PR, Brazil, 3Adisseo South America, São Paulo, SP, Brazil.

T171  Rumen-protected methionine supplementation on milk yield and its composition, morbidity and culling of transition dairy cows.
G. F. M. Leão*, 1, S. K. Santos2, E. J. Askel1, T. C. Michelotti2, G. Negro1, F. Lopes1, and R. Almeida1, 1Universidade Federal do Paraná, Curitiba, PR, Brazil, 2Pontificia Universidade Católica do Paraná, Curituba, PR, Brazil, 3Adisseo South America, São Paulo, SP, Brazil.

T172  Relative metabolizable methionine content of rumen-protected products using the seleno-methionine technique.
Rumen-protected choline or methionine affects the choline metabolite profile of plasma and milk and alters expression of genes associated with choline and lipid metabolism in periparturient cows.
S. B. Potts*, K. M. Brady, C. M. Scholte, K. M. Moyes, and R. A. Erdman, University of Maryland, College Park, MD.

Effects of rumen-protected methionine fed to lactating Holstein cows during a heat stress challenge on blood biomarkers harvested at 2 time points post-feeding.
R. T. Pate*, D. Luchini, and F. C. Cardoso; 1Department of Animal Sciences, University of Illinois, Urbana, IL, 2Adisseo, Alpha- pharet, GA.

Effects of supplementing a lysine derivative at varying doses on lactational performance of dairy cows.

Evaluating methionine bioavailability of rumen protected technologies using the plasma amino acid dose-response technique without using ruminally cannulated animals.
N. Whitehouse*, B. Veilleux, S. Hollister, L. Silva, and J. Sexton, University of New Hampshire, Durham, NH.

Effects of rumen protected lysine and histidine on performance and energy and nitrogen partitioning in high-hydrolyzed-feather-meal diets fed to Jersey cows.
D. L. Morris* and P. J. Kononoff, Department of Animal Science, University of Nebraska–Lincoln, Lincoln, NE.

Stability of rumen-protected lysine in rumen and TMR with different moisture contents.
T. Sugino*, S. Ishimaru, K. Ikuta, and T. Obitsu; 1The Research Center for Animal Science, Graduate School of Biosphere Science, Hiroshima University, Higashi-Hiroshima, Hiroshima, Japan, 2Awaji Agricultural Technology Institute, Hyogo Prefectural Technology Center for Agriculture, Forestry and Fisheries, Minami-Awaji, Hyogo, Japan.

V. M. R. Malacco*, M. Cecava, P. Doane, R. B. Reis, and S. S. Donkin, 1Purdue University, West Lafayette, IN, 2Archer Daniels Midland Company, Decatur, IL, 3Department of Animal Sciences, College of Veterinary Medicine, Federal University of Minas Gerais, Belo Horizonte, MG, Brazil.

In situ rumen degradability and in vitro intestinal digestibility of rumen-protected methyl donors and lysine.

Evaluation of rumen-protected lysine prototypes on performance of lactating Holstein cows.
M. I. Rivelli*, M. J. Cecava, P. H. Doane, and F. C. Cardoso, 1University of Illinois, Urbana, IL, 2ADM Research Division, Decatur, IL.

Dietary starch level and rumen-protected amino acids: Effects on CH4 emissions and heat production in lactating dairy cows.

Use of the plasma free amino acid dose-response technique to quantify bioavailability of rumen-protected histidine.
N. Whitehouse*, B. Veilleux, Y. Zang, A. Brito, and M. Miura, 1University of New Hampshire, Durham, NH, 2Ajinomoto Co. Inc., Kawasaki-shi, Japan.

Lactation performance of dairy cows fed increasing amounts of microencapsulated methionine.
L. King*, E. Branstad, C. McCarthy, B. Dooley, M. O’Neill, D. Cooke, and E. Grilli; 1Iowa State University, Ames, IA, 2DIME-VET, University of Bologna, Bologna, Italy, 3Vetagro Inc., Chicago, IL.

Assessment of dairy cow performance fed soybean meal or canola meal through a meta-analysis.
J. Sánchez-Duarte, N. García-Fernández, and F. Díaz; 1INIFAP-CELALA, Matamoros, Coahuila, México, 2Dairy Knowledge Center LLC, Brookings, SD, 3Rosecrans Dairy Consulting LLC, Yamhill, OR.

Slow-release urea (Optigen) does not elevate ammonia levels and leads to lower lactic acid accumulation when compared to free urea in an in vitro rumen model.
J. Apajalahti, E. Pennala*, V. Holder, J. Keegan, and C. Moran, 1Alimentos, Espoo, Finland, 2Alltech Inc., Nicholasville, KY, 3Alltech Ireland, Dunboyne, Ireland, 4Alltech SARL, Vire, France.

Nutritive value of mechanically pressed cottonseed cake compared with soybean meal for lactating dairy cows.
N. Webb, J. K. Bernard*, and S. Tao, University of Georgia, Tifton, GA.
Camelina cake in dairy cow diets: Effects on production and milk composition.
F. Omodei Zorini1, V. Perricone1, G. Savoini1, M. Mele2, A. Serra2, and G. Invernizzi*1, 1Università degli Studi di Milano, Department of Health, Animal Science and Food Safety, Milan, Italy, 2Dipartimento di Scienze Agrarie, Alimentari e Agro-ambientali, University of Pisa, Pisa, Italy.

Insulin potentiates the effect of individual amino acids on mechanistic target of rapamycin complex 1 (mTORC1) signaling in mammary epithelial cells.
J. Zhang*1,2, V. Pszczolkowski1,3, and S. Arriola Apelo1,3, 1Department of Dairy Science, University of Wisconsin-Madison, Madison, WI, 2State Key Laboratory of Animal Nutrition, Beijing Engineering Technology Research Center of Raw Milk Quality and Safety Control, College of Animal Science and Technology, China Agricultural University, Beijing, China, 3Endocrinology and Reproductive Physiology Graduate Training Program, University of Wisconsin-Madison, Madison, WI.

Small Ruminant 1

Relationship between somatic cell count variation and mastitis in dairy goats of northwest Argentina.
V. Suarez and G. Martinez*, INTA, Salta, Argentina.

Productive performance of dairy goats supplemented with two different iodine sources.
G. M. Martinez* and V. Suarez, Instituto Nacional de Tecnología Agropecuaria, Salta, Argentina.

Performance of Saanen kid fed different diets and slaughtered at different ages.

Effect of a novel selenium product on growth performance of lambs.
K. Nedelkov1,2, X. Chen1,3, M. E. Young1, S. Räisänen1, C. F. A. Lage1,4, A. Melgar*1, M. T. Harper1, J. Oh1, E. H. Wall1, and A. N. Hristov1, 1The Pennsylvania State University, University Park, PA, 2Faculty of Veterinary Medicine, Trakia University, Stara Zagora, Bulgaria, 3College of Pastoral Agriculture Science and Technology, Lanzhou University, Lanzhou, Gansu, China, 4Universidade Federal de Minas Gerais, Minas Gerais, Brazil, 5Pancosma, Geneva, Switzerland.

Effects of selenium yeast supplementation on milk selenium concentration, milk performance, milk fatty acid profile, and antioxidant and immunity status in lactating dairy goats.
P. Wang*1, J. Wu1, G. Lin2, A. Koontz3, and J. Luo3, 1College of Animal Science and Technology, Northwest A＆F University, Yangling, Shaanxi, China, 2Alltech China, Beijing, China, 3Center for Animal Nutrigenomics and Applied Animal Nutrition, Alltech Inc., Nicholasville, KY.

Response to an Escherichia coli LPS intramammary challenge of dairy ewes supplemented with barley β-glucans.
A. Elhadi*, S. Guamán, E. Albanell, and G. Caja, Group of Research in Ruminants (G2R), Universitat Autonoma de Barcelona, Bellaterra, Barcelona, Spain.

Impact of culture positive samples on goat milk composition.
G. Santana1, K. Reis1, M. Marques1, L. Guifarro1, M. Rovai1, and L. da Costa*4, 1Federal Rural University of Pernambuco, Recife, PE, Brazil, 2University of São Paulo, São Paulo, SP, Brazil, 3South Dakota State University, Brookings, SD, 4The Ohio State University, Columbus, OH.
ADSA Southern Branch Graduate Student Oral Competition
Chair: Jillian Bohlen, University of Georgia
260/261

9:30 AM 262 Effects of mean occupation rate on hourly automatic milking system use and total milk production in Holstein cows.
A. Lee*, P. Krawczel†, E. Ternman‡, L. Schneider³, P. Løvendahl⁴, and L. Munksgaard⁵, ¹University of Tennessee, Knoxville, TN, ²Aarhus University, Tjele, Denmark.

9:45 AM 263 Simulating the cost to raise dairy heifers from birth to 60 days pre-calving under different post-weaning management and housing practices.

10:00 AM 264 Polyhalite reduces urine pH in nonlactating cows without affecting dry matter intake.
E. S. Richardson*, G. Ferreira², and R. J. Meakin³, ¹Department of Dairy Science, Virginia Tech, Blacksburg, VA, ²Sirius Minerals, Scarborough, UK.

10:15 AM 265 Evaluating anti-Müllerian hormone as a reproductive tool in dairy cows.
K. Alward*, W. Graves¹, R. Palomares², A. Nelson¹, and J. Bohlen¹, ¹University of Georgia Animal and Dairy Science, Athens, GA, ²University of Georgia College of Veterinary Medicine, Athens, GA.

Animal Behavior and Well-Being: Focus on Affective State
Chair: Amber Adams-Progar, Washington State University
205

9:30 AM 266 Behavioral approaches to assess and improve affective state of dairy cattle.
E. K. Miller-Cushon* and J. M. C. Van Os³, ¹University of Florida, Gainesville, FL, ²University of Wisconsin, Madison, WI.

10:00 AM 267 Hock injury healing through facility transitions on dairy cattle in Canada.
A. M. Armstrong*, J. Schenkels², T. F. Duffield¹, D. B. Haley¹, and D. F. Kelton¹, ¹University of Guelph, Guelph, ON, Canada, ²Atlantic Veterinary College, Charlottetown, PEI, Canada.

10:15 AM 268 A survey of dairy cattle veterinarians’ perspectives on timely management and euthanasia for common calf conditions.
M. C. Cramer*, A. M. Dietsch¹, J. K. Shearer¹, K. L. Proudfoot¹, and M. D. Pairs-Garcia¹, ¹The Ohio State University, Columbus, OH, ²Iowa State University, Ames, IA.

10:30 AM 269 Effect of stocking density and a barrier in a group close-up pen on the odds that dairy cows develop metritis after calving.
K. Creutzinger*, H. Dann², L. Moraes³, P. Krawczel, and K. Proudfoot³, ¹The Ohio State University, Columbus, OH, ²William H. Miner Agricultural Research Institute, Chazy, NY, ³University of Tennessee, Knoxville, TN.

10:45 AM Break

11:00 AM 270 Housing tie-stall dairy cows in deep-bedded loose-pens during the dry period has the potential to improve gait.
E. Shepley* and E. Vasseur, McGill University, Ste-Anne-de-Bellevue, QC, Canada.

11:15 AM 271 Association between feeding behavior and wellness scores in Jersey dairy cows around calving.
D. du Toit*, G. Esposito, J. H. C. van Zyl, and E. Raffrenato, Department of Animal Sciences, Stellenbosch University, Stellenbosch, South Africa.
11:30 AM 272  Could the first time be the last time? Implications of the first incident of mastitis or lameness on total milk production in first-lactation cows.
M. A. Puerto*, R. I. Cue1, D. Warner1,2, and E. Vasseur3, 1McGill University, Ste-Anne De Bellevue, QC, Canada, 2Valacta, Valacta Dairy Centre of Expertise, Ste-Anne De Bellevue, QC, Canada.

11:45 AM 273  Condition of cull dairy cows from farm to slaughter plant.
J. Stojkov* and D. Fraser, Animal Welfare Program, Faculty of Land and Food Systems, The University of British Columbia, Vancouver, BC, Canada.

Joint Animal Health/Reproduction Symposium:
Transition Cow Calcium Homeostasis—Health Effects of Hypocalcemia and Strategies for Prevention
Chair: Barry Bradford, Kansas State University
Sponsor: SoyChlor
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9:30 AM 274  Calcium transport mechanisms in different epithelia of ruminants.
M. Wilkens*, Institute of Physiology and Cell Biology, University of Veterinary Medicine, Hannover, Foundation, Hannover, Germany.

10:10 AM 275  Implications of vitamin D physiology and nutrition in regulation of calcium in dairy cows.

10:50 AM  Discussion

11:00 AM 276  Novel role for serotonin in calcium homeostasis and effects on transition health.
L. Hernandez*, J. Laporta2, S. Weaver3, and M. Connelly1, 1University of Wisconsin-Madison, Madison, WI, 2University of Florida, Gainesville, FL, 3Mayo Clinic-Rochester, Rochester, MN.

11:40 AM 277  Use of oral calcium for treatment of hypocalcemia and effects on health and production.
J. A. A. McArt*, Cornell University, Ithaca, NY.

12:20 PM  Discussion

Breeding and Genetics: Health, Efficiency, Resiliency and Other Novel Traits
Chair: Brad Heins, University of Minnesota
207/208

9:30 AM 278  EAAP Speaker Exchange Presentation: Estimation of genetic parameters for young stock survival in Danish beef × dairy crossbred calves.
R. B. Davis*, E. Norberg1,2, and A. Fogh1, 1SEGES, Aarhus N, Denmark, 2Aarhus University, Tjele, Denmark, 3NMBU (Norwegian University of Life Sciences), Ås, Norway.

10:00 AM 279  Assessing the predictive value of facial biometrics for genomic health traits via a statistical learning approach.
C. McVey*1,2 and P. Pinedo1, 1Colorado State University, Fort Collins, CO, 2University of California Davis, Davis, CA.

10:15 AM 280  Genomic evaluation for cow and calf wellness traits in US Jersey cattle.
D. Gonzalez-Pena*, N. Vukasinovic, J. Brooker, C. Przybyla, and S. DeNise, Zoetis, Kalamazoo, MI.

10:30 AM 281  Extending genomic evaluations to direct health traits in Jerseys.
Genetic evaluation of residual feed intake and feeding behavior patterns of growing Holstein heifers.
J. R. Johnson*, G. E. Carstens, C. Heuer, and N. Deeb. Texas A&M University, College Station, TX.

Genetic parameters for dry matter intake, body weight, and energy corrected milk in dairy cattle.
T. C. Seleguim Chud*, F. Miglior, D. J. Seymour, D. Hailemariam, C. Baes, and F. S. Schenkel. Centre for Genetic Improvement of Livestock, University of Guelph, Guelph, ON, Canada.

Inclusion of herdmate data improves genomic prediction for milk production and feed efficiency traits within North American dairy herds.
N. Schultz* and K. Weigel. University of Wisconsin, Madison, WI.

The Efficient Dairy Genome Project: An overview.

Breeding for resilience in dairy cows using daily milk yield recording.
M. Poppe*, H. Mulder, and R. Veerkamp. Wageningen University & Research, Wageningen, the Netherlands.

The genetic relationship of production traits recorded during grazing and non-grazing seasons in US organic Holstein cows.
L. Hardie*, I. Haagen, L. Han, B. Heins, D. Fitzsimmons, and C. Dechow. Penn State University, University Park, PA.

Sire predicted transmitting ability for production and fertility traits in US organic Jersey cows.

ADSA Foundation Scholar Presentation (Dairy Foods) and Dairy Foods: Microbiology and Health
Chair: Olivia McAuliffe, Teagasc

N. Martin, Cornell University, Ithaca, NY.

Bioengineered nisin derivatives to control Listeria monocytogenes in Queso Fresco.
L. A. Ibarra-Sanchez*, W. Kong, T. Lu, and M. J. Miller. University of Illinois at Urbana-Champaign, Urbana, IL.

Manufacturing low-s cope-count skim milk powder by controlling raw milk holding conditions—a pilot-scale trial.
N. Awasti*, S. Anand, and G. Djira. Midwest Dairy Foods Research Center, Department of Dairy and Food Science, South Dakota State University, Brookings, SD.
Transcriptional and proteomic analysis revealed a synergistic effect of aflatoxin M<sub>1</sub> and ochratoxin A mycotoxins on the intestinal epithelial integrity of differentiated human Caco-2 cells.

Y. Gao<sup>1,2</sup>, S. Li<sup>1,2</sup>, J. Wang*<sup>1,2</sup>, and N. Zheng<sup>1,2</sup>, <sup>1</sup>State Key Laboratory of Animal Nutrition, Institute of Animal Sciences, Chinese Academy of Agricultural Sciences, Beijing, China; <sup>2</sup>Key Laboratory of Quality and Safety Control for Milk and Dairy Products of Ministry of Agriculture and Rural Affairs, Institute of Animal Sciences, Chinese Academy of Agricultural Sciences, Beijing, China.

11:00 AM

Break

11:15 AM 292 iTRAQ-based quantitative proteomic analysis of the global response in high EPS-producing Streptococcus thermophilus ASCC 1275 in the presence of different sugars.

A. Padmanabhan*, Y. Tong, C. Lo, and N. Shah, The University of Hong Kong, Hong Kong.

11:30 AM 293 Novel antidiabetic bioactive peptides from camel milk protein hydrolysates.

S. Maqsood*<sup>1,2</sup>, P. Mudgil<sup>1</sup>, G. Yuen<sup>1</sup>, A. Nongonierma<sup>1</sup>, and R. J. FitzGerald<sup>1</sup>, <sup>1</sup>United Arab Emirates University, Al Ain, United Arab Emirates; <sup>2</sup>University Sains Malaysia, Malaysia.

11:45 AM 294 Development and characterization of novel bigel system.

M. Bolloom*, N. Acevedo, and S. Clark, Iowa State University, Ames, IA.

Growth and Development 1
Chair: Kristy Daniels, Virginia Tech

9:30 AM 296 Impact of increasing grass hay inclusion level on weaned dairy calf growth and metabolism.

L. K. Mitchell* and A. J. Heinrichs, Pennsylvania State University, University Park, PA.

9:45 AM 298 Effects of YANG (multi-strain yeast) supplementation on health and performance in male Holstein calves.

D. Cavallini*<sup>1</sup>, M. Pollesel<sup>1</sup>, M. Gauthier<sup>2</sup>, and M. Tassinari<sup>1</sup>, <sup>1</sup>DIMEVET, Dipartimento di Scienze Mediche Veterinarie, Università di Bologna, Bologna, Italy; <sup>2</sup>Lallemand SAS, Blagnac, France.

Lactation Biology Symposium: Refining the Old to Answer the New: Moving Approaches Forward to Study Mammary and Lactation Physiology

Chairs: T. Casey, Purdue University, and J. Laporta, University of Florida

Junior Ballroom C

9:30 AM Overall introduction.

T. Casey<sup>1</sup> and J. Laporta<sup>2</sup>, <sup>1</sup>Purdue University, West Lafayette, IN, <sup>2</sup>University of Florida, Gainesville, FL.

9:35 AM Introduction of Dr. Capuco and his work.

K. Plaut, Purdue University, West Lafayette, IN.

9:45 AM 299 Determinants of milk production: Understanding population dynamics in the bovine mammary epithelium.

A. V. Capuco*, Animal Genomics and Improvement Laboratory, USDA-ARS, Beltsville, MD.

10:45 AM 300 Studying hormonal regulation of mammary gland homeostasis.

N. D. Horseman*, University of Cincinnati, Cincinnati, OH.
11:30 AM 301 Delayed response of xanthosine on goat mammary gland: Quantification of stem/progenitor cells, differentiation and proliferation markers, and milk production in next lactation.
T. P. Kaur*, R. Verma¹, S. Choudhary², R. Udehiya³, S. Kaswan⁴, and R. K. Choudhary⁵, ¹School of Animal Biotechnology, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab, India, ²Department of Animal Nutrition, College of Veterinary Science, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab, India, ³Department of Veterinary Surgery and Radiology, College of Veterinary Science, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab, India.

11:45 AM 302 Deep tissue imaging of lobuloalveolar development in the mouse.
C. J. Watson*, Department of Pathology, University of Cambridge, Cambridge, UK.

12:30 PM Lunch break

2:00 PM 303 A comparative multi-species approach to improve our understanding of mammary gland biology.

2:45 PM 304 Milk omics: Modern tools to answer ancient questions.
D. G. Lemay*¹,², ¹USDA Western Human Nutrition Research Center, Davis, CA, ²University of California-Davis, Davis, CA.

3:30 PM Ice cream break in Exhibit Hall

4:00 PM 305 Dry period heat stress alters mammary protein expression throughout the subsequent lactation.
A. L. Skibiel*¹,², T. F. Fabris¹, B. Dado-Senn¹, J. Koh¹, N. Zhu¹, M.-J. Yoo¹, G. E. Dahl¹, and J. Laporta¹, ¹University of Florida, Gainesville, FL, ²University of Idaho, Moscow, ID.

4:15 PM Chat with the experts: A discussion of current questions in mammary gland biology and tools available to answer them.

4:45 PM A dedication to Dr. Capuco, followed by Cheese and Wine Reception
Geoffrey Dahl and Thomas McFadden

Milk Protein and Enzymes Symposium: Don’t Have a Cow—Plant Proteins, Bovine Protein Expression, and Milk Humanization
Chair: David Everett, AgResearch, New Zealand

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9:30 AM 306 The dairy matrix—Bioaccessibility of nutrients and physiological effects.
S. L. Turgeon*, STELA Dairy Research Centre and Institute of Nutrition and Functional Foods (INAF), Department of Food Science, Université Laval, Québec City, QC, Canada.

10:00 AM 307 Functionality, bioactivity, and structure of bovine and plant proteins.

10:30 AM 308 Sustainability of dairy product production on a protein basis.
Y. Wang*, Innovation Center for US Dairy, Rosemont, IL.

11:00 AM Break

11:15 AM 309 Humanization of bovine milk using modern genetic technologies.
G. Laible*, AgResearch, Ruakura Research Centre, Hamilton, New Zealand.

11:45 AM 310 Taking a page out of nature: Catering to the future of proteins.
B. Oommen*, Perfect Day Inc., Berkeley, CA.

12:15 PM Moderated discussion
Physiology and Endocrinology 2
Chair: Massimo Bionaz, Oregon State University
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9:30 AM 311 Effect of protein absorption on the daily rhythms of milk synthesis and plasma hormones and metabolites in dairy cows.
I. Salfer*, C. Matamoros, R. Bomberger, and K. Harvatine, The Pennsylvania State University, University Park, PA.

9:45 AM 312 Effects of circadian rhythm disruption during the dry period on tissue mobilization in multiparous dairy cattle.
R. Klopp**, T. S. Steckler1, A. Suarez-Trujillo1, M. Grott1, J. R. Townsend1, K. Plaut1, T. M. Casey1, and J. P. Boerman1, 1Department of Animal Sciences, Purdue University, West Lafayette, IN, 2Animal Science Research and Education Center, Purdue University, West Lafayette, IN, 3Department of Veterinary Clinical Sciences, Purdue University, West Lafayette, IN.

10:00 AM 313 Effect of fatty acid absorption on the daily rhythms of milk synthesis and plasma hormones and metabolites in dairy cows.
I. Salfer* and K. Harvatine, The Pennsylvania State University, University Park, PA.

10:15 AM 314 Nitrogen metabolism and insulin signaling targets in adipose tissue of Holstein cows during the periparturient period differ by body condition score.
Y. Liang*, E. Trevisi*, and J. Loor1, 1University of Illinois at Urbana-Champaign, Urbana, IL, 2Università Cattolica del Sacro Cuore, Piacenza, Italy.

10:30 AM 315 Plasma metabolome profiles in heifer calves at birth and during the preweaning period are altered by supply of methionine during late-pregnancy.
A. Elolimi*1,2, A. Alharthi1,2, E. Abdel-Hamied1,2, C. Parys4, and J. Loor1,2, 1Mammalian NutriPhysioGenomics, Department of Animal Sciences, University of Illinois, Urbana, IL, 2Department of Animal Sciences, University of Illinois, Urbana, IL, 3Animal Medicine Department, Beni-Suef University, Beni-Suef, Egypt, 4Evonik Nutrition & Care GmbH, Hanau-Wolfgang, Germany.

10:45 AM 316 Effects of hindgut acidosis on metabolism, inflammation and production in dairy cows consuming a standard lactation diet.

11:00 AM 317 Hepatic one-carbon metabolism, methionine cycle, and transsulfuration pathways are altered by prepartum adiposity and feed intake in peripartal grazing cows.
M. Vailati-Riboni*, Y. Lian1, D. Coleman1, S. Meier2, C. Burke2, J. K. Kay2, M. D. Mitchell1, C. G. Walker1, M. A. Crookenden1, A. Heiser4, J. R. Roche4, and J. J. Loor1, 1Department of Animal Sciences, University of Illinois, Urbana, IL, 2DairyNZ, Hamilton, New Zealand, 3University of Queensland, Queensland, Australia, 4AgResearch, Palmerston North, New Zealand.

11:15 AM 318 Plasma branched-chain amino acids (BCAA) and mRNA abundance of 3 different BCAA transporters in adipose tissue, muscle and liver of dairy cows with high or normal body condition score.
L. A. Webb**, H. Sadri2, K. Schuh1,3, S. Egert**, P. Stehle3, C. Koch4, G. Dusel4, and H. Sauерwein4, 1Institute of Animal Science, Physiology and Hygiene Unit, University of Bonn, Bonn, Germany, 2Department of Clinical Science, Faculty of Veterinary Medicine, University of Tabriz, Tabriz, Iran, 3Department of Life Sciences and Engineering, Animal Nutrition and Hygiene Unit, University of Applied Sciences Bingen, Bingen, Germany, 4Institute of Nutritional Medicine, University of Hohenheim, Stuttgart, Germany, 5Department of Nutrition and Food Sciences, Nutritional Physiology, University of Bonn, Bonn, Germany, 6Educational and Research Center for Animal Husbandry, Hofgut Neumühle, Münchweiler a.d. Alsenz, Germany.

11:30 AM 319 Abundance of hepatic patatin-like phospholipase domain-containing protein 3 protein was inversely related to peripartum hepatic triglyceride accumulation.
R. S. Pralle*, H. T. Holdorf, C. R. Seely, R. Caputo Oliveira, and H. M. White, University of Wisconsin-Madison, Madison, WI.
Production, Management, and the Environment Symposium:
Advancing Artificial Intelligence on Dairy Farms
Chair: Victor Cabrera, University of Wisconsin-Madison

9:30 AM 320 Automated collection and processing of data in livestock farms.
J. Koltes*, Iowa State University, Ames, IA.

10:00 AM 321 Use of big data to monitor herd health.
H. White*, University of Wisconsin-Madison, Madison, WI.

10:30 AM Break

10:45 AM 322 Real-time continuous decision-making using big data.
V. Cabrera*, J. Barrientos, L. Fadul, and H. Delgado, University of Wisconsin-Madison, Madison, WI.

11:15 AM 323 Optimized decisions using big data analytics in dairy farms.
M. Ferris*, A. Christensen, and S. Wangen, University of Wisconsin, Madison, WI.

Reproduction 2
Chair: Alan Ealy, Virginia Tech

9:30 AM 324 Interaction of estrous expression and progesterone on the impact of GnRH administration at the time of AI on pregnancy and ovulation rates.

9:45 AM 325 Efficacy of intravaginal administration of prostaglandin F2α for induction of luteal regression in lactating dairy cows.

10:00 AM 326 Effects of GnRH and hCG administration during early diestrus on estrous cycle length, expression of estrus, and fertility in lactating dairy cows.
T. O. Cunha*, W. Martinez2, and J. P. N. Martins1, 1School of Veterinary Medicine, University of Wisconsin-Madison, Madison, WI, 2University of California Agriculture and Natural Resources, Cooperative Extension, Tulare, CA.

10:15 AM 327 Effect of progesterone before an Ovsynch-CIDR protocol on fertility in dairy cows with low body condition score.
D. Scandolo1, P. Melendez2, M. Bilbao3, S. Perez Wallace3, and J. Bartolome3, 1Faculty of Veterinary Sciences, National University of Litoral, Santa Fe, Argentina, 2College of Veterinary Medicine, University of Georgia, Tifton, GA, 3Faculty of Veterinary Sciences, National University of La Pampa, La Pampa, Argentina, 4Zoetis, Argentina, Buenos Aires, Argentina.

10:30 AM 328 Impact of assisted reproduction techniques on subsequent reproductive performance of dairy heifers and cows.
C. C. Figueiredo*, D. Z. Bisinotto, G. V. R. Brandão, S. G. Umana Sedo, and R. S. Bisinotto, Department of Large Animal Clinical Sciences, University of Florida, Gainesville, FL USA.

10:45 AM Break

11:00 AM 329 Lipidomics of uterine fluid in lactating cows during diestrus.
E. Ticiani1,2, J. F. W. Spricigo1, M. R. Carvalho1, A. Moore3, M. Bertolini3, and E. S. Ribeiro1, 1Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, 2Animal Sciences Research Program, Federal University of Rio Grande do Sul, Porto Alegre, RS, Brazil.
J. F. W. Spricigo*, M. R. Carvalho, E. Ticiani, O. B. Pancottini, B. Mion, and E. S. Ribeiro, 1Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, 2Department of Population Medicine, University of Guelph, Guelph, ON, Canada.

11:30 AM 331  Galectin gene expression in the elongating bovine conceptus.
H. L. Baldwin*, L. F. Grose, and D. J. Mathew, West Virginia University, Morgantown, WV.

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Ruminant Nutrition 3: Vitamins and Minerals
Chair: Duarte Diaz, University of Arizona
Junior Ballroom D

9:30 AM 332  Dietary starch level alters blood indicators of copper status in lactating Holstein-Friesian dairy cows when fed without or with additional sulfur and molybdenum.

9:45 AM 333  Effects of zinc hydroxychloride on production and metabolism during 5 d of feed restriction.

10:00 AM 334  The effect of supplementing dairy cows with vitamins based on the BASF annual industry vitamin supplementation survey on productive and reproductive parameters.
M. Coelho*, R. Jones, and F. Parks, BASF Corp., Florham Park, NJ.

10:15 AM 335  Effect of nanoparticle copper oxide fed alone or in combination with dietary antagonists on mineral status and performance of dairy cows.
A. Williams*, A. M. Mackenzie, J. J. Bennison, and L. S. Sinclair, 1Harper Adams University, Newport, UK, 2Agrimin Ltd., Kirmington, UK.

10:30 AM 336  Impact of B-complex vitamins on dairy cow productive and reproductive performance.
M. Coelho*, R. Jones, and F. Parks, BASF Corp., Florham Park, NJ.

10:45 AM 337  Survey on the impact of diet composition on folate and vitamin B12 plasma concentrations of cows across the United States and Canada.
M. Duplessis*, K. E. Ritz, M. T. Socha, and C. L. Girard, 1Agriculture and Agri-Food Canada, Sherbrooke, QC, Canada, 2Zinpro Corporation, Eden Prairie, MN.

11:00 AM 338  Evaluation of source of trace minerals and corn silage on lactational performance and total-tract nutrient digestibility of Holstein cows.
M. D. Miller*, J. Lanier, S. Kvidera, H. M. Dann, C. S. Ballard, and R. J. Grant, 1William H. Miner Agricultural Research Institute, Chazy, NY, 2Micronutrients USA LLC, Indianapolis, IN.

11:15 AM 339  The effect of substantial decreases on vitamin A supplementation for 6 and 36 months on dairy cow productive and reproductive performance.
M. Coelho*, R. Jones, and F. Parks, BASF Corp., Florham Park, NJ.

11:30 AM 340  Effects of dose and source of vitamin D on mineral homeostasis and performance in transition dairy cows.

11:45 AM 341  Effect of cobalt source and folic acid on lactation performance of dairy cows.
K. E. Ritz*, C. L. Engel, M. T. Socha, C. S. Kending, P. Stark, and T. B. Bennett, 1Zinpro Corporation, Eden Prairie, MN, 2University of Wisconsin-School of Veterinary Medicine, Madison, WI.
The effect of vitamin antioxidant status and neutrophil function on dairy cow productive and reproductive performance.
M. Coelho*, R. Jones, and F. Parks, BASF Corp., Florham Park, NJ.

ADSA Southern Branch Symposium: Dairy Cattle Longevity Revisited—
Trends, Economics, and Opportunities
Chair: Jillian Bohlen, University of Georgia
Sponsor: Elanco Animal Health

2:00 PM
Why revisit dairy cattle longevity?
A. De Vries*1, K. Daniels2, J. Fain Bohlen3, G. Ferreira4, A. Rius5, and S. Ward6, 1University of Florida, Gainesville, FL,
2Virginia Tech, Blacksburg, VA, 3North Carolina State University, Raleigh, NC, 4University of Tennessee, Knoxville, TN,
5University of Georgia, Athens, GA.

2:15 PM
The effect of management and facilities on cow culling rates.
N. Cook*, University of Wisconsin-Madison, Madison, WI.

2:45 PM
Replacement heifers: How many, what kind, and how should we manage it all?
M. W. Overton*, Elanco Animal Health, Greenfield, IN.

3:15 PM
Impact of genomic selection and sexed semen on the economics of longevity.
D. Kendall*, C. Heuer, C. Sun, and J. Deeb, ST Genetics, Navasota, TX.

3:45 PM
Ice cream break in Exhibit Hall

4:00 PM
Business Meeting and Reception

Animal Health 2: Immunity
Chair: Sha Tao, University of Georgia

2:00 PM
Transcriptomic analysis of circulating leukocytes in early postpartum dairy cows with and without uterine infection.
S. Crisp*, C. McConnel, T. Biggs, S. Ficklin, L. Parrish, W. Sischo, and A. Adams-Progar, Washington State University, Pullman, WA.

2:15 PM
Effect of a non-specific immune stimulant on white blood cell counts around parturition.
G. Solano*1, D. Manriquez1, L. Keiko-Hatamoto1, S. Paudyal1,2, A. Velasquez-Munoz1, J. Velez1, L. Caixeta1,3, A. Masic4, and P. Pinedo1, 1Department of Animal Sciences, Colorado State University, Fort Collins, CO, 2Aurora Organic Dairy, Platteville, CO, 3Department of Veterinary Population Medicine, University of Minnesota, St. Paul, MN, 4NovaVive Inc., Napanee, ON, Canada, 5Texas A&M University, College Station, TX.

2:30 PM
Evaluation of disease occurrence and production parameters of dairy cows treated with pegbovigrastim.
M. X. da Silva Oliveira*, D. D. McGee2, J. A. Brett3, and A. E. Stone1, 1Animal and Dairy Sciences, Mississippi State University, Mississippi State, MS, 2Elanco Animal Health, Greenfield, IN, 3College of Veterinary Medicine, Mississippi State University, Mississippi State, MS.

2:45 PM
Using chitosan microparticles to treat metritis in lactating dairy cows.
3:00 PM 351  
Effect of chitosan microparticles on the uterine microbiome of dairy cows with metritis.  
K. Galvão¹, E. de Oliveira¹, F. Cunha¹, R. Daetz¹, R. Chebel¹, C. Risco¹, J. Santos¹, K. Jeong¹, R. Bicalho², and C. González Moreno³, ¹University of Florida, Gainesville, FL, ²Cornell University, Ithaca, NY, ³Universidad Nacional de Tucumán, San Miguel de Tucumán, Tucumán, Argentina.

3:15 PM 352  
Intracellular zinc bioavailability in bovine mammary epithelial cells is modulated by lipopolysaccharide: A fluorescence resonance energy transfer approach.  
R. Mohan*, F. Rosa, and J. S. Osorio, Dairy and Food Science Department, South Dakota State University, Brookings, SD.

3:30 PM  
Ice cream break in Exhibit Hall

4:00 PM 353  
Needle-free vaccination of cattle against blue tongue virus (BTV) serotype 8.  
R. Rehage¹, J. Szura¹, L. Haas², B. Hoffmann², and J. Rehage*, ¹Clinic for Cattle, University of Veterinary Medicine Hannover, Hannover, Germany, ²Department of Virology, University of Veterinary Medicine Hannover, Hannover, Germany, *Institute of Diagnostic Virology, Friedrich Loeffler Institute, Riems, Germany.

4:15 PM 354  
A cohort study on the carcass weight loss associated with bovine leukemia virus infection in dairy production in Hokkaido, Japan.  
S. Nakada*¹,², Y. Fujimoto², J. Kohara³, Y. Adachi⁴, and K. Makita³, ¹Hokkaido Higashi Agriculture Mutual Aid Association, Nakashibetsu, Japan, ²Veterinary Epidemiology Unit, Graduate School of Veterinary Medicine, Rakuno Gakuen University, Ebetsu, Japan, ³Animal Research Center, Agricultural Research Department, Hokkaido Research Organization, Shintoku, Japan, ⁴Hayakita Meat Inspection Center, Iburi Sub-Prefectural Bureau, Hokkaido Prefectural Government, Hokkaido, Japan.

Joint Animal Health/Growth and Development Platform Session: Factors that Influence Calf Health, including Fetal Programming  
Chair: Emma Wall, Erbo Group

2:00 PM 355  
Late-gestation maternal factors affecting dairy calves’ health and development.  
A. Abuelo*, Department of Large Animal Clinical Sciences, Michigan State University, East Lansing, MI.

2:45 PM 356  
Effects of serum protein concentrations on selected health measures within the first 90 days of life in Holstein dairy calf.  
B. J. Tverdy*,¹, C. Y. Tsai¹, W. J. Price², and P. Rezamand¹, ¹Department of Animal and Veterinary Science, University of Idaho, Moscow, ID, ²Statistical Programs, College of Agricultural and Life Sciences, University of Idaho, Moscow, ID.

3:00 PM 357  
Validation of an automated cell counter to determine leukocyte differential counts in neonatal Holstein calves.  
T. E. von Konigslow*, D. L. Renaud, T. F. Duffield, V. Higginson, and D. F. Kelton, University of Guelph, Guelph, ON, Canada.

3:15 PM 358  
Colostrum supplementation with omega-3 fatty acids alters plasma fatty acid profile and inflammatory mediators in newborn calves during the first week of life.  

3:30 PM  
Ice cream break in Exhibit Hall

4:00 PM 359  
Extracellular vesicles modulate pro-inflammatory signaling in bovine macrophages.  
C. M. Ylioja*, M. Garcia, L. K. Mamedova, and B. J. Bradford, Kansas State University, Manhattan, KS.

4:15 PM 360  
Deep RNA-Seq reveals genetics and nutritional regulation of miRNomes in mammary gland of lactating Holstein and Montbéliarde cows.  
P.-A. Billa*, Y. Faulconnier¹, T. Ye²,³, S. Bes⁴, J. Pires⁵, and C. Leroux⁶, ¹Université Clermont Auvergne, INRA, VetAgro Sup, UMR Herbivores, Saint-Genès-Champanelle, Auvergne-Rhône-Alpes, France, ²Institut de Génétique et de Biologie Moléculaire et Cellulaire, Illkirch, Grand Est, France, ³Centre National de la Recherche Scientifique, Illkirch, Grand Est, France, ⁴Department of Food Science and Technology, University of California Davis, Davis, CA.
Genome-wide association study in colostrum reveals QTL for natural antibodies in Swedish dairy cattle.

Breeding and Genetics: Breeding Strategies and Male Fertility
Chair: Francisco Peñagaricano, University of Florida
207/208

Realized genetic selection differentials in Canadian Ayrshire dairy cattle herds.
B. A. Hagan*, J. Moro-Mendez, and R. I. Cue, Animal Science Department, McGill University, Ste-Anne-de-Bellevue, QC, Canada, Dairy consultant, Montreal, QC, Canada.

Genetic update of lost Holstein male lineages.
C. D. Dechow, J. Ziegler, C. G. Sattler, H. Wei, and H. Blackburn, Pennsylvania State University, University Park, PA, Select Sires Inc, Plain City, OH, Trans Ova Genetics, Sioux Center, IA, National Animal Germplasm Program, Fort Collins, CO.

Effect of genomic selection on rate of inbreeding and effective population size in North American Holstein and Jersey dairy cattle populations.
B. Makanjuola, F. Miglior, M. Sargolzaei, C. Maltecca, F. Schenkel, and C. Baes, Centre for Genomic Improvement of Livestock, Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, Ontario Genomics, Toronto, ON, Canada, HiggsGene Solutions Inc., Guelph, ON, Canada, Department of Animal Science and Genetics Program, North Carolina State University, Raleigh, NC, Institute of Genetics, Vetsuisse Faculty, University of Bern, Bern, Switzerland.

A web-based mating program for global optimization on commercial dairy herds.
C. Sun, S. Westberry, D. Kendall, and D. Castellani, STgenetics, Navasota, TX.

Effects of recent and ancient inbreeding on performance of Dutch Holstein Friesian dairy cattle.
H. P. Doekes, R. F. Veerkamp, P. Bijma, S. J. Hiemstra, G. de Jong, and J. J. Windig, Animal Breeding and Genomics, Wageningen University & Research, Wageningen, the Netherlands, Centre for Genetic Resources the Netherlands, Wageningen University & Research, Wageningen, the Netherlands, Cooperation CRV, Arnhem, the Netherlands.

Crossbreeding affects the production performance of dairy cows exposed to a range of temperature and humidity in a pasture-based system.
J. Graham, S. Biffani, and F. Tiezzi, Department of Animal Science, North Carolina State University, Raleigh, NC, Istituto di Biologia e Biotecnologia Agraria, Milan, Italy.

Ice cream break in Exhibit Hall

Consequences of crossbreeding, genotyping, and use of sexed semen and beef semen on genetic merit and profitability in Swedish dairy herds.
J. Clasen, M. Kargo, S. Østergaard, W. Fikse, L. Rydhmer, and E. Strandberg, Department of Animal Breeding and Genetics, Swedish University of Agricultural Sciences, Uppsala, Sweden, Department of Molecular Biology and Genetics, Science and Technology, Aarhus University, Foulum, Denmark, Department of Animal Science, Science and Technology, Aarhus University, Foulum, Denmark, Växa Sverige, Uppsala, Sweden, SEGES, Danish Agriculture & Food Council, Skejby, Denmark.

Genomic prediction of male fertility in Jersey dairy cattle.
F. M. Rezende, J. P. Nani, and F. Peñagaricano, University of Florida, Gainesville, FL, Universidade Federal de Uberlândia, Uberlândia, Minas Gerais, Brazil.

Investigation of genetic variation in global DNA methylation in bull semen and its relationship with semen quality and fertility parameters.
Y. He, C. Maltecca, F. Tiezzi, A. Canovas, S. Bhattacharai, and S. McKay, Department of Animal Science, North Carolina State University, Raleigh, NC, Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, Department of Animal and Veterinary Sciences, University of Vermont, Burlington, VT.
4:45 PM 371 Dissecting the genetic role of sex chromosomes on dairy bull fertility.  
H. A. Pacheco*, F. M. Rezende1,2, and F. Peñagaricano1.  
1University of Florida, Gainesville, FL, 2Universidade Federal de Uberlândia, Uberlândia, Minas Gerais, Brazil.

5:00 PM 372 Whole-genome homozygosity mapping reveals candidate regions affecting male fertility in US Holstein cattle.  
J. P. Nani* and F. Peñagaricano, University of Florida, Gainesville, FL.

Dairy Foods Symposium: Recent Advances in Dairy Food Safety Research  
Chair: Tim Stubbs, National Dairy Council  
Sponsor: National Dairy Council  
237/238

2:00 PM 373 Overview of National Dairy Council Listeria Research Consortium, industry needs identification, and funding of research gaps.  
T. Stubbs*, National Dairy Council, Rosemont, IL.

2:15 PM 374 Protective cultures: Applications to control spoilage organisms and pathogens in high-risk cheese.  

2:45 PM 375 Functionalized mesh materials for Listeria control in dairy applications.  

3:15 PM Ice cream break in Exhibit Hall

3:45 PM 376 Controlling Listeria monocytogenes in soft cheese with high voltage atmospheric cold plasma (HVACP) treatment.  
K. M. Keener* and Z. Wan, Iowa State University, $Ames, IA.

4:15 PM 377 Effects of acid type, fermentates, and culture selection on the safety of high moisture cheeses.  
K. Glass* and S. Engstrom, University of Wisconsin-Madison, $Madison, WI.

4:45 PM 378 Interventions to control Listeria monocytogenes as a surface contaminant on high-moisture cheese.  
D. D’Amico and S. Brown*, University of Connecticut, Storrs, CT.

5:15 PM Closing remarks  
T. Stubbs.

Dairy Foods: Chemistry  
Chair: Karen Schmidt, Kansas State University  
236

2:00 PM 379 Calibration samples and calibration adjustment for mid-infrared milk fatty acid analysis.  
D. Barbano*, Cornell University, Ithaca, NY.

D. Barbano*, C. Coon, and M. Portnoy, Cornell University, Ithaca, NY.

2:30 PM 381 Mid-infrared analysis of reconstituted milk powders.  
E. Peterson* and D. Barbano, Cornell University, Ithaca, NY.

2:45 PM 382 Infrared milk analyzers: Calibration samples for milk urea nitrogen.  
M. Portnoy* and D. Barbano, Cornell University, Ithaca, NY.
Evaluation of an automatic fat analysis system for determination of fat in dairy products.
H. Jiang*, J. Romero, and S. Govindasamy-Lucey, Wisconsin Center for Dairy Research, University of Wisconsin-Madison, Madison, WI.

Physicochemical properties of skim milk powder dispersions acidified by gluconic acid, hydrochloric acid, and citric acid.
I. Choi* and Q. Zhong, The University of Tennessee, Knoxville, TN.

Physiology and Endocrinology 3
Chair: Zhen Zhou, Michigan State University
262

The effect of tea tree oil on bovine mammary epithelial cells and polymorphonuclear leukocytes function.

Mammary gland RNA-seq analysis highlights a protective effect of NutriTek supplementation on udder integrity and health during a Streptococcus uberis mastitis challenge in mid-lactating dairy cows.
M. Vailati-Riboni*, D. Coleman, V. Lopreiato, A. Alharthi, R. Bucktrout, I. Yoon, and J. J. Loor, Department of Animal Sciences, University of Illinois, Urbana, IL, Interdepartmental Services Centre of Veterinary for Human and Animal Health, Department of Health Science, Magna Graecia University, Catanzaro, Italy, Department of Animal Sciences, Food and Nutrition (DIANA), Università Cattolica del Sacro Cuore, Piacenza, Italy, Diamond V, Cedar Rapids, IA.

Effects of improving serotonin bioavailability on serotonergic components of the immune system of dairy calves.
M. G. Marrero*, A. L. Skibiel, B. Dado-Senn, S. L. Field, and J. Laporta, Department of Animal Sciences, University of Florida, Gainesville, FL.

Ex vivo mammalian target of rapamycin (mTOR) pathway activation of bovine immune cell subsets during the transition period.
A. Sipka, T. Chandler, T. Overton, and S. Mann*, Department of Population Medicine, College of Veterinary Medicine, Cornell University, Ithaca, NY, Department of Animal Science, College of Agriculture and Life Sciences, Cornell University, Ithaca, NY.

A comparison of peripheral blood mononuclear cell mitochondrial enzyme activity to genetic markers of lactation performance in high- and low-producing Holstein cows.

Pharmacological inhibition of the mammalian target of rapamycin (mTOR) pathway alters phenotype and inflammatory response in bovine monocyte derived dendritic cells.
A. Sipka*, S. Klaessig, T. Weichhart, and S. Mann, Population Medicine and Diagnostic Sciences, Cornell University, Ithaca, NY, Medical University of Vienna Center for Pathobiochemistry and Genetics, Vienna, Austria.
Production, Management, and the Environment Symposium: Profitability and Sustainability
Chair: Victor Cabrera, University of Wisconsin-Madison
Sponsors: Dean Foods and Ajinomoto Animal Nutrition

2:00 PM 393 Colostrum management and calf nutrition for profitable and sustainable dairy farms. A. J. Heinrichs*, 1 P. S. Erickson2, H. Chester-Jones2, and C. M. Jones2, 1The Pennsylvania State University, University Park, PA, 2University of New Hampshire, Durham, NH, 3University of Minnesota Southern Research and Outreach Center, Waseca, MN.

2:30 PM 394 Nutrition strategies for improved health, production, and fertility during the transition period. F. Cardoso*, 1K. Kalscheur2, 1University of Illinois, Urbana, IL, 2Dairy Forage Center ARS-USDA, Madison, WI.

3:00 PM 395 Current and future trends of organic dairy in the United States: From feed efficiency to carbon emission. A. F. Brito* and L. H. P. Silva, University of New Hampshire, Durham, NH.

3:30 PM Ice cream break in Exhibit Hall

4:00 PM 396 The top 5 technologies for the modern cow. A. E. Stone*, Mississippi State University, Starkville, MS.

4:30 PM 397 Decomposing efficiency of milk production and maximizing profit. A. Bach*, 1, 2ICREA (Institució Catalana de Recerca i Estudis Avançats), Barcelona, Spain, 2Department of Ruminant Production, IRTA (Institut de Recerca i Tecnologia Agroalimentàries), Caldes de Montbui, Spain.

5:00 PM 398 Strategies to improve efficiency and profitability of heifer raising. J. L. Anderson*, 1P. S. Erickson2, K. F. Kalscheur*, and G. J. Lascano*, 1South Dakota State University, Brookings, SD, 2University of New Hampshire, Durham, NH, 3USDA-ARS Dairy Forage Research Center, Madison, WI, 4Clemson University, Clemson, SC.

Joint Reproduction/Animal Health Platform Session: Transition Cow Health and Reproduction
Chair: Stephen LeBlanc, University of Guelph
Sponsor: Merck Animal Health

2:00 PM 399 Uterine microbiome and uterine disease. K. Galvão*, University of Florida, Gainesville FL.

2:45 PM 400 Long-term consequences of inflammatory disorders postpartum on fertility. E. S. Ribeiro*, M. R. Carvalho, B. Mion, and J. F. W. Spricigo, Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada.

3:30 PM 401 Associations between metabolic diseases and reproductive performance of dairy cows using survival analysis and machine learning models. O. Bogado Pascontini*, M. Probo*, S. Leblanc*, G. Opsomer*, M. Hostens*, 1Population Medicine, Ontario Veterinary College, University of Guelph, Guelph, ON, Canada, 2Department of Veterinary Medicine, Veterinary Teaching Hospital, University of Milan, Lodi, Italy, 3Department of Reproduction, Obstetrics and Herd Health, Faculty of Veterinary Medicine, Ghent University, Merelbeke, Belgium, 4Department of Farm Animal Health, Faculty of Veterinary Medicine, University of Utrecht | Utrecht, the Netherlands.

3:45 PM Ice cream break in Exhibit Hall

Regardless of bacterial load in the vagina, heat stress increases uterine disease incidence and severity in the dairy cow.
P. C. C. Molinari*1, I. M. Sheldon2, G. E. Dahl3, and J. J. Bromfield4, 1Department of Animal Sciences, University of Florida, Gainesville, FL, 2Institute of Life Science, Swansea University Medical School, Swansea, UK.

Effects of fully acidified, negative DCAD diets with differing concentrations of dietary calcium fed prepartum on uterine morphology and redox environment of Holstein cows after parturition.
K. Ryan1, A. Guadagnin*1, K. Glosson1,2, S. Bascom2, A. Rowson3, and F. Cardoso4, 1Department of Animal Sciences, University of Illinois, Urbana, IL, 2Phibro Animal Health Corporation, Teaneck, NJ.

Aflatoxin compromises development of the preimplantation bovine embryo through mechanisms independent of reactive oxygen production.
Y. Jiang*1, P. J. Hansen1, I. M. Ogunade2, X. Yao1, T. Amaral1, K. G. Arriola1, D. Vyas1, and A. T. Adesogan1, 1Department of Animal Sciences, University of Florida, Gainesville, FL, 2Division of Food and Animal Science, Kentucky State University, Frankfort, KY.

Effect of the treatment with carprofen during early postpartum on the reproductive performance of dairy cows with potential incidence of clinical metritis.
A. Rodríguez*1, M. Solar2, P. Palma2, and H. Bustamante3, 1Graduate School, Faculty of Agricultural Sciences, Universidad Autral de Chile, Valdivia, Chile, 2Lecherias del Sur Ltda, Osorno, Chile, 3Veterinary Clinical Sciences Department, Faculty of Veterinary Sciences, Universidad Austral de Chile, Valdivia, Chile.

Effect of a new preventive strategy with acetylsalicylic acid on uterine diseases and reproductive performance in dairy cows.
A. A. Barragan*1, S. Bas2, E. Hovingh1, A. Ludwikowski1, J. Zug1, and S. Hann1, 1Department of Veterinary and Biomedical Sciences, Penn State University, University Park, PA, 2Phytobiotics Futterzusatzstoffe GmbH Bvd, Córdoba, Argentina, 3Department of Animal Science, Penn State University, University Park, PA, 4Zugstead Farm, Mifflintown, PA.

Ruminant Nutrition 4: Production and Efficiency
Chair: Hugo Ramirez, Iowa State University
Junior Ballroom A

Improving the efficiency of inefficient lactating cows by increasing dietary forage to concentrate ratio.
Y. A. Ben Meir*1,2, I. Halachmi3, J. Miron3, and S. J. Mabjeesh1, 1Hebrew University of Jerusalem, Jerusalem, Israel, 2Agriculture Research Organization, Reashon LeZion, Israel, 3Institute of Agricultural Engineering, Reashon LeZion, Israel.

Between-cow variation in the components of feed efficiency.
A. Guinguina*1, T. Yan2, P. Lund3, A. Bayat4, and P. Huhtanen1, 1Department of Agricultural Research for Northern Sweden, Swedish University of Agricultural Sciences, Umeå, Sweden, 2Agri-Food and Biosciences Institute, Hillsborough, Co. Down, UK, 3Department of Animal Science, Aarhus University, AU, Foulum, Tjele, Denmark, 4Natural Resources Institute Finland (LUKE), Milk production, Jokioinen, Finland.

Effect of adding molasses-based liquid feed to a high-straw dry cow diet on intake and behavior of Holstein dairy cows.
C. Havekes*1, T. F. Duffield2, A. J. Carpenter1, and T. J. DeVries3, 1Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, 2Department of Population Medicine, University of Guelph, Guelph, ON, Canada.

Effect of *Saccharomyces cerevisiae* fermentation product (XP) supplemented to dairy cows during summer on feed efficiency, oxidative stress, and inflammatory markers.
U. Moallem*1, G. De With1,2, L. Lifshitz2, G. Kra3, Y. Portnick1, S. Jacoby1, M. Zachut1, and I. Yoon3, 1Department of Ruminant Science, ARO, Volcani Center, Rishon LeZion, Israel, 2Aeres University of Applied Sciences, Dronten, Holland, 3Diamond V, Cedar Rapids, IA.

Effects of supplemental concentrate type on dry matter intake and milk solids production of mid-lactation dairy cattle grazing perennial ryegrass-based pasture.
M. Dineen*1,2, M. C. McCarthy2, F. Coughlan3, P. Dillon4, and M. E. Van Amburgh1, 1Department of Animal Science, Cornell University, Ithaca, NY, 2Teagasc, Animal and Grassland Research and Innovation Centre, Moorepark, Fermoy, Co. Cork, Ireland.
Altered rumen fermentation patterns in lactating dairy cows supplemented with phytochemicals improves milk production and efficiency.
R. C. B. Grazziotin\textsuperscript{1}, J. Halfen\textsuperscript{2,3}, F. Rosa\textsuperscript{1}, J. L. Anderson\textsuperscript{1}, V. Ballard\textsuperscript{1}, and J. S. Osorio\textsuperscript{1}, \textsuperscript{1}Dairy and Food Science Department, South Dakota State University, Brookings, SD, \textsuperscript{2}Núcleo de Pesquisa, Ensino e Extensão em Pecuária (NUPEEC), Departamento de Clínica Veterinária, Universidade Federal de Pelotas, Pelotas, RS, Brazil, \textsuperscript{3}Groupe CCPA, Janzé, France.

Ice cream break in Exhibit Hall

Models to predict feed intake in dairy cows.
V. Ambriz-Vilchis\textsuperscript{1,2,3}, M. Webster\textsuperscript{1}, J. Flockhart\textsuperscript{1}, D. Shaw\textsuperscript{1}, and J. Rooke\textsuperscript{2}, \textsuperscript{1}Biosimetrics Ltd., Edinburgh, UK, \textsuperscript{2}SRUC, Edinburgh, UK, \textsuperscript{3}Royal (Dick) School of Veterinary Studies, Roslin, Midlothian, UK.

Feed efficiency of slick-hair and wild-type dairy cows under heat stress.
C. G. Rios-Solis\textsuperscript{1}, J. E. Curbelo-Rodríguez, E. Valencia, and G. Ortiz-Colón, University of Puerto Rico, Mayagüez, PR.

Effects of feeding native rumen microorganisms on production efficiency in lactating dairy cows.
B. M. Goetz\textsuperscript{1,2,3}, E. A. Horst\textsuperscript{1,4}, E. J. Mayorga\textsuperscript{1}, M. Al-Qaisi\textsuperscript{1}, M. A. Abeyta\textsuperscript{1}, L. M. van den Brink\textsuperscript{1}, S. Rodriguez-Jimenez\textsuperscript{1}, C. S. McCarthy\textsuperscript{1}, M. Embree\textsuperscript{1}, R. La\textsuperscript{1}, H. B. Green\textsuperscript{1}, C. E. Moore\textsuperscript{1}, H. A. Ramirez-Ramirez\textsuperscript{2}, and L. H. Baumgard\textsuperscript{1}, \textsuperscript{1}Department of Animal Science, Iowa State University, Ames, IA, \textsuperscript{2}Ascus Biosciences Inc., San Diego, CA.

Large-scale evaluation of growth performance and health of dairy calves supplemented with condensed whey solubles on a commercial dairy calf ranch.
N. Senevirathne\textsuperscript{1,2}, J. Anderson\textsuperscript{1}, L. Metzger\textsuperscript{1}, and C. Marella\textsuperscript{1}, \textsuperscript{1}South Dakota State University, Brookings, SD, \textsuperscript{2}Idaho Milk Products, Jerome, ID.

Effects of corn particle size on feeding behavior, intake, lactation, and metabolic status of early postpartum dairy cows.
M. N. T. Shipandeni\textsuperscript{1,2,3}, G. Esposito\textsuperscript{1,2}, C. W. Cruywagen\textsuperscript{1}, and E. Raffrenato\textsuperscript{1}, \textsuperscript{1}Department of Animal Sciences, Stellenbosch University, Stellenbosch, South Africa, \textsuperscript{2}Department of Animal Science, University of Namibia, Windhoek, Namibia.

Ruminant Nutrition 5: Fat and Lipid Metabolism
Chair: Joe McFadden, Cornell University
Junior Ballroom D

Abomasal infusion of different exogenous emulsifiers alters fatty acid digestibility and milk fat yield of lactating dairy cows.
C. M. Prom\textsuperscript{*} and A. L. Lock, Michigan State University, East Lansing, MI.

Effect of olive oil and hydrogenated vegetable oil supplementation on rumen bacterial composition in dairy cows.
N. Cancino-Padilla\textsuperscript{1,2}, J. Romero\textsuperscript{1,2}, S. A. Huws\textsuperscript{1,2}, and E. Vargas-Bello-Pérez\textsuperscript{1,2}, \textsuperscript{1}Pontificia Universidad Católica de Chile, Santiago, Chile, \textsuperscript{2}University of Co-pen-hagen, Copenhagen, Denmark.

Effect of palmitic acid-enriched supplements containing stearic or oleic acid on nutrient digestibility and production responses of low- and high-producing dairy cows.
A. M. Burch\textsuperscript{*}, A. Pineda, and A. L. Lock, Michigan State University, East Lansing, MI.

Altering the ratio of dietary palmitic and oleic acids impacts nutrient digestibility and energy intake in early lactation dairy cows.
J. de Souza\textsuperscript{*}, C. M. Prom, and A. L. Lock, Michigan State University, East Lansing, MI.

Dietary fatty acid composition alters digestibility and digestible energy intake in lactating dairy cows.
J. de Souza\textsuperscript{*}, R. A. de Souza, M. J. VandeHaar, and A. L. Lock, Michigan State University, East Lansing, MI.

Palmitic fatty acid dosed in continuous culture fermenters increases fiber digestibility estimates.
B. Wenner\textsuperscript{*} and N. St-Pierre\textsuperscript{2}, \textsuperscript{1}The Ohio State University, Columbus, OH, \textsuperscript{2}Perdue AgriBusiness, Salisbury, MD.
3:30 PM  Ice cream break in Exhibit Hall

4:00 PM  426  Effects of fatty acid and one-carbon donor abomasal infusates on hepatic ceramide and phosphatidylcholine levels in lactating dairy cows.

4:15 PM  427  Effects of abomasal infusions of fatty acids and one-carbon donors on the plasma and muscle metabolome of lactating cows.
J. E. Rico*, W. A. Myers, and J. W. McFadden, Cornell University, Ithaca, NY.

4:30 PM  428  High oleic soybeans increase milk fat yield at high and low inclusion levels.
R. Bomberger, E. Barnoff, and K. Harvatine*, Penn State University, University Park, PA.

4:45 PM  429  Effect of oleic acid and lecithin in saturated fatty acid supplements on production and nutrient digestibility in lactating dairy cows.
R. Shepardson* and K. Harvatine, Penn State University, University Park, PA.

5:00 PM  430  Simulating precision feeding of high concentrate diets with high fat inclusion and different unsaturated fat sources in continuous culture fermentors.
S. M. Hussein*, M. X. Toledo, S. Twyman, O. Thomas, and G. J. Lascano, Department of Animal and Veterinary Sciences, Clemson University, Clemson, SC.

5:15 PM  431  Production responses to increasing levels of calcium salts of palm fatty acids in dairy cows grazing tropical pastures.
J. M. dos Santos Neto*, A. N. Navarro¹, M. P. Sicilian¹, J. Olivier da Silva¹, J. de Souza¹, A. L. Lock², and F. A. P. Santos³, ¹Universidade de São Paulo, Piracicaba, SP, Brazil, ²Michigan State University, East Lansing, MI, ³Perdue Agribusiness, Salisbury, MD.
Wednesday, June 26

POSTER PRESENTATIONS

Animal Behavior and Well-Being 2

W1  Tryptophan supplementation in calf milk replacers at weaning as an attempt to facilitate weaning.
M. Terré, A. Bassols, M. Vidal, and A. Bach.
Institut de Recerca i Tecnologia Agroalimentàries, Caldes de Montbui, Barcelona, Spain; Universitat Autònoma de Barcelona, Bellaterra, Barcelona, Spain; Institució Catalana de Recerca i Estudis Avançats, Barcelona, Spain.

W2  Are fly avoidance behaviors of dairy cows housed on pasture influenced by the use of mesh fly leggings?
R. Perttu, B. Heins, H. Phillips, and M. Endres, Department of Animal Science, University of Minnesota, St. Paul, MN.

W3  Public acceptance of dairy calf housing options.
R. Perttu, B. Ventura, and M. Endres, Department of Animal Science, University of Minnesota, St. Paul, MN.

W4  Udder wetness and behavioral responses to showers in the milking parlor.
K. Reuscher, R. Salter, M. Mondaca, and J. Van Os, University of Wisconsin-Madison, Madison, WI.

W5  Effect of using fresh ryegrass/berseem clover as forage basis for TMR on dairy cow behavior.
Facultad de Agronomía e Ingeniería Forestal, Pontificia Universidad Católica de Chile, Santiago, Región Metropolitana, Chile; Laboratorio de Etiología Aplicada, Universidade Federal de Santa Catarina, Florianópolis, Santa Catarina, Brazil; Teagasc, Animal & Grassland Research and Innovation Centre, Moorepark, Fermoy, Co. Cork, Ireland.

W6  Characterization of use of a molasses-based feeding enrichment and effects on feeding behavior in group-housed dairy calves.
K. Gingerich and E. K. Miller-Cushon, University of Florida, Gainesville, FL.

W7  Epidemiology of lameness during the dry period.

W8  Effects of providing social and nutritional enrichment to dairy calves on learning behavior.
K. L. Kutina and J. M. Huzzey, California Polytechnic State University, San Luis Obispo, CA.

Animal Health 3

W9  Abundance of microbial virulence genes in rectal swabs from US dairy cows varies by stage of lactation.
E. A. Galbraith, A. M. Lange, S. Son, R. P. Arias, S. R. Fensterseifer, C. M. Peter, and M. R. King, Microbial Discovery Group, Franklin, WI; United Animal Health, Sheridan, IN.

W10  Microbial virulence gene abundance in rectal swabs from US dairy cows with or without gastrointestinal disease symptoms.
A. M. Lange, E. A. Galbraith, S. Son, R. P. Arias, C. M. Peter, and M. R. King, Microbial Discovery Group, Franklin, WI; United Animal Health, Sheridan, IN.

W11  Prevalence of five enteric pathogens on Ohio dairy farms.
J. Barkley, J. Pempek, A. Bowman, J. Nolting, J. Lee, S. Lee, and G. Habing, Department of Veterinary Preventive Medicine, The Ohio State University, Columbus, OH; Division of Environmental Health Sciences, College of Public Health, The Ohio State University, Columbus, OH; Veterinary Public Health Program, The Ohio State University, Columbus, OH.

W12  Advanced molecular spectroscopic techniques for screening mycotoxin concentrations in feed grains for dairy cows in western Canada.
H. Shi and P. Yu, Ministry of Agriculture Strategic Feeds Research Chair Program, Department of Animal and Poultry Science, College of Agriculture and Bioreources, University of Saskatchewan, Saskatoon, SK, Canada; College of Life Science and Engineering, Foshan University, Foshan, Guangdong.
Forages and Pastures 2

W25 In vitro degradability of Guinea grass (*Megathyrsus maximus*) silage with different inclusion levels of hulls from pineapple, passion fruit, and banana.

W26 Evaluation of the bale-cutting mechanism for alfalfa-orchardgrass baled silages.
W. Coblentz* and M. Akins, *US Dairy Forage Research Center*, Marshfield, WI, *University of Wisconsin, Madison, WI.*
W27 Effects of the application of a silage inoculant (Lactobacillus hilgardii and Lactobacillus buchneri) on corn silage aerobic stability and performance of dairy cows.
A. Bach1,2, E. Cheveaux3, G. Elcoso3, and J. Malliú1, 1CREA, Barcelona, Spain, 2IRTA, Caldes de Montbui, Spain, 3Lallemand Animal Nutrition, Toulouse, France, 4Blanca from the Pyrenees, Hostalets de Tost, Spain.

W28 Effect of ensiling time and temperature on the fermentation and nutritive value of a corn hybrid containing an α-amylase enzyme trait (Enogen Feed Corn).
E. Hellings1, K. Moyer*, É. da Silva1, C. Novinski1,3, Y. Li1, W. Sá4, R. Mester1, and L. Kung Jr.1, 1University of Delaware, Newark, DE, 2Heilongjiang Bayi Agricultural University, Daqing, Heilongjiang, China, 3Federal University of Paraná, Curitiba, Paraná, Brazil, 4Federal University of Paraíba, João Pessoa, Paraíba, Brazil.

W29 Survey of physical and chemical characteristics of sorghum silage in California.
J. Heguy*, N. Clark2, and D. Meyer3, 1University of California Agriculture & Natural Resources, Modesto, CA, 2University of California Agriculture & Natural Resources, Tulare, CA, 3University of California Davis, Davis, CA.

W30 Probiotic potential of Lactobacillus plantarum and its effectiveness on low-moisture silage development.

W31 Influence of microbial inoculation and length of storage on fermentation profile, N fractions, and ruminal in situ starch disappearance of whole-plant corn silage.
B. A. Saylor*, T. Fernandes1,2, H. Sultana3, and L. F. Ferraretto1, 1University of Florida, Gainesville, FL, 2Federal University of Lavras, Lavras, MG, Brazil.

W32 Evaluation of a novel pocket-sized micro-spectrometer as a rapid method to determine dry matter in silages.
S. Ostrom, M. Daynua, M. Messman*, T. Da Silva, and G. Schroeder, Cargill Animal Nutrition, Elk River, MN.

W33 The effects of recombinant bacterial expansin-like protein and a fibrolytic enzyme on in vitro nutrient digestibility and pre-ingestive hydrolysis of alfalfa silage.
J. E. Blajman1, A. A. Pech-Cervantes2, M. Irfan3, Y. Li1, W. Sá4, R. Mester1, and L. Kung Jr.1, 1University of Delaware, Newark, DE, 2Heilongjiang Bayi Agricultural University, Daqing, Heilongjiang, China, 3Federal University of Paraná, Curitiba, Paraná, Brazil, 4Federal University of Paraíba, João Pessoa, Paraíba, Brazil.

W34 Aerobic stability of sorghum silages inoculated with wild strains of Lactobacillus buchneri.

W35 Effect of wild strains of lactic acid bacteria on the fermentation profile of alfalfa silage.

W36 Reduced-lignin and normal alfalfa in monoculture and in binary mixtures with perennial grass.
D. J. R. Cherney1, S. R. Smith1, C. C. Sheaffer3, S. M. Wells1, and J. H. Cherney1, 1Cornell University, Ithaca, NY, 2University of Kentucky, Lexington, KY, 3University of Minnesota, St. Paul, MN.

W37 An evaluation of Lactobacillus hilgardii 4785 to improve the aerobic stability of corn silage.
D. M. Costa1, K. Z. Moyer3, E. A. Hellings3, E. M. Santos2, N. A. Moyer3, and L. Kung Jr.3, 1Universidade Federal de Lavras, Lavras, MG, Brazil, 2Universidade Federal da Paraíba, João Pessoa, Paraíba, Brazil, 3University of Delaware, Newark, DE.

W38 Evaluation of additives containing Lactobacillus buchneri on the fermentation of corn silage.
E. M. Santos2, K. Z. Moyer3, E. A. Hellings3, D. M. Costa1, N. A. Moyer3, M. A. Davidson3, and L. Kung Jr.3, 1Universidade Federal de Lavras, Lavras, MG, Brazil, 2Universidade Federal da Paraíba, João Pessoa, Paraíba, Brazil, 3University of Delaware, Newark, DE.

W39 Particle size distribution of whole-plant corn silage harvested with pull-type or self-propelled forage harvesters.
E. F. Barbosa1, G. S. Dias Junior2, and M. N. Pereira*, 1Universidade Federal de Lavras, Lavras, MG, Brazil, 2Agroceres Multimix, Rio Claro, SP, Brazil.

W40 Impact of roll gap and theoretical length of cut settings, and storage length on fermentation profile and berry processing score of whole plant sorghum silage.
Dairy heifer growth while grazing meadow fescue or orchardgrass.
C. Hribar*1, G. Brink2, J. Bleier2, M. Casler2, W. K. Coblelnz1, R. K. Ogden3, J. C. Cavadini4, and M. S. Akins1, 1University of Wisconsin-Madison, Madison, WI, 2USDA Dairy Forage Research Center, Madison, WI, 3USDA Dairy Forage Research Center, Marshfield, WI, 4University of Wisconsin Marshfield Agricultural Research Station, Stratford, WI.

Use of machine learning to predict feed components via near-infrared spectroscopy.
J. R. R. Dorea*1, J. Karlen2, and G. J. M. Rosa1, 1University of Wisconsin-Madison, Madison, WI, 2Rock River Laboratory Inc., Watertown, WI.

Effect of ammonia fiber expansion (AFEX) treatment on the digestibility and feeding value of rice straw for young dairy steers.
B. Van Soest*1, F. Teymouri2, D. Haddad2, V. Bringi2, and M. VandeHaar1, 1Michigan State University, East Lansing, MI, 2Michigan Biotechnology Institute, Lansing MI.

Growth and Development: Milk and Milk Replacer

Effects of breed and health incidences on total milk consumption and predicted body weight of Holstein and Angus × Holstein F1 calves during the preweaning period.
T. S. Steckler* and J. P. Boerman, Department of Animal Sciences, Purdue University, West Lafayette, IN.

Effects of porcine plasma or combined sodium butyrate and Bacillus subtilis on growth and health of dairy calves.
D. Wood*1, R. Blome1, A. Keunen2, D. Renaud3, J. Campbell4, and J. Crenshaw5, 1Animix LLC, Juneau, WI, 2Mapleview Agri Ltd., Palmerston, ON, Canada, 3Population Medicine, University of Guelph, Guelph, ON, Canada, 4APC Inc., Ankeny, IA.

Effects of milk replacer feeding rate and functional fatty acids on digestion in Jersey calves.

Different milk replacer induces changes in growth performance and rumen bacterial diversity of dairy bull calves.
Y. Zhang1, D. Jin1, J. Cheng2, N. Zhang1, Y. Zhang2, and J. Wang*3, 1State Key Laboratory of Animal Nutrition, Institute of Animal Sciences, Chinese Academy of Agricultural Sciences, Beijing, China, 2Institute of Animal Husbandry and Veterinary Science, Shanxi Academy of Agricultural Science, Taiyuan, China.

Effects of feeding Holstein calves 3% wheat protein in milk replacer.
A. Keunen*1 and D. Renaud1, 1Mapleview Agri Ltd., Palmerston, ON, Canada, 2Population Medicine, University of Guelph, Guelph, ON, Canada.

K. Murayama*1, Y. Inabu2, and T. Sugino2, 1Dairy Technology Research Institute, Feed-Livestock and Guidance Department, The National Federation of Dairy Co-operative Associations (ZEN-RAKU-REN), Nishi-shirakawa, Fukushima, Japan, 2The Research Center for Animal Science, Graduate School of Biosphere Science, Hiroshima University, Higashi-Hiroshima, Japan.

Use of body measurements to estimate live weight of Holstein dairy calves in the pre-weaning period.
M. Hasnaoui*1, D. Santschi2, S. Plante1, E. Vasseur3, A. Bregard1, S. Binggeli1, and É. Charbonneau1, 1Université Laval, Québec, QC, Canada, 2Valacta, Ste-Anne-de-Bellevue, QC, Canada, 3McGill University, Ste-Anne-de-Bellevue, QC, Canada.

Lactation Biology 1

Differential effects of the lactogenic hormones on mechanistic target of rapamycin complex 1 (mTORC1) signaling in primary bovine mammary epithelial cells.
V. Pszczolkowsky1, L. Hernandez1, S. Arriola Apelo*2,1, 1Endocrinology and Reproductive Physiology Graduate Training Program, University of Wisconsin-Madison, Madison, WI, 2Department of Dairy Science, University of Wisconsin-Madison, Madison, WI.

Relationships between blood metabolites and milk fat-to-protein ratio in dairy cows during early lactation.
E. H. Cabezas-Garcia*3, A. W. Gordon1, F. J. Mulligan4, and C. P. Ferris1, 1Agri-Food and Biosciences Institute, Hillsborough, Co. Down, UK, 2Agri-Food and Biosciences Institute, Belfast, Co. Antrim, UK, 3School of Veterinary Medicine, University College Dublin, Belfield, Dublin, Ireland.
W53  Regulation of mammary gene expression during prolonged exposure to heat stress.
R. O. Rodrigues*, M. E. Shanraw, L. K. Hirtz, P. R. F. Adkins, and T. B. McFadden, University of Missouri, Columbia, MO.

W54  Regulation of mammary function during early exposure to heat stress in dairy cows.
R. O. Rodrigues*, J. R. Scalant Jr., E. M. Shanraw, L. K. Hirtz, and T. B. McFadden, University of Missouri, Columbia, MO, Sao Paulo State University, Araçatuba, SP, Brazil.

W55  Effects of extracellular branched-chain amino acid availability on the abundance of glucose transporter 1 (GLUT1) in bovine mammary epithelial cells.
J. V. Silva*, S. Ganesan, C. A. Kaya, H. K. J. P. Wickramasinghe, and J. A. D. R. N. Appuhamys, Department of Animal Science, Iowa State University, Ames, IA, Dicle University, Diyarbakir, Turkey.

W56  Milk fatty acid profile of 32 inbred mice strains and in silico genome-wide association analysis to locate significant SNP associated with fatty acid variability.
C. I. Matamoros*, K. E. Robinson, D. L. Hadsell, D. L. Hadsell, D. L. Hadsell, and D. L. Hadsell, University of Guelph, Guelph, ON, Canada, Department of Animal, Food & Nutritional Science, University of Guelph, Guelph, ON, Canada, Department of Animal, Food & Nutritional Science, University of Guelph, Guelph, ON, Canada, Department of Animal, Food & Nutritional Science, University of Alberta, Edmonton, AB, Canada, Animal Genomics & Improvement Laboratory, USDA ARS, Beltsville, MD, Agriculture Victoria, Agribio, Centre for AgriBioscience, Bundoora, VIC, Australia, School of Applied Systems Biology, La Trobe University, Bundoora, VIC, Australia, Animal & Veterinary Sciences, Scotland’s Rural College, Edinburgh, UK, Qualities AG, Zug, Switzerland, Viking Genetics, Randers, Denmark.

W57  Intramammary lipopolysaccharide infusion elicits local or systemic effects depending on milk component.
E. Shangraw*, R. Rodrigues, M. Witzke, H. Linder, R. Choudhary, A. Spitzer, F. Q. Zhao, and T. McFadden, University of Missouri, Columbia, MO, University of Vermont, Burlington, VT.

W58  Correlations of feed efficiency measures to parameters of the Dijkstra lactation model in dairy cattle.
D. J. Seymour*, A. C. Calvo*, T. C. S. Chu, J. P. Cant, V. R. Osborne, F. S. Shenkel, D. Hailieman, E. E. Connor, J. E. Priceman, E. Wall, S. Wegmann, J. Lassen, and F. Milori, Centre for Nutrition Modelling, Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, Centre for Genetic Improvement of Livestock, Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, Department of Agricultural, Food & Nutritional Science, University of Alberta, Edmonton, AB, Canada, Animal Genomics & Improvement Laboratory, USDA ARS, Beltsville, MD, Agriculture Victoria, Agribio, Centre for AgriBioscience, Bundoora, VIC, Australia, School of Applied Systems Biology, La Trobe University, Bundoora, VIC, Australia, Animal & Veterinary Sciences, Scotland’s Rural College, Edinburgh, UK, Qualities AG, Zug, Switzerland, Viking Genetics, Randers, Denmark.

W59  Bovine milk proteome: Pooling samples within day does not account for diurnal mammary fluctuations.
M. Honan*, M. Fahey, and S. Greenwood, The University of Vermont, Burlington, VT.

W60  Stearic acid supplementation (C18:0) does not overcome the CLA cis-10, cis-12-induced milk fat depression in early lactating dairy ewes.
G. C. Aguiar, R. Horstmann, C. G. Padilha, D. T. C. Bessani, and D. E. Oliveira, Santa Catarina State University, Lages, Santa Catarina, Brazil.

W61  Stearic acid (C18:0) does not overcome the downregulating gene expression effect of conjugated linoleic acid (CLA) trans-10, cis-12 on lipogenic genes in early lactating dairy ewes.
G. C. Aguiar, R. Horstmann, C. G. Padilha, and D. E. Oliveira, Santa Catarina State University, Lages, Santa Catarina, Brazil.

W62  The effects of incomplete milking and increased milking frequency on milk production rate and milk composition.

W63  Associations between body condition score at parturition and microRNA profile in colostrum of dairy cows.
C. M. Ylioja*, M. M. Rolf, M. K. Mamedova, and B. J. Bradford, Kansas State University, Manhattan, KS.

W64  Effects of extracellular branched-chain amino acid availability on the abundance of proteins regulating fat synthesis in bovine mammary cells: A proteomics analysis.
S. Ganesan*, J. V. V. Silva, C. A. Kaya, H. K. J. P. Wickramasinghe, and J. A. D. R. N. Appuhamy, Department of Animal Science, Iowa State University, Ames, IA, Dicle University, Diyarbakir, Turkey.

W65  Conjugated linoleic acid (CLA) alters the milk fat composition in lactating sows.
E. C. Sandri, C. V. M. Ribeiro, and D. E. Oliveira, Universidade do Estado de Santa Catarina, Lages, Santa Catarina, Brazil, Universidade Federal da Bahia, Salvador, BA, Brazil.
Physiology and Endocrinology 2

W66  
Trans-10,cis-12 conjugated linoleic acid (CLA) reduces gene expression of ACACA, FASN, SCD, LPL, AGPAT6, DGAT1, CSN2, and LALBA in the mammary gland of sows.  
E. C. Sandri1, K. J. Harvatine1, and D. E. Oliveira*1; 1Santa Catarina State University, Lages, Santa Catarina, Brazil, 2Penn State University, State College, PA.

W67  
Leucine stimulates mammalian target of rapamycin (mTOR) signaling pathway to regulate κ-casein synthesis via activating LAT1 and LARS in bovine mammary epithelial cells.  

W68  
Nerve growth factor-β effects on steroidogenesis and angiogenic markers in the bovine pre-ovulatory follicle.  
J. L. Stewart1,2, J. A. Flaws1, I. F. Canisso1,3, and F. S. Lima*1, 1Department of Veterinary Medicine, University of Illinois, Urbana, IL, 2Department of Large Animal Clinical Science, Virginia Polytechnic Institute and State University, Blacksburg, VA, 3Department of Comparative Biosciences, University of Illinois, Urbana, IL.

W69  
Nerve growth factor-β increases small luteal cell number and steroidogenic activity in the bovine corpus luteum.  
J. L. Stewart1,2, V. R. G. Mercadante1, N. W. Dias1, S. Stella1, L. Cunha*1, I. F. Canisso1, and F. S. Lima1, 1Department of Veterinary Medicine, University of Illinois, Urbana, IL, 2Department of Large Animal Clinical Science, Virginia Polytechnic Institute and State University, Blacksburg, VA, 3Department of Animal Sciences, Virginia Polytechnic Institute and State University, Blacksburg, VA.

W70  
Pegbovigrastim treatment alters gene expression profiles of leukocytes in Simmental and Holstein cows after calving.  
V. Lopreiato1, A. Minuti1,2, D. Britti1, F. Trimbo1, F. Piccioli Cappelli1, J. J. Loor4, and E. Trevisi*1, 1Interdepartmental Services Centre of Veterinary for Human and Animal Health, Department of Health Science, Magna Græcia University, Catanzaro, Italy, 2Department of Animal Sciences, Food and Nutrition (DIANA), Università Cattolica del Sacro Cuore, Piacenza, Italy, 3Proteomics and Nutrigenomics Research Center (PRONUTRIGEN), Università Cattolica del Sacro Cuore, Piacenza, Italy, 4Department of Animal Sciences and Division of Nutritional Sciences, University of Illinois, Urbana, IL.

W71  
A lateral flow-based portable platform for quantification of circulating concentrations of progesterone.  
M. Masello*1, E. M. Schillikowsky1, Z. Lu2, D. Erickson2, J. Gavalchin3, and J. O. Giordano1, 1Department of Animal Science, Cornell University, Ithaca NY, 2Sibley School of Mechanical and Aerospace Engineering, Cornell University, Ithaca NY.

W72  
Increasing supply of Met and Arg relative to Lys while maintaining Thr:Phe, Lys:Thr, Lys:His, and Lys:Val ratios alters casein protein abundance via amino acid-induced upstream mechanistic target of rapamycin signaling pathway and circadian clock in bovine mammary epithelial cells.  
L. Y. Hu1,2, Y. F. Chen1, I. M. Cortes1,2, D. N. Coleman*1, H. Y. Dai1,3, C. Parys1, M. Z. Wang1, and J. J. Loor1, 1College of Animal Science and Technology, Yangzhou University, Yangzhou, Jiangsu, China, 2Department of Animal Sciences and Division of Nutritional Sciences, University of Illinois, Urbana, IL, 3Agricultural and Animal Production Department, UAM-Xochimilco, Mexico City, Mexico, 4College of Veterinary Medicine, Nanjing Agricultural University, Nanjing, Jiangsu, China, 5Evonik Nutrition & Care GmbH, Hanau-Wolfgang, Germany.

W73  
Novel phospho-proteomic analysis of abdominal and subcutaneous adipose tissues from dairy cows supplemented with conjugated linoleic acid during the transition period.  
M. Zachut*1, G. Kra1, Y. Levin1, A. Tröscher3, L. Vogel4, M. Grott4, and H. Hammon4, 1Agriculture Research Organization, Volcani Center, Rishon LeZion, Israel, 2The Nancy and Stephen Grand Israel National Center for Personalized Medicine, Weizmann Institute of Science, Rehovot, Israel, 3BASF SE, Lampertheim, Germany, 4FBN, Dummerstorf, Germany.

W74  
Effect of 2-hydroxy-4-(methylthio)butanoate supplementation on rumen bacterial populations in dairy cows when exposed to diets with risk for milk fat depression.  
D. Pitta*1, N. Indugu1, B. Vecchiarelli1, M. Baldin1, and K. Harvatine2, 1University of Pennsylvania, School of Veterinary Medicine, Kennett Square, PA, 2The Penn State University, University Park, PA.

W75  
Effect of postpartum meloxicam administration to ewes on inflammatory status, plasma fatty acid concentrations, and oxy-lipid biosynthesis.  
K. E. Olagaray*1, L. M. Sordillo1, J. C. Gandy2, T. H. Swartz2, C. Youngs2, and B. J. Bradford1, 1Kansas State University, Manhattan, KS, 2Michigan State University, East Lansing, MI, 3Iowa State University, Ames, IA.

W76  
Adipose tissue and plasma fatty acid profile during the peripartum period differ by parity but not by late-lactation dietary fatty acid profile.  
K. A. Weld*1, C. Bradley2, J. Davidson2, and H. M. White1, 1University of Wisconsin-Madison, Madison, WI, 2Purina Animal Nutrition, Gray Summit, MO.
Comparison of telomere lengths in blood leukocytes and in nasal and vaginal epithelial cells from water buffalos (*Bubalus bubalis* of different ages.  
K. Seibt, S. Häussler, D. Vecchio, F. DeCarlo, F. Ceciliani, and H. Sauerwein, 1 Institute of Animal Science, Physiology and Hygiene Unit, University of Bonn, Bonn, Germany, 2 Instituto Zooprofilattico Sperimentale del Mezzogiorno, National Reference Centre for Hygiene and Technologies of Water Buffalo Farming and Production, Salerno, Italy, 3 Department of Veterinary Medicine, Università degli Studi di Milano, Milano, Italy.

Post-ruminal choline supply during a feed restriction-induced negative nutrient balance alters components of hepatic mechanistic target of rapamycin (mTOR) signaling and plasma amino acids in Holstein cows.  
D. N. Coleman, E. Abdelmaksoud, R. Bucktrout, Y. Liang, M. Miura, and J. J. Loor, 1 University of Illinois, Urbana, IL, 2 Beni-Suef University, Beni-Suef, Egypt, 3 Ajinomoto Co. Inc., Tokyo, Japan.

Lipogenic effects of *cis-10,cis-12* and *cis-9*-*trans-11* conjugated linoleic acids on 3D cultured omental and subcutaneous adipocytes derived from lactating dairy cows.  
J. Geldersma, J. Laguna, A. Lock, and G. Contreras, 1 Large Animal Clinical Sciences, Michigan State University, East Lansing, MI, 2 Animal Science, East Lansing, MI.

Increasing supply of methionine and arginine at constant Thr:Phe, Lys:Thr, Lys:His, and Lys:Val ratios alters inflammatory and oxidative stress responses during a lipopolysaccharide challenge in bovine mammary epithelial cells.  
H. Dai, D. N. Coleman, L. Hu, I. Martinez-Cortés, X. Shen, and J. J. Loor, 1 University of Illinois, Urbana, IL, 2 Nanjing Agricultural University, Nanjing, Jiangsu, China, 3 Yangzhou University, Yangzhou, Jiangsu, China, 4 National Autonomous University of Mexico, Mexico City, Mexico.

Identification of novel real-time quantitative PCR reference genes for bovine corpus luteum via whole-transcriptome RNA sequencing.  
M. A. Mezera, L. Wenli, D. J. Koch, A. Edwards, C. A. Gammarra, R. S. Gennari, V. E. Gomez-Leon, R. Reis Domingues, A. D. Beard, and M. C. Wiltbank, 1 University of Wisconsin-Madison, Madison, WI, 2 USDA Dairy Forage Research Center, Madison, WI.

Whole-transcriptome RNA-sequencing analysis of the corpus luteum throughout physiologic luteolysis in dairy cows.  
M. A. Mezera, L. Wenli, C. A. Gammarra, R. S. Gennari, A. Edwards, A. B. Prata, and M. C. Wiltbank, 1 University of Wisconsin-Madison, Madison, WI, 2 USDA Dairy Forage Research Center, Madison, WI.

Feeding NutriTek improves udder health and systemic response during a *Streptococcus uberis* mastitis challenge in mid-lactating dairy cows.  
M. Vailati-Riboni, D. Coleman, V. Lopreiato, A. Alharthi, R. Bucktrout, E. Trevisi, I. Yoon, and J. J. Loor, 1 Department of Animal Sciences, University of Illinois, Urbana, IL, 2 Interdepartmental Services Centre of Veterinary for Human and Animal Health, Department of Health Science, Magna Graecia University, Catanzaro, Italy, 3 Department of Animal Sciences, Food and Nutrition (DIANA), Università Cattolica del Sacro Cuore, Piacenza, Italy, 4 Diamond V, Cedar Rapids, IA.

Production, Management, and the Environment 3

Rumen-protected methionine product in lactating dairy cows.  
V. Sáinz de la Maza, B. Rossi, R. Paratte, A. Piva, and E. Grilli, 1 Department of Animal Production, University of Lleida, Lleida, Spain, 2 Vetagro S.P.A, Reggio Emilia, Italy, 3 DIMEVET, University of Bologna, Ozzano dell’Emilia, Bologna, Italy, 4 Vetagro Inc., Chicago, IL.

Relationship between climate variations and milk composition of Ayrshire cows in tropical conditions.  

Effects of milk replacer feeding rate on blood metabolites, insulin, and cortisol during an ACTH challenge of preweaning dairy calves during summer.  
R. M. Orellana Rivas, G. H. Komori, V. V. Beihling, T. N. Marins, J. K. Bernard, and S. Tao, University of Georgia, Tifton, GA.
Impact of cold stress on rumen fermentation parameters and enteric methane production in Holstein and Jersey steers.
M. Islam*1, S. H. Kim1, L. L. Mamuad1, S. C. Ramos1, Y. I. Choi1, E. T. Kim1, and S. S. Lee1, 1Department of Animal Science and Technology, Sunchon National University, Suncheon, Republic of Korea, 2Dairy Science Division, National Institute of Animal Science, Rural Development Administration, Cheonan, Chungnam, Republic of Korea.

An investigation of dairy calf management practices, colostrum quality, and occurrence of failure of passive transfer and enteropathogens among Australian dairy farms.
A. Abuelio*1,2, P. Havrlant3, N. Wood3, and M. Hernandez-Jover1,2, 1Michigan State University, Department of Large Animal Clinical Sciences, East Lansing, MI, 1Charles Sturt University, School of Animal and Veterinary Sciences, Wagga Wagga, NSW, Australia, 2Graham Centre for Agricultural Innovation (Charles Sturt University and NSW Department of Primary Industries), Wagga Wagga, NSW, Australia, 3NSW Department of Primary Industries, Wagga Wagga Agricultural Institute, Wagga Wagga NSW, Australia.

Management factors affecting dairy calf growth in northeastern Italy.
M. Cortese*, G. Marchesini, S. Caccin, M. Chinello, and I. Andrighetto, Department of Animal Medicine, Productions and Health, University of Padova, Legnaro (Padova), Italy.

Effects of metritis treatment strategies on health, reproductive, and productive parameters of Holstein cows.
V. R. Merenda*1, D. Lezier1, A. Odetti1, C. C. Figueiredo1, C. A. Risco1, and R. C. Chebel1,2, 1Department of Large Animal Clinical Sciences, University of Florida, Gainesville, FL, 2Department of Animal Sciences, University of Florida, Gainesville, FL.

Hair coat color comparisons between slick and wild type-haired Puerto Rican Holstein cows.

An observational study of cow contact resistance conditions on commercial dairy farms in Idaho.
R. Norell*1, J. Wilson2, M. de Haro Marti1, M. Chahine3, and A. Ahmadzadeh4, 1University of Idaho, Idaho Falls ID, 2University of Idaho, Twin Falls, ID, 3University of Idaho, Gooding, ID, 4University of Idaho, Moscow, ID.

A postbiotic additive from Aspergillus oryzae decreased body temperature and increased milk production of lactating dairy cows exposed to heat stress.
J. Kaufman*1, H. Bailey1, P. De Toledo Shimoda1, F. Bargo2,3, I. Ipharraguerre4, G. Pighetti5, and A. Rius1, 1University of Tennessee, Knoxville, TN, 2Biozyme Inc., St. Joseph, MO, 3Universidad de Buenos Aires, Argentina, 4University of Kiel, Germany.

Supplements of biotin, folic acid and vitamin B12: Their effects on cow metabolism during the transition period.
M. Duplessis*, H. Lapierre, and C. L. Girard, Agriculture and Agri-Food Canada, Sherbrooke, QC, Canada.

Effect of rearing method of calves during liquid milk period on their growth.
J. Broucek*1, M. Uhrincat1, A. Hanus1, M. Soch2, 1Department of Animal Sciences, University of Idaho, Moscow, Idaho, 2School of Animal and Veterinary Sciences, Charles Sturt University, Wagga Wagga, NSW, Australia.

Hair diameter comparisons between slick and wild type-haired lactating Puerto Rican Holstein cows.

Effect of on-farm, component-based milk replacer compared with commercial agglomerated milk replacer on growth performance and feed efficiency of dairy calves.
C. M. Peter*1, S. R. Fensterseifer1, and J. V. Anderson2, 1United Animal Health Inc, Sheridan, IN, 2Progressive Dairy Solutions Inc., Oakdale, CA.

A survey of diet characteristics related to feed particle size on buffalo farms in southern Italy.
A. J. Heinrichs*1, A. DiFrancia1, F. Masucci2, F. Serrapica2, and C. M. Jones1, 1The Pennsylvania State University, University Park, PA, 2University of Naples Federico II, Portici, NA, Italy.

Effects of a Saccharomyces cerevisiae fermentation product in heat-stressed dairy cows.
M. Al-Qaisi*1, E. A. Horst1, E. J. Mayorga2, B. M. Goetz3, M. A. Abeyta1, C. S. McCarthy1, M. R. O’Neil3, I. Yoon2, H. A. Ramirez-Ramirez1, L. L. Timms3, and L. H. Baumgard4, 1Department of Animal Science, Iowa State University, Ames, IA, 2Diamond V, Cedar Rapids, IA.

Effects of a new preventive strategy with acetylsalicylic acid on daily milk yield, milk conductivity and rumination in dairy cows after calving.
A. Ludwikowski*1, A. A. Barragan1, E. Hovingh1, S. Bas2, S. Takitch3, J. Zug4, and S. Hann5, 1Department of Veterinary and Biomedical Sciences, Penn State University, University Park, PA, 2Phytobiotics Futterzusatzstoffe GmbH Bvd, Córdoba, Argentina, 3Department of Animal Science, Penn State University, University Park, PA, 4Zugstead Farm, Mifflintown, PA.
Reproduction 1

W102 The association between serum anti-Müllerian hormone (AMH) concentration and fertility, and genetic heritability and genome-wide associations for serum AMH in Irish dairy cows.

W103 Association between milk yield and fertility by health status during early lactation.

W104 Use of Zn⁺ chelators to improve bovine artificial oocyte activation.
V. Negron-Perez, K. Uh, and K. Lee. Virginia Polytechnic Institute and State University, Blacksburg, VA.

W105 Effects of nerve growth factor-β added to extenders for cryopreservation of electro-ejaculated and epididymal harvested bull semen.
J. L. Stewart, I. F. Canisio, G. Podico, E. F. Garrett, and F. S. Lima. 1Department of Veterinary Medicine, University of Illinois, Urbana, IL; 2Department of Large Animal Clinical Science, Virginia Polytechnic Institute and State University, Blacksburg, VA.

W106 Phenotyping the expression of estrus behavior in dairy cows using novel heat detection technology.
F. G. Kumro, F. M. Smith, M. J. Yallop, S. E. Poock, L. A. Ciernia, and M. C. Lucy. Division of Animal Sciences, University of Missouri, Columbia, MO; 2Farmshed Labs Limited, Hamilton, New Zealand; 3College of Veterinary Medicine, University of Missouri, Columbia, MO.

W107 Characterizing estrus behavior in Holstein heifers based on an ear-attached movement sensor.
J. E. Carrelli, T. C. Bruinjé, and D. J. Ambrose. 1Department of Agricultural, Food, and Nutritional Science, University of Alberta, Edmonton, AB, Canada; 2Livestock Systems Section, Alberta Agriculture and Forestry, Edmonton, AB, Canada.

W108 Ano-genital distance as a possible indicator of embryo yield and viability in superovulated Holstein cows—A preliminary report.
I. Rajesh, J. E. Carrelli, M. Gobikrushanth, and D. J. Ambrose. 1Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada; 2Livestock Systems Section, Alberta Agriculture and Forestry, Edmonton, AB, Canada.

W109 Effects of fully-acidified, negative DCAD diets with differing concentrations of dietary calcium fed prepartum on the dominant follicle of the first follicular wave after parturition and pregnancy in Holstein cows.

W110 Effects of parity, season and region on fertility of lactating dairy cows submitted to a Double-Ovsynch protocol for first timed-AI.
R. Mur-Navales, P. M. Fricke, V. E. Cabrera, J. O. Giordano, M. C. Wiltbank, and J. P. N. Martins. Independent Dairy Data Analyst, Huesca, HU, Spain; 2Department of Dairy Science, University of Wisconsin-Madison, Madison, WI; 3Department of Animal Science, Cornell University, Ithaca, NY; 4School of Veterinary Medicine, University of Wisconsin-Madison, Madison, WI.

W111 Association between reproductive efficiency of heifers and their reproductive performance as lactating cows.
B. Mion, M. R. Carvalho, and E. S. Ribeiro. Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada.

W112 Length of follicular and luteal phase is associated with estrous expression.

W113 Transcriptome of corpus lutea in pregnant and nonpregnant cows at late diestrus.
J. F. W. Spricigo, A. Leclerc, I. Toledo, W. W. Thatcher, and E. S. Ribeiro. 1Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada; 2Department of Animal Sciences, University of Florida, Gainesville, FL.

W114 Associations between maternal characteristics and health, survival, and performance of heifers.
M. R. Carvalho, C. Aboujaoude, T. J. DeVries, B. McBride, and E. S. Ribeiro. Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada.
The reproductive and economic impact among 6 reproductive programs for lactating dairy cows including a sensitivity analysis of the cost of hormonal treatments.

A. Ricci*, M. Li², P. M. Fricke², and V. E. Cabrera². ¹Department of Veterinary Science, University of Torino, Grugliasco, Torino, Italy, ²Department of Dairy Science, University of Wisconsin-Madison, Madison, WI.

Ruminant Nutrition: Fat and Lipids

Relationship between body condition score and ultrasound measurement of backfat thickness of Holstein dairy cows in a grazing-based system.

G. V. Kozlowski*, L. Wlodarski¹, D. S. Zeni², J. A. R. Rosback³, and W. M. Gräfl¹. ¹Universidade Federal de Santa Maria, Santa Maria, RS, Brazil, ²Instituto Federal Farroupilha, Santa Maria, RS, Brazil.

Effects of increasing levels of calcium soap of fatty acid supplementation on lactation performance in dairy buffaloes.

Hifzulrahman*, M. Abdullah¹, J. Bhatti², T. Pasha³, M. Akhtar¹, Z. Ali³, M. Saadullah¹, and M. Haque¹. ¹Department of Livestock Production, University of Veterinary and Animal Sciences, Lahore, Punjab, Pakistan, ²Department of Animal Nutrition, University of Veterinary and Animal Sciences, Lahore, Punjab, Pakistan, ³Applied Chemistry Research Center, Pakistan Council of Scientific and Industrial Research Laboratories Complex, Lahore, Punjab, Pakistan.

Responses in performance and feed intake of early-lactation dairy cows supplemented with linseed oil coated with vegetable fat or extruded linseed.

J. M. Ruiz-Rodriguez¹, M. Puyalto², J. J. Mallo³, G. Elcoso³, and A. Bach¹. ¹Department of Agrarian Production, Polytechnic University of Madrid, Madrid, Spain, ²Norel S.A, Madrid, Spain, ³Blanca from the Pyrenees, Hostalets de Tost, Spain, ⁴Department of Ruminant Production, IRTA, Barcelona, Spain, ⁵Institució Catalana de Recerca i Estudis Avançats, Barcelona, Spain.

Impact of feed intake and fiber digestibility on milk fatty acid profile and yield.

J. de Souza¹,² and A. L. Lock¹. ¹Michigan State University, East Lansing, MI, ²Perdue AgriBusiness, Salisbury, MD.

Degree of esterification and fatty acid profile of C16:0-enriched supplements impact fatty acid digestibility in lactating dairy cows: A meta-analysis.

J. de Souza¹,², N. R. St-Pierre², and A. L. Lock¹. ¹Michigan State University, East Lansing, MI, ²Perdue AgriBusiness, Salisbury, MD.

The yields of individual de novo and preformed milk fatty acids are differentially regulated in response to changes in the intake of palmitic acid in dairy cows.

J. de Souza¹,² and A. L. Lock¹. ¹Michigan State University, East Lansing, MI, ²Perdue AgriBusiness, Salisbury, MD.

Milk fatty acids profile, blood serum, and oocyte quality of early-lactation dairy cows supplemented with linseed oil coated with vegetable fat or extruded linseed.

J. Ruiz Rodriguez¹, M. Puyalto², J. Mallo³, G. Elcoso³, and A. Bach¹. ¹Department of Agrarian Production, Polytechnic University of Madrid, Madrid, Spain, ²Norel S.A, Madrid, Spain, ³Blanca from the Pyrenees, Hostalets de Tost, Spain, ⁴Department of Ruminant Production, IRTA, Caldes de Montbui, Spain, ⁵ICREA, Institució Catalana de Recerca i Estudis Avançats, Barcelona, Spain.

Lipid-coat protection of sodium selenite and copper sulfate from microbial fermentation impacts VFA synthesis and nitrogen metabolism in a dual-flow continuous culture system.

J. A. Arce-Cordero¹, H. F. Monteiro¹, A. L. Lelis², R. Restelatto², L. R. Lima³, V. L. N. Brandao¹, L. G. Silva¹, H. Leclerc¹, and A. P. Faciola¹. ¹Department of Animal Sciences, University of Florida, Gainesville, FL, ²Department of Animal Sciences, Federal University of Paraíba, Curitiba, PR, Brazil, ³Department of Animal Sciences, Federal University of Mato Grosso, Cuiaba, MT, Brazil, ⁴Jefo, St. Hyacinthe, QC, Canada.

Bioequivalence test of neutral detergent fiber analysis with or without an acetone wash of feed ingredients, orts, and feces from cows fed fat-supplemented diets.

J. M. dos Santos Neto¹,², J. de Souza¹, C. M. Prom¹, and A. L. Lock¹. ¹Michigan State University, East Lansing, MI, ²University of São Paulo, Piracicaba, São Paulo, Brazil, ³Perdue AgriBusiness, Salisbury, MD.

Oleic acid supplementation alters adipose tissue lipolytic responses and insulin sensitivity in early-lactation dairy cows.

J. Laguna¹,², M. Gonzalez², C. Prom¹, A. Lock¹, and A. Contreras¹. ¹Department of Large Animal Clinical Sciences, Michigan State University, East Lansing, MI, ²Department of Animal Science, Michigan State University, East Lansing, MI.

Impact of feeding a palmitic enriched supplement on production responses of mid-lactating Jersey and Holstein cows.

A. Sears*, A. Alberto, O. Gonzalez, A. Young, and F. Battistel, Department of Animal, Dairy, and Veterinary Sciences, Utah State University, Logan, UT.
Ruminant Nutrition: Forages

W135 Effects of replacing alfalfa hay and whole corn silage with paper mulberry (Broussonetia papyrifera L.) silage in high lactating cow diets on dry matter intake, milk yield, and milk composition.
Z. H. Wu, C. Y. Liang, R. C. Huang, J. L. Ouyang, L. Ma, L. S. Zhao, and D. P. Bu\(^*\), Institute of Animal Science, State Key Laboratory of Animal Nutrition, Chinese Academy of Agricultural Sciences, Beijing, Beijing, China.

W136 Effects of feeding floury and brown midrib whole-plant corn silage varieties from corn treated with foliar fungicide to lactating Holstein cows on nutrient digestibility.
L. J. Wente\(^{*+}\), M. S. Akins\(^2\), and F. C. Cardoso\(^1\), Department of Animal Sciences, University of Illinois, Urbana, IL; Department of Dairy Science, University of Wisconsin-Madison, Marshfield, WI.

W137 Corn silage treated with the spent substrate from white rot mushroom culture to lactating goats.
B. C. Agustinho\(^*+2\), E. Machado\(^1\), J. M. Bragatto\(^2\), C. R. Alcalde\(^1\), P. T. M. Pintro\(^3\), C. R. Schneider\(^2\), B. R. Saraiva\(^3\), and L. M. Zeoula\(^1\), Programa de Pós Graduação em Zootecnia, Universidade Estadual de Maringá, Maringá, PR, Brazil; Department of Animal Sciences, University of Florida, Gainesville, FL; Programa de Pós Graduação em Ciência de Alimentos, Universidade Estadual de Maringá, Maringá, PR, Brazil.

W138 Effects of alfalfa silage treated using different varieties of waste date on feed intake, nutrient digestibility and performance of Holstein lactating dairy cows.
M. Ghorbani\(^1\), A. Naserian\(^1\), R. Valizadeh\(^1\), S. H. Ebrahimi\(^2\), B. Kim\(^*\), and A. Rahimi\(^2\), Faculty of Agriculture, Animal Science Department, Ferdowsi University of Mashhad, Mashhad, Iran; College of Animal Life Sciences, Kangwon National University, Chuncheon, Republic of Korea.
Estimation of activity energy requirement for grazing dairy cows fed with different strategies.
D. Talmón*, M. García-Roche, A. Mendoza, D. A. Mattiauda, M. Carriquiry, School of Agronomy, UdelaR, Montevideo, Uruguay, National Agricultural Research Institute, La Estanzuela, Colonia, Uruguay.

Comparison of the energy expenditure between grazing and idling activities in Holstein dairy cows during mid-lactation.
D. Talmón*, M. García-Roche, A. Mendoza, D. A. Mattiauda, M. Carriquiry, School of Agronomy, UdelaR, Montevideo, Uruguay, National Agricultural Research Institute, La Estanzuela, Colonia, Uruguay.

Effect of grazing in energy partitioning of Holstein multiparous cows.

Relationship between corn silage quality traits and dietary proportions on average yearly milk production and composition of Québec dairy farms: Exploratory research.
A. Gallo, F. Ghiladerlli, P. Drouin, and M. Leduc, Department of Animal Science, Food and Nutrition (DIANA), Facoltà di Scienze Agrarie, Alimentari e Ambientali, Università Cattolica del Sacro Cuore, Piacenza, Italy, Lallemand Animal Nutrition, Lallemand Specialities Inc., Milwaukee, WI, Department of Animal Science, McGill University, Montreal, QC, Canada, Volacta, Dairy Production Centre of expertise, Ste-Anne-de-Bellevue, QC, Canada.

Milk production performance and ruminal fermentation in lactating dairy cows fed processed oats grain in comparison with barley grain.
M. R. Tosta, L. L. Prates, D. A. Christensen, J. J. McKinnon, and P. Yu, Department of Animal and Poultry Science, University of Saskatchewan, Saskatoon, Canada.

Midwestern US commercial dairy survey results: corn silage kernel processing, rumen starch digestibility and fecal starch content.
J. Geiser and J. Goeser*, University of Wisconsin-River Falls, River Falls, WI, Rock River Laboratory Inc., Watertown, WI, University of Wisconsin-Madison, Madison, WI.

Forced air versus microwave oven sample drying does not affect rumen starch digestibility, estimated by in situ rumen technique, for total mixed ration, corn silage, or high-moisture corn grain.
J. Goeser*, C. Goldberg, E. Opgenorth, and D. Sawyer, Rock River Laboratory Inc., Watertown, WI, University of Wisconsin-Madison, Madison, WI.

Effects of drying method on nutrient composition, particle size, and in situ washout for corn silage.
N. Schlau*, D. R. Mertens, B. Steinlicht, D. Miemietz, K. Taysom, and D. Taysom, Dairyland Laboratories Inc., Arcadia, WI, Mertens Innovation and Research LLC, Belleville, WI.

Differential responses of brown midrib (BMR) and non-BMR maize hybrids to ensiling, aerobic stability and inoculation with combination of heterofermentative lactic acid bacteria strains Lactobacillus buchneri and Lactobacillus hilgardii.

Effects of forage particle size on intake, growth performance, and ruminal pH of Holstein dairy calves.
N. Bagheri*, A. M. Javaherkalam, M. Mirzaei, and A. Assadi-Alamouti, Department of Animal Science, College of Abouraihan, University of Tehran, Pakdasht, Tehran, Iran, Department of Animal Science, Faculty of Agriculture and Natural Resources, Arak University, Arak, Markazi, Iran.

Ruminant Nutrition: Ruminal Fermentation and Gas Production

Design updates to dual-flow continuous culture fermenters reduce variance of digestibility and bacterial nitrogen flow compared with previous fermenters.
E. Kesselring, L. Antal, T. Henthorne, and B. Wenner*, Department of Chemistry, The Ohio State University, Columbus, OH, Department of Animal Sciences, The Ohio State University, Columbus, OH.

Dose response of caffeine on fermentation and nutrient utilization in continuous culture fermenters.
S. M. Hussein*, M. X. Toledo, J. Echesabal, S. Twyman, S. Simmons, J. Sinkevitch, G. Loughlin, and G. J. Lascano, Department of Animal and Veterinary Sciences, Clemson University, Clemson, SC.
Additive effect and in vitro gas production of diets based on silage of poultry litter, pig manure, urea with cane molasses, and bakery by-product.

In vitro rumen fermentation characteristics of high-grade crystalline versus low-grade liquid betaine products.
T. Kelley, G. Chibisa, P. Rezamand, and M. Chahine. 1University of Idaho, Twin Falls, ID, 2University of Idaho, Moscow, ID.

Potential of CO2 measurements for ranking of cows for feed efficiency.
A. Bayat, A. Guingüina, and P. Huhtanen. 1Milk Production, Production Systems, Natural Resources Institute Finland (LUKE), Jokioinen, Finland, 2Department of Agricultural Research for Northern Sweden, Swedish University of Agricultural Sciences, Umeå, Sweden.

T. Park, L. Ma, X. Zhou, D. Bu, and Z. Yu. 1Department of Animal Sciences, The Ohio State University, Columbus, OH, 2State Key Laboratory of Animal Nutrition, Institute of Animal Science, Chinese Academy of Agricultural Sciences, Beijing, China, 3CAAS-ICRAF Joint Lab on Agroforestry and Sustainable Animal Husbandry, Beijing, China.

Protozoa inhibition by specific inhibitors of lysozyme and peptidases to enhance nitrogen balance in vitro.
T. Park, H. Mao, and Z. Yu. 1Department of Animal Sciences, The Ohio State University, Columbus, OH, 2College of Animal Science and Technology, Zhejiang A&F University, Hangzhou, Zhejiang, China.

The effect of ultrasound processing and exogenous cellulase supplementation on the ruminal degradability of palm date seeds.
A. Aboragah, M. Embaby, and A. AbuGhazaleh. Southern Illinois University, Carbondale, IL.

Effect of method of diet delivery to dairy cows on enteric methane emissions, digestion and milk performance.
C. Benchaar and F. Hassanat. Agriculture and Agri-Food Canada, Sherbrooke Research and Development Centre, Sherbrooke, QC, Canada.

Effect of kelp meal on milk yield, methane emission, and thyroid hormones in Jersey cows.
M. Ghelichkhan, R. C. R. Tinini, J. G. Dessbesell, H. A. Whitesel, Y. Zang, L. H. P. Silva, M. A. Zambom, and A. F. Brito. 1University of New Hampshire, Durham, NH, 2Universidad Estadual do Oeste do Paraná, Marechal Cândido Rondon, PR, Brazil.

Enterobacteriaceae bacteria counts vary for US commercial dairy total mixed rations fed during summer months.

Use of a mass flow meter in headbox-style indirect calorimetry, and the effects of gas recovery on estimated energy partition in lactating dairy cows.
K. McLain, K. Buse, T. Brown-Brandl, D. Morris, and P. Kononoff. 1Department of Animal Science, University of Nebraska-Lincoln, Lincoln, NE, 2Department of Biological Systems Engineering, University of Nebraska-Lincoln, Lincoln, NE.

Fermentation of total mixed ration using microbial inoculants and its effect on in vitro rumen fermentation and microbial population in Hanwoo cows.

In vitro evaluation of rumen fermentation of ground, dry rolled and steam-flaked corn compared with pre-grinding super-conditioning pelleted corn.
A. Rahimi, A. Naserian, R. Valizadeh, A. Tahmasebi, H. Dehghani, K-I Sung, B. Kim, A. Shahdadi, S. Kim, J. Ghasemi Nejad, and M. Malekkhahi. 1Faculty of Agriculture, Animal Science Department, Ferdowsi University of Mashhad, Mashhad, Iran, 2The Research Institute of Biotechnology, Ferdowsi University of Mashhad, Mashhad, Iran, 3College of Animal Life Sciences, Kangwon National University, Chuncheon, Republic of Korea, 4College of Animal Bio-Sciences, Konkuk University, Seoul, Republic of Korea, 5Dordaneh Razavi, Mashhad, Iran.
Dose-response effect of the macroalga *Asparagopsis taxiformis* on enteric methane emission in lactating dairy cows.
H. Stefenoni*1, S. Räisänen1, A. Melgar1, C. Lage2, M. Young3, and A. Hristov1, 1The Pennsylvania State University, University Park, PA, 2Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil.

Assessing ruminal fermentation using the omasal sampling technique and the dual-flow continuous culture system as models: A meta-analytical approach.
V. Brandao*1, M. Marcondes1, and A. Faciola1, 1University of Florida, Gainesville, FL, 2Universidade Federal de Vícosa, Vícosa, Minas Gerais, Brazil.

Effect of enzyme extracts from *Aspergillus oryzae* and *Aspergillus niger* on rumen bacterial and fungal diversity and fermentation in vitro.
K. Nedelkov1,2, S. E. Räisänen*1, X. Chen1,2, M. T. Harper1, A. Melgar1, J. Oh1, D. M. Paulus Compart4, and A. N. Hristov1, 1The Pennsylvania State University, University Park, PA, 2The Pennsylvania State University, The Pennsylvania State University, 3University of Ulster, Belfast, UK, 4PMI, Arden Hills, MN.

Novel ruminal microbial urease inhibitors screened through molecular docking.
Z. Zhang1,2, S. Zhao1,2, N. Zheng1,2, and J. Wang*1,2, 1State Key Laboratory of Animal Nutrition, Institute of Animal Sciences, Chinese Academy of Agricultural Sciences, Beijing, China, 2Key Laboratory of Quality & Safety Control for Milk and Dairy Products of Ministry of Agriculture and Rural Affairs, Institute of Animal Sciences, Chinese Academy of Agricultural Sciences, Beijing, China.

Effects of feeding barley grain on intake, rumen pool size and apparent total tract digestibility in lactating dairy cattle fed pasture-based diets.
M. Dineen*1,2, B. McCarthy1, P. Dillon1, S. W. Fessenden1, P. A. LaPierre1, R. A. Molano1, and M. E. Van Amburgh1, 1Department of Animal Science, Cornell University, Ithaca, NY, 2Teagasc, Animal and Grassland Research and Innovation Centre, Moorepark, Fermoy, Co. Cork, Ireland.

Comparison of ruminal digestibility of *Origanum onites* L. leaves in dairy buffalo and cows.
E. Gultepe*1,2, C. Uyarlar1, I. Cetingul1, A. Iqbal1, U. Ozcinar1, I. Bayram2, and B. Bradford2, 1Department of Animal Nutrition and Nutritional Diseases, Afyon Kocatepe University, Afyonkarahisar, Turkey, 2Department of Animal Sciences and Industry, Kansas State University, Manhattan, KS.

Comparison of two sampling techniques for evaluating ruminal fermentation in dairy cows.
C. F. A. Lage*1,2, S. E. Räisänen1, A. Melgar1, K. Nedelkov1,2, X. Chen1,2, J. Oh1, J. Bender3, B. Vecchiarelli3, D. Pitta3, M. E. Young1, and A. N. Hristov1, 1The Pennsylvania State University, University Park, PA, 2Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil, 3Faculty of Veterinary Medicine Trakia University, Stara Zagora, Bulgaria, 4College of Pastoral Agriculture Science and Technology, Lanzhou University, China, 5School of Veterinary Medicine, University of Pennsylvania, New Bolton Center, PA.

Mutagenesis of UreG to probe nickel binding and interaction with UreE in predominant urease of ruminal uncultured bacteria.
X. Zhang1,2, S. Zhao1,2, X. Li1,2, N. Zhen1,2, and J. Wang*1,2, 1State Key Laboratory of Animal Nutrition, Institute of Animal Sciences, Chinese Academy of Agricultural Science, Beijing, China, 2Key Laboratory of Quality & Safety Control for Milk and Dairy Products of Ministry of Agriculture and Rural Affairs, Institute of Animal Sciences, Chinese Academy of Agricultural Sciences, Beijing, China, 3College of Animal Science and Technology, Huazhong Agricultural University, Wuhan, China.

Genomic survey of the rumen microbiome of Argentinian dairy cows provides insights into farm-dependent influences on microbial community structure.

Effect of substrate to inoculum ratio on outcomes of in vitro rumen fermentation.
J. Remy1,2 and S. Armstrong*2, 1Department of Animal and Rangeland Sciences, Oregon State University, Corvallis, OR, 2Phibro Animal Health Corporation, Teaneck, NJ.

Biological or chemical modification of soybean meal alters in situ ruminal degradation kinetics.
Evaluating strategies to reduce ruminal protozoa and their impacts on nutrient utilization and animal performance in ruminants: A meta-analysis.
X. Dai* and A. Faciola, Department of Animal Sciences, University of Florida, Gainesville, FL.

Ruminant Nutrition: Vitamins and Mineral Nutrition

Responses to ruminally protected choline in transition cows do not depend on body condition.

Effect of dietary calcium nitrate on dry matter intake, milk production and ruminal parameters in dairy cows.

Evaluation of cobalt source and level for lactating dairy cows.

Assessment of magnesium availability from magnesium oxide sources.
D. B. Vagnoni, L. E. Alvarez, and H. J. Dadah, California Polytechnic State University, San Luis Obispo, CA.

Effects of additional bioavailable chromium on dry matter intake, milk yield, and component production: A meta-analysis.
T. L. Harris*, J. E. Hergenreder, D. J. Dickson, and M. D. Sellers, 1Kemin Industries, Inc., Des Moines, IA, 2Milk Specialties Global Animal Nutrition, Eden Prairie, MN.

Calcidiol increased milk yield and reduced somatic cell count of late-lactation dairy cows.

Meta-analysis of the effects of supplemental rumen-protected choline during the transition period on performance and health of dairy cows.

Effects of soy lecithin on circulating choline metabolite concentrations and phosphatidylcholine profile in Holstein cows.
J. E. Rico*, A. B. P. Fontoura, B. N. Tate, and J. W. McFadden, Cornell University, Ithaca, NY.

MegAnion as an anionic salt source in prepartum negative dietary cation-anion difference diets for multiparous dairy cows.
L. S. Caixeta*, W. J. Weber, D. M. Johnson, J. Fraser, B. M. Visser, and B. A. Crooker, 1Department of Veterinary Population Medicine, University of Minnesota, Saint Paul, MN, 2Department of Animal Science, University of Minnesota, Saint Paul, MN, 3Origination Inc. O2D, Maplewood, MN, 4Vita Plus Corporation, Madison, WI.

Assessment of the capacity of certain mycotoxin binders to adsorb vitamins.
# SYMPOSIA AND ORAL SESSIONS

**Teagasc-Moorepark Symposium:**
Animal Diet, Dairy Product Quality, and Advances in Dairy Foods Nutrition and Health

**Chairs:** Paul Kindstedt, University of Vermont (morning), and John Lucey, University of Wisconsin (afternoon)

**Sponsor:** U.S. Dairy Export Council

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<th>Time</th>
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<th>Speaker(s)</th>
<th>Institution</th>
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<tr>
<td>8:45 AM</td>
<td>Introduction.</td>
<td>P. Kindstedt*&lt;sup&gt;*, University of Vermont, Burlington, VT.</td>
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<tr>
<td>9:00 AM</td>
<td>Updates from Teagasc Food Research Centre Moorepark.</td>
<td>Mark Fenelon, Teagasc Food Research Centre Moorepark, Fermoy, Co. Cork, Ireland.</td>
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<tr>
<td>9:45 AM</td>
<td>Factors influencing the flavor of bovine milk and cheese from grass-based versus TMR-based milk production systems.</td>
<td>K. Kilcawley*&lt;sup&gt;*, Teagasc Food Research Centre Moorepark, Fermoy, Co. Cork, Ireland.</td>
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<tr>
<td>10:15 AM</td>
<td>Break</td>
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<tr>
<td>10:45 AM</td>
<td>Influence of herd diet (pasture-based vs. TMR) on the composition, ripening and metabolome of continental-type cheeses.</td>
<td>J. J. Sheehan*&lt;sup&gt;*, Teagasc Food Research Centre Moorepark, Fermoy, Co. Cork, Ireland.</td>
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<tr>
<td>11:45 AM</td>
<td>Lunch</td>
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<tr>
<td>1:00 PM</td>
<td>Milk oligosaccharides: The influence of the milk glycome on human health.</td>
<td>R. Hickey*&lt;sup&gt;*, Teagasc Food Research Centre, Moorepark, Fermoy, Co. Cork, Ireland.</td>
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<tr>
<td>1:30 PM</td>
<td>Relationships between structures of dairy-based matrices and digestibility within the gastrointestinal tract.</td>
<td>A. Brodkorb*&lt;sup&gt;*, Teagasc Food Research Centre Moorepark, Fermoy, Co. Cork, Ireland.</td>
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<tr>
<td>2:00 PM</td>
<td>Metagenomic and metabolomic analysis of the impact of exercise or whey protein supplementation on the gut microbiome.</td>
<td>W. Barton*&lt;sup&gt;*, Teagasc Food Research Centre Moorepark, Fermoy, Co. Cork, Ireland.</td>
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<td>2:30 PM</td>
<td>Break</td>
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<td>2:45 PM</td>
<td>Dairy matrix effects: Response to consumption of dairy fat differs when eaten within the cheese matrix.</td>
<td>E. Gibney*&lt;sup&gt;*, University College Dublin, Belfield, Dublin, Ireland.</td>
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<td>3:15 PM</td>
<td>Open forum</td>
<td>Diarmuid Sheehan, moderator.</td>
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<tr>
<td>3:45 PM</td>
<td>Closing remarks</td>
<td>Paul Kindstedt and Diarmuid Sheehan.</td>
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<tr>
<td>4:00 PM</td>
<td>Reception</td>
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</tbody>
</table>
Animal Health 3: Gastrointestinal Health
Chair: Tanya Gressley, University of Delaware
262

9:30 AM 441  Guiding antimicrobial therapy: Prevalence of bacteremia in dairy calves with diarrhea.
J. Garcia*,1, J. Pempek1, A. Hinds2, D. Diaz-Campos1, and G. Habling1, 1The Ohio State University, College of Veterinary Medicine, Columbus, OH, 2University of Missouri College of Veterinary, Columbia, MO.

9:45 AM 442  Climatic conditions at birth associate with serum total proteins and diarrhea occurrence in pre-weaned organic dairy heifers in northern Colorado.
A. Velasquez-Munoz*, D. Manriquez, and P. Pino, Department of Animal Sciences, Colorado State University, Fort Collins, CO.

10:00 AM 443  Bacterial composition and short-chain fatty acids profiles in the gastrointestinal tract of neonate calves.
C. Villot*1, L. L. Guan1, E. Chevaux2, and M. A. Steele1, 1Department of Agricultural, Food and Nutritional Science. University of Alberta, Edmonton, AB, Canada, 2Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, 3Lallemand SAS, Blagnac, France.

10:15 AM 444  Lactobacillus animalis LAS1 confers protection from the damaging effects of pathogens on the intestinal barrier.

10:30 AM 445  Investigation into the immunoregulatory pathway of conjugated linoleic acid in a ruminal epithelial cell inflammation model.
C. Yang* and W. Lan, Institute of Dairy Science, MoE Key Laboratory of Molecular Animal Nutrition, College of Animal Sciences, Zhejiang University, Hangzhou, Zhejiang, China.

10:45 AM  Break

11:00 AM 446  Investigating the dynamics of Johne’s disease in Ontario dairy herds.
J. Imada*, D. Kelton, S. Roche, and C. Bauman, Ontario Veterinary College, Guelph, ON, Canada.

P. N. Gott**,1, E. G. Hendel1, S. Curry1, U. Hofstetter2, and G. R. Murugesan1, 1BIOMIN America Inc., Overland Park, KS, 2BIOMIN Holding GmbH, Getzersdorf, Austria.

11:30 AM 448  Occurrence of mycotoxins in 2018 US corn silage and total mixed ration samples.
P. N. Gott**,1, E. G. Hendel1, S. Curry1, U. Hofstetter2, and G. R. Murugesan1, 1BIOMIN America Inc., Overland Park, KS, 2BIOMIN Holding GmbH, Getzersdorf, Austria.

11:45 AM 449  Effect of high-concentrate feeding and a clay mineral-based mix on liver health and fecal pH in dairy cows.
N. Reisinger*,1, A. Stauder2, E. Humer1, J. Faas1, V. Neubauer3, and Q. Zebeli2, 1BIOMIN Research Center, Tulln, Austria, 2Institute of Animal Nutrition and Functional Plant Compounds, Department for Farm Animals and Veterinary Public Health, Vetmeduni Vienna, Vienna, Austria.

Animal Health Platform Session: A Summary of Discover Conference 35
Chair: Eduardo Ribeiro, University of Guelph
206

9:30 AM 450  Discover Conference 35 recap—Stress effects on health and production.
M. A. Ballou*1 and B. J. Bradford2, 1Department of Veterinary Sciences, Texas Tech University, Lubbock, TX, 2Department of Animal Sciences and Industry, Kansas State University, Manhattan, KS.

10:00 AM 451  Male dairy calf morbidity and mortality after long-distance transportation.
D. Wilson*, J. Stojkov, and D. Fraser, University of British Columbia, Vancouver, BC, Canada.
Assessing the utility of leukocyte differential cell counts for predicting mortality risk in neonatal Holstein calves upon arrival and 72 hours post-arrival at calf rearing facilities.
T. E. von Konigslow*, D. L. Renaud, T. F. Duffield, V. Higginson, and D. F. Kelton, University of Guelph, Guelph, ON, Canada.

Effects of a bovine nonspecific immune stimulant on health of Jersey and Jersey-cross heifer calves in the first month of life.
B. Omontese*, M. Celestino1, D. Paiva1, A. García-Muñoz1,2, A. Masic1, V. Machado1, and L. Caixeta1, 1Department of Veterinary Population Medicine, University of Minnesota, St. Paul, MN, 2Department of Veterinary Sciences, Texas Tech University, Lubbock, TX, 3Facultad de Veterinaria, Universidad CEU Cardenal Herrera, Valencia, Spain, 4NovaVive Inc., Napanee, ON, Canada.

Cis-9, trans-11 CLA and trans-10,cis-12 CLA isomers differentially regulate LPS-induced pro-inflammatory responses in ruminal epithelial cells.
W. Lan* and C. Yang, Institute of Dairy Science, MoE Key Laboratory of Molecular Animal Nutrition, College of Animal Sciences, Zhejiang University, Hangzhou, Zhejiang, China.

Association between hoof lesions and milk yield in dairy cows.
B. O. Omontese*, R. Bellet-Elias1, A. M. Argüello1, G. D. Catandi1, R. Casagrande1, Z. Rodriguez1, R. S. Bisinotto2, and G. Cramer1, 1Department of Veterinary Population Medicine, University of Minnesota, St. Paul, MN, 2Department of Large Animal Clinical Sciences, University of Florida, Gainesville, FL.

Impact of metabolic, digestive and postpartum disorders on milk yield.
G. Pérez-Hernández*, J. G. García-Muñiz1, H. A. Ramirez-Ramirez2, and A. Ruiz-Flores1, 1Universidad Autónoma Chapingo, Chapingo, México, 2Iowa State University, Ames, IA.

Plasma alpha-1-acid glycoprotein is negatively associated with dry matter intake in postpartum dairy cows.
W. E. Brown*, I. Aguilar2, Y. Masuda1, I. Mista1, and A. Legarra2, 1University of Georgia, Athens, GA, 2INIA, Las Brujas, Canelones, Uruguay, 3INRA, Castanet Tolosan, France.

Breeding and Genetics: Genomic Methods and GWAS
Chair: Daniela Lourenco, University of Georgia, GA

Exact P-values for large-scale single-step genome-wide association using the BLUPF90 software suite.
D. Lourenco*, I. Aguilar2, Y. Masuda1, I. Mista1, and A. Legarra2, 1University of Georgia, Athens, GA, 2INIA, Las Brujas, Canelones, Uruguay, 3INRA, Castanet Tolosan, France.

Genomic predictions using more markers and gene tests.
G. R. Wiggans2, P. M. VanRaden1, D. J. Null1, and J. B. Cole*, 1USDA Animal Genomics and Improvement Laboratory, Beltsville, MD, 2Council on Dairy Cattle Breeding, Bowie, MD.
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<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
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<tbody>
<tr>
<td>10:00 AM</td>
<td>463</td>
<td>Validation of genomic predictions for linear type traits in US Holsteins using over 2 million genotyped animals.</td>
<td>S. Tsuruta*1, D. A. L. Lourenco1, Y. Masuda1, I. Misztal1, and T. J. Lawlor1, University of Georgia, Athens, GA, Holstein Association USA, Brattleboro, VT.</td>
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<tr>
<td>10:30 AM</td>
<td>465</td>
<td>Changes in predictions when using different core animals in the APY algorithm.</td>
<td>I. Misztal*, S. Tsuruta, I. Pocrnic, and D. Lourenco, University of Georgia, Athens, GA.</td>
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<tr>
<td>10:45 AM</td>
<td>466</td>
<td>Cattle variant-detection modelling using selective-sequencing experimental design and statistical learning.</td>
<td>K. Bakshy*1, R. Schnabel1, and D. Bickhart1, USDA-Agricultural Research Service Dairy Forage Research Center, Madison, WI, University of Missouri, Columbia, MO.</td>
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<tr>
<td>11:00 AM</td>
<td>467</td>
<td>Genomic prediction with unknown-parent groups and metafounders for production traits in US Holsteins.</td>
<td>Y. Masuda*1, S. Tsuruta1, E. Nicolazzi1, and I. Misztal1, University of Georgia, Athens, GA, The Council of Dairy Cattle Breeding, Bowie, MD.</td>
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<tr>
<td>11:15 AM</td>
<td>468</td>
<td>Alternative input parameters for Wood’s curve within best prediction used by USDA-AGIL for genetic evaluation of production traits in the United States.</td>
<td>E. S. Houdek*1, B. J. Heins1, A. R. Hazel1, L. B. Hansen1, and J. B. Cole1, University of Minnesota, St. Paul, MN, Animal Genomics and Improvement Laboratory, ARS, USDA, Beltsville, MD.</td>
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<tr>
<td>11:30 AM</td>
<td>469</td>
<td>A genome-wide analysis using runs of homozygosity in Italian Holstein cattle.</td>
<td>A. Cesari1, G. Gaspa1, C. Dimaura1, M. Usala1, F. Corredu1, and N. Macciotta1, Università di Sassari, Dipartimento di Agraria, Sassari, Italy, Università di Torino, Dipartimento di Scienze Agrarie Alimentari e Forestali, Grugliasco, Italy.</td>
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<td>11:45 AM</td>
<td>470</td>
<td>Association between lipid-related genes implicated in conceptus elongation and female fertility traits in dairy cattle.</td>
<td>R. Abdollahi-Arpanahi*, M. R. Carvalho1, E. S. Ribeiro1, and F. Peñagaricano1, University of Florida, Gainesville, FL, University of Guelph, Guelph, ON, Canada.</td>
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<tr>
<td>12:00 PM</td>
<td>471</td>
<td>Genomic prediction and marker selection using high-density genotypes from 5 dairy breeds.</td>
<td>P. M. VanRaden1, D. J. Null1, J. R. O’Connell2, J. B. Cole1, and B. Li1, USDA Animal Genomics and Improvement Laboratory, Beltsville, MD, University of Maryland School of Medicine, Baltimore, MD.</td>
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Physiology and Endocrinology 4  
Chair: Angel Abuelo, Michigan State University  
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<th>Authors</th>
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<tr>
<td>9:30 AM</td>
<td>472</td>
<td>Effects of rumen-protected methionine fed to lactating Holstein cows during a heat stress challenge on mammary explant response to lipopolysaccharide.</td>
<td>D. N. Coleman*1, M. Vailati-Riboni1, R. T. Pate1, D. Luchini1, F. C. Cardoso1, and J. J. Loor1, University of Illinois, Urbana, IL, Adisseo, Alpharetta, GA.</td>
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<td>9:45 AM</td>
<td>473</td>
<td>Dairy cows that are less resilient to metabolic stress have increased markers of subacute inflammation, oxidative stress and endo-toxemia when calving during climatic heat stress.</td>
<td>N. Nemes-Navon1, G. Kra1, N. Ben-Aharon1, S. Yakoby1, and M. Zachut1, Department of Ruminant Science, Institute of Animal Science, Volcani Center, Rishon LeZion, Israel, Bar Ilan University, Ramat Gan, Israel.</td>
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<tr>
<td>10:00 AM</td>
<td>474</td>
<td>Effects of intralipid infusion on metabolism and inflammation in immune-challenged lactating cows.</td>
<td>E. A. Horst*, L. M. van den Brink, E. J. Mayorga, M. Al-Qaisi, S. Rodriguez-Jimenez, B. M. Goetz, M. A. Abeyta, and L. H. Baumgard, Department of Animal Science, Iowa State University, Ames, IA.</td>
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10:30 AM 476 Effects of hindgut acidosis on metabolism, inflammation, and production in dairy cows acclimated to a low-starch diet.
M. A. Abeyta*, E. A. Horst1, S. J. Rodriguez-Jimenez2, E. J. Mayorga1, B. M. Goetz1, M. Al-Qaisi1, P. Piantoni2, G. F. Schroeder2, H. A. Ramirez-Ramirez2, and L. H. Baumgard1, 2Department of Animal Science, Iowa State University, Ames, IA, 1Cargill Animal Nutrition Innovation Center, Elk River, MN.

10:45 AM 477 Oxidative stress pathway components in adipose tissue of Holstein cows during the periparturient period differ by body condition score.
Y. Liang*, E. Trevisi2, and J. Loor1, 1University of Illinois, Urbana-Champaign, Urbana, IL, 2Università Cattolica del Sacro Cuore, Milan, Italy.

Production, Management, and the Environment 3
Chair: Todd Callaway, University of Georgia 264

9:30 AM 478 Late-gestation heat stress impairs performance of daughters and granddaughters.

9:45 AM 479 Heat stress alters expression of stress and immune response genes in leukocytes of lactating cows.

10:00 AM 480 When do dry cows get heat stressed? Correlations of rectal temperature, respiration rate, and performance.
I. M. Toledo*, T. F. Fabris1, G. E. Dahl1, and S. Tao1, 1University of Florida, Gainesville, FL, 2University of Georgia, Athens, GA.

10:15 AM 481 Progesterone based synchronization following Quick-resynch protocol improves cumulative pregnancy rate in lactating dairy cows.
A. H. Shahzad*, A. Abbas2, S. Abbas1, I. Anwar2, and R. Safdar2, 1University of Veterinary and Animal Sciences, Lahore, Pakistan, 2Livestock and Dairy Development Department, Punjab, Pakistan.

10:30 AM Break

10:45 AM 482 The effect of milk predicted transmitting ability and concentrate supplementation level on milk production and composition in late-lactation spring-calving grazing dairy cows.
M. J. Doran*, M. B. Lynch1, F. J. Mulligan1, A. G. Fahey1, E. L. Brady1, C. Grace1, and K. M. Pierce2, 1School of Agriculture and Food Science, University College Dublin Lyons Farm, Naas, Co. Kildare, Ireland, 2School of Veterinary Medicine, University College Dublin, Veterinary Science Centre, Belfield, Dublin, Ireland.

11:00 AM 483 Perception of sustainability of dairy producers in Chile.
P. Toro-Mujica*, L. Robles1, and E. Vargas-Bello-Pérez2, 1Instituto de Ciencias Agronómicas y Veterinarias, Universidad de O’Higgins, San Fernando, Chile, 2Departamento de Ciencias Animales, Facultad de Agronomía e Ingeniería Forestal, Pontificia Universidad Católica de Chile, Santiago, Chile.

11:15 AM 484 Antibiotic use in cubicle housing and freewalk barn systems.
A. Kuipers*, P. Galama, and H. Wemmenhove, Wageningen University and Research, Wageningen, Gelderland, the Netherlands.

11:30 AM 485 Electrical energy consumption in four commercial Midwest dairy barns.
K. Sharpe*, B. Heins, E. Buchanan, M. Cotter, and M. Reese, West Central Research and Outreach Center, University of Minnesota, Morris, MN.
Combinatorial peptide library approach for Ruminococcus bromii and Ruminococcus flavefaciens in the rumen.
Department of Animal Sciences, University of Florida, Gainesville, FL, 2Animal Science Department, The Ohio State University, Columbus, OH.

11:00 AM 493 Assessing different branched-chain VFA combinations on NDF degradation and VFA production in vitro.
Y. Roman-Garcia*, B. L. Denton1, C. Lee2, M. Socha3, and J. L. Firkins1, 1Department of Animal Science, The Ohio State University, Columbus, OH, 2Ohio Agricultural Research and Development Center, Wooster, OH, 3Zinpro Corporation, Eden Prairie, MN.

11:15 AM 494 Increased high-moisture alfalfa hay preservation, in vitro ruminal degradability, fermentability, and decreased proteolysis with the novel use of paper mill byproducts.
D. C. Reyes**, S. L. Annis3, A. Y. Leon-Tinoco2, S. A. Rivera1, H. M. Dubuc1, L. B. Perkins1, J. J. Perry3, R. J. Kersbergen1, C. Wu1, C. W. Knight1, M. S. Castillo1, and J. J. Romero1, 1Animal and Veterinary Sciences, School of Food and Agriculture, University of Maine, Orono, ME, 2School of Biology and Ecology, University of Maine, Orono, ME, 3Food Science and Human Nutrition, School of Food and Agriculture, University of Maine, Orono, ME, 4University of Maine Cooperative Extension, Orono, ME, 5Department of Animal and Food Sciences, University of Delaware, Newark, DE, 6Department of Crop and Soil Science, North Carolina State University, Raleigh, NC.
Effects of branched-chain VFA and branched-chain AA supplementation on NDF degradation and VFA production in vitro.
Y. Roman-Garcia*, B. L. Denton, C. Lee, M. Socha, and J. L. Firkins, 1The Ohio State University Department of Animal Science, Columbus, OH, 2Ohio Agricultural Research and Development Center, Wooster, OH, 3Zinpro Corporation, Eden Prairie, MN.

Factors associated with the digestibility of alfalfa and corn silage on dairy farms.
J. C. Plaizier*, S. Kendall, and K. H. Ominski, University of Manitoba, Winnipeg, MB, Canada.

Simulating precision feeding of high and low forage diets with increasing poultry fat inclusion alter fermentation in continuous culture.
S. M. Hussein*, S. Simmons, J. Sinkevitch, H. Oswalt, G. Loughlin, and G. J. Lascano, Department of Animal and Veterinary Sciences, Clemson University, Clemson, SC.

Relation of branched-chain VFA supplementation with solids passage rate and pH on NDF degradation and microbial function in continuous culture.
Y. Roman-Garcia*, B. L. Denton, K. E. Mitchell, C. Lee, M. Socha, and J. L. Firkins, 1The Ohio State University Department of Animal Science, Columbus, OH, 2Ohio Agricultural Research and Development Center, Wooster, OH, 3Zinpro Corporation, Eden Prairie, MN.

Ruminant Nutrition Symposium: From Field to Feed Bunk—Application of Remote Sensing and New Age Technology to Improve Forage Production and Nutrient Utilization
Chair: Hugo Ramirez, Iowa State University

9:30 AM 499  
Farming data—The new agriculture.
R. Johnson*, Cainthus, Ottawa, ON, Canada.

Field remote sensing and its relationship to forage and crop yield and quality.
J. K. Ward*, North Carolina State University Biological and Agricultural Engineering, Raleigh, NC.

Forage harvest logistics and optimization.
B. Luck*, University of Wisconsin-Madison, Madison, WI.

Determination of the relationships between rumination time, milk fat production, and milk fatty acid profile using real-time rumination data.
D. M. Andreen*, M. M. Haan, C. D. Dechow, and K. J. Harvatine, 1The Pennsylvania State University, University Park, PA, 2Penn State Extension, Berks County, PA.

Animal Health 4
Chair: Turner Swartz, Kansas State University

2:00 PM 503  
Acoustic pulse therapy at dry-off period.

2:15 PM 504  
Automated detection of lameness using activity monitoring.
S. Paudyal*, G. Solano, P. Melendez, I. Roman-Muniz, R. Callan, F. Maunsell, J. Velez, and P. Pinedo, 1Department of Animal Sciences, Colorado State University, Fort Collins, CO, 2Texas A&M University, College Station, TX, 3Department of Population Health, College of Veterinary Medicine, University of Georgia, Athens, GA, 4Department of Clinical Sciences, College of Veterinary Medicine, Colorado State University, Fort Collins, CO, 5Department of Clinical Sciences, College of Veterinary Medicine, University of Florida, Gainesville, FL, 6Aurora Organic Dairy, Platteville, CO.
Dynamics of activity around corrective and therapeutic hoof trimming.
S. Paudyal1,2, G. Solano1, P. Melendez3, I. Roman-Muniz1, R. Callan4, F. Maunsell5, J. Velez6, and P. Pinedo1, 1Department of Animal Sciences, Colorado State University, Fort Collins, CO, 2Texas A&M University, College Station, TX, 3Department of Population Health, College of Veterinary Medicine, University of Georgia, Athens, GA, 4Department of Clinical Sciences, College of Veterinary Medicine, Colorado State University, Fort Collins, CO, 5Department of Clinical Sciences, College of Veterinary Medicine, University of Florida, Florida, Gainesville, FL, 6Aurora Organic Dairy, Platteville, CO.

Association between lying behavior and hoof lesions in lactating dairy cows.
B. O. Omontese1; R. Bellet-Elias1, A. M. Argüello2, G. D. Catandi1, R. Casagrande1, Z. Rodriguez1, R. S. Bisinotto2, and G. Cramer1, 1Department of Veterinary Population Medicine, University of Minnesota, St. Paul, MN, 2Department of Large Animal Clinical Sciences, University of Florida, Gainesville, FL.

Growth and Development 2
Chair: Peter Erickson, University of New Hampshire

Maternal copper and zinc alter epigenetic markers in muscle of offspring.

Milk consumption differs by breed and lung consolidation score in automated feeding systems.
T. S. Steckler*, M. A. Erasmus, and J. P. Boerman, Purdue University Department of Animal Sciences, West Lafayette, IN.

MILK Symposium:
Improving Milk Production, Quality, and Safety in Developing Countries
Chair: Geoffrey Dahl, University of Florida

Opening remarks
Adegbola Adesogan, University of Florida, Gainesville, FL.

The importance of milk in the diets of infants, pregnant women, adolescents and adults.
D. I. Givens*, University of Reading, Reading, UK.

Foodborne diseases from dairy products in developing countries: hazards and health implications.
A. H. Havelaar1, D. Grace-Randolph2, and F. Wu3, 1University of Florida, Gainesville, FL, 2International Livestock Research Institute, Nairobi, Kenya, 3Michigan State University, East Lansing, MI.

Subclinical mastitis prevalence, causative pathogens and risk factors in small dairy holders linked to milk collection centers in Rwanda.
J. B. Ndagetuye1,2, J. Twambazimana1, A. Nyman1, Y. Persson1, and R. Båge1, 1Division of Reproduction, Department of Clinical Sciences, Swedish University of Agricultural Sciences, Uppsala, Sweden, 2College of Agriculture, Animal Sciences and Veterinary Medicine, University of Rwanda, Busogo, Rwanda, 3National Veterinary Institute, Uppsala, Sweden, 4Vaxa Sverige, Stockholm, Sweden.

A technology package for the control of mastitis in dairy animals at smallholder farmer level.
K. Sah*, P. Karki1, R. Shrestha2, A. Adesogan3, and G. Dahl3, 1Heifer International Nepal, Kathmandu, Nepal, 2Himalayan College of Agricultural Sciences and Technology, Kathmandu, Nepal, 3Department of Animal Sciences, University of Florida, Gainesville, FL.

Ice cream break in Exhibit Hall
Interventions towards improving the microbiological quality of traditional yogurt in Borana pastoral communities, Ethiopia.


Department of Microbiology, Immunology and Veterinary Public Health, College of Veterinary Medicine and Agriculture, Addis Ababa University, Bishoftu, Ethiopia, Institute of Leadership and Good Governance, Ethiopian Civil Service University, Addis Ababa, Ethiopia, International Livestock Research Institute (ILRI), Addis Ababa, Ethiopia, USDA-ARS, Food Animal Environmental Systems Research Unit, Bowling Green, KY, Department of Animal Science, University of Tennessee, Knoxville, TN, International Livestock Research Institute (ILRI), Nairobi, Kenya, Department of Animal Sciences, College of Agriculture and Environmental Sciences, Arsi University, Asella, Ethiopia, International Centre for Agricultural Research in the Dry Areas (ICARDA), Amman, Jordan.

Effects of ration formulation on the performance of dairy animals in Nepal.

B. Shrestha* and A. Adesogan


University of Florida, Gainesville, FL.

“More milk, please!” Does increased milk consumption lead to better child growth and development in rural Nepal?

L. Miller*, N. Joshi, M. Lohani, S. Neupane, S. Neupane, and A. Thorne-Lyman


Production, Management, and the Environment 4

Chair: Todd Callaway, University of Georgia

2:00 PM

Feeding a diet with high corn distillers grain with solubles alters manure characteristics and decreases ammonia emission from manure in dairy cows.

C. Lee*, D. L. Morris, and K. M. Lefever

Department of Animal Sciences, OARDC, The Ohio State University, Wooster, OH, Department of Animal Science, University of Nebraska-Lincoln, Lincoln, NE.

The effects of concentrate feeding strategy and dairy cow genotype on milk production and metabolic status under restricted grazing conditions during the breeding season.


School of Veterinary Medicine, University College Dublin, Belfield, Dublin, Ireland, School of Agriculture and Food Science, University College Dublin, Belfield, Dublin, Ireland.

Effects of milk replacer feeding rate and frequency on performance of preweaning dairy calves during summer.


University of Georgia, Tifton, GA.

Management strategies to optimize milk fatty acid composition and component production.


North Carolina State University, Raleigh, NC, Cornell University, Ithaca, NY.

Dairy cow response to a restriction in pasture allowance in early lactation—Effect on energy balance and blood metabolites.

A. Claffey*, L. Delaby, T. M. Boland, E. Lewis, and E. Kennedy

Teagasc Animal and Grassland Research and Innovation Centre, Moorepark, Fermoy, Co. Cork, Ireland, INRA, AgroCampus Ouest, UMR Physiologie, Environnement et Génétique pour l’Animal et les Systèmes d’Elevage, Saint Gilles, France, School of Agriculture and Food Science, University College Dublin, Belfield, Dublin, Ireland, Devenish Nutrition Limited, Belfast, UK.
Pasture and supplement intake, milk production, and partial economic profit in commercial dairy systems: Effects of two contrasting productive strategies.
M. N. Méndez*, 1M. Aguerre1, and P. Chilibroste2, 1Red Tecnológica Sectorial de Lechería, Montevideo, Uruguay, 2Departamento de Producción Animal y Pasturas, Facultad de Agronomía, UdelaR, Paysandú, Uruguay.

Production, Management, and the Environment Symposium:
Future of Housing for Dairy Cattle
Chair: Joao Costa, University of Kentucky
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Housing and management systems for dairy cows.
P. J. Galama*, A. Kuipers, and H. J. van Dooren, Wageningen Livestock Research, Wageningen, Gelderland, the Netherlands.

Comparing cattle welfare in compost barns and freestalls in six European countries.
I. Blanco-Penedo*, A. Kuipers2, M. Klopic3, and U. Emanuelson1, 1SLU, Department of Clinical Sciences, Uppsala, Sweden, 2WUR, Wageningen Livestock Research, Wageningen, the Netherlands, 3UL, Department of Animal Science, Groblje, Slovenia.

Current and future of compost bedded pack barns in North America.
J. L. Taraba*, University of Kentucky, Lexington, KY.

Transition period and calving housing: Latest information and where are we heading?
K. Proudfoot*, Ohio State University, Columbus, OH.

ADSA Foundation Scholar Presentation (Production) and Ruminant Nutrition Symposium: Dietary Methyl Donor Supplementation and Hepatic Health in Transition Dairy Cows
Chair: Joseph McFadden, Cornell University
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ADSA Foundation Scholar Award Presentation (Production): Influencing hepatic metabolism: Can fatty acids and methyl donors modulate nutrient partitioning to support metabolic health in the transition dairy cow?
H. White*, University of Wisconsin Madison, Madison, WI.

Methyl donor metabolism and nutrition in the transition dairy cow: Should we consider fatty acid nutrition simultaneously?
J. W. McFadden*, Cornell University, Ithaca, NY.

Potential impacts of betaine supplementation on dairy cattle during the transition period and under heat stress.
S. Tao*, J. K. Bernard, R. M. Orellana Rivas, T. N. Marins, and Y. Chen, University of Georgia, Tifton, GA.

Folic acid and vitamin B₁₂ requirements of mature cows: Importance of endogenous production of methyl donors from the one-carbon pool.
C. L. Girard* and M. Duplessis, Agriculture and Agri-Food Canada, Sherbrooke, QC, Canada.
Methionine supplementation during the transition period: Fine-tuning immunometabolism.
Z. Zhou*, Michigan State University, East Lansing, MI.

Ruminant Nutrition 7
Chair: Kristen Glosson, Phibro Animal Health

The effects of isoenergetic high-starch or high-fat diets on energy and nitrogen partitioning and utilization in late-lactation Jersey cows.
D. L. Morris*, T. M. Brown-Brandl, K. E. Hales, J. K. Harvatine, and P. J. Kononoff, 1Department of Animal Science, University of Nebraska-Lincoln, Lincoln, NE, 2Department of Biological Systems Engineering, University of Nebraska-Lincoln, Lincoln, NE, USDA Agricultural Research Service, US Meat Animal Research Center, Clay Center, NE, 3Department of Animal Science, The Pennsylvania State University, University Park, PA.

Characterization of daily patterns within the rumen metaproteome of Holstein dairy cattle.
M. Honan* and S. Greenwood, The University of Vermont, Burlington, VT.

Postpartum ammoniated lactate supplementation altered gene expression to support hepatic metabolism.

Effects of rumen-protected capsicum alone or in a combination with an artificial sweetener on productivity and fat mobilization in early lactation dairy cows.
J. Oh1, M. T. Harper2, A. Melgar3, S. Räsänen4, X. Chen5, K. Nedelkov3, E. H. Wall6, and A. H. Nistova, 1The Pennsylvania State University, University Park, PA, 2College of Pastoral Agriculture Science and Technology, Lanzhou University, Gansu, China, 3Faculty of Veterinary Medicine, Trakia University, Stara Zagora, Bulgaria, 4Pancosma, Geneva, Switzerland.

Lactation performance of dairy cows fed rehydrated and ensiled corn grain differing in particle size and concentration in the diet.
L. P. Castro1, J. D. L. Dias1, D. V. D. Lage1, E. F. Barbosa1, R. P. Melo1, K. Ferreira1, J. T. R. Carvalho1, F. F. Cardoso1, R. A. N. Pereira1,2, and M. N. Pereira*, 1Universidade Federal de Lavras, Lavras, MG, Brazil, 2Better Nature Research Center, Ijaci, MG, Brazil, 3Empresa de Pesquisa Agropecuaria de Minas Gerais, Lavras, MG, Brazil.

Effects of lecithin supplementation on milk production and circulating markers of metabolic health in Holstein cows.
A. B. P. Fontoura*, J. E. Rico1, K. M. Keller1, A. N. Davis1, W. A. Myers1, J. T. Siegel1, R. Gervais2, and J. W. McFadden1, 1Cornell University, Ithaca, NY, 2Universitè Laval, Quebec City, QC, Canada.

Body condition score prior to parturition is associated with abundance of ruminal bacteria during the peripartal period in Holstein dairy cows.
A. Elolimy*, K. Wilachai1, A. Alharthi1, P. Paengkoum1, and J. J. Loor1, 1Department of Animal Sciences and Division of Nutritional Sciences, University of Illinois, Urbana, IL, 2Program of Animal Science, Faculty of Agricultural Technology, Rajabhat Maha Sarakham University, Thailand, 3School of Animal Technology and Innovation, Institute of Agricultural Technology, Muang, Nakhon Ratchasima, Thailand.

Hindgut microbiome and metabolome in neonatal Holstein heifer calves with divergent residual feed intake during the preweaning period.
A. Elolimy*, A. Alharthi, M. Zeineldin, and J. J. Loor, 1Department of Animal Sciences and Division of Nutritional Sciences, University of Illinois, Urbana, IL, 2Integrated Food Animal Management Systems, Department of Veterinary Clinical Medicine, University of Illinois, Urbana, IL.
4:45 PM 543  Evaluating heat stress response in lactating Holstein cows with supplementation of a feed additive during mid lactation.
M. Vander Poel*, R. Collier¹, L. Camacho¹, Y. Xiao², D. Compart³, K. Russo³, and D. Diaz³. ¹Department of Animal and Biomedical Science, University of Arizona, Tucson, AZ, ²Department of Animal Science, University of Florida, Gainesville, FL, ³PMI Nutritional Additives, Arden Hills, MN.

5:00 PM 544  Growth performance, metabolic and rumen profile, and health of calves fed condensed whey solubles with starter pellets.
M. J. Della*, J. L. Anderson, J. S. Osorio, and L. Metzger, Dairy and Food Science Department, South Dakota State University, Brookings, SD.
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Louisville, Kentucky

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June 19–22, 2022
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