

## Appendix 1: Standard Abbreviations

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The following abbreviations may be used without definition in the *Journal of Dairy Science* (but please spell out all abbreviations in the Interpretive Summary). In addition, abbreviations of all chemical elements, common combinations of chemical elements, SI units of measure used with a value, and common amino acids (3-letter and 1-letter abbreviations) should be used without definition. Abbreviations are generally not permitted in the title, running head, and key words. Plural abbreviations do not require "s".

|                                                            |                                                                                       |
|------------------------------------------------------------|---------------------------------------------------------------------------------------|
| AA = amino acid                                            | MALDI-TOF = matrix-assisted laser desorption/ionization time-of-flight                |
| ACTH = adrenocorticotropin                                 | ME = metabolizable energy                                                             |
| ADF = acid detergent fiber                                 | MIC = minimum inhibitory concentration                                                |
| ADG = average daily gain                                   | MP = metabolizable protein                                                            |
| ADL = acid detergent lignin                                | mRNA = messenger ribonucleic acid                                                     |
| ADIN = acid detergent insoluble nitrogen                   | MS = mass spectrometry                                                                |
| AMP, ADP, ATP = adenosine mono-, di-, or triphosphate      | MUFA = monounsaturated fatty acids                                                    |
| ANOVA = analysis of variance                               | MUN = milk urea nitrogen                                                              |
| ATPase = adenosine triphosphatase                          | n = number of samples                                                                 |
| BCS = body condition score                                 | NAD <sup>+</sup> /NADH = nicotinamide adenine dinucleotide (oxidized/reduced)         |
| BHB = $\beta$ -hydroxybutyrate                             | NADP = nicotinamide adenine dinucleotide phosphate                                    |
| BLUP = best linear unbiased predictor                      | NADPH <sub>2</sub> = reduced nicotinamide adenine dinucleotide phosphate              |
| BSA = bovine serum albumin                                 | NAN = nonammonia nitrogen                                                             |
| bST = bovine somatotropin                                  | NAS = non- <i>aureus</i> staphylococci                                                |
| BTA = <i>Bos taurus</i> autosome                           | NDF = neutral detergent fiber                                                         |
| BUN = blood urea nitrogen                                  | NDIN = neutral detergent insoluble N                                                  |
| BW = body weight                                           | NDM = nonfat dry milk                                                                 |
| cDNA = complementary deoxyribonucleic acid                 | NEAA = nonessential amino acid                                                        |
| CI = confidence interval                                   | NEG = net energy for gain                                                             |
| CLA = conjugated linoleic acid                             | NEL = net energy for lactation                                                        |
| CN = casein                                                | NEM = net energy for maintenance                                                      |
| CNS = coagulase-negative staphylococci (see NAS)           | NFC = nonfiber carbohydrates                                                          |
| CoA = coenzyme A                                           | NPN = nonprotein nitrogen                                                             |
| CP = crude protein                                         | NRC = National Research Council                                                       |
| CV = coefficient(s) of variation                           | NSC = nonstructural carbohydrates                                                     |
| DCAD = dietary cation-anion difference                     | OM = organic matter                                                                   |
| df = degrees of freedom                                    | PAGE = polyacrylamide gel electrophoresis                                             |
| DHI(A) = Dairy Herd Improvement/Information (Association)  | PBS = phosphate-buffered saline                                                       |
| DIM = days in milk                                         | PCR = polymerase chain reaction                                                       |
| DM = dry matter                                            | PGF <sub>2<math>\alpha</math></sub> = prostaglandin F <sub>2<math>\alpha</math></sub> |
| DMI = dry matter intake                                    | PMN = polymorphonuclear leukocyte                                                     |
| DNA = deoxyribonucleic acid                                | PTA = predicted transmitting ability                                                  |
| DNase = deoxyribonuclease                                  | PUFA = polyunsaturated fatty acids                                                    |
| dNTP = deoxynucleotide triphosphates                       | QTL = quantitative trait loci                                                         |
| EAA = essential amino acid                                 | r = correlation coefficient                                                           |
| EBV = estimated breeding value                             | R <sup>2</sup> = coefficient of determination                                         |
| ECM = energy-corrected milk                                | RDP = rumen-degraded protein                                                          |
| EDTA = ethylenediaminetetraacetate                         | REML = restricted maximum likelihood                                                  |
| EGTA = ethylene glycol tetraacetate                        | RFLP = restriction fragment length polymorphism                                       |
| ELISA = enzyme-linked immunosorbent assay                  | RIA = radioimmunoassay                                                                |
| FCM = fat-corrected milk                                   | RNA = ribonucleic acid                                                                |
| FSH = follicle-stimulating hormone                         | RNase = ribonuclease                                                                  |
| GAPDH = glyceraldehyde 3-phosphate dehydrogenase           | rRNA = ribosomal ribonucleic acid                                                     |
| GBLUP = genomic best linear unbiased prediction            | RUP = rumen-undegraded protein                                                        |
| GC = gas chromatography                                    | SARA = subacute ruminal acidosis                                                      |
| GEV = genomic estimated breeding value                     | SCC = somatic cell count                                                              |
| GHG = greenhouse gases                                     | SCS = somatic cell score                                                              |
| GLC = gas-liquid chromatography                            | SD = standard deviation                                                               |
| GnRH = gonadotropin-releasing hormone                      | SDS = sodium dodecyl sulfate                                                          |
| GWAS = genome-wide association study                       | SE = standard error                                                                   |
| h <sup>2</sup> = heritability                              | SEM = standard error of the mean                                                      |
| HEPES = N-2-hydroxyethyl piperazine-N'-ethanesulfonic acid | SFA = saturated fatty acids                                                           |
| HPLC = high-performance (pressure) liquid chromatography   | SNF = solids-not-fat                                                                  |
| HTST = high temperature, short time                        | SNP = single nucleotide polymorphism                                                  |
| IFN = interferon                                           | SPC = standard plate count                                                            |
| Ig = immunoglobulin                                        | TDN = total digestible nutrients                                                      |
| IGF = insulin-like growth factor                           | Tris = tris(hydroxymethyl)aminomethane                                                |
| IL = interleukin                                           | TMR = total mixed ration                                                              |
| IMI = intramammary infection                               | TS = total solids                                                                     |
| $\alpha$ -LA = $\alpha$ -lactalbumin                       | UF = ultrafiltration, ultrafiltered                                                   |
| $\beta$ -LG = $\beta$ -lactoglobulin                       | UFA = unsaturated fatty acids                                                         |
| LH = luteinizing hormone                                   | UHT = ultra-high temperature                                                          |
| LPS = lipopolysaccharide                                   | USDA = United States Department of Agriculture                                        |
| LSD = least significant difference                         | UV = ultraviolet                                                                      |
| LSM = least squares means                                  | VFA = volatile fatty acids                                                            |
| mAb = monoclonal antibody                                  |                                                                                       |

The following units and terms can be used without definition in the *Journal of Dairy Science*.

|                            |                     |                           |                               |
|----------------------------|---------------------|---------------------------|-------------------------------|
| atomic mass unit           | amu                 | minute(s)                 | min                           |
| atmosphere                 | atm                 | molar (concentration)     | <i>M</i>                      |
| base pair                  | bp                  | molar (mass)              | mol                           |
| calorie (gram)             | cal                 | mole (number, mass)       | mol                           |
| celsius (with number)      | °C                  | month(s)                  | mo                            |
| centimeter                 | cm                  | morning/afternoon         | a.m./p.m.                     |
| centimeter, square         | cm <sup>2</sup>     | nano                      | n (prefix)                    |
| circa                      | ca.                 | newton                    | N                             |
| centimorgan                | cM                  | normal (concentration)    | <i>N</i>                      |
| centipoise                 | cP                  | nanogram                  | ng                            |
| central processing unit    | CPU                 | osmolality                | use mmol/kg                   |
| colony-forming unit        | cfu                 | outside diameter          | o.d.                          |
| counts per minute          | cpm                 | parts per billion         | ppb (use µg/kg or equivalent) |
| counts per second          | cps                 | parts per million         | ppm (use mg/kg or equivalent) |
| crossed with, times        | ×                   | pascal                    | Pa                            |
| cubic                      | cu                  | pico                      | p (prefix)                    |
| cubic centimeter           | cc, cm <sup>3</sup> | picogram                  | pg                            |
| cubic millimeter           | mm <sup>3</sup>     | plaque-forming unit       | pfu                           |
| curie                      | Ci                  | probability               | <i>P</i>                      |
| cycles per second (hertz)  | Hz                  | revolutions per minute    | rpm                           |
| day(s)                     | d                   | second(s)                 | s                             |
| dalton                     | Da                  | siemens                   | S                             |
| deci                       | d (prefix)          | species                   | spp.                          |
| deciliter                  | dL                  | subcutaneous              | s.c.                          |
| electron volt              | eV                  | subspecies                | ssp.                          |
| equivalents                | Eq                  | thousands (approximation) | K (e.g., 50K SNPs)            |
| foot-candle                | use lx              | unit                      | U                             |
| gram                       | g                   | volt                      | V                             |
| gravity                    | <i>g</i>            | volume                    | vol                           |
| hectare                    | ha                  | volume/volume             | vol/vol (use parenthetically) |
| hour(s)                    | h                   | watt                      | W                             |
| inside diameter            | i.d.                | week(s)                   | wk                            |
| international unit         | IU                  | weight/volume             | wt/vol (use parenthetically)  |
| intramuscularly            | i.m.                | year(s)                   | yr                            |
| intraperitoneally          | i.p.                |                           |                               |
| intravenously              | i.v.                | <b>Amino Acids</b>        |                               |
| joule                      | J                   | alanine                   | Ala                           |
| kilo                       | k (prefix)          | arginine                  | Arg                           |
| kilobase                   | kb                  | asparagine                | Asn                           |
| kilobyte                   | KB                  | aspartic acid             | Asp                           |
| kilocalorie                | kcal                | citrulline                | Cit                           |
| kilogram                   | kg                  | cysteine                  | Cys                           |
| kilopascal                 | kPa                 | glutamic acid             | Glu                           |
| liter                      | L                   | glutamine                 | Gln                           |
| logarithm (natural)        | ln                  | glycine                   | Gly                           |
| logarithm (base 10)        | log <sub>10</sub>   | histidine                 | His                           |
| lux                        | lx                  | isoleucine                | Ile                           |
| mega                       | M (prefix)          | leucine                   | Leu                           |
| meter                      | m                   | lysine                    | Lys                           |
| metric tonne               | tonne or t          | methionine                | Met                           |
| micro                      | µ (prefix)          | ornithine                 | Orn                           |
| microcurie                 | µCi                 | phenylalanine             | Phe                           |
| microfarad                 | µF                  | proline                   | Pro                           |
| microgram                  | µg                  | serine                    | Ser                           |
| microliter                 | µL                  | threonine                 | Thr                           |
| milli                      | m (prefix)          | tryptophan                | Trp                           |
| milliliter                 | mL                  | tyrosine                  | Tyr                           |
| millimeters of mercury     | mm Hg               | valine                    | Val                           |
| millimolar (concentration) | mM (= mmol/L)       |                           |                               |
| millimole (mass)           | mmol                |                           |                               |