

**Abstracts of the  
2023 American Dairy Science Association®  
Annual Meeting**

***Journal of Dairy Science*®  
Volume 106, Supplement 1**





# JOURNAL OF DAIRY SCIENCE® SINCE 1917

1800 S. Oak St., Ste. 100, Champaign, IL 61820 Phone 217-356-5146 | Fax 217-378-4083 | <http://www.journalofdairyscience.org>

**Paul Kononoff, Editor-in-Chief (25)**  
University of Nebraska–Lincoln; [pkononoff2@unl.edu](mailto:pkononoff2@unl.edu); 402-472-6442

## Invited Reviews

Kerst Stelwagen, Senior Editor (24)  
SciLactis Ltd.

## Dairy Foods

### Bioactivity and Human Health Dairy Product Microbiology and Safety Food Systems and Environment

Olivia McAuliffe, Senior Editor (24)  
Teagasc

Michael Miller, Editor (23)  
University of Illinois

Nicole Martin, Editor (24)  
Cornell University

Denis Roy, Editor (24)  
Université Laval

### Chemistry and Materials Science Processing and Engineering Sensory Analysis

Scott A. Rankin, Senior Editor (23)  
University of Wisconsin–Madison

Milena Corredig, Editor (25)  
Aarhus University

Adriano Cruz, Editor (25)  
IFRJ

## Production

### Animal Nutrition

Jeffrey L. Firkins, Senior Editor (23)  
The Ohio State University

Alex Bach, Editor (24)  
ICREA

Barry Bradford, Editor (25)  
Michigan State University

Andre Brito, Editor (25)  
University of New Hampshire

Timothy J. Hackmann, Editor (24)  
University of California–Davis

### Farm Systems and Environment

Robin White, Senior Editor (24)  
Virginia Tech

Bradley J. Heins, Editor (24)  
University of Minnesota

### Genetics and Genomics

Andrés Legarra, Senior Editor (23)  
INRA

Christine Baes, Editor (23)  
University of Guelph; University of Bern

Daniela Lourenco, Editor (24)  
University of Georgia

## Health, Behavior, and Well-being

Jessica McArt, Senior Editor (25)  
Cornell University

Wolf Heuwieser, Editor (24)  
Freie Universität Berlin

John Middleton, Editor (23)  
University of Missouri

Olga Wellnitz, Editor (23)  
University of Bern

Richard Laven, Editor (24)  
Massey University

Katy Proudfoot, Editor (24)  
University of Prince Edward Island

## Physiology

Gerd Bobe, Senior Editor (23)  
Oregon State University

Laura Hernandez, Editor (24)  
University of Wisconsin

Paul Fricke, Editor (24)  
University of Wisconsin

## JOURNAL MANAGEMENT COMMITTEE

S. Clark, Chair (24)  
Iowa State University

J. Costa (27)  
University of Kentucky

Matthew C. Lucy,  
University of Missouri

**Board Liaison**  
Paul J. Kononoff,  
University of Nebraska

**Ex officio**  
Jerry Bowman,  
Executive Director

K. Aryana (26)  
Louisiana State University

S. Greenwood (25)  
University of Vermont

Laura Esterman  
Managing Editor  
Karie Simpson  
Lead Technical Editor

## EDITORIAL BOARD

A. Abuelo (23) USA  
S. Alcaine (24) USA  
S. Anand (23) USA  
F. Bargo (23) Argentina  
J. Barlow (24) USA  
D. S. Beggs (25) Australia  
P. Behare (24) India  
D. Berry (24) Ireland  
M. Bionaz (24) USA  
R. Bisinotto (24) USA  
J. Boerman (23) USA  
A. Bouwman (23) the Netherlands  
L. F. Brito (24) USA  
J. Bromfield (23) USA  
V. E. Cabrera (24) USA  
M. Castillo (23) Spain  
T. M. Casey (25) USA  
P. Chaivisuthangkura (25) Thailand  
A. Cruz (24) Brazil

E. Cuttance (23) New Zealand  
J. Dalton (23) USA  
J. De Souza (25) USA  
T. DeVries (24) Canada  
J. Dubuc (25) Canada  
M. Endres (23) USA  
A. Faciola (24) USA  
L. Ferraretto (24) USA  
L. Giblin (23) Ireland  
C. Girard (23) Canada  
J. Gross (25) Switzerland  
G. Habing (23) USA  
H. M. Hammon (24) Germany  
L. Izzo (24) Italy  
R. Jimenez-Flores (23) USA  
Y. Kim (23) Korea  
V. Krömker (23) Germany  
J. Laporta (24) USA  
C. Lee (23) USA

G. Lewis (24) USA  
X. Li (24) China  
A. L. Lock (24) USA  
N. Lopez-Villalobos (24)  
New Zealand  
L. Ma (23) USA  
S. Mann (24) USA  
M. Marcondes (23) USA  
P. Martin (24) France  
E. Miller-Cushon (24) USA  
S. Moore (24) Ireland  
R. Mor (24) India  
C. Oberg (23) USA  
P. Ospina (24) USA  
M. O'Sullivan (25) Ireland  
B. Pardon (23) Belgium  
F. Peñagaricano (24) USA  
P. Pinedo (25) USA  
N. Raak (23) Denmark

D. Renaud (25) Canada  
A. Rius (24) USA  
J. E. P. Santos (24) USA  
D. Sepulveda (23) Mexico  
N. Silvia-del-Rio (23) USA  
M. A. Steele (24) Canada  
E. Stefanovic (25) Ireland  
V. Sunkesula (25) USA  
L. Tauer (23) USA  
P. Toral (25) Spain  
J. Vandenplas (25) the Netherlands  
R. Ward (25) USA  
M. Wattiaux (23) USA  
M. Wiedmann (23) USA  
C. A. Wolf (25) USA  
H. Zheng (24) USA

## FASS PUBLICATIONS STAFF ([journals@assoqh.org](mailto:journals@assoqh.org))

Laura Esterman, Managing Editor  
Karie Simpson, Lead Technical Editor  
Katy Henkel

Christine Horger  
Ron Keller  
Lisa Krohn

Theresa Lawrence  
Natalie Lehman  
Shauna Miller

Kaitlyn Moore  
Hannah Park  
Jess Townsend

## ADSA BOARD

**President**  
N. St-Pierre  
Perdue AgriBusiness

**Vice President**  
F. Harte  
Pennsylvania State University

**Treasurer**  
A. De Vries  
University of Florida

**Past President**  
P. Kindstedt  
University of Vermont

**Editor-in-Chief**  
Paul Kononoff  
University of Nebraska

**Executive Director**  
Jerry Bowman  
ADSA

**Past Past President**  
R. Erdman  
University of Maryland

**Director**  
R. Kapoor (23)  
Dairy Management Inc.

**Director**  
X. Zhao (23)  
McGill University

**Director**  
D. Everett (24)  
AgResearch

**Director**  
L. Hernandez (24)  
University of Wisconsin

**Director**  
R. Govindasamy-Lucey (25)  
Wisconsin Center for Dairy  
Research

**Director**  
S. LeBlanc (25)  
University of Guelph

*Journal of Dairy Science* (ISSN 1525-3198) is published online (<http://www.journalofdairyscience.org>) monthly on behalf of the American Dairy Science Association® by FASS Inc., Champaign, IL 61820, and Elsevier Inc., 360 Park Avenue South, New York, NY 10010-1710. Business and Editorial Office: 1600 John F. Kennedy Blvd., Ste. 1800, Philadelphia, PA 19103-2899. Customer Services Office: 3251 Riverport Lane, Maryland Heights, MO 63043.

# ADSA 2023 Program Committees

## **Overall Program Committee**

Corwin Nelson (chair)  
Sam Alcaine (vice chair)  
Pedram Rezamand  
Nicole Martin  
Kayanush Aryana  
Kevin Harvatine  
Trevor DeVries  
Federico Harte (ex officio)  
Luke Qian (ex officio)  
Paul Kononoff (ex officio)

## **Animal Behavior and Well-Being**

Barbara Jones (chair)  
Meagan King  
Kimberly Morrill

## **Animal Health**

Johan Osorio (chair)  
Angie Rowson  
Xin Zhao

## **Breeding and Genetics**

Natascha Vukasinovic (chair)  
Luiz Brito  
Eveline Ibeagha-Awemu

## **Dairy Foods**

Nicole Martin (chair)  
Jayendra Amamcharla  
Haotian Zheng  
Guillaume Brisson  
Laura Colby  
Venkateswarlu Sunkesula  
Rani Govindasamy-Lucey

## **Extension Education**

Shannon Davidson (chair)  
Noelia Silva-del-Rio  
Maristela Rovai

## **Forages and Pastures**

Ken Griswold (chair)  
Diwakar Vyas  
Uchenna Anele

## **Growth and Development**

Kimberley Morrill (chair)  
Anne Laarman  
Toshihisa "Toshi" Sugino

## **Lactation Biology**

Adam Geiger (chair)  
Rupert Bruckmaier  
Amy Skibiel  
Tom McFadden

## **Milk Protein and Enzymes**

Hadi Eshpari (chair)  
Beth Briczinski  
Milena Corredig  
David Everett  
Donald McMahon  
Don Otter  
Phoebe Qi  
Rodrigo Roesch

## **Physiology and Endocrinology**

Benjamin Renquist  
Shelly Rhoads

## **Production, Management, and the Environment**

Fabio Lima (chair)  
Seongwon "Terry" Seo

## **Reproduction**

Anna Denicol (chair)  
Alvaro Garcia Guerra  
Osvaldo Bogado Pascottini

## **Ruminant Nutrition**

Dengpan Bu (chair)  
Agustín Ríus  
Fernanda Batistel  
Maris McCarthy  
Jacquelyn Boerman  
Marcos Marcondes

## **Small Ruminant**

Andres Pech Cervantes (chair)  
Diwakar Vyas  
Izabelle Teixeira

## **Teaching/Undergraduate and Graduate Education**

Tracy Burnett (chair)  
Caitlin Foley  
Barbara Jones

## **ADSA Southern Branch Symposium**

Amanda Stone (chair)

## **ADSA Graduate Student Symposium**

Luke Qian (chair)  
Brittany Morstatter

**ADSA USD Undergraduate Oral and Poster Competition**

Amanda Stone (chair)

Molly Kelley

**Graduate Student Competition: ADSA Dairy Foods Oral**

Rodrigo Ibanez Alfaro (chair)

Neha Singh

Ni Cheng

**Graduate Student Competition: ADSA Dairy Foods Poster**

Minto Michael (chair)

Ashraf Hassan

Venkateswarlu Sunkesula

**Graduate Student Competition: ADSA Production Oral (MS/PhD)**

Virginia Brandao (chair)

Mike Socha (chair)

Kristen Glosson

Robin White

Heidi Rossow

Joseph McFadden

**Graduate Student Competition: ADSA Production Poster (MS/PhD)**

Kayla Rink (chair)

Lorenzo Hernandez Castellano

Jessica McArt

Kari Estes

Anne Laarman

Barry Bradford

**Graduate Student Competition: ADSA Southern Section Oral Competition**

Amanda Stone (chair)

**Citing ADSA 2023 Meeting Abstracts** (XXX = page number from this abstract collection):

Author, A., B. Author, and C. Author. 2023. Presentation title. *J. Dairy Sci.* 106(Suppl. 1): XXX. (Abstr.)

**ABSTRACTS**  
**American Dairy Science Association®**  
**Sunday, June 25, to Wednesday, June 28, 2023**

**Contents**

	<b>Abstract no.</b>	<b>Page no.</b>
Dairy Foods Symposium: Todd R. Klaenhammer Memorial Symposium—Contributions to Our Understanding of Lactic Acid Bacteria .....	1	1
ADSA-EAAP (European Federation of Animal Science) Speaker Exchange Symposium: Building a Resilient Dairy Sector—Circular Economies of Dairy Production and Dairy Foods .....	3	3
ADSA-GSD Competition: Dairy Foods Oral Presentations.....	5	5
ADSA-USD Competition: Dairy Foods Oral Presentations.....	9	9
ADSA-USD Competition: Dairy Production Oral Presentations.....	10	10
ADSA-USD Competition: Original Research Oral Presentations.....	12	12
Animal Behavior and Well-Being Symposium: Hot Topics in Calf Management—Welfare Considerations from Birth to Transport.....	15	15
Animal Health 1 .....	17	17
Joint Breeding and Genetics and Lactation Biology Symposium: Genomics and Phenomics of Lactation.....	21	21
Dairy Foods Symposium: Managing the Risks—Lessons from the Infant Formula Crisis.....	23	23
Production, Management, and the Environment 1 .....	24	24
Ruminant Nutrition 1: Gut Physiology, Fermentation, and Digestion .....	29	29
Ruminant Nutrition 2: Protein and Amino Acids.....	34	34
Small Ruminants 1 .....	39	39
Teaching/Undergraduate and Graduate Education Symposium and Workshop: Novel Teaching Strategies in Dairy Science.....	43	43
ADSA Southern Branch Symposium: Incorporating Beef in Dairy Systems.....	45	45
Animal Health 2 .....	47	47
Breeding and Genetics Platform Session: Novel Traits, Novel Technologies .....	52	52
Dairy Foods Symposium: Dairy Beverages 2.0—Current Innovations to Fuel Dairy-Based Beverages of the Future .....	56	56
Dairy Foods 1: Cheese.....	58	58
Joint NMC (National Mastitis Council) and ADSA Lactation Biology Symposium: Unlocking the Potential of the Bovine Mammary Gland—Recognition of the Contribution of ADSA Fellow Mike Akers.....	62	62
Physiology and Endocrinology 1 .....	64	64
Production, Management, and the Environment 2.....	69	69
Ruminant Nutrition Symposium: Improving Rumen Fermentation Through Altering Rumen Microbiota.....	73	73
Ruminant Nutrition 3: Carbohydrates and Lipids.....	74	74
Animal Health 3 .....	79	79
Breeding and Genetics Symposium: Breeding for Resilience in Dairy Animals.....	83	83

	<b>Abstract no.</b>	<b>Page no.</b>
Dairy Foods Symposium: Continued Challenges in Controlling Dairy Spoilage.....		84
Dairy Foods 2: Dairy Products and Processing .....		85
Extension Education Symposium: Leading Extension Programs on Dairy Farms—Tribulations, Changes, and Successes.....		89
Lactation Biology 1 .....		90
Production, Management, and the Environment 3.....		95
Joint Reproduction, Physiology and Endocrinology, and Ruminant Nutrition Symposium: Mechanisms Linking Transition Health, Nutrition, and Fertility of Dairy Cattle.....		100
Ruminant Nutrition 4: Calves and Heifers .....		103
Ruminant Nutrition 5: Gut Physiology, Fermentation, and Digestion .....		108
Dairy Foods: Milk Protein and Enzymes Committee Symposium: High Milk Protein Foods Innovation Opportunities .....		113
Animal Behavior and Well-Being 1 .....		114
Joint AAVI (American Association of Veterinary Immunologists) and ADSA Animal Health Symposium: Harnessing Novel Molecular Technologies to Address Challenges in Livestock Production.....		118
Breeding and Genetics 1: Breeding for the Future—Efficiency, Sustainability, and Resilience .....		120
Dairy Foods 3: Chemistry.....		124
Dairy Foods 4: Microbiology .....		128
Production, Management, and the Environment 4: Greenhouse Gas Emissions .....		133
Ruminant Nutrition Symposium: Advances in Fatty Acid Nutrition .....		138
Ruminant Nutrition 6: Gut Physiology, Fermentation, and Digestion .....		140
ADSA-INRAE International Partnership Symposium: Milk—From Production to Effect on Human Health   The Latest Results of INRAE in Rennes in the PEGASE and STLO Research Units.....		145
Animal Health 4 .....		148
Breeding and Genetics 2: Emerging Issues in Dairy Genetics .....		153
Extension Education 1 .....		157
Joint Growth and Development and Physiology and Endocrinology Symposium and Platform Session: From Fetus to Weaning—The Microbiome and Its Impact on Immune Development .....		161
Joint CSAS (Canadian Society of Animal Science) and ADSA Production, Management, and the Environment Symposium: Mitigation Strategies to Achieve Dairy Net Zero.....		163
Reproduction Platform Session: Epigenetic Impacts on the Next Generation of Dairy Cows .....		166
Ruminant Nutrition 7: Lipids .....		169
Ruminant Nutrition 8: General .....		173
Animal Behavior and Well-Being 2.....		178
Animal Health 5 .....		182
Breeding and Genetics 3: Advances in Methods for Genetic Improvement.....		187
Forages and Pastures 1.....		192
Joint Growth and Development and Physiology and Endocrinology—General Orals .....		197
Reproduction 1 .....		201
Ruminant Nutrition Symposium: Dairy Nutrition to Improve Feed Utilization—Recognizing the Contributions of ADSA Fellow Dr. Bill Weiss .....		206
ADSA-Graduate Student Competition: Dairy Foods—Poster .....		208
ADSA-Graduate Student Competition: Production—Poster (MS).....		213

	<b>Abstract no.</b>	<b>Page no.</b>
ADSA-Graduate Student Competition: Production—Poster (PhD) .....		216
ADSA-USD Competition: USD Original Research Poster Presentations.....		219
Animal Behavior and Well-Being 1 .....		223
Animal Health 1 .....		228
Breeding and Genetics 1: Inbreeding, Crossbreeding, and Lifetime Performance .....		239
Dairy Foods 1: Microbiology and Cheese .....		243
Forages and Pastures 1 .....		254
Lactation Biology 1 .....		258
Physiology and Endocrinology 1 .....		260
Production, Management, and the Environment 1 .....		263
Reproduction 1 .....		274
Ruminant Nutrition: Calves and Heifers 1 .....		277
Ruminant Nutrition: Carbohydrates and Lipids 1 .....		282
Ruminant Nutrition: General 1 .....		285
Ruminant Nutrition: Gut Physiology, Fermentation, and Digestion 1 .....		292
Ruminant Nutrition: Protein and Amino Acids 1.....		299
Animal Behavior and Well-Being 2.....		304
Animal Health 2 .....		309
Breeding and Genetics 2: Genetics of Health.....		320
Dairy Foods 2: Production, Products, and Chemistry.....		324
Growth and Development 1.....		342
Lactation Biology 2.....		345
Physiology and Endocrinology 2.....		347
Production, Management, and the Environment 2.....		350
Reproduction 2 .....		361
Ruminant Nutrition: Calves and Heifers 2 .....		365
Ruminant Nutrition: Carbohydrates and Lipids 2.....		370
Ruminant Nutrition: General 2 .....		373
Ruminant Nutrition: Gut Physiology, Fermentation, and Digestion 2 .....		381
Ruminant Nutrition: Protein and Amino Acids 2.....		387
Animal Behavior and Well-Being 3.....		391
Animal Health 3 .....		395
Breeding and Genetics 3: Omics, AI, and Emerging Technologies .....		405
Extension Education 1 .....		409
Forages and Pastures 2.....		411
Growth and Development 2.....		416
Lactation Biology 3.....		418
Physiology and Endocrinology 3.....		420
Production, Management, and the Environment 3.....		423
Reproduction 3 .....		433

	<b>Abstract no.</b>	Page no.
Ruminant Nutrition: Calves and Heifers 3 .....		436
Ruminant Nutrition: Carbohydrates and Lipids 3.....		442
Ruminant Nutrition: General 3 .....		446
Ruminant Nutrition: Gut Physiology, Fermentation, and Digestion 3 .....		453
Ruminant Nutrition: Protein and Amino Acids 3.....		459
Small Ruminants 1 .....		464
Teaching/Undergraduate and Graduate Education 1.....		467
Author Index .....		468
Key Word Index .....		492



**1366T Preliminary studies of the development of a milk protein concentrate containing pre-aggregated whey proteins.** A. Schnurr\* and J. Amamcharla, *Kansas State University, Manhattan, KS.*

Milk protein concentrate (MPC) is one of the preferred ingredients in formulating high-protein products. Increasing the protein content can lead to undesirable functional and sensory attributes due to increased protein-protein interactions. Whey proteins and their interactions with caseins in MPC during heat treatment play a major role. Limiting the casein-whey protein interactions in MPC can result in a novel functionality. This study aims to understand the functionality of a model MPC containing pre-aggregated whey proteins. Two lots of milk whey protein isolate (mWPI) and micellar casein concentrate (MCC) were collected from a commercial manufacturer. The mWPI was hydrated to 8% (wt/wt) protein and stored overnight to ensure complete hydration. The next day, the pH of mWPI solution was adjusted to pH 3 or 7 as per the experimental design. The pH adjusted mWPI solutions were heated to 85°C for 10 min under constant stirring, cooled to 30°C, and viscosity and particle size were measured. No significant ( $P < 0.05$ ) differences were found between the viscosity of mWPI solutions heated at pH 3 or 7. However, mWPI solution heated at pH 7 resulted in a significantly ( $P < 0.05$ ) higher particle size ( $87.48 \pm 3.22$  nm) than mWPI heated at pH 3 ( $74.36 \pm 1.33$  nm). The pH of heated mWPI solutions were readjusted to 6.8 and viscosity and particle size were measured. Samples heated at pH 3 had a viscosity of  $13.28 \pm 0.98$  mPas and particle diameter of  $1,580.34 \pm 25.30$  nm, which were significantly ( $P < 0.05$ ) higher than the samples heated at pH 7, which had a viscosity of  $7.52 \pm 0.53$  mPas and a particle diameter  $99.4 \pm 9.86$  nm. In the next phase, MCC was rehydrated to 14% (wt/wt) protein and mixed with pH adjusted mWPI heated at pH 3 and 7 to prepare a model MPC. Model MPC prepared with mWPI heated at pH 3 had a significantly ( $P < 0.05$ ) lower viscosity and a significantly ( $P < 0.05$ ) larger particle size than model MPC prepared with mWPI heated at pH 7. Overall, modified MPC containing pre-aggregated whey proteins showed promising differences and potential to use as an ingredient in tailoring the functionality of MPC.

**Key Words:** whey protein aggregation, functional modification, viscosity

**1367T The physiochemical changes during storage of retort-sterilized dairy-based high-protein beverages.** B. Zaitoun\* and J. Amamcharla, *Kansas State University, Manhattan, KS.*

Milk protein concentrates (MPC) are the preferred ingredients in formulating low-acid high-protein beverages (HPB). This study aims to understand the physiochemical changes of low-acid HPB during storage. Two lots of commercial MPC85 were used to prepare beverages containing 8% protein (wt/wt). The formulation was filled in glass bottles, retort sterilized (121°C/15 min), and stored at room temperature. The HPB were analyzed on 0, 7, 14, 28, 42, 61, 88, 109, 140, 161, and 225 d of storage with no shaking applied. On each experimental day, the beverage in each bottle was carefully separated into 4 equal layers from top to bottom and labeled as L1 to L4. Selected physical and chemical analyses were performed on the separated layers, such as total protein (TP), soluble proteins, viscosity, particle size, and zeta potential. Data was analyzed as repeated measures design. The TP of the beverage for all layers at d 0 was  $7.86 \pm 0.09$ ; as expected, there were not significantly different ( $P > 0.05$ ). During storage, it was observed that the TP content of L1 and L2 significantly decreased to  $6.03 \pm 0.18$  and  $7.03 \pm 0.58\%$ , respectively. On the other hand, the TP content of L3 and L4 significantly increased to  $8.70 \pm 0.36$  and  $9.82 \pm 0.69\%$ , respectively. The increase in TP in L3 and L4 suggested the sedimentation of proteins during storage. On d 0, the viscosity of at a shear rate  $100 \text{ s}^{-1}$  ( $74.36$

$\pm 3.19$  mPa·s), particle size ( $187.77 \pm 1.45$  nm), and zeta potential ( $-34.17 \pm 0.99$ ) were not significantly different between the layers. Over storage, the viscosity of L1 significantly increased ( $P < 0.05$ ) up to  $140.23 \pm 20.79$  mPa·s. At the same time, no change was observed in the viscosity of L2. However, a different trend was observed in L3 and L4 as the viscosity in both layers significantly decreased to  $47.52 \pm 3.19$  and  $31.34 \pm 12.98$  mPa·s, respectively. The results conclude that there were compositional differences, especially in the TP content, due to gravity separation between the top and bottom layers during storage and consequently leading to significant changes in the viscosity and other physicochemical properties.

**Key Words:** sedimentation, beverage, protein

**1368T Immunoglobulins concentration and major solids content of bovine colostrum can be accurately determined through mid-infrared spectroscopy.** A. Goi<sup>1</sup>, M. De Marchi<sup>1</sup>, G. Visentin<sup>2</sup>, C. L. Manuelian<sup>3</sup>, and A. Costa<sup>2</sup>, <sup>1</sup>Department of Agronomy, Food, Natural resources, Animals and Environment, University of Padova, Legnaro (PD), Italy, <sup>2</sup>Department of Veterinary Medical Sciences, University of Bologna, Ozzano dell'Emilia (BO), Italy, <sup>3</sup>Group of Ruminant Research (G2R), Department of Animal and Food Sciences, Universitat Autònoma de Barcelona (UAB), Bellaterra, Spain.

Colostrum has to be administered to calves as soon as possible after birth to permit the passive transfer of the immunity and avoid negative effects on survival and performance. Moreover, bovine colostrum is an emerging ingredient used by functional food manufacturers and pharmaceutical industry. The narrow-sense quality of colostrum relies on the concentration of immunoglobulins G (IgG), whose determination via gold standard is expensive and time consuming, making the analysis difficult to implement on a large-scale and/or in routine. In the present study we evaluated the predicting ability of mid-infrared spectroscopy (MIRS) as an indirect method for the assessment of IgG and gross composition traits in Holstein cows colostrum ( $n = 714$ ) collected within 6 h from calving in 9 commercial farms located in Northern Italy. Reference values of IgG concentration and fat, protein, and lactose content were determined through radial immunodiffusion, Verbands Deutscher Landwirtschaftlicher Untersuchungs und Forschungsanstalten VI C15.2.1 method, Kjeldahl, and high-performance liquid chromatograph, respectively. Spectral data, collected using a benchtop instrument (Milkoscan 7 RM, FOSS Electric A/S, Hillerød, Denmark), were used as predictor variables in the partial least square regression analyses. Both cross- and external validation were performed for each trait. Colostrum IgG, fat, protein, and lactose averaged 93.54 g/L, 14.71%, 4.61%, and 2.36 mg/100 mg with a coefficient of variation of 36.21, 23.86, 65.94, and 21.61%, respectively. Overall, the predictive ability of MIRS resulted promising. The coefficient of determination in external validation, in fact, ranged from 0.74 (fat) to 0.89 (protein) and was outstanding (0.84) for IgG. Root mean square errors were 13.39 (IgG), 1.16 (protein), 1.57 (fat), and 0.19 (lactose). Our findings represent a validation of the MIRS technology for a rapid and low-cost colostrum quality assessment and open the debate on the practicability of MIRS models implementation for acquisition of phenotypes of interest.

**Key Words:** immunity, novel phenotype, MIR

**1369T Effect of slicing on the total coliform, *Escherichia coli* and toxigenic *Staphylococcus aureus* counts in mozzarella cheese produced in Tocantins, Brazil.** J. Ribeiro Júnior<sup>\*1,2</sup>, D. Santos<sup>1</sup>, Y. Rodrigues<sup>1</sup>, B. Dias<sup>1</sup>, E. da Silva<sup>1</sup>, F. Nunes<sup>1</sup>, and A. Alfieri<sup>2</sup>, <sup>1</sup>Federal University of North Tocantins, Araguaína, Tocantins, Brazil, <sup>2</sup>National