

August 2024



### ***Livestock Gentec - Plus ça change, plus c'est la même chose***

The last period has seen a number of project successes for the Gentec team, with funding totaling \$8 million from research funders over the next 5 years and industry contributing an additional \$20 million in in-kind contributions and cash. Support for the projects was made possible by funding from Emissions Reduction Alberta, the Natural Sciences and Engineering Research Council (NSERC) and the Social Sciences and Humanities Research Council (SSHRC), as well as the Sustainable Canadian Agricultural Partnership, cost-shared by the federal and provincial governments and delivered by Results Driven Agriculture Research (RDAR).

Graham Plastow (former Gentec CEO) comments "It's really pleasing to see this success continuing under the new leadership of John Basarab". As would be expected for Gentec all of these initiatives have been developed in close collaboration with industry. Pleasingly this includes both existing and new partners such as Forage Associations, G.K.Jim Farms, Telus Agriculture, and ArkeaBio. In addition, Sunterra Farms and Sunhaven Farms have renewed their knowledge translation projects led by Jenny Patterson to help improve gilt and sow lifetime productivity.

RDAR support was highlighted on our social media accounts - here are the associated stories:

<https://www.ualberta.ca/en/agriculture-life-environment-sciences/news/2024/july/dna-technology-helps-breed-cattle-to-benefit-earth-and-beef-industry.html>

and

<https://rdar.ca/latest/press-releases/rdar-supports-beef-genomics-technology-adoption-with-the-delivery-of-a-2-2m-investment-into-livestock-gentec>

Information on the new beef projects is here:

Sire-based Feeder Profit Index for Beef on Dairy production and marketing systems, 2024-2027, PI Basarab (RDAR SCAP)

Using genomics to improve the profitability and sustainability of Alberta's beef industry, 2024-2027, PI Basarab, co-PI Plastow (RDAR SCAP)

Evaluation of reduced enteric methane emissions in beef cattle using a novel vaccine at a research farm in Alberta, 2025-2028, PI Colin South, ArkeaBio Inc., UofA lead Basarab (ERA)

Reducing Greenhouse Gas Emissions from the Canadian Beef Industry through the Development and Adoption of Genomic Tools, 2024-2029, PI Basarab (NSERC)

### **News on the Gentec “family”**

Several members of the team are moving on in their careers. **Kira Hames** is now the Dairy Research and KTT Specialist for the western provincial milk boards. **Elda Dervishi** is now Assistant Professor in Animal Science at the Pomona campus of Cal State Polytechnic University at the Don B. Huntley College of Agriculture, Department of Animal and Veterinary Science, **Niloofer Pejman** is now business partner in Sustainable Production (Clean Resources) team at Alberta Innovates and is also a project advisor for projects relating to agrifood and agriculture, and **Seanna Wengryn**, a summer student, will soon be starting her vet program at UCVM after spending the summer in the Technology Transfer Program at the Alberta Beekeepers Commission (see below). Following his postdoctoral studies with ChangXi Li with support from AAFC and ERA, **Hongwei Li** will become an Assistant Professor at the Institute of Animal Science, Chinese Academy of Agricultural Sciences. Congratulations to all of you and thank you for all of your contributions to Livestock Gentec. In addition, **Anna Szenthe** retired from the University, although Anna continues to help out when we need to tap all of her experience. **Graham Plastow**, Professor Emeritus also continues to work with John and the team on building and implementing projects. We are also thrilled to note that **Heather Bruce** has been appointed to the role of Dean and Campus Principal, Faculty of Agriculture at Dalhousie University. She will be joining Gentec alumni **Younes Miar** and **Ghader Manafiazar** who are Assistant Professors in the Faculty.

*Everyone, please send us your news so that we can share it with our network.*

**AgSmart Educational Expo** - **John Basarab** and **Tiago Valente** recently attended AgSmart at Olds College to present the newly funded project on “Adoption of Genomic Tools” (<https://agsmartolds.ca/timetable/event/adoption-of-genomic-tools-project/>). The presentation, hosted by Josie Van Lent, a member of the RDAR Board of Directors, attracted around 20 beef cattle producers, researchers, and industry experts. The session focused on how producers can receive incentivized pricing for genotyping their animals and benefit from the genomic services provided by Livestock Gentec. John highlighted the current challenges in the beef industry and discussed how genomic breed composition, Hybrid Vigour Score, the Replacement Heifer Index Score™, and the Feeder Profit Index™ can be used to improve profitability and sustainability. Gentec’s goals include improving the accuracy of these tools including molecular breeding values for 15 economically significant traits. This initiative offers a valuable opportunity for beef producers interested in adopting genomic tools. As one producer mentioned on LinkedIn, “Gentec is doing amazing work that will benefit producers who adopt it”. We look forward to collaborating closely with beef producers to increase the application of these. For more information and to enroll in the project, please visit links below:

[https://ales-cms.ales.ualberta.ca/livestockgentec/wp-content/uploads/sites/31/2024/07/2.RDAR\\_Turn-Genomic-Data-into-Profit\\_2-Pager-approved\\_4Jul2024.pdf](https://ales-cms.ales.ualberta.ca/livestockgentec/wp-content/uploads/sites/31/2024/07/2.RDAR_Turn-Genomic-Data-into-Profit_2-Pager-approved_4Jul2024.pdf)

[https://ales-cms.ales.ualberta.ca/livestockgentec/wp-content/uploads/sites/31/2024/07/1.RDAR\\_DNA-Sample-Submission-to-Livestock-Gentec-approved\\_4Jul2024.pdf](https://ales-cms.ales.ualberta.ca/livestockgentec/wp-content/uploads/sites/31/2024/07/1.RDAR_DNA-Sample-Submission-to-Livestock-Gentec-approved_4Jul2024.pdf)

**Kinsella Research Ranch Field Tour** – On August 6th, researchers and producers gathered for an insightful Ranch tour centered on the Climate Action Through Grazing (CAT-G) Project, led by Gentec associated researchers **Carolyn Fitzsimmons** (AAFC), **Gleise da Silva**, and **Edward Bork** (UofA). The tour provided an in-depth look at the infrastructure supporting rotational grazing, a key component of the CAT-G Project. Discussions covered a range of topics, including the effects of grazing management on soil nitrogen cycling genes, nitrogen fixation, below-ground nitrogen transfer, and the impact of grazing practices and stocking rates on methane emissions. Additionally, attendees explored the conservation of riparian areas using innovative virtual fencing technology. The event also highlighted the Alberta AgriSystems Living Lab (<https://www.agrisystemsll.ca/>), offering further insights into sustainable grazing practices. For more information about the CAT-G Project, visit <https://cat-g.ca>.



**Summer student enthusiastic about NSERC Alliance project on pigs:** We are thrilled to highlight the contributions of our summer student, **Morgan Rioch**, who made a significant impact on our team this summer. Morgan supported our NSERC Alliance project with our research partner Hypor, the swine brand of Hendrix Genetics, in Saskatchewan. This 4-year project will identify the underlying genetic and phenotypic relationships between different traits in order to achieve more balanced selection to improve sow lifetime productivity, production profitability and sustainability.



Morgan is an undergraduate entering her 4th year of a Bachelor of Science in Animal Bioscience, at the University of Saskatchewan. In addition to her scholastic achievements, she is on scholarship for the UofS Huskies Women's Soccer Team. Morgan's enthusiasm, hard work, dedication and intellectual input to the project was hard to beat.

**Morgan Rioch**

Although we were sad to see her head back to Saskatoon to hit the soccer field again, we are thankful for the time she spent with us this summer and look forward to seeing her future achievements. Morgan

joined our graduate students Sonja Allen and Kayla Patey with Sonja and Jenny Patterson also spending time at the barn learning the processes in place to select the best female pigs. The project is led by Professor Michael Dyck and Graham Plastow.

*"I couldn't be more grateful to have the opportunity of being a part of this wonderful team this summer. It was very enlightening to be able to see the different selection processes in place from farrowing to finishing during my time at the barn. Seeing the correlation between the data collected and the study was very rewarding. I look forward to following along with the project's development!" - Morgan Rioch*

### **Graduate student Sonja Allen hits the ground running**

We are excited to highlight the early successes of our new PhD student, **Sonja Allen**. Originally from Jamaica, Sonja completed a double Master's degree from AgroParisTech and Georg-August-Universität Göttingen in 2023 and arrived in Edmonton on the coldest day in January to join the Gentec team. Sonja's focus will be to identify the underlying genetic and phenotypic relationships between different traits to improve sow lifetime productivity.

For her Master's degree, Sonja received the IAEA Marie Sklodowska-Curie Fellowship. Soon after her arrival in Edmonton, she was honored with an invitation to attend the prestigious "For More Women in Nuclear: the IAEA Marie Sklodowska-Curie Fellowship and IAEA Lise Meitner Programme" Conference in Vienna, Austria. The conference brought together current students and alumnae to exchange ideas and to strengthen their network and leadership skills.



In March, Sonja attended RE Peter Biological Conference at the University of Alberta and won first place in the Genetics Award for her oral presentation on "Estimation of genetic variability of digestibility of the three major French Pig breeds" <https://repeter2024.weebly.com/winners.html>

Congratulations Sonja! We celebrate your early achievements and those that will come.

*Sonja Allen at the IAEA conference*

### **PODCAST: Gilt Fertility Quadrant and Gilt Development Unit Management**

Gentec's **Jenny Patterson** was invited to participate in PIC's Podcast "The Squeal" alongside Kendall Weger (PIC Technical Services) where they discussed the gilt development unit (GDU) as a large contributor to the success of the overall breeding program.

<https://www.pic.com/resources/the-squeal-201/> The successful introduction and retention of gilts through their early parities drives lifetime performance of the breeding herd and represents an opportunity to improve and enhance overall sow longevity. Jenny works to



support industry partners to put “Science into Practice”. She aids in implementing management practices to better capture genetic merit and improve efficiencies by providing technical advice and consultation focusing on gilt development. She also loves working with farm production data, through which powerful insights can be developed to make data-driven decisions that positively affect overall herd performance.

**Genetics and RNAi Technology in treatment of bees.** Seanna Wengryn explored her passion for genetics investigating host susceptibility to Bovine Respiratory Disease (see team news) and has continued the theme in her work with the Alberta Bee commission - see her article here [https://issuu.com/albertabeekeeperscommission/docs/abn\\_august\\_2024\\_v4](https://issuu.com/albertabeekeeperscommission/docs/abn_august_2024_v4).

**BovReg Final Meeting** - Graham Plastow attended the final meeting of this major international project funded by the European Commission (<https://bovreg.eu/>). The project, which included samples from the University of Alberta Kinsella crossbred herd at its centre, aimed to improve understanding of the genetics of cattle, focusing on particular functions in the cow genome that correspond to the diversity and adaptability of the physical characteristics (phenotypes) among different breeds of cattle. Gentec researchers included **Carolyn Fitzsimmons** and **ChangXi Li** at AAFC as well as **Leluo Guan, Paul Stothard, Ellen Goddard** and **John Basarab**. **Marzieh Heidaritabar** and Renzo Bonifazi (WUR) presented their latest results on Biology-driven Whole Genome Sequence genomic predictions for feed efficiency within and across-breeds. Videos and presentations from the conference are available at <https://bovreg.eu/bovreg-final-conference/>

**New Global Initiative on Ruminant Methane Genetics** - John Basarab and Graham Plastow attended the first meeting of this new initiative led by “old project” colleagues Roel Veerkamp and Birgit Gredler-Grandl at Wageningen University & Research. This initiative in full is the Global Livestock Genetics and Genomics Programme selecting for Reduced Methane Emissions in Ruminants. As Prof Veerkamp states “The only way to accelerate genetic progress and implement breeding strategies across the globe, both in developed and less developed regions, is through a global approach.” (<https://www.wur.nl/en/show/update-on-the-global-livestock-genetics-and-genomics-programme-selecting-for-reduced-methane-emissions-in-ruminants.htm>). We look forward to collaborating with this amazing initiative. Funding for the Wageningen lead effort is from the Bezos Earth Fund in collaboration with the Global Methane Hub and with the support of University Fund Wageningen.

**Forthcoming Events** more details below

**September:** the George Foxcroft Reproduction Workshop at the Allen D. Leman Conference

**October:** John Basarab at the Manitoba Beef & Forage Conference

**John Basarab at the Manitoba Beef & Forage Conference, 30th October**

Gentec CEO John Basarab will be presenting on the value of genomics for increasing the profitability and sustainability of the cow-calf herd. This will include Gentec tools for hybrid

vigour, genomic breed composition and the Replacement Heifer Profit Index Score that help increase calf crop percentage, and the Feeder Profit Index to help improve feed efficiency and carcass quality of slaughter cattle. Sampling and detailed cow-calf records are key and producers can join through Gentec's "Adoption of Genomic Tools" project that supports the cost of genotyping and how to get the most value from their genomic data.

See the September 2024 edition of Cattle Country by the Manitoba Beef Producers for more details <https://mbbeef.ca/news/>.

### ***Gentec's Jenny Patterson and Michael Dyck will be hosting the George Foxcroft Reproduction Workshop at the Allen D. Lemman Conference in September.***

The University of Alberta and University of Minnesota have jointly hosted the Lemman Pre-Conference Reproduction Workshop for 18 years. Each year we bring together world class speakers to address common industry concerns with the goal of putting "Science into Practice". The audience represents many of the decision makers from across the industry including production systems, veterinarians, nutritionists, industry partners and more. The success of the workshop is not only measured by the people in the room, but the number of sows that are influenced.

Last year, we renamed the workshop in honor of its founder, the late George Foxcroft. His early vision was to facilitate a workshop directed at leaders within the industry focused on driving improved breeding herd performance.

We are pleased to announce that once again we are hosting the "George Foxcroft Reproduction Workshop" at the 2024 Allen D. Lemman Swine Conference. The title of this year's workshop is "Managing the breeding herd in a changing environment".

*The management of an efficient breeding herd must take into consideration a variety of "environments", including the animals' physiological environment, the housing environment, the regulatory environment and the technological environment, just to name a few. These ever-changing environments that affect production are driving the need for more sophisticated and adaptable management practices. In this session we will bring together experts to discuss technical and practical considerations in dealing with these evolving environments and how to maintain an efficient breeding herd. This workshop is designed for swine producers, veterinarians, and industry professionals looking to enhance their knowledge and practices in swine breeding management. Don't miss this opportunity to learn from the best and network with peers in the industry.*

For more information and to register, please visit the conference website:

<https://lemanconference.umn.edu/>

**Topics & Speakers - Managing hyperprolific sows with a focus on the litter** *Fernando Bortolozzo, Universidade Federal do Rio Grande do Sul*; **Sweltering swine: How gestational heat stress shapes sow pregnancy and offspring development** *Jay Johnson, University of*

*Missouri; **Augmenting piglet survival as litter size increases** Mark Knauer, North Carolina State University (Sponsored by the National Pork Board); **The changing environment of boar studs** Darwin Reicks, Reicks Veterinary Research & Consulting; **Sow housing: Challenges and opportunities in a changing environment** Tom Parsons, University of Pennsylvania **20 Years of Group Housing at CVFF: Achievements and Key Lessons Learned.** Carlos Roudergue , Country View Family Farms; **Breeding herd labor retention in a changing environment** Jason Christensen, Eichelberger Farms Inc.; **Technologies for improving swine production** Suzanne Leonard, North Carolina State University (Sponsored by the National Pork Board)*

