

# ANIMAL TRACKS

A Newsletter from the Department of Animal Biosciences

## Inside...

Teaching Horses  
for BBRM-EQM

New Aquaculture  
Professor

Biochar and Feed  
Efficiency in Beef  
Production

Student and  
Postdoc Awards





# A Message from the *Chair*

Welcome to the Summer 2020 edition of 'Animal Tracks' – a newsletter dedicated to sharing news, awards and the many successes of the Department of Animal Biosciences. We received excellent feedback on the inaugural issue of the newsletter and are excited to continue providing updates on all of the goings-on in ABSc.

The past few months have certainly been difficult for everyone at ABSc, the University of Guelph and broader community. The COVID-19 pandemic has forced students, faculty and staff to quickly adapt to a new way of life, working and learning while in the face of constant uncertainty. I wish to thank all of you for your collective efforts in helping make these transitions to a 'new normal' as smooth as possible.

As we look to the Fall 2020 semester, the teaching and learning environment is set to look very different from what we are accustomed. At the time of this writing, ABSc is following guidance provided by university leadership and planning to offer a hybrid of online and face-to-face learning. I want to assure you that we remain committed to delivering a high standard of education while making the health, safety and well-being of our students staff and faculty a top priority. I am confident that our faculty and teaching support staff will bring their strong sense of commitment and boundless creativity to the development of innovative remote learning strategies that will keep students engaged and on the road to success. For the limited number of courses with in-person activities, all precautions will be taken with guidance and directives from Wellington-Guelph-Dufferin Public Health.

Our department is known globally as a leader in basic and applied research in

animal biosciences. With the scale down of research to essential lab activities, graduate students and postdoctoral researchers are facing a variety of difficulties from timely completion of their projects to financial concerns and an uncertain job market. I encourage all graduate students and postdoctoral researchers to stay connected with the Office of Graduate and Postdoctoral Studies for information regarding financial assistance, remote thesis and qualifying exam, skills development courses and other questions you may have regarding your studies. The university is currently working on a phase-in plan that will allow us to return to campus and enable researchers further access to facilities to scale up our research to our new normal.

Finally, I also would like to acknowledge the hard work of the dedicated staff in ABSc. Whether working on campus or remotely, their continued presence has ensured that the needs of students and faculty are met in a timely and efficient manner. In addition, I want to extend our great appreciation to the UofG custodial staff based out of ABSc. These dedicated employees have the difficult but essential task of ensuring students, faculty and staff have access to a clean and safe environment and we thank you for all you do.

Please be kind to one another and look out for your own mental and physical health. Remember- we're all in this together.

Sincerely,

Jim Squires  
*Professor and Chair  
Department of  
Animal Biosciences*



Photo: Martin Schwaibe

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#### ON THE COVER:

Prof. Wendy Pearson with Patriot, one of the new teaching horses for the BBRM-EQM program.  
Photo credit: Stephanie Stock

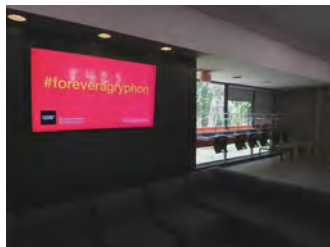
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ONTARIO  
AGRICULTURAL COLLEGE  
DEPARTMENT OF ANIMAL BIOSCIENCES

## Digital Signage



The ANNU building lobby underwent some changes this past Fall with the installation of two digital signage displays. The updated space aims to enhance engagement with students, faculty and visitors and provide

up-to-date information on news, events, research and current opportunities in ABSc.

A special thank you to ABSc IT support technician Dave Tocek and U of G's digital signage program lead Kevin Jinde for helping get this project up and running.

## Beef Research Centre Opens

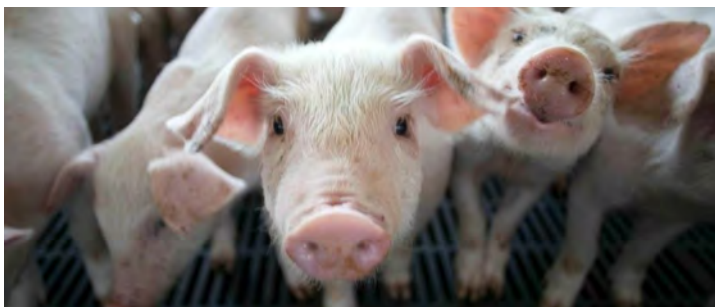


Beef cattle grazing at the new Ontario Beef Research Centre

Fall 2019 also saw the official opening of the new \$15.5-million dollar Beef Research Centre in Elora. With support from U of G, the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), the Agricultural Research Institute of Ontario (ARIO), Beef Farmers of Ontario (BFO) and Agriculture and Agri-Food Canada (AAFC), the state-of-the-art facility will allow U of G researchers to remain global leaders in research related to the health, welfare and production of beef cattle.

More information on some of the exciting research being carried out at the new facility can be found on page 17.

## New Swine Facility Announced



The Elora Research Station has been the site of massive expansion in recent years. In addition to the Ontario Beef

Research Centre, the Ontario Dairy Research Centre opened in 2015. Elora will now also be the site of a new swine research facility. The \$15-million dollar project, a partnership between the province, Ontario Pork and U of G, will replace the Arkell Swine Research Station in Guelph and is scheduled to be ready for operation in 2022.

The modern high-tech structure will allow researchers to continue making advances in swine health, nutrition, genetics, reproduction and consumer research.

## Horse Herd for BBRM-EQM

ABSc is bringing a teaching herd of eight horses to campus for exclusive use by students enrolled in the BBRM Equine Management Major.



Giselle and Zoe are two of the new teaching horses for BBRM-EQM.

Previously, laboratories and other experiential learning activities were conducted at off-site locations (eg. private farms, Arkell Research Station) and on campus using shared space between OAC and OVC. However, with priority use marked for OVC students and loss of learning time due off-site travel, a dedicated herd of horses will greatly benefit EQM students and ensure that the program remains a leader in the field of equine science.

Renovations to a section of existing stalls at the OVC Equine Sports Medicine and Reproduction Centre are now complete and the horses arrived in June.

A special thanks to Prof. Wendy Pearson for her passion and effort in this process. These new additions will greatly enhance the student experience.



## New Staff Member

This past fall ABSc welcomed Mary Arnie Cua (Arnie) in the main office. Arnie has a degree in Business Administration and brings experience in payroll, accounts payable/receivable and customer service. With her education and experience, she has been a valuable new member to the team.



## CHAIR REAPPOINTED



Prof. Jim Squires has been re-appointed as Chair of the Department of Animal Biosciences for a three-year-term beginning May 2020. He was named interim chair in 2014 and then appointed as chair in 2015.

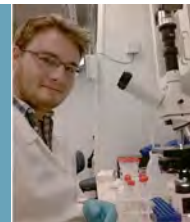
**"The review committee was pleased to recommend reappointment, and we are so grateful for Jim's readiness to lead," shares Rene Van Acker, dean of the Ontario Agricultural College. "We are facing unprecedented times and need the consistency and positivity that Jim is known for."**

Under his leadership Animal Biosciences saw considerable growth and renewal. Squires spearheaded significant facility improvements, including renovations to the abattoir and meat lab, renovations to support the equine program and new video conferencing capacity. Over the last six years, fourteen new faculty and eight new staff were hired.

Squires also led the re-naming of the department, from Animal and Poultry Science, and established an executive committee to support distributed leadership.

During his next term, Squires has concrete plans to work on key areas. He plans to support the continued growth of research revenue and capacity, assist in the development of new academic programs, and spearhead initiatives to support the organizational effectiveness of the department.

## COMING HOME: New Aquaculture Prof. Returns to U of G



We are pleased to welcome Dr. David Huyben as an Assistant Professor in Aquaculture. Huyben will begin his role in July 2020.

In this position, Huyben will establish a research program in a variety of disciplines relevant to the aquaculture sector in Ontario and Canada. In particular, he will build upon his expertise on microbial and nutrition interactions in salmonid species, with the aim of improving health and growth in captive fish. Huyben will also be responsible for both undergraduate and graduate education in the department and will continue the university's long-standing reputation for industry liaison and outreach.

“

David brings a wealth of experience that is relevant to our aquafood research, teaching and outreach disciplines," says Prof. Jim Squires, chair of the department. "His research training in water quality, fish physiology and nutrition, will bring an enhanced skill set to our department and help us build upon over three decades of aquaculture program development in OAC. We are excited to have him bring his enthusiasm and expertise to the Aquaculture Centre and the department.

”

Huyben's primary research focuses on the fish microbiome and how gut bacteria contribute to the growth and health of both farmed and wild fish, especially rainbow trout and Atlantic salmon. He is also interested in the health and immune effects of feeding sustainable ingredients to fish including probiotic yeast, omega-3 oils and insect meals.



Huyben received his B.Sc. (Agr.) and M.Sc in aquaculture from the University of Guelph and his PhD from the Swedish University of Agricultural Sciences in an aquaculture discipline. Since completing his PhD, Huyben spent the past few years as a post-doctoral researcher working in Sweden and Scotland.

## CODE OF PRACTICE FOR SALMON AQUACULTURE



Professor Rich Moccia is an invited member of the 'scientific and code committees' supporting the development of Canada's first "Code of Practice for Salmonid Aquaculture". The new code will be part of the suite of terrestrial livestock codes of practice written and published by the National Farm Animal Care Council of Canada. The aquaculture code will address production and management issues that impact animal welfare, and is designed to protect and highlight the importance of protecting animal welfare in farmed livestock. For more details see: <https://www.nfacc.ca/codes-of-practice/farmed-salmonids>.



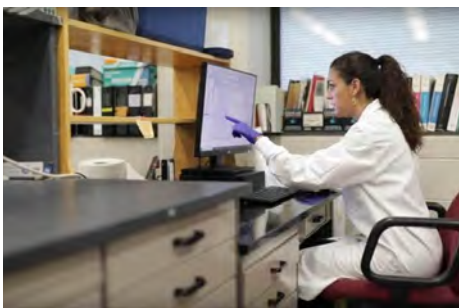


**Prof. Kate Shoveller** was one of two recipients of the inaugural Friend of Pet Food Award presented at the

American Feed Industry Association (AFIA) 2020 Pet Food Conference.

The award recognizes professionals “who go above and beyond for the pet food industry” with nominations submitted from industry and the academic community.

**Prof. Angela Canovas** was awarded the prestigious ASAS Early Career Achievement Award, a National Award from the American Society of Animal Science. Canovas was also one of five U of G researchers to receive a Research Excellence Award. The award program is sponsored by the Office of Research and the Office of the Provost to recognize outstanding achievements of recently tenured faculty members and raise their profile among external funding agencies.



**Prof. Eduardo Ribeiro** and co-authors received the 2019 Journal of Dairy Science-Highly Cited

award for their 2016 paper “Carryover effect of postpartum inflammatory diseases on developmental biology and fertility in lactating dairy cows”. The award recognizes research that has a significant impact on the dairy industry.



**Prof. Alexandra Harlander** has won the Poultry Science Association Early Achievement Award for Teaching. The biennial award recognizes the

achievements of PSA members in the early stages of their career in poultry-related teaching.



**Prof. Andy Robinson** was chosen by the Class of 2020 to give the Last Lecture. This annual event offers graduating students an opportunity to come together and

reflect upon their experiences at the University of Guelph, bring closure to the time that they have spent here, and celebrate their many accomplishments both inside and outside of the classroom.



**Prof. Michael Steele** has been named the recipient of the 2020 American Dairy Science Association (ADSA)

Foundation Scholar Award in Dairy Production. The award recognizes a young scholar from the Production Division and their potential in research and educational leadership, and to identify critical issues affecting the future of the dairy industry.



**Prof. Katie Wood** received the 2020 Young Scientist Award from the Canadian Society of Animal Science. The

award is given to CSAS members in recognition of their achievements as new and productive members of the research community.

Prof. Wood joined ABSc in 2016 and runs a successful research program focused on beef cattle nutrition. She has over 23-peer reviewed publications and abstracts and currently supervises 6 MSc thesis and 2 PhD students. Outside of her research, Katie breeds, owns and shows Simmental cattle and Polled Dorset sheep.

## Making Headlines



Prof. Dominique Bureau was one of the featured experts in an article from CBC Life on the nutritional value of insects as part of the human diet. Prof. Bureau was also featured on The Fish Site in an article detailing his presentation at the Alltech One Virtual Conference titled ‘On the Money: Optimizing Performance and Profit With Dynamic Nutritional Modeling’.



Prof. Katrina Merkies, faculty advisor for the Bachelor of Bio-Resource Management degree program in Equine Management, recently spoke with CBC news about some of the challenges facing the equine industry due to COVID-19.



Prof. Kate Shoveller also appeared in a CBC news story where she offered tips on what confused pet owners should consider when choosing the best food for their dog.

## Need an Expert?

ABSc faculty have expertise on a variety of topics related to livestock and companion animals including nutrition, breeding and genetics, behavior and welfare and physiology. Get in touch!

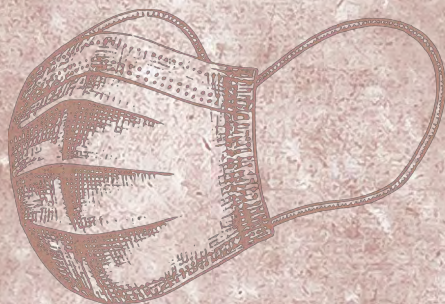




# FACULTY NEWS

## GRANT SUCCESS!

*Prof. Katrina Merkies received funding through the University of Guelph COVID-19 Research Development & Catalyst Fund for 'Resources for Horse Community Responsiveness to Pandemic Measures'. With matching dollars from ABSc, the funds provide financial support for two part-time summer research students to contribute to the project.*



## Where the Information Starts! What, Who, and Where

**Information for horse communities dealing with COVID-19  
from the Equine Information Source**

**By Prof. Katrina Merkies and Amanda St Onge**

**T**here is no doubt that the effects of the current pandemic instigated by COVID-19 are far-reaching. Horse owners are suffering anxiety through being unable to interact with their beloved horses and worried about their health and welfare; misinformation is fanning this anxiety; facility managers and caretakers have been scrambling to adapt routine care procedures both dealing with social distancing


and reduced workforce; equine professionals (i.e. veterinarians, farriers, etc.) are suffering economic loss alongside changes in delivery of emergency services; supply chain disruptions have led to uncertainty of acquisition of feed and bedding; abrupt unemployment of horse owners has resulted in economic hardships potentially causing the sale or disposal of horses, in turn resulting in the overburdening of horse rescues.



While the equine industry is not alone in facing unprecedented challenges, it is often forgotten, not being a “mainstream” agricultural industry. As the world scrambles to adjust to the new normal, research and information is being generated for many agricultural species but there is little assistance for the equine community. However, equestrian facilities cannot simply open the barn doors and return to business as usual. A phased -in approach with conscious regard to the health and welfare of both people and animals must be implemented.

The Equine Information Source is a team of students in the Bachelor of Bio-Resource Management (BBRM) degree program majoring in Equine Management who are working to provide information for equine communities dealing with COVID-19. In collaboration with Equestrian Canada, the EIS will assist in developing and disseminating a biosecurity protocol for return to business for equestrian facilities and a return to train and competition protocol for equine events. Additionally, the research team is creating evidence-based information for horse owners and facility managers through videos and interviews and webinars with subject matter experts to address questions such

as reducing costs while protecting horse health and welfare, downstream economic impacts of horse care and ownership, and overburdening of horse rescues. Information for horse communities around Canada can be found on the Equestrian Canada website <https://www.equestrian.ca/industry/about/covid-19-resources>.

The EIS is also working with Equine Guelph to provide resources to the horse community. As moderators on the Horse Portal community called For The Herd, they research expert advice and provide answers to questions on different aspects of the equine industry dealing with the COVID-19 pandemic. These topics include nutrition, health care, farrier, pasture management, safety and prevention, risk management, financial management, future development, and of course general questions that do not fall into any of these categories. This forum is available only to applicants of For The Herd through Ontario Equestrian. This initiative was created to help barn owners whose main business and income derives from riding lessons. For more information or to get involved with this program, go to [fortheherd.ca](http://fortheherd.ca). 



## The EIS TEAM

Our team consists of three student research assistants. Caleigh Copelin is a third year student who has been riding and working with horses for 11 years in the hunter/jumper industry. She has worked for private barns, lesson facilities and even an overnight summer horseback riding camp. Amanda St Onge is also a third year student who grew up training and rehoming wild mustangs with her family and working on her neighbour's cattle ranch in British Columbia. She has 19 years of experience with mostly western riding but has dabbled a bit in English. Elizabeth Crouchman is a graduating student who has been involved in the equine industry for approximately 14 years. She started out riding saddleseat but has recently made the switch to western riding. Supervising the students is Dr. Merkies, associate professor at the University of Guelph, and developer of the BBRM major, the only equine degree program in Canada. She teaches numerous equine undergraduate courses while engaged in research projects involving equine behaviour, welfare and management. She is also a board member with the Donkey Sanctuary of Canada and the International Society for Equitation Science.



Clockwise from top left: Amanda St Onge, Elizabeth Crouchman, Caleigh Copelin, and Dr. Merkies.



## GRANT SUCCESS!

ABSc faculty were also once again very successful in recent grant competitions offered by various funding agencies. Congratulations!



Prof. Elijah Kiarie

- Amino acid nutrition for optimal gut health and productivity in broiler chickens raised without antimicrobial growth promoters (OMAFRA Alliance)



Prof. Gregoy Bedecarrats

- Determination of the metabolic triggers responsible for sexual maturation in layer chickens and their relation to rearing environment and nutrition (OMAFRA Alliance)



Prof. Jennifer Ellis

- Optimization of pellet quality at the mill level using machine learning (OMAFRA Alliance)
- Hybridization of artificial intelligence and mechanistic models to create 'intelligent' precision nutrition models for next generation dairy production (OMAFRA Alliance)



Prof. Angela Canovas

- Applying genomics to identify markers associated with genetic resistance of sheep gastrointestinal nematode parasite infection (OMAFRA Alliance)



Prof. Julang Li

- Market validation via registration of EGF containing yeast fermentation product (OMAFRA Alliance)
- Characterization and validation of a potential probiotic with novel desired traits for animal application (OMAFRA Alliance)



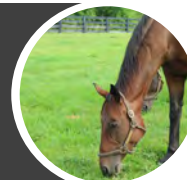
Prof. Lee-Anne Huber

- Pre- and post-weaning nutrition strategies to improve growth performance, gut health and robustness of pigs after weaning (OMAFRA Alliance)
- Development of evidence-based feeding strategies for lactating sows using novel and evolving feeding technologies (OMAFRA Alliance)



Prof. Wendy Pearson

- Fatness, Fitness and Affliction: are there inflammatory consequences to exercise when you're a fat pony? (NSERC Discovery)



Prof. Trevor DeVries

- Enhancing digestion efficiency, weaning success and welfare of dairy and veal calves through provision of a novel calf starter (OMAFRA Alliance)



Prof. Michael Steele

- Impact of prophylactic antimicrobial use in calves (OMAFRA Alliance)
- Use of bovine colostrum as a treatment for diarrhea in calves (OMAFRA Alliance)
- How does colostrum insulin content alter neonatal calf metabolism, skeletal muscle development, and gastrointestinal tract maturation? (NSERC CRD)
- Impact of prepartum energy intake on colostrum quality and calf performance (Beef Cattle Research Council)





The following is a sampling of recent publications from ABSc. For a more complete list, please visit the faculty member profile pages at: [animalbiosciences.uoguelph.ca/abscfaculty](http://animalbiosciences.uoguelph.ca/abscfaculty).

van Staaveren N, Leishman EM, Adams SM, Wood BJ, **Harlander-Matauschek A, Baes CF. Housing and Management of Turkey Flocks in Canada.** *Animals (Basel)*. 2020 Jul 8;10(7):E1159. doi: 10.3390/ani10071159.

Parsons SD, **Steele MA**, Leslie KE, Renaud DL, **DeVries TJ. Investigation of weaning strategy and solid feed location for dairy calves individually fed with an automated milk feeding system.** *J Dairy Sci*. 2020 Jul;103(7):6533-6556. doi: 10.3168/jds.2019-18023.

Arrazola A, **Merkies K. Effect of Human Attachment Style on Horse Behaviour and Physiology during Equine-Assisted Activities-A Pilot Study.** *Animals (Basel)*. 2020 Jul 8;10(7):E1156. doi: 10.3390/ani10071156.

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Monckton V, van Staaveren N, **Harlander-Matauschek A. Broiler Chicks' Motivation for Different Wood Beddings and Amounts of Soiling.** *Animals (Basel)*. 2020 Jun 16;10(6):E1039. doi: 10.3390/ani10061039.

Maltecca C, Tiezzi F, Cole JB, Baes C. **Symposium review: Exploiting homozygosity in the era of genomics-Selection, inbreeding, and mating programs.** *J Dairy Sci*. 2020 Jun;103(6):5302-5313. doi: 10.3168/jds.2019-17846.

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Makanjuola BO, Miglior F, Abdalla EA, Maltecca C, Schenkel FS, Baes CF. **Effect of genomic selection on rate of inbreeding and coancestry and effective population size of Holstein and Jersey cattle populations.** *J Dairy Sci*. 2020 Jun;103(6):5183-5199. doi: 10.3168/jds.2019-18013.

Mohammadigheisar M, Shouldice VL, **Torrey S, Widowski T, Kiarie EG. Research Note: Comparative gastrointestinal, tibia, and plasma attributes in 48-day-old fast- and slow-growing broiler chicken strains.** *Poult Sci*. 2020 Jun;99(6):3086-3091. doi: 10.1016/j.psj.2020.01.032.

Moore SM, **DeVries TJ. Effect of diet-induced negative energy balance on the feeding behavior of dairy cows.** *J Dairy Sci*. 2020 May 28;S0022-0302(20)30402-1. doi: 10.3168/jds.2019-17705.

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Fonseca PAS, Suárez-Vega A, **Cánovas A. Weighted Gene Correlation Network Meta-Analysis Reveals Functional Candidate Genes Associated with High- and Sub-Fertile Reproductive Performance in Beef Cattle.** *Genes (Basel)*. 2020 May 12;11(5):543. doi: 10.3390/genes11050543.

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\*ABSc faculty/emeriti in bold

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# Catching Up with Amber Zupan

Last summer, OAC profiled 4th year animal biology student Amber Zupan where she discussed everything from why she came to UofG to finding her passion for working with livestock. We recently caught up with Amber to find out how her last year of undergrad went, the impact of the COVID-19 pandemic on her studies and what lies ahead.

## What did you enjoy most about your final year?

In my final year, I took some very interesting courses like dairy nutrition, animal breeding methods, and animal housing. Some of my favourite memories from fourth year are all of the events that I did with my OAC class year, the 2020 Buffalo! These included a Dairy Trip, where we visited dairy farms across the Maritimes, and a Grad Trip to Panama.

## The COVID-19 pandemic has dramatically altered the world we live in. How did the pandemic impact your winter semester?

The shift from in class to online learning happened very fast, and I had a hard time adapting at first. I typically try to take in class courses since I learn better through a lecture format rather than teaching myself the content so the switch definitely took some getting used to. All of my professors handled the switch very well and checked in with us

to make sure that we were all adapting to the new learning style. I did find that a lot of the professors had different teaching styles ranging from posting PowerPoints with a voice over lecture, whereas other professors set up a video call allowing us to watch lectures from home. While I did find the switch difficult at first, the university itself, professors and teaching assistants all went the extra mile to ensure everyone was able to keep up with and understand the content.





Photo Credit: Amber Zupan.

**How did you stay in touch with friends during the pandemic and have you been able to celebrate graduation?**

My friends and I all kept in touch through social media. We made a point to try and have a video chat at least once a week through zoom although recently it's been harder to get everyone together since were all back to work!

I have yet to celebrate as I'm waiting for my degree to come in the mail, making it feel more real! I definitely will celebrate more with my friends who have also graduated and hope to attend a future ceremony to make sure I get the experience of walking the stage!

**Your post-grad plans were to continue your studies in ABSc and complete an MSc. Any change in these plans?**

As of now, my plans have still stayed the same but with a different deadline. I will be doing my Masters of Science with Dr. Katie Wood in Beef Nutrition, but I am currently waiting to hear when my start date will be as it may not be this fall. I am really looking forward to continuing my studies in the Animal Biosciences Department!

**Where would you like the MSc to take you career-wise?**

I hope one day to be a ruminant nutritionist while also still being able to partake in research! However, I am really open to any opportunities as I have had plans all through undergrad that have constantly changed (for the better) and given me incredible opportunities that I never would have dreamed of.

**Last summer you were working as a Research Assistant with Prof. Katie Wood. How have you been keeping busy this summer?**

This summer I am fortunate enough to be able to work for Grober Nutrition as a Young Animal Technician. I am working on the Canada's Outdoor Farm Show grounds helping to run a research trial working with

calves on milk replacer. My daily tasks include monitoring calf health, ensuring they receive proper nutrition and general tasks like cleaning of pens, recording data and more! I couldn't ask for a better job! While the pandemic pushed our start date by about a month, I was happy to get started and have really been enjoying the job. I have also had the opportunity to continue working on the dairy farm I have been at the past few years, working with jersey's and helping with farm chores!

**A new cohort of Animal Biology students will be arriving (virtually) this fall. Any advice for first-year students enrolled in the ABIO program?**

One of my biggest tips would be to come into the program with an open mind and be willing to partake in new experiences. I came into UofG with a set plan, and my undergrad career hasn't even slightly followed that path. It is okay to stray from your original plans and change where you thought you would end up. I came into the program expecting to work with companion animals and have come out of university with a passion for working with livestock. Be open minded, always ask for help if needed, and most importantly, get involved!

Speaking of being getting involved, you participated in a variety of activities on campus. Any tips for students on how to get involved and make the most of their time at UofG?

Getting involved on campus is one of the best ways to make sure that your university career is one to never forget! First and foremost, if you are in a program that falls under the Ontario Agricultural College I would highly recommend going out to your class year events to have fun and meet other people in the same programs or similar programs to you. A facebook page will be created for your year and will be the main source of information for all your class events and details for class executive elections, choosing your mascot, colours and class president! There are also so many other clubs on campus that it is very unlikely that you won't find one that matches your interests. Gryphlife ([gryphlife.uoguelph.ca](http://gryphlife.uoguelph.ca)) is a university website that lists all the clubs and events going on!



**What advice would you give to new students about learning online?**

While online learning may be a learning curve for you at first, it is super important to ask questions or reach out for help if you need it. If there's one thing that really stuck with me when I visited UofG in Grade 12 and witnessed all throughout my undergrad is that everyone wants you to succeed. Professors love talking to students and helping them to better understand a concept, and even teaching assistants will go the extra mile to make sure you achieve a full understanding. Never be afraid to speak up and ask for help!

**Last summer you were raising a chocolate lab named Carlton through Autism Dog Services. How is Carlton these days?**

Carlton is doing amazing! While he is no longer in the service dog stream due to some health issues, I am so pleased to have adopted him and have him in my life permanently. He is living a happy and healthy life, full of off leash walks, swimming and playing with friends. He also currently has a friend staying with us. We have recently invited Skye into our home to finish her service dog training (also through Autism Dog Services) with us for the next few months. She is a 1 year old black lab that is full of personality and just adores people and other dogs. We will soon be sending her off to advanced training and will hope that she will pass allowing her to spend her days working with a child with autism!

**Can you sum up your experience as an undergrad at Guelph in one word or sentence?**

One word definitely isn't enough to summarize my time at Guelph! Completing my undergrad at the University of Guelph has been some of the best years I could've ever asked for, filled with unique learning experiences, and a community that has provided me with memories that will last a lifetime!

Photo Credit: Amber Zupan.



Photo Credit: Tamara Hamilton.







ABSc Graduate Students were recently featured on OAC's new 'The Why and How Podcast', a series featuring interviews with graduate students, postdocs and professors that explores issues related to agriculture, food, and the environment.

In episode 6 'Why are Health Trends Stressing out Chickens?', PhD candidate Rosemary (Rosie) Whittle discussed her research in Prof. Tina Widowski's lab examining the effects of omega-3 fatty acids on the behaviour of laying hens and broiler (meat) chickens.

Increasing evidence suggests omega-3s have a variety of health benefits in humans including potential positive effects on brain health. However, given that developing chick embryos absorb ~95% of the phospholipid content of the egg yolk, the addition of omega-3s to the maternal diet may impact offspring brain function and behavior.

Rosie's early results in laying hens has revealed offspring from mothers fed an omega-3 enriched diet (linseed or algae) vocalised more frequently during social isolation than those from mothers on the control diet. Interestingly, when comparing different strains of laying hens, ISA Browns vocalized more frequently than Shave

Whites. This suggests increased levels of omega-3s in the developing embryos can indeed influence behavior and that these effects may be strain specific.

In episode 9, 'How Can Dairy Genomics Fight Climate Change?', recent PhD graduate Dr. Adrien Butty and current PhD candidate Kerry Houlihan sat down to discuss their work in applying genomics to breed cattle with improved feed efficiency and reduced methane emissions.

Under the guidance of Profs. Christine Baes, Flavio Schenkel and Filippo Miglior, Adrien and Kerry are important contributors to a large international research initiative called the Efficient Dairy Genome Project (EDGP). Tasked with analyzing large datasets comprised of millions of data points, they hope to identify genetic markers that can then be used to select dairy cattle with desirable traits that support more sustainable and efficient dairy agriculture.

To learn more about these and other projects being carried out at OAC you can find the Why and How Podcast at [uoguelph.ca/oac/research/why-how-podcast](http://uoguelph.ca/oac/research/why-how-podcast).



“

*I like to know that what I'm doing actually might have a difference and that I'm in a position here where it maybe could influence commercial poultry welfare.*

—Rosie Whittle

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“

*There's a big push for farms to become more sustainable and more efficient. We want to see the industry improve every year. To be better, to do better, to be more sustainable, also to be more efficient.*

—Kerry Houlihan

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## Are You A Cat Whisperer?

A recent study led by ABSc postdoctoral researcher Dr. Lauren Dawson and Prof. Georgia Mason (now in the Department of Integrative Biology) delved into the mysterious world of cats to find out whether people can accurately interpret mood based on different facial expressions.

Published in the journal *Animal Welfare*, the study received international attention from over 50 news outlets including the *Washington Post*, *Daily Mail*, *CBC*, *CTV*, *Science Daily* as well *Science*, one of the world's top academic journals.

The large study found that women as well those with professional experience with cats (eg. veterinarians) were more successful at identifying feline emotions from cats' faces.

A companion piece written by Dr. Dawson 'Are you a cat whisperer? How to read Fluffy's facial expressions' was also published in *The Conversation*.



In photo: Dr. Lauren Dawson with Louie, who was used in the study. Credit-Susan Dawson.

Journal Reference: L.C. Dawson et al. 2019, Humans can identify cats' affective states from subtle facial expressions. *Animal Welfare* 28 (4): 519-531; doi: 10.7120/09627286.28.4.519





## STUDENT & POSTDOC NEWS

The Department of Animal Biosciences created six new awards to recognize their graduate students and post-doctoral fellows. Each award is worth \$500 and recognizes a variety of achievements



From top left: Dave Seymour, Charlene Hanlon, Dr. Stephane Lam, Dr. Pablo Fonseca, Samantha Dixon

From bottom left: Andrea Polanco, Bruna Mion, Dr. Mohsen Mohammadigheisar, Dr. Aroa Suarez-Vega, Andrea Polanco, Midian Nascimento, Dr. Emihimad Abdalla

### External Awards



Postdoctoral fellow Nienke van Staaveren was awarded an incentive prize as part of the Marina van Damme Fund from Wageningen University and Research. The program supports talented female WUR alumni working towards the next step in their career progression.

Dr. van Staaveren obtained a BSc and MSc in Animal Sciences from WUR. This was followed by a PhD in Veterinary Medicine from University College Dublin and Teagasc – the Irish Agriculture and Food Development Authority, with a focus in pig health and welfare. In 2017, she joined Prof. Alexandra Harlander's lab to work on an epidemiological study regarding feather pecking in Canadian laying hens for which she received a Mitacs Elevate Fellowship. Recently, Nienke has joined Prof. Christine Baes's lab to manage the Genomic Applications Partnership Program (GAPP) turkey genomics project.



Sudanshu Sudan, a PhD student working with Prof. Julang Li, has been awarded first-place in the Nutreco Young Researchers Prize competition. The prize "acknowledge and champion the most promising research by PhD and post-doctorate students working around the world across animal, aquaculture and veterinary sciences."

Sudhanshu graduated from Faculty of Agriculture, Dalhousie University Nova Scotia with a MSc degree in 2013. He has been involved in interdisciplinary research areas including cell biology, toxicology and cancer biology and has worked as a lead technologist in Trouw Nutrition's R&D lab.

The focus of his current research is to assess the role of microbes isolated from novel niche environments in gut health and function, stress response and microbiome modulation in piglets.



MSc student Renee Hilker, also working with Prof. Julang Li, was awarded an Ontario Graduate Scholarship for the coming year.

Renee is the recipient of numerous other academic awards including a Queen Elizabeth II Graduate Scholarship in Science and Technology that provided support for her first year in the MSc program. As an undergraduate at the University of Waterloo, Rene was also awarded a President's Scholarship, Science Scholarship of Excellence and NSERC Undergraduate Student Research Award.

Renee's completed an undergraduate degree in Zoology/Animal Biology and her current research interests include investigating the role of microRNAs in oocyte development using the pig as a model.

# STUDENT AWARDS

Congratulations to all recipients of the 2019 OAC Scholarships and Awards including those from ABSO. We would also like to acknowledge the generous support of alumni, donors and industry partners. Thank you!

## UNDERGRADUATE

STUDENT NAME	PROGRAM	AWARD RECEIVED	DONOR
Kelly Chen	BSCH.ABIO	DOROTHY WRIGHT ENTRANCE AWARD	Mr. R. Ivor Wright
Taylor Flewwelling	BSAG.ANSC	NORMAN MCCOLLUM DAIRY SCHOLARSHIP	The late Norman E. McCollum and the OAC Alumni Foundation
Laura Hoffer	BSAG.ANSC	ROBERT THOMPSON SCHOLARSHIP	Mrs. Sarah Jane Fiske
Jacob Maxwell	BSCH.ABIO	FRANK AND GERTRAUDE HURNIK SCHOLARSHIP	Gertraude and the late Frank Hurnik
Jacob Maxwell	BSCH.ABIO	CHRISTINA VICTORIA KENNY MEMORIAL SCHOLARSHIP	Clare and Stirling Kenny
Rebecca Randle	BSCH.ABIO	DR. RALPH AND JOANNE WATT SCHOLARSHIP	Dr. Ralph and Joanne Watt Foundation
Emily Reardon	BBRM.EQM	MACSON SCHOLARSHIP	MacLaren Property
Emily Reardon	BBRM.EQM	MASSEY FUND TRAVEL SCHOLARSHIPS	OAC Awards Committee
Emily Reardon	BBRM.EQM	GEORGE RAITHBY MEMORIAL TRAVEL GRANT	OAC Alumni Foundation
Natalia Savor	BSAG.ANSC	ONTARIO AGRIBUSINESS ASSOCIATION SCHOLARSHIP	Ontario Agri Business Association
Natalie Templeton	BSAG.ANSC	PARRISH AND HEIMBECKER SCHOLARSHIP	Friends and Associates of the late Herb Heimbecker
Chloe Vainqueur	BBRM.EQM	OAC'49 BACHELOR OF BIO-RESOURCE MANAGEMENT-EQUINE MANAGEMENT SCHOLARSHIP	OAC Class of '49 and the OAC Alumni Foundation
Kathryn West	BSCH.ABIO	DAVID F. BOYES APICULTURE SCHOLARSHIP	The Apiculture Club
Kathryn West	BSCH.ABIO	TORONTO DISTRICT BEEKEEPERS' ASSOCIATION SCHOLARSHIP	Toronto District Beekeeper's Association
Karenna White	BBRM.EQM	OAC'49 BACHELOR OF BIO-RESOURCE MANAGEMENT-EQUINE MANAGEMENT SCHOLARSHIP	OAC Class of '49 and the OAC Alumni Foundation

## GRADUATE

Reza Akbari Moghaddam Kakhki	PHD	CRAIG HUNTER POULTRY SCIENCE GRADUATE SCHOLARSHIP	Family and friends of the late Craig Hunter Sr.
Lucas Alcantara	PHD	HAMILTON MILK PRODUCERS ASSOCIATION SCHOLARSHIP	Hamilton Milk Producers' Association
Kaitlin Doering	MSC	SODEN MEMORIAL SCHOLARSHIPS IN AGRICULTURE	The estate of Edythe P. Soden
Renee Garant	MSC	W.R. GRAHAM MEMORIAL AWARD	W. R. Graham
Renee Garant	MSC	JOHN S. MARTIN MEMORIAL SCHOLARSHIP	The estate of Lillian E. Martin
Renee Garant	MSC	SODEN MEMORIAL SCHOLARSHIPS IN AGRICULTURE	The estate of Edythe P. Soden
George Hall	PHD	KING COLE DUCKS LTD. POULTRY SCHOLARSHIP	King Cole Ducks Ltd.
George Hall	PHD	LARRY MILLIGAN RESEARCH TRAVEL GRANT	Family, friends and colleagues of Dr.
Charlene Hanlon	PHD	W.R. GRAHAM MEMORIAL AWARD	W. R. Graham
Renee Hilker	MSC	SODEN MEMORIAL SCHOLARSHIPS IN AGRICULTURE	The estate of Edythe P. Soden
Kerry Houlahan	PHD	BRIAN W. KENNEDY MEMORIAL SCHOLARSHIP	Dr. Brian W. Kennedy
Tanka Khanal	PHD	ANIMAL BIOSCIENCES LEADERSHIP SCHOLARSHIP	Department of Animal Biosciences
Tanka Khanal	PHD	SCHNELLER AND SUMMERS AWARD	Dr. John D. Marion (Schneller)
Jennifer MacNicol	PHD	ANIMAL BIOSCIENCES ACADEMIC SCHOLARSHIP	Department of Animal Biosciences
Audrey Martin	PHD	FRANK WALLACE COCKSHUTT	Frank Wallace Cockshutt
Claire Mindus	PHD	FRANK AND GERTRAUDE HURNIK SCHOLARSHIP	Dr. Frank and Gertraude Hurnik
Claire Mindus	PHD	JAMES A. MCGRATH MEMORIAL SCHOLARSHIP	Family and friends of James A.
Valerie Monckton	MSC	DEBORAH WHALE-POULTRY INDUSTRY COUNCIL GRADUATE	Poultry Industry Council
Sarah Parsons	PHD	CANADIAN DAIRY COMMISSION DOCTORAL SCHOLARSHIP	Canadian Dairy Commission
Anna Schwanke	MSC	CANADIAN DAIRY COMMISSION M.SC. SCHOLARSHIP	Canadian Dairy Commission
Sudhanshu Sudan	PHD	JAMES HARRIS SCHOLARSHIP	James Harris Foundation
Tiana Sullivan	MSC	TORONTO MILK PRODUCERS SCHOLARSHIP FOR ANIMAL	Toronto Milk Producers Association
Aizwarya Thanabalan	PHD	EGG FARMERS OF ONTARIO THOMAS R. GRAHAM	Eggs Farmers of Ontario

**Undergraduate:** BSCH.ABIO (Bachelor of Science, Honours-Animal Biology), BSAG.ANSC (Bachelor of Science Agriculture-Animal Sciences), BBRM.EQM (Bachelor of Bio-Resource Management Equine Management). **Graduate:** MSc (Masters of Science), PhD (Doctor of Philosophy)



# Towards Sustainable Beef in the 21st Century

Projects are up and running at the new Ontario Beef Research Center. Beef nutrition expert Prof. Katie Wood and her research team are making use of the new facilities to develop strategies that will help the beef industry meet increasing demand while reducing the carbon footprint associated with beef production.

## Performance and Environmental Benefits of Biochar Supplementation in Beef Cattle Grazing Systems

By Emily Conlin

Charcoal has a long history of use in human and veterinary medicine as a treatment for acute poisonings. But can charcoal also be used to help livestock become more eco-friendly? The Wood lab has set out to determine whether a charcoal-like substance can be used as a feed supplement to reduce the environmental footprint of beef cattle production systems.

**A**gricultural activities account for a significant percentage of global greenhouse gas (GHG) emissions. In the livestock sector, methane represents a potent GHG generated as a by-product of microbial fermentation in the gut of ruminants. The gaseous waste is then released into the atmosphere by eructation (better known as *burping*).

In Canada, some progress has been made towards reducing GHGs released by livestock. For instance, Canadian beef production has one of the lowest emission rates per unit production in the world at 12.0kg CO<sub>2</sub> equivalent per kilogram of weight. As the demand for meat protein continues to rise, a further reduction in GHG emissions remains a top priority for sustainable beef production.

Genetic selection, forage quality and novel feed additives are some areas of research being explored in an effort to

combat ruminant methane production. Dietary manipulation represents a particularly attractive mitigation strategy as it can be rapidly implemented to beef producers.

The last decade has seen tremendous interest and research on the potential benefits of biochar in halting climate change. Although definitions vary, biochar is simply a form of charcoal produced from pyrolysis (thermal decomposition) of sustainable bio-mass materials that is intended primarily for agriculture purposes.



Biochar has a range of agricultural applications due to its high adsorptive capacity, including soil remediation, coop litter hygiene and manure composting. As a feed supplement, biochar may improve animal growth and performance by trapping toxins, increasing nutrient efficiency and reducing enteric methane production. Manure quality may also improve through increased retention of organic and mineral compounds with high fertilizing properties.

Continued on next page →



Exactly how biochar may lead to reduced methane release in ruminant animals is unclear. Studies in soil have shown that the addition of biochar provides a more favourable environment for the growth of certain microbial groups (methanotrophs) that readily metabolize methane for energy. Whether a similar process occurs in ruminants is an area of active research.

To date, only a handful of studies have examined the potential benefits of biochar feed additives in cattle. Experiments carried out using in vitro rumen models (eg. fermentation bottles, filter bags) have demonstrated that biochar can effectively reduce methane release. A small number of in vivo studies in beef cattle have also been published but with conflicting results. Therefore, more research is needed to determine whether biochar represents a useful and practical strategy for mitigating enteric methane production.

In the first phase of the project at the Ontario Beef Research Centre (OBRC), a 3-month trial was carried out to evaluate the effect of different doses of a pine-based biochar on cow performance, methane emissions and manure nutrient composition. Using this optimized dose, a more comprehensive study began this July to evaluate the effect of biochar supplementation on a larger group of cows housed on pasture for four months.

Overall, this research may provide beef cattle producers a new feed additive that has the potential to reduce methane emissions while simultaneously improving the nutrient value of manure.



In photo: Cows line up to use the GreenFeed machine. Credit: Lauren Finlay

## Using Mathematical Models to Estimate Feed Efficiency in Beef Cows on Pasture Using Methane Emissions

By Lauren Finlay

Feed efficiency is an economically important trait that is difficult to measure in a pasture setting. The Wood lab is investigating whether a modelling approach may offer a potential solution.

**B**eef cows in Canada are typically kept on pasture which is the most economical strategy for the producer. However, compared to drylot production, raising grass-fed beef cattle brings challenges to the observation and selection of economically important performance traits such as feed efficiency. Animals that are 'feed efficient' require less feed for equal or better production performance than their inefficient counterparts. An added benefit of improved feed efficiency is reduced enteric fermentation resulting in lower levels of methane production. Thus, selection of more feed efficient animals not only has cost benefits for beef production but also serves as an indirect approach to mitigating livestock GHG emissions.

Feed efficiency (FE) can be calculated using the feed conversion ratio (FCR). FCR refers to the ratio of feed intake to production traits such as growth or weight gain over gestation (ie. feed intake: gain). By monitoring the relationship between enteric gas emissions, feed intake, and body condition score, mathematical models can be built to estimate feed efficiency in cattle based on methane production and gas exchange. These models will then be used to investigate the relationship between FE and methane production in drylot and pasture-fed animals.

Overall, the goal of this research is to determine whether a modelling approach has value in predicting FE and whether this data can be translated to beef cows on pasture. Together with the biochar study, this research will provide novel data on GHG emissions in beef cattle in Ontario and contribute to the development of strategies that support environmentally sustainable beef production.

### The Ontario Beef Research Centre: A World-Class Facility

- Insentec feeding system for individual feed intake and feeding behaviour data collection.
- Essential to determine if feeding biochar had any effect on feed intake and for calculating feed efficiency.
- C-Lock GreenFeed trailers for measurement of methane emissions in an applied setting on pasture.
- Top-notch handling facility for data collection (eg. body weight, backfat ultrasound measurements, body condition scores, fecal and rumen fluid samples).
- 200+ acres of new pasture and new handling facilities on pasture to increasing research capacity on grazing systems.



# IN MEMORIAM

The Ontario Agricultural College and Department of Animal Biosciences extends sincere sympathies to the family, friends and colleagues of Bill Szkotnicki, who passed away on September 18, 2019. Bill was the Manager of IT and Computing in ABSc and his loss is deeply felt by all those who knew him.

A long-standing professional staff member of the department, Bill first came to the University of Guelph in 1974 after graduating with a degree in Mathematics and Computer Science from the University of Waterloo.



Bill was always generous with his time and helped nearly everyone in the department. Not only was he responsible for building and managing the large computing infrastructure of the department but Bill was also a key contributor to countless research projects. From solving complex statistical problems to applying his extensive knowledge of programming languages towards software creation, Bill was integral to the everyday functioning of ABSc.

Just prior to his passing he received over 100 emails from past members of the department from New Zealand to Europe.

Bill will be remembered by work colleagues for his deep dedication and devotion to family and friends, his love of gardening, contributions to United Way events and the hamburgers he used to cook after the annual ABSc soccer match.

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*I have greatly enjoyed my career in the department and hope that ABSc will continue to lead the way with its research and teaching activities and I have been very proud to be a small part of this great ship. I am confident that the future will be bright in all of our disciplines and species. Keep ABSc strong and great!*

*-Bill Szkotnicki*

”

A Celebration of Life of family, friends and colleagues was held on campus in late October.

In memory of Bill, donations to the Community Foundation) would be appreciated. Peter was the beloved son of Bill and Jean and passed away in 2011. The Peter Szkotnicki Legacy Fund provides support for charitable activities or organizations that are dedicated to improving the quality of life in the Guelph community, and more specifically, in support of mental health programs targeting youth.

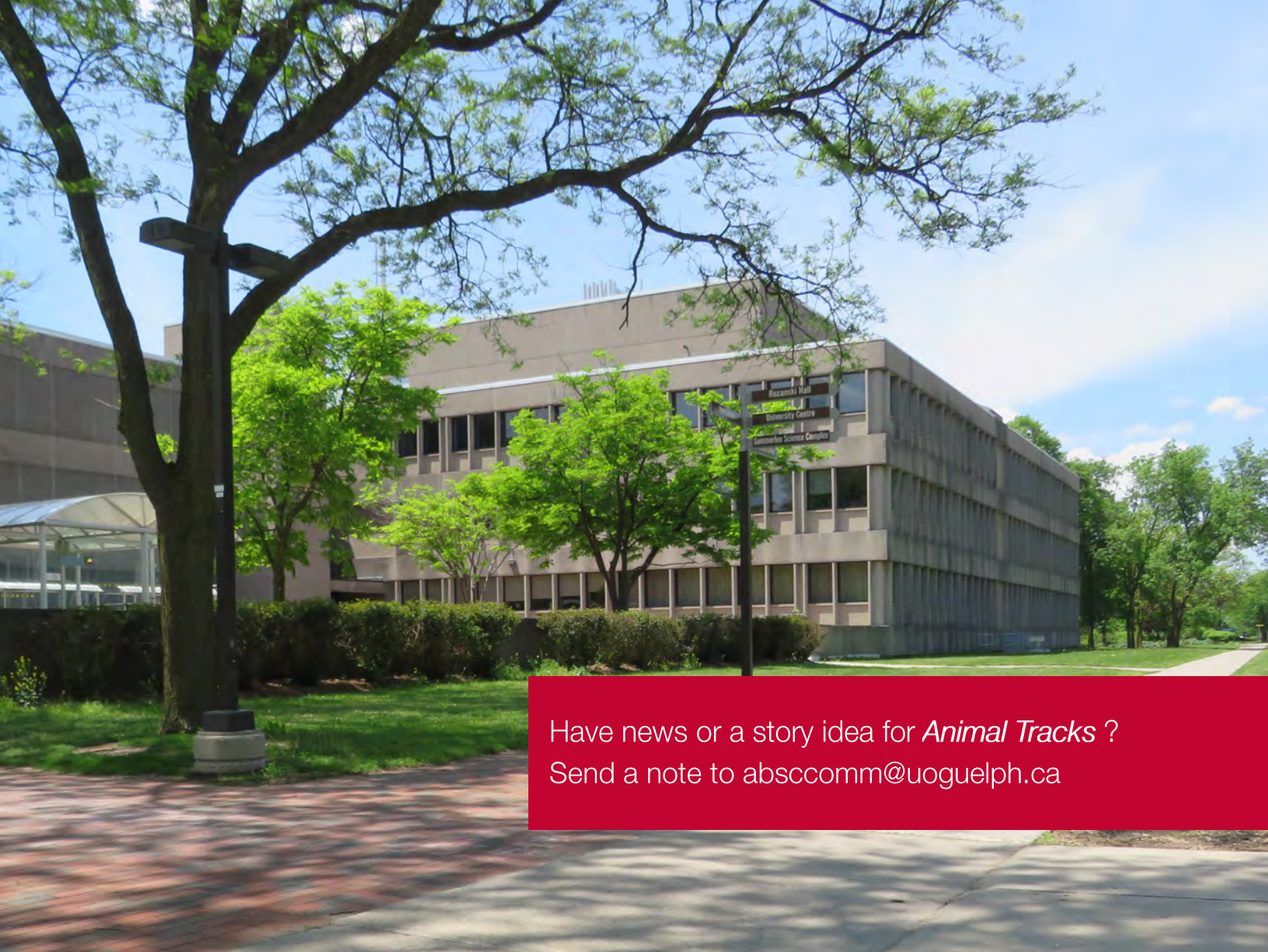


It is with sympathy that we share the passing of Dr. Larry Milligan on May 22, 2020. Dr. Milligan was a long-standing and deeply respected member of the University of Guelph community. Joining the university in 1986 as Dean of Research, he then became the first Vice-President of Research in 1990. Following the completion of his tenure, Dr. Milligan returned to teaching and research in animal nutrition as a faculty member in the Department of Animal Biosciences (formerly the Department of Animal and Poultry Sciences).

The Larry Milligan Research Travel Grant was established in 2001 in recognition of his outstanding leadership in research activities. With donations from family, friends and colleagues, the grant continues to be awarded each year to a student enrolled in ABSc who will be attending a conference to present their research findings.

..... ♦ .....  
We would also like to send our deep condolences to the family of Dr. Gerald Winston Friars, who passed away on June 19, 2020. Dr. Friars was a faculty member in Animal and Poultry Sciences from 1963-1985 and then served in the role of Chief Scientist at the Atlantic Salmon Federation from 1985-1995. Throughout his career, Dr. Friars made significant contributions to poultry science and quantitative fish genetics that continue to be influential in the fields today.





Have news or a story idea for *Animal Tracks* ?  
Send a note to [absccomm@uoguelph.ca](mailto:absccomm@uoguelph.ca)



## ONTARIO AGRICULTURAL COLLEGE

DEPARTMENT OF ANIMAL BIOSCIENCES