7th ANNUAL CONFERENCE

LIVESTOCK PRODUCTION:

MANAGING IN A TIME OF UNPRECEDENTED CHANGE

EDMONTON, ALBERTA OCTOBER 18-19, 2016









ALMA is a proud supporter of the 7th Annual Livestock Gentec Conference.

This conference promotes knowledge sharing, future industry collaboration and increased awareness of work by Livestock Gentec, Delta Genomics and their partners and collaborators.

It is also a great opportunity to learn more about genomics' many benefits.

Ideas. Information. Investment. alma.alberta.ca



MESSAGE FROM ALBERTA AGRICULTURE AND FORESTRY

Aberta Government

To say the least, 2016 has been a challenging year in Alberta's agriculture industry. The theme to Livestock Gentec's conference—"Managing in a Time of Unprecedented Change"—is relevant. Given the present agriculture situation, *unprecedented* is an appropriate word to describe where agriculture is with change. Social licence is a term that has appeared in agriculture over the past few years that was not an issue before. Social licence, defined by the Canadian Federation of Agriculture (CFA), is the "ongoing level of acceptance, approval and trust of consumers regarding how food is produced." As an industry, agriculture may be able to defend its social licence but, as pointed out by the CFA, it needs to build and maintain that social licence, and that takes time and two-way communication.

The morning session on October 18 addresses the topic of the Canadian livestock industry's social licence. While sustainability is not a new word in the agriculture community's vocabulary, the meaning and strength of the word has recently been called into question. The Canadian Roundtable for Sustainable Beef (CRSB), through the McDonald's initiative, has and continues to strengthen and develop what a sustainable beef industry looks like in Canada. We are pleased to have Cherie Copithorne-Barnes, rancher and chair of the CSRB, address this topic.

The various industries within agriculture can learn from each other. The morning session will address the dairy industry's experiences with transparency and trust with a presentation by Guy Seguin of the Dairy Farmers of Canada. Vicky Horn, Spring Creek Beef, will round off the session with ideas to meet consumer demands through a branded product.

Each presenter will provide their perspectives, and we hope there will be a two-way dialogue with presenters and conference registrants during the panel discussion. Come prepared to ask questions and learn from each other. Together, we can move the livestock industry onward and upward in these changing times.

Lorna Baird Beef Extension Specialist

and

Andrea Hanson Beef Extension Specialist



TUESDAY MORNING, OCTOBER 18

All sessions in the Royal/Imperial Room. All meals and breaks in the Empire Room

ALBERTA AGRICULTURE AND FORESTRY PRESENTS

Moderator: Josie Van Lent, Dean, Agricultural Sciences, Lakeland College

- 08:00 09:00 **Registration and Coffee**
- 09:00 09:15 Welcome Josie Van Lent, Dean, Agricultural Sciences, Lakeland College
- 09:15 09:35 Sustainability as Viewed from the Producer Level from Programs to Production

Cherie Copithorne-Barnes, CEO, CL Ranches

- 09:35 09:55 **Transparency and the Investment for Trust** Guy Seguin, Assistant Director, Policy and Dairy Production, Dairy Farmers of Canada
- 09:55 10:10 Industry Update: Why Does Industry Need BIXS? How Has BIXS Evolved to Meet the Needs? Deborah Wilson, Senior VP, BIXSco Inc.

10:10 – 10:40 **Coffee Break**

- 10:40 11:00Meeting Consumer Demands Through Branded Beef Programs
Vicky Horn, Producer Liaison, Spring Creek Beef
- 11:00 11:30Panel DiscussionCherie Copithorne-Barnes, Guy Seguin, Vicky Horn
- 11:30 11:50Industry Update: Applying Genomics Beyond Traditional Pure Breed
Populations and Applications
Michelle Miller, CEO, Delta Genomics
- 11:50 12:50 Lunch



TUESDAY MORNING, SPEAKERS



Sustainability as Viewed from the Producer Level from Programs to Production

Cherie Copithorne-Barnes, CEO, CL Ranches

As producers, there is much concern over sustainability. Fortunately, there is light at the end of this tunnel. Through the example of the McDonald's Verified Sustainable Beef Project, the Canadian Roundtable for Sustainable Beef is rolling out its own framework that we believe will aid the Canadian beef industry in defining "Sustainable Beef" for our retail and food service groups. Producers are already well along this path. Our aim is to guide them to better understand how they can coordinate many of the production practices that they are already using today to achieve Sustainable Beef verification.



Transparency and the Investment for Trust

Guy Seguin, Assistant Director, Policy and Dairy Production, Dairy Farmers of Canada Dairy Farmers of Canada is a national policy, lobby and promotional organization representing dairy producers on ~12,000 farms across Canada. Guy will discuss the work at DFC relating to monitoring and addressing consumer expectations about their food. One measure aimed at increasing confidence in farm practices is the DFC's proAction[®] Initiative that provides support (for producers) and transparency (to consumers). Based on consumer expectations and the growth of monitoring technologies, efforts focusing on traceability and antimicrobial usage are ongoing. Openness and transparency are no longer an option.



Industry Update: Why Does Industry Need BIXS? How Has BIXS Evolved to Meet the Needs?

Deborah Wilson, Senior VP, BIXSco Inc.

It has been 21 months since BIXSco Inc. was formed and took over operations of the Beef InfoXchange. Deborah provides an overview as to what has taken place since, the need for BIXS and how BIXS is evolving to serve the industry better.



Meeting Consumer Demands through Branded Beef Programs Vicky Horn, Producer Liaison, Spring Creek Beef

The marketplace is changing. Claims of "hormone free," "antibiotic free," and "raised without" can be found on various forms of advertising, and are discussed rampantly on social media. But what do they all mean? And what is required for ranchers to make these claims? Vicky Horn from Spring Creek Premium Beef discusses rancher requirements and the benefits of participating in a branded beef program.





Industry Update: Applying Genomics Beyond Traditional Pure Breed Populations and Applications

Michelle Miller, CEO, Delta Genomics

To date, most of the progress and application of genomics has taken place in pure breed populations and / or in vertically integrated populations. For the first time, research may be on the cusp of providing useful and cost-effective tests in the larger commercial and cross-bred populations of species, such as cattle.



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MESSAGE FROM LIVESTOCK GENTEC

Welcome to the seventh edition of the Livestock Gentec annual conference. We look forward to seeing old friends and meeting new ones.

livestock

The most noticeable addition to this year's conference is the amount of dairy-specific content on the agenda.

On Tuesday morning, a session will address the increasing engagement of consumers in evaluating their food choices around sustainability and animal health. Cherie Copithorne-Barnes will discuss the recently completed McDonald's Verified Sustainable Pilot championed by the Canadian Round Table for Sustainable Beef. Guy Seguin, discusses the dairy industry's proAction Initiative[®], while branded-beef procurement specialist Vicky Horn talks about what the producers they source from and the packers they supply are saying.

Wednesday will be packed full of information for beef and dairy producers alike. Mike Coffey and Alison Van Eenennaam will lead combined sessions, with beef and dairy producers discussing advances in genomics and technology applied in beef or dairy production, and on activities yet to be applied in the "other" bovine sector.

The rest of the day will be separated into beef- and dairy-specific sessions. On the dairy side, Gert Schrijver of Alberta Milk's Research Committee will provide an update on Alberta Milk's Health Dairy Herd Program: the program, the partners, and its focus on animal health programming. On the beef side, topics include ongoing industry priorities and activities, the role of calculated risk and beef quality.

Thank you to our sponsors for making this event possible. Thank you to our funders, partners and collaborators for envisioning a Canadian livestock industry that is the envy of the world. And thank *you* for attending, sharing and learning with us.



Graham Plastow CEO







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TUESDAY AFTERNOON, OCTOBER 18

LIVESTOCK GENTEC PRESENTS

Moderator: Al Schaefer, Manager Technology Access Centre, Olds College

- 12:50 13:00 Welcome from Alberta Innovates Bio Solutions Steve Price, President and COO, Bioindustrial Innovation, AlBio
- 13:00 13:45
 Beef as a Consumer-driven Food Business: Changing Perspectives from Cattle to Food Production

 John Stika, President, Certified Angus Beef®
- 13:45 14:00 Industry Update: UCVM: Ever-changing Karin Orsel, Associate Professor, Faculty of Veterinary Medicine, University of Calgary
- 14:00 14:30 **Coffee Break**
- 14:30 15:10The Nutritional Benefits of Red Meat: Why Do We Need to Eat More Beef?
Sangita Sharma, Endowed Chair of Indigenous Health, Faculty of Medicine and Dentistry,
University of Alberta
- 15:10 15:50Linking Genetic Seedstock Decisions of Commercial Cattle Outcomes:
Transition Considerations When Moving From "Research" to Implementation
Steve Miller, Director of Genetic Research, Angus Genetics Inc.
- 15:50 16:45 Genome Canada Updates

David Bailey, President and CEO, Genome Alberta

- gEPDs for Commercial Beef Cattle. John Basarab
- Application of Genomics to Improve Disease Resilience and Sustainability in Pork Production. Irene Wenger
- The Efficient Dairy Genome Project. Filippo Miglior

16:45 Summary of Day 1

Graham Plastow, CEO, Livestock Gentec

- 17:30 Depart for Pampa
- 18:00 19:15 Networking and Student Poster Session
- 19:15 Dinner
- 21:00 First transport back to hotel
- 21:45 Last transport back to hotel



TUESDAY AFTERNOON, SPEAKERS



Beef as a Consumer-driven Food Business: Changing Perspectives from Cattle to Food Production

John Stika, President, Certified Angus Beef®

It is important to recognize that brands are established on what the consumer values, not on the basis of what the producer or industry values... and that the sustainability of the beef industry rests on the back of the consumer's willingness to pay for the beef-eating experience. Taste matters.

Over the past 15 years, the price of beef vs. the price of other proteins has increased to the point that, in 2015, beef demanded a 57% premium over pork and was 210% higher than chicken. In spite of this growth, branded-beef programs have increased over four-fold during this period. Consumers may not have a high degree of understanding of how beef is produced but they have an interest and opinions on it. John tells the story of how Certified Angus Beef tries to link and create value for both the producer and consumer.



Industry Update: UCVM: Ever-changing

Karin Orsel, Associate Professor, Faculty of Veterinary Medicine, University of Calgary The University of Calgary's Faculty of Veterinary Medicine has a large and ever-evolving portfolio of research. Karin's presentation summarizes several ongoing collaborative projects of interest to producers on the topics of lameness and genetic selection for longevity.



The Nutritional Benefits of Red Meat: Why Do We Need to Eat More Beef?

Sangita Sharma, Endowed Chair of Indigenous Health, Faculty of Medicine and Dentistry, University of Alberta

The Why Act Now project was launched in Edmonton in 2011 to develop a sustainable nutrition intervention to improve youth health and wellness. Data was collected from over 1,000 youth from all over Alberta. Participants, aged 11 to 23, were asked a wide variety of questions related to nutrition, physical activity, and health status. Preliminary results show that the majority of the youth did not meet the daily recommendations for essential nutrients including protein, iron, zinc, selenium, and vitamin B12. Many of the nutritional inadequacies could be addressed by increasing consumption of beef.



Linking Genetic Seedstock Decisions of Commercial Cattle Outcomes: Transition Considerations When Moving From "Research" to Implementation Steve Miller, Director of Genetic Research, Angus Genetics Inc.

The tools available to cattle breeders continue to improve. Research and technology have added new traits and increased selection accuracy. Genomic selection is now mainstream in beef-cattle breeding in North America. Over 25% of registered calves with American Angus are genotyped, contributing to a database of over 250,000 cattle. The implementation of genomic selection has enhanced existing traits, which are centred on phenotypes collected in seedstock herds. One of the advantages of genomics is that phenotypes collected in the commercial environment, when combined with genotypes can contribute to selection of all breeding candidates. To move the industry forward, we need a renewed emphasis on phenotypes collected in a commercial environment. Electronic recording, computer carcass-grading and tools to link databases across the supply chain will play an important role. Growth and carcass data, sources of information related to health and longevity will also be important traits. The combining of commercial phenotypes with genomics to advance selection tools for breeders will be discussed.





Genome Canada Project Updates

David Bailey, President and CEO, Genome Alberta

David provides an overview of the priorities and activities of Genome Canada and Genome Alberta over the past year, and introduces the projects listed below.



gEPDs for Commercial Beef Cattle John Basarab, Project Lead



Application of Genomics to Improve Disease Resilience and Sustainability in Pork Production Irene Wenger, Project Manager



The Efficient Dairy Genome Project Filippo Miglior, Project Lead







Alberta Innovates Bio Solutions leads science and innovation to grow prosperity in Alberta's agriculture, food and forestry sectors.

We are an agency of the Government of Alberta that offers grant funding, advice, connections, and knowledge to companies and researchers for the development of new technologies, products, services or industry practices. The areas of research we support are sustainable agriculture and forest production, bioindustrial innovation, food innovation, ecosystem services and biodiversity, biological greenhouse gas management, and the Alberta Prion Research Institute.

We are a proud funder of Livestock Gentec and wish them a successful conference.

FOR MORE INFORMATION

Call 780-427-1956 or email BIO@albertainnovates.ca

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WEDNESDAY MORNING, OCTOBER 19

All sessions in the Royal/Imperial Room. All meals and breaks in the Empire Room

LIVESTOCK GENTEC PRESENTS

07:30 – 08:45 Breakfast

Moderator: Al Schaefer, Manager Technology Access Centre, Olds College

- 09:00 09:15 **The ALMA-Gentec Story from the Beginning** David Chalack, Board Chair, ALMA
- 09:15 10:00 **Beef and Dairy: The Cross-application of Technology** Mike Coffey, Professor of Livestock Informatics, Scotland's Rural College
- 10:00 10:15Industry Update: Ongoing Genetic Improvement Efforts for Beef in Canada
John Crowley, Director of Scientific and Industry Advancement, CBBC
- 10:15 10:45 **Coffee Break**
- 10:45 12:15

Parallel Sessions

Beef Breakout

Moderator: Al Schaefer, Manager Technology Access Centre, Olds College

Technology Adoption, Putting Your Money Where Your Mouth Is, and the Role of Calculated Risk

Doug Munton, Benchmark Angus Ranch

Squaring the Circle: Beef Industry Issues

Tom Lynch-Staunton, Issues Manager, Canadian Cattlemen's Association

Dairy Breakout Moderator: Josie Van Lent, Dean, Agric. Sciences, Lakeland College

Feed Efficiency (RFI) Trials from Beef. What Can We Learn?

John Basarab, Beef Research Scientist, Alberta Agriculture and Forestry

The Logistics of Feed Intake Discovery and Application in Real Time

Jelle-Pier (JP) Brouwer, producer and Chair, Alberta Milk Research Committee

Decreasing the Environmental Impact of Dairying Using Genomics

Filippo Miglior, Adjunct Professor, Dept of Animal Biosciences, University of Guelph

The Efficient Dairy Genome Project: Current Status at Guelph

Christine Baes, Assistant Professor, Dept of Animal Biosciences, University of Guelph

Note: this session is in the Empire Room.



WEDNESDAY MORNING, SPEAKERS



The ALMA-Gentec Story from the Beginning

David Chalack, Board Chair, ALMA

The Alberta Livestock and Meat Agency (ALMA), founded in 2008, is a provincial government agency committed to growing competitiveness, profitability and sustainability in Alberta's agricultural industry. Through collaboration with industry and government partners, ALMA supported projects that encouraged knowledge transfer, innovation and adoption of best practices. Throughout this time, ALMA invested heavily in initiatives designed to improve and advance livestock and the related industries both in the province and beyond. In his presentation, David looks at the legacy that ALMA created in the process.

Beef and Dairy: The Cross-application of Technology

Mike Coffey, Professor of Livestock Informatics, Scotland's Rural College

Last year, Mike discussed a project with Limousin cattle, looking at efforts to transmit value signals through the supply chain from consumer to producer. In addition to providing an update on the project's success in calculating the optimal returns to the producer using feed costs, days-to-slaughter, and risk-to-return trade-offs, this year's focus includes discussion on *selection for* beef characteristics in dairy cattle, predicting feed intake in dairy cows from milk samples, and the emerging relationship between the dairy and beef herds in the UK.



Industry Update: Ongoing Genetic Improvement Efforts for Beef in Canada

John Crowley, Director of Scientific and Industry Advancement, CBBC CBBC has led projects in collaboration with breed associations and other working partners. In particular, John will highlight the Canadian Agricultural Adaptation Program (CAAP)-funded "Genomics Adoption" project which aims to increase the rate of adoption of genomic selection in beef.



Beef Session

Technology Adoption, Putting your Money Where Your Mouth Is, and the Role of Calculated Risk

Doug Munton, Benchmark Angus Ranch

Every action/inaction contains an element of risk. For entrepreneurs, standing still and not taking advantage of opportunities are the greatest threats in limiting one's potential. Influenced by his role as a chartered accountant, Doug discusses some of the processes surrounding calculated risks relating to actions he has taken and those he has not. Benchmark Angus consistently evaluates new technologies and opportunities using ultrasound, genomics and GrowSafe technologies, operating its own slaughter facility, and marketing premium beef and other protein items. Doug and his son Mike bring a "boots on the ground" approach to the science of the day.



Squaring the Circle: Beef Industry Issues

Tom Lynch-Staunton, Issues Manager, Canadian Cattlemen's Association

Tom has gained a unique compilation of skills working in the beef industry as a producer, with funders and industry as part of a research organization and, most recently, on policy and government relations topics. From this vantage point, Tom discusses some of the issues and challenges facing producers as well as some of the initiatives being advanced at the national and international levels, and why optimism is warranted.







Dairy Session

Feed Efficiency (RFI) Trials from Beef. What Can We Learn?

John Basarab, Beef Research Scientist, Alberta Agriculture and Forestry The four-year project: "Development and deployment of MBVs/gEPDs for feed efficiency and carcass traits that perform in commercial beef cattle (gEPDs and genomic tools for commercial beef cattle)" is funded by Genome Alberta with support from Livestock Gentec, Delta, BIO, BeefBooster, ICBF, CCHMS (cow-calf Health Management Services), Alberta Agriculture and Forestry, CCEMC, CAAP and USDA.



The Logistics of Feed Intake Discovery and Application in Real Time

Jelle-Pier (JP) Brouwer, producer and Chair, Alberta Milk Research Committee Much is yet to be discovered about feed efficiency across the lactation phases in dairy cattle. In his presentation, JP discusses his motivation to become involved due to his belief that evidence collected on an active dairy operation would serve as a demonstration project to help other members of the industry improve as well. Discussions initiated as a result of this project are ongoing and, if successful, may result in Sunalta Farms becoming the largest dairy feedmonitoring installation in North America.



Decreasing the Environmental Impact of Dairying Using Genomics

Filippo Miglior, Adjunct Professor, Dept of Animal Biosciences, University of Guelph

To date, it has been difficult and expensive to collect the data required for selecting feed efficient dairy cattle with low methane emissions. The latest genomics approaches offer an opportunity to collect and assess the required data to carry out the selection. Filippo will give an overview of the development of genetic evaluation services for feed efficiency and methane emissions, which will allow for genetic selection and improvement of these novel traits.



The Efficient Dairy Genome Project: Current Status at Guelph

Christine Baes, Assistant Professor, Dept of Animal Biosciences, University of Guelph The foundation of the Efficient Dairy Genome Project is the collection of individual daily feed intake data for cows and heifers at two research herds in Canada: the newly opened Livestock Research and Innovation Centre at the University of Guelph and the Dairy Research and Technology Centre at the University of Alberta. Christine will give an update on the current status of research efforts at Guelph.

LIVESTOCK PRODUCTION: Managing in a Time of Unprecedented Change





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Services offered include biobanking, high and low density genotyping, sequencing, SNP-parentage, coat colour, horned/polled (cattle), myostatin, genetic abnormalities, and other diseases.

ABOUT DELTA GENOMICS

Formed in 2012, Delta Genomics Centre is a national, not-for-profit DNA service facility specializing in livestock.

We are a team of specialists in genomics, biotechnology, research, agriculture, and knowledge transfer. The joint passion of our group is to provide solutions for the livestock industry and help make it profitable and efficient.

We have supported over 25 major genomics research projects representing 9 different livestock species, including helping enable the transition to a lower cost SNP parentage in the purebred Canadian beef industry.





For more information

deltagenomics.com info@deltagenomics.com 1-780-492-2538





WEDNESDAY AFTERNOON, OCTOBER 19

LIVESTOCK GENTEC PRESENTS

Moderator: Josie Van Lent, Dean, Agricultural Sciences, Lakeland College

13:15 – 13:30 Student Poster Awards

13:30 - 14:15A Comparison of the Use of Genomic Technologies in the Beef and Dairy
Industry

Alison Van Eenennaam, Cooperative Extension Specialist, Animal Genomics and Biotechnology, Department of Animal Science, University of California, Davis

14:15 – 14:35 **Coffee Break**

14:35 - 15:15

Parallel Sessions

Beef Breakout Moderator: Josie Van Lent, Dean, Agricultural Sciences, Lakeland College

Dairy Breakout Moderator: Al Schaefer, Manager Technology Access Centre, Olds College

proAction[®]'s Herd Health Initiative Gert Schrijver, Delegate, Alberta Milk

Information Manuel Juárez, Livestock Phenomics Scientist, Agriculture and Agri-Food Canada

The Value of Carcass and Meat Quality

Note: this session is in the Empire Room

15:15 – 15:30 **Close**



WEDNESDAY AFTERNOON, SPEAKERS



A Comparison of the Use of Genomic Technologies in the Beef and Dairy Industry

Alison Van Eenennaam, Cooperative Extension Specialist, Animal Genomics and Biotechnology, Department of Animal Science, University of California, Davis

The adoption of genomic technologies has had dramatically different trajectories in the beef and dairy cattle industry. Since the release of the first dairy genomic predictions in 2009, genomic selection was rapidly adopted by that industry.

There are over one million genotypes in the US dairy evaluation program; and more than half of all AI matings are now made to genomically-tested young bulls. It is estimated that the rates of genetic gain per year have increased from 5-100% for yield traits and from three- to fourfold for lowly heritable traits.

In contrast, the technology has been slow to start in the beef industry for technical and structural reasons. This limited the size of the genotyped, phenotyped training populations available to develop genomic predictions for beef cattle breeds, which, in turn, limited the accuracy of the breeding values obtained from genomic information.

Some countries have taken a proactive approach to this problem by implementing programs to collect production, health and carcass data and genotypes on every animal in the national herd. Over time, such programs will increase the size of the training populations of phenotyped and genotyped beef cattle, and increase the accuracy and value of genomic information.

The Value of Carcass and Meat Quality Information

Manuel Juárez, Livestock Phenomics Scientist, Agriculture and Agri-Food Canada

In the past, carcass quality was like a sports score... you had to wait until the end of the game to get any meaningful information. Even the more recent tools such as ultra sound and camera grading only provided real information about the final moments of the game. As phenomics and genomics databases expand, it is now possible to glean information sooner allowing for decisions to be made that can still affect outcome in terms of animal management. But even determining who gets to enter the game through selective breedings/matings has the potential to significantly impact yield and quality. This is an exciting topic, and a presentation that will provide information about what we have now and what we can expect "tomorrow".



proAction®'s Herd Health Initiative

Gert Schrijver, Delegate, Alberta Milk

Gert Schrijver and his wife, Sonja, own and operate Mars Dairy Ltd. in Stettler, AB. The dairy is one of the top-producing herds worldwide. Gert will talk about how he reached this high level of production through herd management and genetics. He will introduce proAction[®], which shows how Canadian dairy farmers produce milk responsibly. proAction[®] provides proof to customers that farmers work continually to ensure milk quality and safety, and to improve animal health and welfare as well as environmental stewardship.

Gert will also describe the Healthy Dairy Herds initiative, a long-term commitment of Alberta Milk and its many industry partners to help producers maintain the health of their herds through initiatives that address Johne's disease, hoof health, BLV and others.



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LIVESTOCK PRODUCTION: Managing in a Time of Unprecedented Change



Posters

- 1. Development of proteinaceous plywood adhesives: an innovative utilization of waste from the beef industry. Presented by <u>B.A. Birendra</u>
- 2. Validation of a small panel for feed efficiency in beef cattle. Presented by M. Abo-Ismail
- 3. WGRPRO: an Excel app to run genomic prediction. Presented by H. Zhiqiu
- 4. Transcriptome analysis of liver tissues in Canadian beef cattle with divergent residual feed intake phenotypes. Presented by <u>R. Mukiibi</u>
- 5. Evaluation of genomic selection in the Canadian Hays Converter cattle breed. Presented by E. Akanno
- Expression of TLR2 pattern recognition receptor on mononuclear cells cultured with ligands among cattle ranked by estimated breeding values for adaptive immune response traits. Presented by <u>L. Wagter-Lesperance</u>
- 7. Genomic prediction for feed efficiency based on SNP genotypes in multiple breed populations of Canadian beef cattle. Presented by <u>F. Zhang</u>
- 8. Optimization of the genetic diversity of the sequenced North American Holstein population. Presented by <u>M.B. Adrien</u>
- 9. The role of pig diseases in structural change in the Canadian pig industry. Presented by Z. Yanan
- 10. Activity budgets of rangeland cattle with divergent residual feed intake molecular breeding values. Presented by <u>C. Moore</u>
- 11. Study of host and microbiome interactions to improve feed efficiency and reduce methane emissions in beef and dairy cattle using integrative '-omics' technologies. Presented by <u>S. Lam</u>
- 12. A simulation study to evaluate crossbreeding and sexed semen technology in the Afrikaner cattle production. Presented by <u>R. Khorshidi</u>
- 13. A genome-wide association study of dark cutting in beef cattle. Presented by L. Huaigang
- 14. Consumers' trust and perceptions about the use of genomics in cattle and pigs. Presented by V. Muringai
- 15. Defining the role of parasutterella, a previously uncharacterized member of the healthy gut microbiota. Presented by <u>T. Ju</u>
- 16. Association of residual feed intake (RFI) with reproduction traits in dairy cattle. Presented by D. Hailemariam



NOTES



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