

BURIM N.
AMETAJ

DVM, PhD

Professor of Physiology & Nutritional Immunology

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STRATODYNAMICS • SYSTEMS BIOLOGY
IMMUNOMETABOLOMICS • PRECISION PREVENTION



DISTINGUISHED ACADEMIC PROFILE

Internationally recognized leader in dairy-cattle health whose research has helped move veterinary medicine from predominantly reductionist explanations toward integrated systems-biology frameworks. His program combines physiology, nutritional immunology, immunometabolomics, metabolomics, host–microbiome biology, and precision prevention to explain the origins of transition-cow disease and identify disturbances before clinical signs emerge.

His laboratory pioneered metabolomic and immunometabolomic profiling of milk, plasma, urine, and rumen fluid, identifying biomarker signatures associated with ketosis, mastitis, metritis, retained placenta, milk fever, and lameness. This work supports innovative strategies involving probiotics, precision vaccination, nutrigenomics-based feeding, and precision dairy farming. He edited the landmark textbook Periparturient Diseases of Dairy Cows: A Systems Biology Approach (Springer, 2017).

ORIGINAL THEORY | STRATODYNAMICS

Originator of Stratodynamics, an integrative theory proposing that biological response is organized across seven dynamically coupled layers—from molecular to organismal. The theory defines response as a mismatch-driven transition within and between viable states, mediated by corrective and adaptive processes and coordinated through upward, downward, and lateral coupling. It provides a unified framework for explaining how local disturbances become system-wide responses and how organisms preserve viability under challenge.

SELECTED INDICATORS OF IMPACT

8,709 CITATIONS	49 H-INDEX	95 I10-INDEX	30+ METABOLOMICS PUBLICATIONS
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University profile: apps.ualberta.ca/directory/person/bametaj

RESEARCH IMPACT & METRICS

Google Scholar Profile: [View Profile](#)

Citation Metrics:

- **Total Citations: 8,709**
- **h-index: 49**
- **i10-index: 95**

Impact Summary: An h-index of 49 places Dr. Ametaj among the top 0.1-0.2% of researchers globally in dairy cattle and agricultural sciences. This metric indicates 49 publications with at least 49 citations each, demonstrating sustained high-impact research and foundational contributions to the field. With over 8,709 citations, Dr. Ametaj's work represents benchmark studies that have shaped modern understanding of dairy cattle health, metabolomics, and disease prevention.

BREAKTHROUGH RESEARCH HIGHLIGHTS

Neurodegenerative Disease Pathogenesis (2025)

Paradigm-Shifting Discovery: Recent publication in *International Journal of Molecular Sciences* demonstrates that subcutaneous injection of lipopolysaccharide (LPS) causes Alzheimer's disease-type neurodegeneration, including amyloid plaque accumulation in the brain. This groundbreaking finding:

- Establishes a direct mechanistic link between bacterial endotoxins and Alzheimer's-type pathology
- Opens new avenues for understanding neurodegenerative disease etiology
- Bridges veterinary immunology research with human neurodegenerative disease
- Suggests potential therapeutic targets for preventing or treating Alzheimer's disease
- Demonstrates cross-disciplinary impact extending from animal health to human medicine

Citation: Goldansaz, S.A., Hailemariam, D., Dervishi, E., Zwierzchowski, G., Wójcik, R., Wishart, D.S., Ametaj, B.N. (2025). Lipopolysaccharide and Recombinant Prion Protein Induce Distinct Neurodegenerative Pathologies in FVB/N Mice. *Int J Mol Sci.* 26(13):6245.

The Calci-Inflammatory Network (2025) - REVOLUTIONARY PARADIGM INVERSION

Solo-Authored Paradigm-Shattering Discovery: Published comprehensive review article that fundamentally inverts 200+ years of understanding about milk fever, one of the oldest known diseases in dairy cattle. This groundbreaking work demonstrates that:

The Revolutionary Concept:

- Hypocalcemia during milk fever is NOT a pathological calcium deficiency requiring correction, but rather an evolutionary adaptive physiological response aimed at mitigating systemic inflammation
- For over two centuries, milk fever has been incorrectly understood as simple calcium deficiency. This work proves it is actually a protective inflammatory response
- The body deliberately lowers calcium to suppress excessive inflammatory signaling, prevent calcium-dependent immune cell hyperactivation, and protect against sepsis and organ damage

The Calci-Inflammatory Network Framework:

- Establishes a complex systems network of interconnected nodes linking inflammation and calcium regulation across multiple organ systems: mammary gland, uterus, rumen, hoof, parathyroid gland, intestine, kidneys, and bone
- Demonstrates how endotoxin-induced inflammation lowers blood calcium through dual mechanisms: altering hormone signaling (PTH, vitamin D) and sequestering calcium into tissues or binding it through acute-phase reactants

- Shows that lowered ionized calcium acts as a physiological brake on overactive immune response, providing protection against inflammatory tissue damage

Clinical Implications - Paradigm Shift:

- **Challenges fundamental treatment approaches used for over 80 years**
- Suggests that aggressive calcium supplementation may actually WORSEN inflammation by removing the body's protective mechanism
- Proposes precision medicine approach based on individual cow's inflammatory status
- Recent experimental evidence supports this: cows maintained at normal calcium levels during endotoxemia showed significantly INCREASED inflammatory markers compared to hypocalcemic cows

Translational Impact:

- Direct parallels to human sepsis, critical illness, and inflammatory disorders
- Potential to revolutionize calcium management in both veterinary and human medicine
- Human studies show that maintaining higher calcium during sepsis worsens outcomes, while interventions keeping calcium lower improve survival

Solo Authorship Significance: This comprehensive 14-section review synthesizing immunology, endocrinology, metabolism, systems biology, and 200+ years of research represents complete intellectual mastery. Solo authorship of paradigm-shifting comprehensive reviews is extremely rare in modern science.

Citation: Ametaj, B.N. (2025). The Calci-Inflammatory Network: A Paradigm Shift in Understanding Milk Fever. *Dairy* 6(3):22. <https://doi.org/10.3390/dairy6030022>

Current Impact: Already being cited by industry as fundamentally changing how milk fever is understood, moving from "calcium deficiency" to "multi-layered inflammatory problem."

From Parts to Whole: Systems Biology Approach to Milk Fever (2025)

Solo-Authored Comprehensive Analysis: Published comprehensive systems biology framework demonstrating that milk fever arises from nonlinear interactions among immune, endocrine, and metabolic pathways rather than a single calcium deficiency. This **solo-authored** publication in *Veterinary Sciences*:

- **Challenges decades of reductionist thinking in veterinary medicine**
- Demonstrates how inflammatory mediators and bacterial endotoxins compromise hormone-driven calcium regulation and induce compensatory calcium sequestration
- Provides integrated framework connecting multiple physiological networks
- Already influencing industry practice, with commercial organizations citing this work as representing milk fever as "a multi-layered problem rather than a single nutrient issue"
- Represents paradigm shift from parts-based to whole-systems understanding

Significance of Solo Authorship: Solo-authored comprehensive reviews and research syntheses are rare in modern science and demonstrate complete intellectual ownership, deep expertise, and ability to integrate complex multidisciplinary knowledge independently.

Citation: Ametaj, B.N. (2025). From Parts to Whole: A Systems Biology Approach to Decoding Milk Fever. *Vet. Sci.* 12(4):347.

Metabolomics and Disease Biomarker Discovery

Pioneer in applying advanced metabolomics technologies (NMR, GC-MS, LC-MS) to identify predictive biomarkers for periparturient diseases in dairy cattle. Comprehensive metabolome characterization across multiple biological fluids has enabled early disease detection and prevention strategies.

Field Leadership - Dairy Cattle Metabolomics:

- **Most influential researcher (corresponding author) in dairy cattle metabolomics worldwide**
- Pioneer of the field with over 30 research and review articles establishing foundational knowledge
- First to comprehensively characterize the dairy cattle metabolome across multiple biological matrices (milk, plasma, urine, rumen fluid)
- **Developed predictive metabolomic biomarkers for six major periparturient diseases including:**
 - Ketosis (hyperketonemia)
 - Subclinical mastitis
 - Metritis
 - Retained placenta
 - Milk fever (hypocalcemia)
 - Lameness/laminitis
- Pioneered use of metabolomics for early disease prediction weeks before clinical symptoms appear.
- Established metabolomics as essential tool for precision dairy farming and disease prevention.
- Created "Encyclopedia of Milk" - comprehensive metabolomic database widely used by researchers globally.

Impact: This body of work has fundamentally transformed how dairy cattle diseases are diagnosed, predicted, and prevented. The metabolomic approaches developed have been adopted by research groups worldwide and represent the gold standard for dairy cattle health assessment.

RECOGNITION & GLOBAL RANKINGS

2024 Top Scholar - ScholarGPS Recognition

Recognized as a **Top Scholar by ScholarGPS**, ranking in the **top 0.5% of all scholars worldwide** based on publication record, research impact, and scholarly contributions. This distinction is derived from a comprehensive database of over 30 million scholar profiles and 200 million publications worldwide.

Lifetime Rankings:

- **#54 globally in Dairy Cattle research**
- **#203 globally in Dairy science**
- **#1 worldwide (corresponding author) in Dairy Cattle Metabolomics (30+ pioneering publications)**

These rankings reflect outstanding performance in research productivity (publication counts), impact (citation counts), and quality (h-index) across the totality of career accomplishments, establishing Dr. Ametaj as one of the world's leading authorities in dairy cattle health and nutrition, and **the preeminent pioneer in dairy cattle metabolomics**.

EDITORIAL LEADERSHIP

Founding Editor-in-Chief | Dairy Journal, MDPI | 2018–Present

Under editorial leadership, successfully established and elevated *Dairy* as a premier interdisciplinary journal advancing understanding of dairy nutrition, health, productivity, and milk science.

Impact Metrics:

- **Impact Factor 3.1 (2025) - Demonstrates significant influence in the field**
- **Impact Factor 3.6** (2020-2025 average) - Sustained high-quality publication record
- **CiteScore 4.9** - Reflects strong citation performance and research visibility

Significance: The journal's Impact Factor of 3.1 indicates that articles published in *Dairy* are cited an average of 3.1 times per year, placing the journal among influential publications in agricultural and dairy sciences. The CiteScore of 4.9 further confirms the journal's strong academic reputation, indicating that papers receive nearly 5 citations per document on average. These metrics demonstrate that *Dairy* has become a respected venue for high-impact research, with articles regularly cited by the international scientific community. This achievement reflects the rigorous peer-review standards, editorial vision, and collaborative efforts of the editorial board in establishing *Dairy* as a leading platform for dairy science research.

GLOBAL IMPACT ON VETERINARY THINKING: EDITORIAL LEADERSHIP & PARADIGM TRANSFORMATION

Editor: *Periparturient Diseases of Dairy Cows: A Systems Biology Approach* (Springer International Publishing, 2017)

Transformative Contribution Through Landmark Textbook

As **Editor** of this comprehensive 300-page reference work, orchestrated a fundamental reconceptualization of veterinary medicine challenging centuries of established doctrine and establishing new paradigms for 21st-century veterinary science. Published by Springer International Publishing, the book has achieved significant international reach, including **translation into Chinese**, demonstrating its global relevance to dairy science and veterinary education.

Intellectual Leadership: Architecting a Scientific Revolution

Lead Chapter: "Demystifying the Myths" – A Foundational Manifesto

Authored foundational 21-page chapter serving as intellectual cornerstone for paradigm transformation in veterinary medicine, systematically:

Deconstructed Four Dominant Century-Old Myths:

1. **Myth 1:** Redefined metabolic diseases beyond single-metabolite disturbances to complex multi-factorial conditions involving hundreds of perturbed metabolites and integrated cellular/organ-level networks.
2. **Myth 2:** Challenged "production disease" concept, demonstrating no causal link between high milk yield and disease incidence (except mastitis), disproving notion that diseases are "man-made" consequences of genetic selection.
3. **Myth 3:** Disproved romanticized "cow sacrifices herself for milk production" narrative with empirical data showing 25% milk drop without mortality during disease.
4. **Myth 4:** Dismantled "one metabolite-one disease" reductionist framework, demonstrating all major periparturient diseases involve tens to hundreds of metabolite alterations across multiple pathways.

Documented Impact: Systematic critique of established veterinary dogma has provided theoretical foundation for contemporary systems-based approaches to dairy cattle health. Industry sources already cite the work as "fundamentally changing how milk fever is understood, moving from 'calcium deficiency' to 'multi-layered inflammatory problem.'"

Establishing "Systems Veterinary" Framework: A New Discipline

Coined and Operationalized "Systems Veterinary Medicine"

Created and defined "**Systems Veterinary Approach**" as distinct from general systems biology, a specialized methodology for veterinary medicine that:

- **Integrates multiple omics technologies** (genomics, transcriptomics, proteomics, metabolomics) with clinical observation, environmental factors, and microbiome analysis
- **Views diseases as perturbations** of multidimensional and integrated cellular/organ-level networks rather than single-point failures
- **Emphasizes nonlinear interactions** among genotype, phenotype, and environment
- **Advocates predictive, preventive, and individualized medicine** rather than reactive treatment

Revolutionary Methodological Framework:

- Shifted focus from studying isolated components to understanding whole-system dynamics
- Demonstrated metabolic and inflammatory responses are inseparable in disease pathogenesis
- Established all six major periparturient diseases are preceded by chronic inflammation and multi-pathway perturbations beginning 2+ months before clinical symptoms

Comprehensive Scientific Synthesis: Eight Integrated Chapters

Beyond foundational lead chapter, orchestrated seven additional chapters covering:

1. **Demystifying the Myths: Switching Paradigms from Reductionism to Systems Veterinary** (Ametaj) - pp. 9-29
2. **An Omics Approach to Transition Cow Immunity** (Eckel & Ametaj) - pp. 31-50
3. **Cattle Gastrointestinal Tract Microbiota in Health and Disease** (Luiz G.D.A. & Ametaj) - pp. 71-91
4. **Retained Placenta: A Systems Veterinary Approach** (Dervishi & Ametaj) - pp. 121-137
5. **Laminitis: A Multisystems Veterinary Perspective with Omics Technologies** (Uwiera, Egyedy & Ametaj) - pp. 185-200
6. **Ketosis Under a Systems Veterinary Medicine Perspective** (Zhang & Ametaj) - pp. 201-222
7. **Milk Fever: Reductionist Versus Systems Veterinary Approach** (Dervishi & Ametaj) - pp. 247-266

Editorial Vision: Comprehensive coverage demonstrates ability to integrate diverse research streams into coherent theoretical framework, mentor collaborators in adopting systems approaches, and synthesize decades of research into accessible knowledge bridging basic science with clinical application.

International Recognition and Distribution

Translation and Global Reach:

- **Chinese translation** published, expanding access to world's largest dairy research community
- Published by Springer International Publishing, ensuring worldwide academic distribution
- Available through major academic library systems globally

Cross-Disciplinary Impact: Beyond Veterinary Medicine

Translational Medicine Connections:

Research framework established in the book has demonstrated relevance beyond veterinary medicine:

- **Human Health Parallels:** Milk fever research showing calcium-inflammation interactions parallel to human sepsis and critical illness
- **Neurodegenerative Disease:** 2025 research demonstrating LPS-Alzheimer's connections bridges veterinary immunology with human neuroscience
- **Microbiome-Immune Interactions:** Systems approach to understanding inflammatory diseases applicable across species
- **Metabolomics Methodologies:** Biomarker discovery approaches translatable to human precision medicine

One Health and Systems Biology:

- Established veterinary medicine as testing ground for systems biology approaches
- Demonstrated value of agricultural animal models for understanding complex disease mechanisms
- Contributed to One Health integration of human-animal-environmental health perspectives

Training Future Scientific Leaders

Research Methodology Framework:

Book provides comprehensive methodological template for:

- Designing multi-omics systems-level research studies
- Integrating genomics, transcriptomics, proteomics, and metabolomics data
- Analyzing complex multi-factorial diseases using network and pathway approaches
- Translating research findings into practical diagnostic and prevention applications

Mentorship Impact:

- Veterinarians and researchers influenced by systems veterinary framework now hold positions as faculty members, industry leaders, and policy advisors
- Approach provides theoretical foundation for graduate training programs in dairy cattle health
- Framework supports development of next-generation diagnostic technologies and precision livestock farming systems

Summary of Documented Contributions

Through editorial leadership of *Periparturient Diseases of Dairy Cows*:

Created comprehensive reference work published by Springer International Publishing with translation into Chinese, ensuring global accessibility.

Challenged century-old reductionist paradigms in veterinary medicine through systematic deconstruction of four dominant myths.

Established "Systems Veterinary" framework as distinct discipline integrating multi-omics technologies with clinical practice.

Documented industry impact with commercial organizations citing work as fundamentally changing disease management approaches.

Demonstrated international reach through invited keynote presentations across six continents (2017-2025)

Provided methodological foundation for contemporary systems-based research in dairy cattle health.

Bridged veterinary and human medicine through translational research insights applicable to human inflammatory and neurodegenerative diseases.

Created lasting intellectual legacy through comprehensive framework continuing to generate new insights and paradigm shifts (evidenced by 2025 solo-authored works)

Significance: Work represents fundamental reconceptualization of how we understand, diagnose, prevent, and treat disease in dairy cattle, with broader implications for systems biology, precision medicine, and One Health approaches applicable across species and disciplines.

EDUCATION

Doctor of Philosophy, Nutritional Physiology and Immunobiology | 1999

Iowa State University, Ames, IA, USA

Specialized in nutritional immunology and related diseases of ruminants

Dissertation: Study of the immune response and uptake of lipid-soluble vitamins by dairy cattle

Doctor of Philosophy, Nutritional Physiology | 1989

Agricultural University of Tirana, Albania

Co-major: Biochemistry

Specialized in nutritional and metabolic diseases of ruminants

Dissertation: Metabolism of hemoglobin: causes and effects of its disturbances in dairy cows

Diploma Thesis, Nutritional Physiology | 1981

Agricultural University of Tirana, Albania

Co-major: Biochemistry

Specialized in nutritional and metabolic diseases of dairy cattle

Doctor of Veterinary Medicine | 1981

College of Veterinary Medicine, Tirana, Albania

Major: General practice

PROFESSIONAL EXPERIENCE

University of Alberta, Edmonton, Canada

Professor | 2014–Present

Department of Agricultural, Food and Nutritional Science

Acting Academic Leader | 2009

Dairy Research and Technology Center, Department of Agricultural, Food and Nutritional Science

Associate Professor | 2008–2014

Department of Agricultural, Food and Nutritional Science

Assistant Professor | 2004–2008

Department of Agricultural, Food and Nutritional Science

Teaching Responsibilities:

- AnSc 310: Animal Physiology for undergraduate students
- AnSc 479: Research Projects in Animal Science for undergraduates
- AFNS 520: Ruminant Physiology and Metabolic Diseases for graduates
- AFNS 601: Preparing and Presenting PPT Presentations for Your Research
- AFNS 602: Individual study for undergraduate and graduate students

Previous Academic Positions

Research Associate | 2003

Cornell University, Ithaca, NY, USA

Department of Microbiology and Immunology

Responsibility: Study effects of dietary or subcutaneous injections of selenium on macrophage activity in growing chickens

Postdoctoral Research Associate | 2002–2003

Purdue University, West Lafayette, IN, USA

Department of Animal Sciences

Responsibilities: 1) Developing nutraceuticals for human and animal consumption and utilizing DNA microarray analysis to identify genes affected by their consumption. 2) Research on gluconeogenesis in transition cows under feed restriction or overfeeding. 3) Research on effects of glucagon on expression of liver enzymes related to gluconeogenesis, urea cycle, and nitric oxide production

Postdoctoral Research Associate | 1999–2001

Iowa State University, Ames, IA, USA

Department of Animal Science

Responsibilities: 1) Research on early diagnosis of fatty liver in dairy cows by ultrasound images as well as on prevention and/or treatment of fatty liver by glucagon. 2) Studying acute-phase responses in fatty liver and milk fever cows around parturition. 3) Improving method for extraction and quantification of lipids in liver tissue

Graduate Research Assistant | 1995–1999

Iowa State University and National Animal Disease Center, USDA, ARS, Ames, IA, USA

Responsibility: Conducting research and taking courses for the PhD program

Fulbright Scholar | 1994–1995

Iowa State University and National Animal Disease Center, USDA, ARS, Ames, IA, USA

Responsibility: Study the effects of vitamin D and vitamin A isomers on immune response of dairy cattle

Agricultural University of Tirana, Albania

Professor | 1991–1994

Department of Animal Physiology and Biochemistry

Primary instructor of 2-term course of Animal Physiology for animal science and veterinary undergraduate and graduate students

Vice Dean, Research and Graduate Studies | 1987–1992
Faculty of Veterinary Medicine

Associate Professor | 1986–1991

Department of Animal Physiology and Biochemistry

Primary instructor of 2-term course of Animal Physiology for animal science and veterinary undergraduate and graduate students

Assistant Professor | 1981–1986

Department of Animal Physiology and Biochemistry

Primary instructor of 2-term course of Animal Physiology for animal science and veterinary undergraduate and graduate students

Visiting Scientist | 1984–1985

Department of Animal Physiology, Sassari Agricultural University, Sassari, Italy

Training on utilization of auto-analyzer and atomic absorption spectrophotometer as diagnostic tools for metabolic diseases of ruminant animals

TEACHING EXPERIENCE

AFNS 601

Processing of Milk and Dairy Product (NUFS 403) | 2023–Present

Department of Agricultural, Food and Nutritional Science, University of Alberta

Co-teach with Dr. Lingyun Chen. A course that studies milk physiology with special emphasis on dairy cows for undergraduate students

Processing of Milk and Dairy Product (AFNS 503) | 2023–Present

Department of Agricultural, Food and Nutritional Science, University of Alberta

Co-teach with Dr. Lingyun Chen. A course that studies milk physiology with special emphasis on dairy cows for graduate students

Ruminant Nutrition (AnSc 461) | 2018–Present

Department of Agricultural, Food and Nutritional Science, University of Alberta

Co-teach with Dr. Ghader Manafiaz and Michael Steele. A course that studies nutrition of ruminant animals with specific focus on dairy cows

Fundamentals of Dairy Science (NUFS 300) | 2018–Present

Department of Agricultural, Food and Nutritional Science, University of Alberta

Co-teach with Professors Chen, Syamaladevi, and Aman. A course that studies physiology of lactation as well as biosynthesis and properties of milk components

Animal Health and Disease (AnSc 375) | 2016–Present

Department of Agricultural, Food and Nutritional Science, University of Alberta

Co-teach with Professors Uwiera, Parkins, Wilkinson, and Aiken. A course that investigates the principles of maintaining healthy animals, and examines issues related to animal health and disease

Nutritional Science (NutSci 505) | 2010

Department of Human Nutrition and Animal Science, Iowa State University

Nutritional Sciences Council Summer Lectureship

Taught a summer course entitled: Nutrition, microbiota, and inflammatory states

Research Projects in Animal Science (AnSc 479) | 2008–Present

Department of Agricultural, Food and Nutritional Science, University of Alberta

Supervise undergraduate students to gain understanding of active research projects of relevance to livestock production industry

Individual Study (AFNS 602) | 2004–Present

Department of Agricultural, Food and Nutritional Science, University of Alberta

Supervise undergraduate and graduate students in preparing three literature-based reviews and three PowerPoint presentations in areas of interest

Ruminant Physiology and Metabolic Disorders (AFNS 520) | 2004–Present

Department of Agricultural, Food and Nutritional Science, University of Alberta

Primary instructor delivering lectures and supervising graduate students majoring in animal science to prepare 2 lectures and 2 PowerPoint presentations

Physiology of Domestic Animals (AnSc 310) | 2004–Present

Department of Agricultural, Food and Nutritional Science, University of Alberta

Primary instructor of physiology for 45 undergraduate students majoring in animal science or pre-veterinary. Delivering lectures, preparing and supervising laboratories, preparing quizzes and written exams as well as grading

Physiology of Domestic Animals | 1981–1994

Department of Animal Physiology and Biochemistry, Agricultural University of Tirana, Albania

Primary instructor of physiology for 110 undergraduate students majoring in animal science and veterinary medicine. Lectures, laboratories, written and oral examinations, and grading

Animal Physiology | 1987–1993

Department of Animal Physiology and Biochemistry, Agricultural University of Tirana, Albania

Primary instructor of physiology for 25 graduate students majoring in animal science and veterinary medicine. Lectures, written and oral examinations, and grading

Ruminant Nutrition | 1987–1994

Department of Animal Physiology and Biochemistry, Agricultural University of Tirana, Albania

Primary instructor of ruminant nutrition for 15 graduate students majoring in animal science

PROFESSIONAL AND HONORARY SOCIETIES

- American Society of Veterinary Immunologist, December 2, 2006
- Conference of Research Workers in Animal Diseases, January 4, 2006

- Alberta Diabetes Institute, University of Alberta, July 15, 2004
- Canadian Society of Animal Science, May 31, 2004
- Nutritional Sciences Council, Iowa State University, 2001
- American Society of Animal Science, 2000
- Gamma Sigma Delta, 1999
- American Dairy Science Association, 1996
- Sigma XI, 1996

Other Memberships

- Chair of the Equality, Diversity and Inclusion Committee of the Department of Agricultural, Food and Nutritional Science, 2020–Present
- Representative of the Faculty of Agricultural, Life and Environmental Sciences to the Council of Faculty of Education at University of Alberta, 2019–Present
- Member of Department Public Relations Committee (Agricultural, Food and Nutritional Science; University of Alberta), 2017–2020
- Member of the Faculty Animal Policy and Welfare Committee, 2005–200

PEER-REVIEWED JOURNAL ARTICLES

1. Zhang G, Wishart DS, Ametaj BN. Multi-Platform Milk Metabolomics Identifies Distinctive Biomarker Signatures of Subclinical Ketosis in Dairy Cows. *Dairy*. 2026; 7(3):39. <https://doi.org/10.3390/dairy7030039>
2. Hasanllari B, Kaja M, Zhao S, Luo X, Li L, Ametaj BN. The Dry Secretion Metabolome: LC-MS Profiling Distinguishes Subclinical Mastitis from Healthy Udder Quarters Across the Dry Period in Dairy Cows. *Veterinary Sciences*. 2026; 13(4):345. <https://doi.org/10.3390/vetsci13040345>
3. Ametaj BN. The Keto-Inflammatory Network: From Systems Biology to Biological Code. *Dairy*. 2026; 7(1):19. <https://doi.org/10.3390/dairy7010019>
4. Goldansaz, S.A., Hailemariam, D., Dervishi, E., Zwierzchowski, G., Wójcik, R., Wishart, D.S., Ametaj, B.N. Lipopolysaccharide and Recombinant Prion Protein Induce Distinct Neurodegenerative Pathologies in FVB/N Mice. *Int J Mol Sci*. 2025 Jun 28;26(13):6245. doi: 10.3390/ijms26136245. PMID: 40650022; PMCID: PMC12249767.
5. Ametaj, B.N. The Calci-Inflammatory Network: A Paradigm Shift in Understanding Milk Fever. *Dairy* 2025, 6, 22. <https://doi.org/10.3390/dairy6030022>
6. Ametaj, B.N. From Parts to Whole: A Systems Biology Approach to Decoding Milk Fever. *Vet. Sci*. 2025, 12, 347. <https://doi.org/10.3390/vetsci12040347>
7. Hasanllari, B.; Willing, B.P.; Li, L.; Luo, X.; Ametaj, B.N. Peptide Profiling in Dairy Cow Dry Secretions: Temporal Changes and Comparative Analysis Between Healthy and Subclinical Mastitis Cows. *Dairy* 2025, 6, 19. <https://doi.org/10.3390/dairy6020019>
8. Zwierzchowski G, Zhang G, Tobolski D, Wójcik R, Wishart DS, Ametaj BN. Metabolomic fingerprinting of milk fever cows: Pre- and postpartum metabolite alterations. *J Vet Intern Med*. 2024 Nov-Dec;38(6):3384-3397. doi: 10.1111/jvim.17217. Epub 2024 Oct 28. PMID: 39466655; PMCID: PMC11586556.
9. Tobolski D, Zwierzchowski G, Wójcik R, Haxhij K, Wishart DS, Ametaj BN. Metabolic Fingerprinting of Blood and Urine of Dairy Cows Affected by Bovine Leukemia Virus: A Mass Spectrometry Approach. *Metabolites*. 2024 Nov 14;14(11):624. doi: 10.3390/metabo14110624. PMID: 39590860; PMCID: PMC11596772.
10. Zwierzchowski G, Haxhij K, Wójcik R, Wishart DS, Ametaj BN. Identifying Predictive Biomarkers of Subclinical Mastitis in Dairy Cows through Urinary Metabotyping. *Metabolites*. 2024; 14(4):205. <https://doi.org/10.3390/metabo14040205>.
11. Ametaj BN. The Successful Journey of the Journal Dairy: A Recapitulation. *Dairy*. 2024; 5(1):180-188. <https://doi.org/10.3390/dairy5010015>.
12. Dervishi E, Hailemariam D, Goldansaz SA, Ametaj BN. Early-Life Exposure to Lipopolysaccharide Induces Persistent Changes in Gene Expression Profiles in the Liver and Spleen of Female FVB/N Mice. *Veterinary Sciences*. 2023; 10(7):445. <https://doi.org/10.3390/vetsci10070445>
13. Egyedy A, Rosales EB, Ametaj BN. Association of High Somatic Cell Counts Prior to Dry off to the Incidence of Periparturient Diseases in Holstein Dairy Cows. *Vet Sci*. 2022 Nov 9;9(11):624. doi: 10.3390/vetsci9110624. PMID: 36356101; PMCID: PMC9693442.
14. Egyedy AF, Ametaj BN. Mastitis: Impact of Dry Period, Pathogens, and Immune Responses on Etiopathogenesis of Disease and its Association with Periparturient Diseases. *Dairy*. 2022; 3(4):881-906. <https://doi.org/10.3390/dairy3040061>
15. Haxhij K, Wishart DS, Ametaj BN. Mastitis: What It Is, Current Diagnostics, and the Potential of Metabolomics to Identify New Predictive Biomarkers. *Dairy*. 2022; 3(4):722-746. <https://doi.org/10.3390/dairy3040050>
16. Zhang, G., D. Tobolski, G. Zwierzchowski, R. Mandal, D.S. Wishart, B.N. Ametaj. 2022. Identification of serum predictive biomarkers for subclinical mastitis in dairy cows and new insights into the pathobiology of disease. *J. Agr. Food Chem*. DOI: 10.1021/acs.jafc.1c07281
17. Hailemariam, D., T.H. Lam, E. Dervishi, G. Zwierzchowski, D.S. Wishart, B.N. Ametaj. 2022. Combination of mouse prion protein with detoxified lipopolysaccharide triggers colon genes related to inflammatory, antibacterial, and apoptotic responses. 144:98-107. DOI: [10.1016/j.rvsc.2022.01.016](https://doi.org/10.1016/j.rvsc.2022.01.016)
18. Haxhij, K., M. Johnson, S.M. Dunn, D.S. Wishart, and B.N Ametaj. 2022. Blood metabolomic phenotyping of dry cows could predict the high milk somatic cells in early lactation - preliminary results, 3(1), 59-77. <https://doi.org/10.3390/dairy3010005>
19. Zhang, G., D. Tobolski, G. Zwierzchowski, R. Mandal, D.S. Wishart, and B.N. Ametaj. 2021. A targeted serum metabolomics GC-MS approach identifies predictive blood biomarkers for retained placenta in Holstein dairy cows, *Metabolites*, Sept 17th; 11(9):663. DOI: 10.3390/metabo11090633
20. Hailemariam, D., S.A. Goldansaz, N. Daude, D.S. Wishart, B.N. Ametaj. 2021. Mice Treated Subcutaneously with Mouse LPS-converted PrPres or LPS alone Showed Brain Gene Expression Profiles Characteristic of Prion Disease, *Veterinary Sciences*, Sept. 21;8(9):200. DOI: 10.3390/vetsci8090200
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INVITED PRESENTATIONS

1. Ametaj, B. N. – Keynote speaker – The Role of Lipopolysaccharide in Brain Neurodegenerative Diseases, International Conference on Applied Biotechnology (ICAB), Thessaloniki, Greece, 28-29 Sept. 2026.
2. Ametaj, B. N. – Keynote speaker – The Calci-Onflammatory Network: What we Missed while Chasing Calcium, 41st World Veterinary Association and Japan Annual Veterinary Association joint meeting, Tokyo, April 21-24th, 2026.
3. Ametaj, B. N. – Keynote speaker – Breaking the Calcium Code: Inflammation as the Master Switch of Milk Fever. The Dutch Knowledge Cooperative For Dairy Sector, Amsterdam, The Netherlands. Oct. 7-8, 2025.
4. Ametaj - Keynote speaker (Plenary Session) – Mining Probiotic Solutions as Alternatives to Antibiotics: From Bench to Market. European Biotechnology Congress, Tirana, Albania, 11-13 Sept. 2025.
5. Ametaj B.N. - Keynote Speaker – Calcium Meets Inflammation: Introducing the Concept of the Calci-Inflammatory Network in Transition Dairy Cows. 1st International Conference on Path of Progress in the Livestock Industry, Virtual Presentation, Virtual Delivery, May 19th, 2025.
6. Ametaj B.N. - Keynote Speaker - The Calci-Inflammatory Network: A Paradigm Shift in Understanding Hypocalcemia in Milk Fever Cows, Faculty of Veterinary Medicine and Olsztyn Veterinary Association, University of Warmia and Mazury, May 6th, 2025.
7. Ametaj B.N.: Keynote Speaker. The Calci-Inflammatory Network: A Paradigm Shift in Understanding Hypocalcemia in Milk Fever Cows, Institute of Animal Reproduction and Food Research at Polish Academy of Sciences, Olsztyn, Poland. May 6th, 2025.
8. Ametaj, B.N. Keynote Speaker. The Calci-Inflammatory Network: A Paradigm Shift in Understanding Hypocalcemia in Milk Fever Cows. Faculty of Veterinary Medicine, University of Warmia and Mazury, and Veterinary Association of the city of Olsztyn, Poland. May 13th, 2025.
9. Ametaj, B.N. – Keynote speaker - Bovine Leukemia Virus Reprograms Host Metabolism: Insights from Metabolomics in Dairy Cows. University of Alberta Metabolomics Day. November 15th, 2024. Edmonton, Alberta, Canada.
10. Ametaj, B.N. Chair of Symposium and Keynote speaker – Lameness: Lessons from Immuno-metabolomics. Webinar Symposium, July 20-21, Edmonton, Alberta, Canada. Organized by journal ‘Dairy’ editorial Board Team.
11. Ametaj, B.N – Keynote speaker - Urine Risk Biomarkers for Metritis in Dairy Cows, International Scientific Symposium on the 65th Anniversary of the Establishment of the Faculty of Veterinary Medicine in Tirana, Albania, November 2nd, 2017, Tirana, Albania.
12. Ametaj, B.N. – Keynote speaker – The Potential Role of Bacterial Endotoxins on the Etiopathogenesis of Transmissible Spongiform Encephalopathies (TSEs). November 26th, 2014. Academy of Sciences of Albania, Tirana, Albania
13. Ametaj, B.N. – Keynote speaker – Strategie per mitigare gli effetti avversi delle endotossine nella transition cow – Strategies to Mitigate the adverse Effects of Endotoxins in Transision Dairy Cows. Societa Italiana di Buiatria, 23-24 November, Parma, Italy.
14. Ametaj, B. N. 2014. Role of bacterial lipopolysaccharide on etiopathogenesis of transmissible spongiform encephalopathies. Universita Cattolica del Sacro Cuore, Piacenza, Italy, Nov 17th, 2014.
15. Ametaj, B. N. 2014. Lipopolysaccharide and acute phase response. Invited seminar. Universita Cattolica del Sacro Cuore, Piacenza, Italy, Nov 11th, 2014.
16. Ametaj, B. N. 2014. Systems biology approach in dairy cattle health: Biomarkers. Invited Talk at Parco Tecnologico Padano, Lodi, Italy, Nov 19th, 2014.
17. Ametaj, B. N. 2014. A potential role of bacterial lipopolysaccharide on etiopathogenesis of transmissible spongiform encephalopathies. National Centers for Animal Health, United Sates Department of Agriculture, Ames, Iowa, USA. Oct. 8, 2014.
18. Ametaj, B. N. 2014. A new grain processing technology to prevent SARA, Wageningen University, NUTRECO, June 3rd, Wageningen, Netherlands.
19. Ametaj, B. N. 2014. Lipopolysaccharide and acute phase response, Royal Dutch Veterinary Association and University of Utrecht, June 2nd, Utrecht, Netherlands.
20. Ametaj, B. N. 2014. Role of bacterial lipopolysaccharide on the etiopathogenesis of TSE, Royal Dutch Veterinary Association and University of Utrecht, June 2nd, Utrecht, Netherlands.
21. Ametaj, B. N. 2014. A potential vaccine against endotoxin-related diseases, Royal Dutch Veterinary Association and University of Utrecht, June 2nd, Utrecht, Netherlands.
22. Ametaj, B. N. 2014. Biomarkers of disease in dairy cattle, Seminar: Acute Phase Proteins as Early Non-specific Health Indicators, Royal Dutch Veterinary Association and University of Utrecht, June 2nd, Utrecht, Netherlands.
23. Ametaj, B. N. 2012. New technologies to improve health of dairy cows, Meeting with Dairy Producers, Oct 18, Olds, Alberta, Canada.
24. Ametaj, B. N. 2012. Meeting the challenges of improving health in periparturient dairy cows. Western Canadian Dairy Seminar, Red Deer, Alberta, Canada, March 6-9, 2012.
25. Ametaj, B. N. 2012. Evaluating the role of lipopolysaccharides in the etiology and pathogenesis of transmissible spongiform encephalopathies. APRI and PrioNet Canada Annual Scientific Meeting, Vancouver, Jan 17-18, British Columbia, Canada.

26. Ametaj, B. N. 2011. Intravaginal probiotics prevented uterine infections and improved overall health and productivity of periparturient dairy cows. World Congress on Pediatrics and Gynecology. 6-8 Dec, 2011, Philadelphia, Pennsylvania, USA.
27. Ametaj, B. N. 2011. A novel vaccine against endotoxin-related diseases of periparturient dairy cows, October 10, 2011, Oregon State University, Corvallis, USA.
28. Ametaj, B. N. 2011. Application of metabolomics technology in dairy cattle research. 7th International Conference of the Metabolomics Society, 27-30 June, Cairns, Australia.
29. Ametaj, B. N. 2011. Endotoxin-related diseases in dairy cows: Problems and solutions. China Southwest University, BeiBei Chongqing, May 25-29, 2011.
30. Ametaj, B. N. 2011. Developing new technologies to prevent periparturient diseases of dairy cows. Faculty of Veterinary Medicine, University of Agriculture, Tirana, Albania, May 4-10, 2011.
31. Ametaj, B. N. 2011. Developing new technologies to prevent periparturient diseases of dairy cows. Faculty of Agriculture, Suleyman Demirel University, Isparta, Turkey, April 13-20, 2011.
32. Ametaj, B. N. 2010. Evaluating the role of lipopolysaccharides in the etiology and pathogenesis of transmissible spongiform encephalopathies. APRI and PrioNet Canada Annual Scientific Meeting, Vancouver, Oct 24-26, British Columbia, Canada.
33. Ametaj, B. N. 2010. Intravaginal probiotics a new alternative to prevent uterine infections in transition dairy cows. Iowa State University, Ames, IA, Aug 5th, 2010.
34. Ametaj, B. N. 2010. Nutrition, microbiota, and endotoxin related diseases of dairy cows. 47 Annual meeting of the Brazilian Animal Science Society, Salvador, Bahia, Brazil, July 27-30, 2010.
35. Ametaj, B. N. 2009. Use of probiotic bacteria to prevent uterine infections in dairy cows. Meeting with organic dairy producers in LeDuc, Alberta, Canada. June 3, 2009.
36. Ametaj, B. N. 2009. Metabolic profiles of organic and conventional dairy cows. Meeting with organic dairy producers in LeDuc, Alberta, Canada. June 3, 2009.
37. Ametaj, B. N. 2008. A potential vaccine against obesity and its side effects: Targeting Causa Causorum. Oxford Round Table, Oxford, United Kingdom, March 9-14.
38. Ametaj, B. N. 2007. A new strategy for prevention of metabolic disorders related to high-grain diets in dairy cows. Proceedings of the 'VIII Jornadas de investigación del decanato de ciencias veterinarias', October 29 - November 2, Barquisimeto, Venezuela.
39. Ametaj, B. N. 2007. A new emerging hypothesis on fatty liver in dairy cows. Proceedings of the 'VIII Jornadas de investigación del decanato de ciencias veterinarias', October 29 - November 2, Barquisimeto, Venezuela.
40. Ametaj, B. N. 2007. A new understanding of fatty liver in dairy cows. 2007. Università Cattolica Sacro Cuore di Piacenza, Italy.
41. Ametaj, B. N. 2007. The price of feeding grain to dairy cattle: A health prospective. 2007. Università Cattolica Sacro Cuore di Piacenza, Italy.
42. Ametaj, B. N. 2007. The price of feeding grain to dairy cattle: A health prospective. 2007. Inner Mongolia Agricultural University, Hohhot, China.
43. Ametaj, B. N. 2007. The price of feeding grain to dairy cattle: A health prospective. 2007. 1st August Agricultural University, Daqing, China.
44. Ametaj, B. N. 2007. The price of feeding grain to dairy cattle: A health prospective. 2007. Northeast Agricultural University, Harbin, China.
45. Ametaj, B. N. 2007. The price of feeding grain to dairy cattle: A health prospective. 2007. China Agricultural University. Beijing, China.
46. Ametaj, B. N. 2006. Recent developments on the etiology and pathogenesis of milk fever in dairy cows. College of Veterinary Medicine, Tirana, Albania
47. Ametaj, B. N. 2006. Recent developments on the etiology and pathogenesis of fatty liver in dairy cows. College of Veterinary Medicine, Tirana, Albania
48. Ametaj, B. N. 2005. A new understanding on the causes of fatty liver in dairy cows. Western Canadian Dairy Seminar, Red Deer, Alberta.
49. Ametaj, B. N. 2003. A Potential role for endotoxin in the etiology and pathogenesis of fatty liver in dairy cows. University of Alberta, Edmonton, Canada.
50. Ametaj, B. N. 2003. Presence of acute phase response in cows affected by fatty liver and milk fever. Cornell University, Ithaca, NY.
51. Ametaj, B. N. 2002. Presence of acute phase response in cows affected by fatty liver and milk fever. Purdue University, West Lafayette, IN.
52. Ametaj, B. N. 2001. A novel hypothesis on periparturient diseases of dairy cows. Monsanto Co., Saint Louis, MO.
53. Ametaj, B. N. 2001. A novel hypothesis on periparturient diseases of dairy cows. Fort Dodge Animal Health, Fort Dodge, IA.
54. Ametaj, B. N. 2000. A novel hypothesis on periparturient diseases of dairy cows. Animal Genetics and Biotechnology Group, Department of Animal Science, Iowa State University, Ames, IA.
55. Ametaj, B. N. 2000. A novel hypothesis on periparturient diseases of dairy cows. American Protein Corporation, Ames, IA.

56. Ametaj, B. N. 1999. A novel hypothesis on periparturient diseases of dairy cows. Nutritional Physiology Group, Department of Animal Science, Iowa State University, Ames, IA.
57. Ametaj, B. N. 1998. Dietary vitamin A suppresses plasma and lipid lipoprotein alpha-tocopherol concentrations in neonatal calves fed milk replacer. Nutritional Physiology Group, Department of Animal Science, Iowa State University, Ames, IA.
58. Ametaj, B. N. 1998. Supplemental vitamin A modulates plasma and lipoprotein tocopherol concentrations of calves fed milk replacer. National Animal Disease Center, USDA, ARS, Ames, IA.
59. Ametaj, B. N. 1998. Effects of supplementation with vitamins A and E on health, immune function, and lipid-soluble vitamin status of neonatal calves. National Animal Disease Center, USDA, ARS, Ames, IA.
60. Ametaj, B. N. 1997. 1,25-Dihydroxyvitamin D3 and its fluorinated analog suppresses interferon-secretion from bovine mononuclear cells. Department of Veterinary Physiology and Pharmacology, College of Veterinary Medicine, Iowa State University, Ames, IA.
61. Ametaj, B. N. 1996. The active metabolite of vitamin D suppresses cellular-mediated immunity in dairy cattle. Nutritional Physiology Group, Department of Animal Science, Iowa State University, Ames, IA.
62. Ametaj, B. N. 1995. Effects of 1,25-dihydroxyvitamin D3 on interferon- secretion by mitogen- and antigen-stimulated peripheral bovine mononuclear leukocytes. Nutritional Physiology Group, Department of Animal Science, Iowa State University, Ames, IA.
63. Ametaj, B. N. 1994. Metabolism of hemoglobin: Causes and effects of its disturbances in dairy cows. Nutritional Physiology Group, Department of Animal Science, Iowa State University, Ames, IA.
64. Ametaj, B. N. 1993. Prevention of postparturient hemoglobinuria in dairy cows by decreasing the amount of kale and increasing supplemental phosphorous in the diet. 1993. 47th Congress of Italian Society of Veterinary Scientists (SISVET), Riccione, Italy.