



# Equine Guelph



Annual Report  
May 1, 2019 – April 30, 2020

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## Executive Summary

The year of 2019-20 will be remembered for many things, given the outbreak of the pandemic and the resulting disruption and challenges in every facet of life, however, the priorities for coming out of this remain the same – building a foundation for sustainability and supporting the social license to operate in the equine industry. We are seeing increasing calls around the world to support animal health and welfare in different ways than has been acceptable in the past and that can be expected to continue. The global equine industry is subject to those pressures as we are here in Canada.

A proactive approach that sees industry and academia working together for research and education/training is an important part of the sustainability strategy going forward. Equine Guelph's research program, funded by the equine industry, is a strong statement that the industry is working together on the research needs to support health and welfare. Within the education programs, the partnerships with our industry demonstrate a strong commitment to providing opportunities for ongoing updating of evidence-based information and education for all levels of the industry, for both the racing and non-racing sectors. With a higher awareness of best practices and prevention, we all win, including the horses.

In this, our 17th year of operation, Equine Guelph continues with its unique partnership of the equine industry in Canada and the University of Guelph.

The research program of Equine Guelph continues to fund areas of priority as designated by the Research Committee with benefits for racing and non-racing sectors for health and welfare. Funding is received from the racing sector through Ontario Racing and the Horsemen's Benevolent and Protective Association of Ontario (HBPA), and through the non-racing sector from Ontario Equestrian with their innovative membership donation program. There are further details on the research programs in this report, and the number of publications and national/international speaking engagements for our researchers is testimony to the research excellence that is gained in this partnership. The members of the Equine Guelph Research Committee spend many hours each year reviewing the research proposals to ensure industry priorities are being supported and final decisions also include the external peer review assessments to ensure quality.

In 2019-2020, an allocation of \$379,000 was made to new and continuing projects. Further details on these and other studies are provided in the Research section and Appendices.

New initiatives were once again launched for the education program as important opportunities for learning continue to be offered to the equine industry, in Canada and Internationally. A major program of re-development and updating has been ongoing for the Diploma and Certificate programs for Equine Science, Welfare and Business to ensure best practices for quality online experiences and updating course materials. The Horse Portal also experienced tremendous growth this year with the addition of racing-focused short courses on designated industry priorities, thanks to funding from the Alcohol and Gaming Commission of Ontario (AGCO).

The portal has been developing enhanced functionality over the year, based on feedback from our partners, instructors and students and has now evolved to the level where customized online training can be developed for youth and adults.

EquiMania! has been a featured exhibit at four of the top 50 North American Agricultural Fairs in the past including many small and local fairs bringing fun, interactive learning activities to young and old. With the cancellation of all of the 2020 events through to October, there has been a major financial hit as well as decreased opportunities for Equine Guelph to build awareness of its programs. The focus has shifted to developing more online activities and these have been promoted monthly for youth engagements.

A special thank you is extended to all past and present Advisory Council and Research Committee members for their ongoing support and volunteer hours, while providing their expertise. Sincere appreciation is also extended to our donors, volunteers and sponsors who contribute to the ongoing success of Equine Guelph and its programs in support of the industry. The dedication and contributions are greatly appreciated.

Equine Guelph acknowledges with sincere appreciation the Council partners as they continue to provide support and guidance for the programs of Equine Guelph on industry priorities – the Alcohol and Gaming Commission of Ontario, the E.P. Taylor Equine Research Fund, Equestrian Canada, the Horsemen’s Benevolent and Protective Association of Ontario, Ontario Equestrian, the Ontario Harness Horse Association, Ontario Racing (which includes CTHS, COSA and SBOA), Ontario Ministry of Agriculture and Food, Standardbred Canada, the Quarter Racing Owners of Ontario, Inc., Ontario Association of Equine Practitioners, and the University of Guelph.

This annual report provides the details on the 2019-2020 activities of Equine Guelph and recognizes the valuable partnerships that make these achievements possible for the benefit of the equine industry and the health and welfare of the horse.





Dear Partners and Supporters of Equine Guelph,

To say that the year of 2019-2020 did not quite turn out according to plan would be an understatement. With a very positive start to the year, including funding for the racing sector and two national recognitions of Equine Guelph, we started on a high note. The research program was building with the continued support of funding from the industry and great progress was made in several areas (see Research section) and the Education program was building new and innovative offerings for the industry.

And then things changed.

With the outbreak of COVID-19 pandemic, globally, the world changed and with it most aspects of our lives. The research program scheduled for 2020 had to be abruptly cancelled as University of Guelph donated medical supplies to the front-line health workers and the required closure of the labs, resulting in a standstill for the equine research program. However, at time of writing, there is a positive outlook for gearing back up as new procedures will be put in place, and some of the research will resume. Our equine researchers are eagerly looking forward to getting back into the lab to continue with their important studies for the health and welfare of our horses.

Recent outbreaks (at the time of printing) of neurological form of herpes virus points out the need to build capacity and continue to build a strong research program in order to help make progress, not only for the priority areas of the industry, but also with local health and welfare issues – research that contributes to the body of knowledge for the veterinarians in the field as well as students-in-training and researchers.

The current pandemic is also putting a spotlight on vulnerable areas in our equine industry, for both the racing and non-racing sectors and threats to its sustainability. Research and industry education can be important contributors to help reinforce our equine industry for challenges ahead, so it is important for Equine Guelph to continue to work closely with the industry and with government to carefully consider building those programs to help in the future.

Major award news

But, as mentioned above, there is also great news to be shared with our Council partners, supporters, students and volunteers. Equine Guelph has received national recognition in two ways.

Equestrian Canada Health and Welfare Award to recognize Equine Guelph for contributing to horse health and welfare as an international leader and pioneering work in promoting evidence based information for communications and accessible

educational programming for all levels and sectors of the equine industry. And director, Gayle Ecker was named one of the top 50 influencers in Canada in the Equine Industry, for its service to the industry through the education, research, healthcare, promotion and industry development since it was founded in 2003.

So, going forward from 2020, the relationship that has been created between the equine industry and Equine Guelph/Ontario Veterinary College is poised to be an “instrument of positive growth” as we work together to continue building, and in some cases such as the riding schools, re-building our equine industry to show a strong recovery.

The value of partnerships working closely together to achieve mutual goals has never been so important. Equine Guelph is the centre created by the industry for the industry, and will continue to work with the industry to offer research programs, education and training, and communications in priority areas identified by our industry.

We thank all our equine associations and their designates who sit at the Advisory Council table, Committee members, donors, supporters, and partners for their important role in supporting Equine Guelph.

Yours sincerely,



Dr. Jeffrey Wichtel  
Dean, Ontario Veterinary College



Mr. Al Patterson  
Co-Chair, Equine Guelph

## Introduction

Equine Guelph celebrated 16 years of service to the equine industry on July 1, 2019!

“The Centre for the horse owner at the University of Guelph” -- Equine Guelph was created in a unique partnership of the equine industry and the University of Guelph as a portal for research, education and training, and communications. Health, welfare and safety continue to be the dominate themes for our industry and for the public, and sustainability of our equine industry also dominates the discussions in the public forum and within industry and government. The continuing partnership of Equine Guelph working with the industry, particularly in light of current events of 2020, demonstrates the value of working together to be a positive force.

The Advisory Council of Equine Guelph is the foundation for this partnership, representing the leaders of the industry, along with the University of Guelph members. Membership includes Equestrian Canada, The Horsemen’s Benevolent and Protective Association of Ontario, Ontario Equestrian, Ontario Racing, Ontario Harness Horse Association, Ontario Ministry of Agriculture, Food and Rural Affairs, the Alcohol and Gaming Commission of Ontario, Standardbred Canada, Quarter Racing Owners of Ontario, Inc. and the University of Guelph. The E.P. Taylor Equine Research Fund, originally developed by the racing industry and now managed by the University of Guelph, is an important contributor to the research program.

The Co-Chairs of the Equine Guelph Council, OVC Dean, Dr. Jeff Wichtel and Mr. Al Patterson, oversee the funding process and program initiatives. Since its inception in July 2003, Equine Guelph has worked with the industry to develop many programs and in service to the industry. The Advisory Council provides the industry with important opportunities for two-way discussions to provide the needed input for development and refinement of programs to reflect current priorities during changing times. The members of the Advisory Council and the Research Committee are integral to the process of development for the research, education and communications programs and will continue to play an important role responding to the changing events of 2020 and beyond.

This Annual Report for the 2019-2020 fiscal year highlight progress, achievements and challenges of 2020 for Equine Guelph and its programs in service to the equine industry throughout the province and across Canada.

## Programs of Equine Guelph

### **Research**

When the equine industry works closely with a research-intensive university, there can be great gains for both partners. With industry funding, the industry can direct those resources to priority research programs and projects and deliver new evidence-based information to the industry with its practical application for the support of health, welfare and performance of horses. This continues to serve the industry needs in this way through the close relationship of Equine Guelph's Research Committee, comprised of the research funding associations through their dedicated representatives as there is assurance that quality, priority-based projects continue to be funded with annual reporting of progress to ensure oversight and effective use of funds. Through the communications program of Equine Guelph, this further gives value to the investment by disseminating this new and developing knowledge to practicing veterinarians, students, trainers, grooms, coaches, facility owners and more, providing a growing foundation of knowledge at many levels.

Research funding allowed \$379, 000 (up from the previous year) to be allocated for research projects for 2019-2020. Nine new projects were accepted for funding, and 18 were given second year funding. Appendix 5 gives details on the new and second year funding research projects for 2019-2020, and included projects covering infectious disease, vitamin D, EIPH and pollution, breeding issues, and several lameness-related studies including new approaches to stem cell studies. Second year studies include research on the gut microbiome, Lasix, renal disease, inflammatory airway disease, infectious disease and disease modelling, bacterial infections, stem cell research and more. Researchers were busy with international presentations and many published papers in peer-reviewed journals.

Meetings with industry designates on the Equine Guelph Research Committee have been going well. Members of the volunteer committee spend many hours each year, reviewing proposals and scientific reviews, along with annual reports, to ensure the research is in line with current industry-designated priorities and their contributions are acknowledged and their time is greatly appreciated.

Funding for the research program comes from the HBPA, the E.P. Taylor Research Fund and Ontario Racing. Ontario Equestrian has also made a generous contribution to the research fund from their innovative membership program, providing a much-valued contribution to the research that supports health and welfare studies. Industry funding is critical for leveraging funding from other agencies to fund research at a higher level.

Research co-chair, Dr. Koch continues his work at developing relationships and exploring new avenues for enhanced funding opportunities through leveraging funds or other sources and welcomes interactions and discussions with our industry to explore future options to increase the funding levels in order to sustain the world-class research conducted in Ontario for the benefit of the equine industry.

It is important to highlight that the research program supported by Equine Guelph contributes to the education program of equine veterinary students, practitioners and

specialists and in this way continues to build the foundation for state-of-the-art emergency preparedness programs in Ontario and beyond.

There is an ongoing and previously identified need to continue to look at the development of both “current response” funding pools for new and emerging issues, and also the development of long-term project funding for programs of research, which can provide enhanced research findings over project-based ones. That requires long-term planning and funding strategies to get to that position, however it is a worthy goal of both university and industry, as that can be expected to pay out results on the investment over the long term.

Unfortunately, due to the COVID-19 pandemic, many research projects were put on hold, but plans are underway for start-up of the programs and re-opening of the labs in the near future, so that funded research programs can commence.

Summaries of each project, a list of publications and research presentations for this fiscal year are found in Appendices 4 through 7. Equine Guelph encourages all Industry groups to provide opportunities for their members to hear directly from researchers about ongoing research areas to help disseminate the results and the practical applications that help support health and welfare. Dr. Koch welcomes the opportunity to assist in these events.

## **Education and Training**

Funding for the education program comes through tuition/workshops, corporate sponsorships, and external contributions through successful grant proposals for 2019-2020. Expenditures for the education program were \$427,813 which included program development, online education programs, and exhibits. The workshops and online education tuition returned \$112,464 with 15 courses offered on TheHorsePortal.ca (see Appendix 10). Several of the short courses on TheHorsePortal.ca were offered to Alcohol and Gaming Commission of Ontario licensees for free as part of the new pilot program with Alcohol and Gaming Commission of Ontario (AGCO) funding and the Canadian Agricultural Partnership Program (CAP) grant projects.

### ***TheHorsePortal short courses***

With AGCO and CAP funding, Equine Guelph had the opportunity to greatly expand the short course offerings on TheHorsePortal.ca and to offer many of these courses for free to our industry.

A major new program developed with AGCO funding for offerings of 7 courses for free for the first 100 AGCO licensees to register, with 3 developed exclusively for racing industry based on the priorities identified, with the goal of providing low or no cost opportunities to provide information to help promote peak performance on the track and maintain health and welfare. Three ambassadors from the racing sector helped to promote these opportunities through face-to-face meetings, presentations, and social media platforms, and provided guidance for students.

A free offering of the Sickness Prevention course was added in response to the Covid-19 pandemic. It quickly filled to capacity within 24 hours, with several people disappointed for missing the opportunity. Adult and youth offerings, were brought forward in response to industry requests and were received with great response.

New partners joining TheHorsePortal included Horse Racing Alberta and the Canadian Therapeutic Riding Association. There is opportunity for other groups/associations to work with Equine Guelph to develop new projects and programs together and give value-added incentive for memberships.

TheHorsePortal.ca was developed in response to survey feedback from our industry citing “time” and “money” as barriers to lifetime learning. The Horse Portal has grown significantly thanks to the partners and support of our Council members and grant funding and has now reached a maturity of the platform to offer customized training programs for the equine industry.

The partners currently include:

#### **Provincial Horse Federations**

- Alberta Equestrian Federation
- Equine Association of Yukon
- Horse Council of British Columbia
- Island Horse Council
- Manitoba Horse Council
- New Brunswick Equestrian Association
- Newfoundland and Labrador Equestrian Association
- Nova Scotia Equestrian Federation
- Ontario Equestrian
- Saskatchewan Horse Federation

#### **Racing Organizations**

- Ontario Racing
- Horse Racing Alberta

#### **Animal Welfare Organizations**

- Campbell Centre for the Study of Animal Welfare
- Ontario SPCA

#### **Accreditation Partners**

- Equestrian Canada
- the Canadian Therapeutic Riding Association

#### **International Partners**

- Saddle Up Safely (a program of the University of Kentucky Health Care, UK college of Agriculture and many community organizations)
- Equine Connection

#### **Youth Partners**

- 4-H Ontario

### ***Certificate and Diploma Programs***

Equine Guelph, in partnership with the office of Open Learning and Educational Support (OpenEd), has been offering university-accredited online equine studies programs since May 2002. We now offer the Equine Studies Diploma, the Equine Welfare Certificate, the Equine Science Certificate, and the Certificate in Equine Business Management.

The 12-week courses continue to attract students from around the world – all sharing a passion for learning more about horse health, welfare and safety from an accredited university for recognized certificate and diploma recognition. A total of 19 courses were offered over the academic year, resulting in another 49 students receiving their Equine Studies Diploma with the total number achieving this status now at 309. The Equine Science Certificate was achieved by 31 students with a total of 449 now awarded; 13 students received their Equine Business Management Certificate resulting in a total of 81 to-date, and 7 students were awarded their Equine Welfare Certificate bringing the total to 25 now awarded. There were 242 students who entered our program this year, from 27 different countries, truly reflecting a global learning community!

OpenEd and Equine Guelph have been conducting a rigorous redevelopment/updating program for the 12-week courses, and the following summarizes the redevelopment progress:

### **Course Updating Completed**

Management of the Equine Environment - F18  
Equine Health & Disease Prevention - F18  
Equine Nutrition - W19  
Equine Business Management F19  
Marketing and Communications in the Equine Industry (W20)  
Equine Behaviour (W20)  
Equine Exercise Physiology (S20)  
Finance and Risk Management (S20)

### **Upcoming Schedule for Fall 2020**

Stewardship in the Equine Environment  
Equine Nutrition research updates  
Advanced Equine Behaviour

### **Scheduled for Winter 2021**

Equine Genetics  
Advanced Equine Health through Nutrition  
The Equine Industry  
Management of the Broodmare, Stallion and Foal or Equine Functional Anatomy (?)

Here is just one example of what our students are saying from the page of testimonials in the appendices:

“This has been absolutely the best class I have taken online! I've taught and taken courses online over many years. This course far outweighs all of them not only in ease of online access but, most importantly, in content. Thank you!”  
*Gail Staines, Management of the Equine Environment Course Participant*

For more information, please refer to Appendices 9 and 10.

## ***Other highlights include:***

### ***Equine Welfare Training***

Equine Welfare Assessment Training was held for OSPCA officers from June 27 – 30, 2019. This is a 4-day training program that involves a combination of in-class, hands-on and case studies and was held at the University of Guelph, Sunrise Therapeutic Riding School and a private farm. This program can be applied for other groups as well, with customization for specific needs of organizations.

### ***ISES***

The 15th annual International Society of Equitation Science conference was held in August, 2019 and Equine Guelph was a partner within the organizing committee for this research/educational event, helping to promote the event through TheHorsePortal site, online communications, Large Animal Emergency Rescue Training offering, and a display booth at the event. Presentations made at the conference included students from Ontario Veterinary College, giving them great experience at delivering research results at international conferences.

### ***EquiMania!***

It was the 14<sup>th</sup> appearance of the award-winning EquiMania! exhibit at the Royal, which included the very popular Tree of Life display, along with “SeeMore” the anatomy horse, “horsey” hopscotch and more. New displays on Concussion Care and reducing the risks through best practices and helmets were introduced and also new materials developed through videos of personal experiences, barn safety poster, helmet fitting and more to complement the theme.

Sadly, major spring and summer events for EquiMania! were cancelled, including the Can-Am All Breeds Expo, the CNE, Horse Capades, Erin Fall Fair and other small fairs, the Minnesota Fall Fair. It is unknown at this time if the Royal Agricultural Winter Fair will be held in November.

Equine Guelph has continued to develop EquiMania! online to complement the travelling exhibit, and promoted a new learning feature each month. Funding is being sought to develop a full EquiMania! online learning experience for youth.

EquiMania! is about youth today being part of our industry tomorrow, for a healthy and sustainable horse community. We sincerely thank our partners who assist us in developing and maintaining this unique program – Can-Am All Breeds Expo, Equestrian Canada, Capri CMW Insurance Services Ltd., Kubota Canada, Ontario Equestrian, The Royal Agricultural Winter Fair, Shur-Gain, SSG Gloves, Standardbred Canada, System Fencing, and Workplace Safety and Prevention Services.

## ***Anatomy Lab***

There was a planned Equine Anatomy dissection lab, that had gained some real interest. This event had to be cancelled in April, but discussions will begin once again for next April.

## ***Specific COVID-19 educational response included:***

- to help in developing action plans, and calculating biosecurity risks on your own farm, a free Sickness Prevention online course was offered.
- promotion of colic risk information to help stables reduce the risk of colic in their horses with the shutdown of riding facilities
- discounted rate for the Fire Prevention and Emergency Preparedness course with specifically designed content relative to the COVID- 19 shutdown and contingency planning
- video interviews with nutrition expert, Don Kapper on feeding horses in a cost-effective manner
- video interviews Dr. Judith Koenig, Dr. Mark Hurtig and Dr. Hilary Clayton on bringing horses back into training safely for their return to work
- webinar created in partnership with OpenEd with guest speakers: Paul Sharpe on best practices for pasture management to extend your forage supply and Tracey Dopko looking at new revenue sources for your business.
- development and opening of the “For the Herd” Learning Community in partnership with Ontario Equestrian to help provide helpful information, interviews, resources, and experts for the goal of “Survive – Then Thrive” business recovery. Work on this will be ongoing as needed, and currently includes interviews by Dr. Mike Pownall, Mike King, Don Kapper, Linda Hauck with more under development. Dr. Katrina Merkies and several of her Bachelor of Bio Resource Management (BBRM) students are contributing.
- offering of Behaviour and Safety online course, one for youth and one for adults
- creation of new items and distribution of important materials from Scott Weese’s popular Worms and Germs Blog, Ontario Animal Health Network, Ontario Equestrian, Equestrian Canada and many others for information pieces, including our COVID-19 resource page.

## ***Education Tuition Awards Continue***

Important opportunities are provided to individuals in the racing industry through the ongoing Stuart Stocks Memorial award, won this year by Holly De Way. Equine Guelph sincerely thanks the Stuart Stocks family for this moving award that is in memory of a passionate follower of the racing industry as it gives an important opportunity for a participant to further their career goals in the racing industry while achieving higher education and knowledge.

The Roger L'Heureux Memorial Award also commemorates a dedicated racing enthusiast and provides an opportunity for a Standardbred driver, trainer or groom or University of Guelph student to continue with their educational studies. Thanks to the L'Heureux family, this award was given to Cynthia Naydani.

Equine Guelph sincerely thanks the Stocks family and the L'Heureux family for their generosity of providing these special educational awards and for their foresight in supporting the efforts of students for their career aspirations in the racing industry.

The Roger L'Heureux Memorial Equine Award for 2019 has been presented to Holly De Way and the Stuart Stocks Memorial Equine Award has been presented to Natalie Elliott. Congratulations to our worthy recipients of this wonderful award and thanks to the families of Stuart Stocks and Roger L'Hereux for their ongoing support to provide educational opportunities through Equine Guelph programs.

### ***Fire Prevention, Emergency Preparedness and Large Animal Rescue Training Program***

#### **Canadian Agricultural Partnership Project: EQUINE WELFARE TRAINING: FIRE & EMERGENCY PREPAREDNESS PILOT PROJECT**

#### **Update on final milestones:**

[Online First Responders Best Practices Guide \(Large Animal Emergency Rescue\) \(completed June 2019\)](#)



The online guide was provided to participants who had received this workshop training in the past four years as a post-workshop reference of rescue protocols/techniques. 452 visits to online guide with 273 visits to first responder entry page (to date - October, 2019)

[Online Fire Department Presentation Kit \(Barn Fire Prevention\) \(completed June 2019\)](#)

The kit was communicated to fire departments across Ontario as a resource to host presentation/distribute materials in their communities to horse farm owners.

120 visits to online kit (to date - October, 2019)

The Online Fire Department Presentation Kit (Barn Fire Prevention) received positive feedback from the Fire Prevention Industry including; "I think this is a wonderful web page. Very well done. I like the interactive part and I don't think any further explanation is required. The pictures say it all. Remember most people are visual learners. It is easier

and anyone that owns a stable or large farm are smart enough to know better, but just need reminders. This power points are great. I will be using these resources as well. I don't think you need any changes." Dianne Kyle, Fire Prevention Officer, Severn Fire & Emergency Services

The kit was used in an event hosted by Guelph/Eramosa Fire Department (October 4, 2019).

### **International Society for Equitation Science Conference (August 2019)**

The conference kicked-off with a pre-conference large animal emergency rescue training workshop run by Equine Guelph and international experts in emergency rescue. The workshop included an in-class theory session discussing both equine and human behaviour and hands-on including practicing different techniques on our 600 lbs horse mannequin. The workshop accommodated 60 participants lead by Equine Guelph's Ontario training team with Dr. Rebecca Gimenez-Husted of Technical Large Animal Emergency Rescue.

**Hamilton Police – Mounted Unit** – “refresher” training (January 9, 2020); officers of the HMP who had taken past courses through Equine Guelph attended a training day to refresh their skills at University of Guelph.

**Equine Care and Management Diploma – Year 1** (University of Guelph, Ridgetown Campus at REACH Huron in Clinton, Ontario) – Large Animal Rescue Training at University of Guelph (March 9, 2020)

### **Postponed events:**

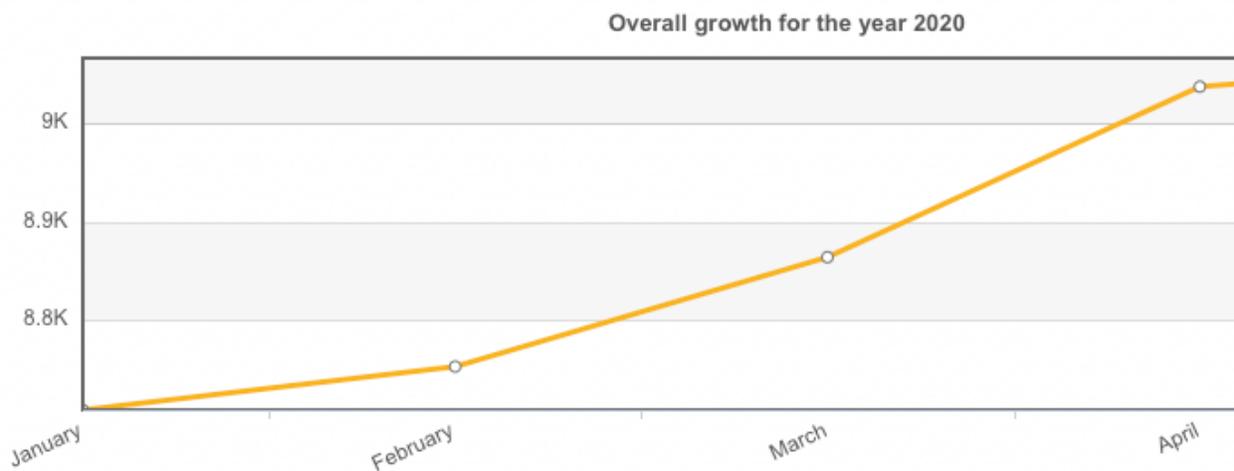
Large Animal Rescue training for the Donkey Sanctuary (originally scheduled April 2020 – postponed to later date – to be determined)

March 29, 2020 - the Northeastern Fire Education Conference - EG Lead Trainer – Victor MacPherson was planning to lead a 3.5 hr workshop for first responders on Sunday March 29, 2020. This is a partnership between Equine Guelph and Farm and Food Care, Ontario to provide a workshop on both Large Animal Rescue and Transport Emergencies. (postponed to 2021)

May 1 - 2, 2020 Ontario Association of Fire Chiefs Tradeshow Education booth - This is a partnership between Equine Guelph and Farm and Food Care, Ontario to provide a workshop on both Large Animal Rescue and Transport Emergencies. (postponed to 2021)

## **Communications and Marketing**

This has been a banner year for the growth and reach of the Communications program to the industry. Equine Guelph has enjoyed an over 19% increase in the uptake of articles released compared to our 2018-2019 year! International and national pickup continues for many major publications and websites. During January to April, there was increased viewing of the biosecurity articles and increased numbers subscribing to our e-news, particularly during March to April with the offering of the special COVID-19 response through our communications program (see below).



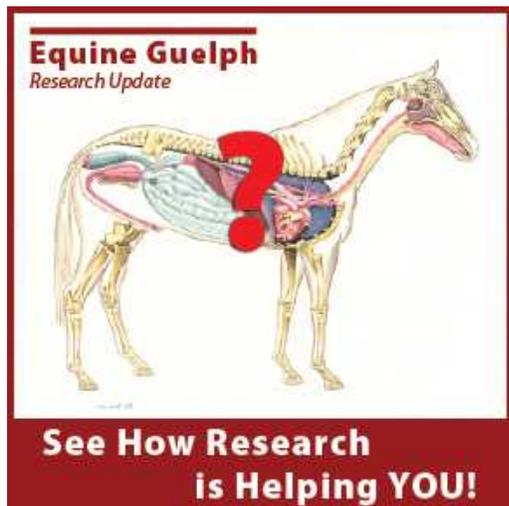
In August, 2019, the International Society for Equitation Science (ISES) was held at the University of Guelph, attracting an international audience. Equine Guelph was a member of the Organizing Committee and a sponsor to help build awareness of the important body of research that is being generated by many researchers in this area. Our role as a partner/sponsor for the ISES clearly expanded the awareness of Equine Guelph through the use of TheHorsePortal.ca as a “go to” site for updated information on the conference, the monthly releases on topics of the conference, and also the special offering of the specialized Large Animal Rescue hands-on training for participants that reached a global audience for attendance and coverage.

Equine Guelph’s Large Animal Emergency Rescue courses providing valuable training to fire fighters, first responders and the racing industry, continue to receive good coverage. Along with the ISES offering, another well publicized training session was for the Hamilton Mounted Police Unit, who returned for a refresher course (See Education section special report on Large Animal Rescue courses offered by Equine Guelph).

The media continues to pay special attention to the resources and courses that The Horse Portal has to offer. With the support of Alcohol and Gaming Corporation of Ontario (AGCO) funding, Equine Guelph was able to launch courses for the racing sector, including Respiratory health, lameness/injury prevention, and gut health and colic prevention, for AGCO license holders, as a special pilot project and the communications

on this program received good pickup in the racing media. Coverage of racing industry specific courses have been shared across many Standardbred, Thoroughbred, and Quarter Horse racing news sources and the racing media have responded with exceptional distribution of the newly launched Racing Pilot program.

## **NEWSLETTER**



The 17<sup>th</sup> edition of Equine Guelph Research update was released for in January 2020. It features upcoming research on Exercise-Induced Pulmonary Hemorrhage. Dr. Janet Beeler-Marfisi and her collaborators plan to use data from air quality monitoring stations and weather stations near Woodbine and Woodbine Mohawk Park racetracks cross referenced with endoscopic exams to determine if there are patterns between EIPH and horses exercising in areas of increased air pollution or in cooler temperatures.

Equine Guelph's newsletter has a major research focus along with providing updates on educational programs. The newsletter is partially supported by

the industry investment into the research program as it extends distribution of research findings to the industry. A PDF copy is available on the Equine Guelph website. It is broadly advertised through the Equine Guelph Enews and press releases. Equine Guelph has discontinued the print version of this newsletter in favor of the easily accessible, eco-friendly, cost effective format now available online. The research one page-flyer is also distributed at trade shows attended by Equine Guelph.

The annual digital version of the Equine Guelph Research Update was well-received and covered several racing-related research studies.

There was also increased uptake in research articles via the monthly enews and press releases with a 29% increase over the previous year. Equine Guelph research was once again well represented in the Canadian Horse Annual.

## **COVID-19 Special Response**

Equine Guelph was keenly aware of the many issues arising due to the pandemic in all sectors of the equine industry. In response to societal changes, Equine Guelph pulled forward several courses from TheHorsePortal.ca and offered them free or at reduced prices. These quickly filled up and added 300 new subscribers to the e-news list.

A new section of equine-related COVID-19 response resources was developed and distributed to the industry through e-news, websites, and social media with continuous updating and development of resources for horse owners. The Fire Safety and

Emergency Preparedness course was offered at discount with updated materials also relative to COVID-19 and preparation for business disruptions and back-up planning. A special offering of the Sickness Prevention in Horses course was offered to assist horse owners in guarding the health and welfare of their horses, and another offering was made for the Behaviour and Safety course (one for youth and one for adults) for those wanting to take advantage of learning while social distancing. This course was previously scheduled for May but in response to industry requests the course was brought forward to April.

A survey was also widely distributed to find out what courses the industry would be most interested in taking so the course schedules might be adjusted to meet industry demands.

Expenditures for the Communications and Marketing program were \$93,041, of which \$27,169 came from direct industry funding.

### ***JobTrack***

JobTrack has been a free job finding platform that has been offered by Equine Guelph. It was developed over 15 years ago with seed money from the Horsemen's Benevolent and Protective Association of Ontario (HBPA), but over the years, the platform has become outdated, cumbersome, and experienced security issues.

With renewed support from HBPA and new funding from Grand River and Ontario Racing, Equine Guelph has now begun development of a new program with enhanced features and security that will provide free upgraded service to the industry. A new template has been developed and the new site (experiencing delays due to the pandemic) will be rolling out soon to provide enhanced services helping to connect jobseekers and employers in our industry.

Equine Guelph sincerely thanks HBPA, Ontario Racing, and Grand River Agricultural Society for their contributions that have enabled this valuable and free service to be upgraded and enhanced.

### ***E-news & HEALTHflash***

A monthly distribution of e-news ensures our readers are up-to-date and informed. The media pick-up of Equine Guelph communications continues to indicate that there is a strong interest in the articles and a value for re-distribution to their audience to keep them informed of new information, research findings and special events. Overall, the e-news enjoys a high "open rate" for the articles – Just over 20% higher than the industry average!

In partnership with our sponsors, *HEALTHflash*, consisting of 4 seasonal email reminders + monthly health alerts, was introduced in January 2013. This publication continues to be highly popular and links have been created from equine media across North America including: Equestrian Canada, Horse-Canada.com, HorseJournals.com, SystemEquine.com, TheRider among a growing number of others.

## **Website**

The overarching goal of the Equine Guelph and Horse Portal websites are to create a virtual portal for the equine industry to have a place for updated information on research, events and educational opportunities. Equine Guelph's website continues to remain popular with the horse industry with over 125,504 page views from those seeking to improve welfare for horses including; research advances, diagnostic developments and educational/training programs. The Horse Portal draws primarily visitors interested in educational offerings for a further 217,293 page views. The combined total of page views for this fiscal year is 342, 793

Equine Guelph's website has reached over 35,813 new unique visitors with the most popular pages continuing to be Job Track, followed by the educational programs list. Traffic to both websites are arriving primarily through organic and direct search with Google as the number one source. The top landing page on TheHorsePortal.ca is the home page followed by course listing page.

## ***Media, Seminars and Presentations, Association Targeted Communication***

For a complete list of seminars and presentations given by Equine Guelph staff, please see Appendix 8. Regular communications are released to the equine media in formats that are easily included in their publications, whether in print or electronic form. Over 317 articles have been published about the programs of Equine Guelph in the industry media (see Appendix 12).

A broad range of coverage continues from a variety of industry publications, including both racing and non-racing interests. Equine Guelph staff regularly review and monitor industry magazines, newsletters and websites to follow and record the ongoing coverage.

In 2019-20, there has been extensive coverage from: HorseJournals.com, Horse-Canada.com, TheRider, COSAonline.com as well as Standardbred Canada and HarnessLink.com. Equine Guelph stories were also featured in the 2019 Canadian Horse Annual, HBPA.com, OntarioRacing.com, Raceline, Quarter Racing Owners of Ontario Inc., Horse Sport Magazine, and the Ontario Veterinary College bulletin among others.

In addition, Equine Guelph received coverage from international horse industry websites such as; TheHorse.com, HorseTalk.co.nz, EquiMed.com, HorseNation.com, Horse and People (Aus), and Equine Science Update.

Infectious Disease Expert, Scott Weese at the University of Guelph, has had a very busy year in the media responding to questions about the potential spread of Covid-19 between animals and humans and how veterinary practices are operating during the pandemic. The 'Worms & Germs Blog' has provided posts nearly daily since mid-March 2020'. An April 13, 2020 appearance on TVO's 'The Agenda' to talk about animal welfare during the pandemic was among the many interviews.

Links to Equine Guelph resources continue to be created from sites including: Equestrian Canada, Provincial Equestrian Federation websites, veterinarian web sites, and blogs from social media sites (i.e. Facebook, Twitter, LinkedIn and Instagram). Information and service sites are also actively posting links to Equine Guelph resources e.g.: Capri CMW Insurance Services Ltd. and SystemEquine.com directing the public to Equine Guelph's online courses, horse owner tools and research.

Ontario Equestrian (OE) continues their strong and on-going support of Equine Guelph with their e-broadcast program to OE members (over 20,000). This provides important assistance in alerting their members to new educational opportunities, thus helping to boost student enrollment and increase tuition revenue. Important partnerships have been developed with OE including the program to contribute to research support, partnering for OE/EquiMania! programs at the Royal Agricultural Winter Fair and other events.

Several other sponsors and provincial equine organizations have been posting buttons on their sites to help promote the communications, research and education/training initiatives including the tuition awards for racing, The Horse Portal course offerings, racing industry specific course offerings and 12 –week course offerings and more.

The Horse Portal has linked 10 provincial equestrian federations nation-wide, as well as the OSPCA, Campbell Centre for the Study of Animal Welfare, Ontario Racing, Horse Racing Alberta, 4-H Ontario and Saddle Up Safely, each with their own unique landing page generating traffic to the new short courses offered by Equine Guelph.

### ***Information Inquiries***

Each year Equine Guelph receives many information requests from the industry on a wide variety of concerns and topics and the small staff continue to provide resources and contacts for the significant number of emails, phone calls, information packages, walk-ins and letters. This includes a significant number of people looking for employment opportunities.

Tradeshows are a common venue for information requests as many visit the booths, displays and attend the seminars, indicating ongoing confidence in the evidence-based information that is provided to the horse industry. Providing an information portal for the industry as well as Job Track is important to the industry for ongoing industry development and sustainability. Equine Guelph was developed by the industry for the industry to play the role of “portal” between the industry and the knowledge developers in the equine research and extension programs at the University of Guelph, and this program remains without a funding basis by the industry or government. An important opportunity remains to be developed for enhancements to this “portal” role to continue to attract new people to the horse industry as workers or horse owners and provide them with important lifelong learning pathways to contribute to the industry.

Popular topics include information requests on large animal emergency rescue courses, fire prevention and safety, biosecurity for horse owners, identifying sources of information on new and emerging diseases, concerns about real or perceived welfare issues such as over population of horses and rehoming/retraining questions, management and nutritional questions.

## Development

### A. Equine Guelph 'Helping Horses for Life' Development Campaign:

The following information reflects fundraising initiatives and private donations as well as corporate sponsorship sales over the past fiscal year:

	<b>FY18-19 Amount Raised</b>	<b>FY19-20 Amount Raised</b>	<b>FY19-20 No. of Unique Donors</b>	<b>FY19-20 Median Gift</b>
Area of Greatest Need	\$42,729.28*	\$15,573	64	\$45
Education	\$5,820.10	\$4,265	3	\$500
Research	\$86,012.48**	\$32,559.89	7	\$100
OE Welfare Education Fund	\$440.00	\$1,030	7	\$10
Sponsorship	\$71,250	\$74,500	9	\$7,000
Kerr Fund for Equine Education and Community Outreach	N/A	\$100,000	1	\$100,000
Equine Guelph – Stuart Stocks Memorial Award	\$1,000	\$1,000	1	\$500
Equine Guelph – Roger L'Heureux Memorial Equine Award	\$0	\$0	0	\$0
<b>TOTAL</b>	<b>\$207,251.86</b>	<b>\$228,927.89</b>	<b>89</b>	<b>\$35</b>

TABLE I - Funds raised from private donations and sponsorship to EG accounts during FY18-19 and FY19-20 including number of unique donors and the median size of gift for each account.

\* Includes one large planned giving gift from a private estate

\*\*Includes two large donations for research from Ontario Equestrian (\$31,237.50) and planned giving gift from a private estate

- 1. NEW – Kerr Fund for Equine Education and Community Outreach:** A generous Equine Guelph supporter donated \$100,000 as confirmed in a gift agreement in the FY2019-20. The purpose of the expendable portion of the Fund is to support ongoing base operational funding for horse education, communication and community outreach initiatives through Equine Guelph.
- 2. Annual Appeal:** The 2019-20 appeal was not sent due to Covid-19. At the timing of printing of the Annual Report, it is planned that the appeal will be mailed in June 2020 and will be reported as part of the FY2020-21.
- 3. Ontario Equestrian Annual Membership Mailing Fundraising Program:** Each year Ontario Equestrian (OE), through its annual membership renewal form, gives members an opportunity to donate to a cause (Equine Guelph is one on a list of choices). The OE donation report is underway with \$9,042.35 reported until end of Feb – at the time of printing this document (payment pending).

**B. Corporate Sponsorship Program:** The FY2019-20 sponsorship program was up slightly from the year before, gaining two new sponsors and losing three long-term sponsors. Total revenue from the corporate sponsorship program was **\$74,500**:

**Online Tools & Other Education Programs – \$37,000**

1. BOEHRINGER INGELHEIM – EG E-Newsletter + senior horse tool ▪ \$12,500
2. CAPRI CMW INSURANCE SERVICES LTD – colic tool, Hoofprints program, portal short course, portal PTSO pages ▪ \$6,500 (contract and \$6,500 received and awaiting second payment for \$6,500 due to delays from COVID, so not included in total)
3. MERCK (AGENCY: DUCK & ASSOCIATES) – EG HEALTH*flash* + portal short course ▪ \$7,000
4. HBPA – JobTrack redevelopment & grant partner ▪ \$7,500
5. ONTARIO RACING – JobTrack redevelopment & grant partner ▪ \$3,500

**EquiMania! – \$37,500**

1. KUBOTA – youth safety activity ▪ \$5,000
2. SHUR-GAIN/TROUW – nutrition display ▪ \$5,000
3. SSG GLOVES – youth safety activity ▪ \$15,000
4. WORKPLACE SAFETY & PREVENTION SERVICES – youth safety activity + fire prevention partner ▪ \$12,500

**C. Equine Guelph Grants:** Grant writing has been a main focus of Equine Guelph. Funding totaling **\$243,230** from three granting agencies has been received in FY2019-20 – all in support of our strategy for course development and promotion of The Horse Portal:

**Alcohol and Gaming Commission of Ontario – \$162,260** (note: \$230,600 total over 2-year period)

‘Online Training Pilot Project for the Ontario Horse Racing Industry’: In 2019-2020, EG is delivering 12 offerings of seven online courses available for free to the first 100 AGCO licensees to register/course. Three of these courses will be developed exclusively for the industry in response to industry-identified priorities: gut health, respiratory and injury/lameness. These courses will help trainers, grooms and all caregivers to maximize racehorse health – promoting peak performance on the track.

### **Grand River Agricultural Society – \$10,000**

'JobTrack Redevelopment Project': Originally developed with funding from the HBPA, JobTrack is outdated, experiencing security issues and postings are now administered manually; JobTrack requires many program enhancements to revive this industry service (Visitors to the site have decreased from a high of 100,000 to our current 30,000/year.) HBPA and OR provided seed funding for this initiative, and GRAS has committed a further \$10,000 to ensure: 1. The latest in design, technical and security enhancements, 2. Expanded search and sorting functionality, 3. Promotion of careers and pathways to education and training and 4. Migration of the service from the EG website to The Horse Portal.

### **Canadian Agricultural Partnership Program (CAP) – \$70,970**

'Equine Welfare Training: Fire & Emergency Preparedness Pilot Project': includes a large animal emergency rescue workshop at Meaford, development of a short one-week portal course (Fire & Emergency Preparedness) with 170 free courses to be delivered to the racing industry (AGCO licence holders), OE (coaches, facilities and general members) and OSPCA officers in spring of 2019, online first responders best practices guide (large animal emergency rescue) and online fire department presentation kit (barn fire prevention).

**D. Equine Guelph Store:** Equine Guelph sells horse healthcare resources to promote welfare to the industry and to provide revenue to support Equine Guelph's education programs.

Total revenue raised in FY2019-20 is **\$1,199.67** with a breakdown by item below:

**Horse Health Check (HHC) Posters:** Equine Guelph retails laminated barn posters at major events such as Can-Am and are also made available through mail-order. Total poster revenue was **\$159.13**



**Horse Health App:** The *Horse Health Tracker App* has been developed for both Google Play and Apple iTunes. The tool allows horse caregivers to be active participants in their horse's healthcare. Total revenue generated in FY2019-20 was **\$582.44** (Note: Apple sales were \$418.40 and Google Play sales were \$164.04).

**Blaze Magazine Donation Station:** Blaze Magazine generously donates back issues of its youth magazine, and Equine Guelph receives donations for the magazines at events such as the Royal Agricultural Winter Fair and Can-Am All Breeds Equine Expo. Total revenue generated in FY2019-20 was **\$458.10**.

## Financial Report

The Year End Financial Report is included in the Appendices. Quarterly reports are produced for the Equine Guelph Advisory Council. Financial reports include forecasting of revenue and expenditure for each of the program areas and year-to-date statements.

Equine Guelph revenue totaled \$884,821 (compared to \$696,929 for previous year) for the fiscal year with funding provided by our funding partners, donations, tuition and a substantial portion coming from grants (Alcohol and Gaming Commission of Ontario, Canadian Agricultural Partnership Program) and increased sponsorships. Program expenditures totaled \$901,002 (\$931,619 last fiscal year).

The research program allocated \$379,016 for research projects. Expenditures for the education program were \$427,813 which included program development, online education programs, and exhibits as specified from grant money or sponsorship agreements. Expenditures for the Communications and Marketing program were \$93,041. The workshops and online education tuition returned \$112,464 - note that many of our short course registrations were offered free of charge as part Alcohol and Gaming Commission of Ontario (AGCO) and Canadian Agricultural Partnership Program (CAP) grant projects.

Challenges of stability in funding for the racing industry remain under discussion and this in turn has continued to impact funding for Equine Guelph with industry funding of \$40,550, an increase from \$18,950 for previous year, but still below levels in prior years. This funding is used for the support of administration and communications related to the research and overall communications program back to the industry.

The majority of funding for the education/communications program continues to come from tuition, sponsorships and successful grant proposals. Research funding continues to be a source of significant concern going forward without specific designated funding identified and protected. While funding has increased since the previous year, the goal of stable consistent funding for the programs of Equine Guelph, as a Centre at the University for the horse industry will continue to be an issue of high priority as the industry continues with its efforts to develop a re-organized model that provides it with a sustainable business model. Research and education/training of the members of the racing and non-racing community will continue to be an important part of future success.

## Highlights and Special Events

May 2019 – April 2020

### ***Celebrating Somebeachsomewhere: Film Event Raises Funds for OVC***

"Somebeachsomewhere: Horse of a Lifetime", made its big screen debut Saturday, May 4, 2019 at Mohawk Inn and Conference Centre, Milton, Ontario. The event proceeds were kindly donated to support equine research at University of Guelph. The screening was made possible through the cooperation and generous support of the Ontario Harness Horse Association (OHHA), Eastlink Community TV, and the USHWA Canada chapter.



**Full Story:** <https://www.equineguelph.ca/news/index.php?content=618>

### ***First National Equine Biosurveillance Program of its Kind Launched across Canada!***



Equine Guelph's education partner, Merck Animal Health, recently launched its national Equine Biosurveillance Pilot Program to fill an unmet need in Canada. Although there are some initiatives at provincial levels, there was currently no nationwide equine biosurveillance program in the country, until now!

**Full**

**Story:**

<https://www.equineguelph.ca/news/index.php?content=619>

### ***Can You Detect Lameness?***



Horses are incredible athletes and companions and it is our responsibility as owners, riders, and caretakers to take caution to prevent injury and provide the proper care when injuries do arise.

Equine Guelph's **Lameness Lab tool** provides interactive activities to help you learn the causes and risks for lameness as well as how to assess lameness.

**Full**

**Story:**

<https://www.equineguelph.ca/news/index.php?content=620>

## **Brooklin Was a Blast - Horse Day Erin Next for EquiMania!**



EquiMania! had a wonderful time at the Brooklin Spring Fair over this past weekend, May 30 - June 2. The attraction from Equine Guelph thrilled many horse lovers both young and old.

Visit the Equine Guelph interactive display to see everything on offer! Discover how a horse is put together, and the care involved to keep them in tip-top shape, as well as signs that you may need to change your routine. Learn about all the educational health care tools and online courses designed specifically for youth, adults, and racing industry professionals.

Where is EquiMania! Next? Horse Day Erin, Saturday, June 8th.

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=621>

## **Results in from Guelph study on soaking and steaming Canadian hay**

Exciting news!! Results are in from the Equine Guelph funded research that marks the first study to investigate steamed, soaked and dry hay in Ontario. Tiana Owens, a University of Guelph graduate student involved in the study, presented these results during her thesis defence last month. The research team, which also includes *Madeline Barnes, Vanessa Gargano, Wilfredo D. Mansilla, Katrina Merkies and Anna K. Shoveller*, found that steaming hay may be a superior method for treating hay when it's being used to feed healthy performance horses.



**Full Story:** <https://www.equineguelph.ca/news/index.php?content=622>



## **15th Annual International Society for Equitation Science Conference**

*The 15th International Society for Equitation Science (ISES) Conference is being held on the University of Guelph campus August 19 - 21, 2019. Guelph is situated in Southwestern Ontario, Canada, approximately 90 km (58 miles) from Toronto's Pearson International Airport. The theme of "Bringing science to the stable" will explore our relationship with horses through the past, present and future with internationally renowned guest speakers.*

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=623>

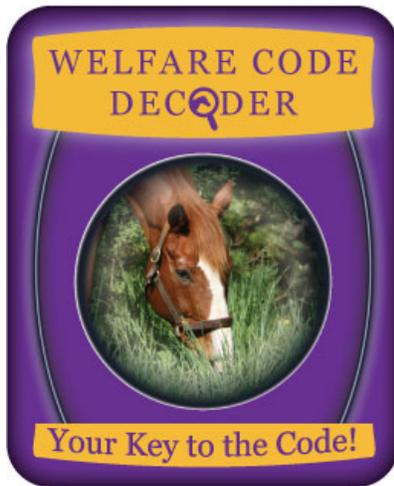
## **OVC Researchers to Conduct First Study in Canada Investigating a Parasite that May Cause Equine Abortions**

Abortions in horses continues to be a very frustrating problem for breeders and veterinarians. So much time and effort are put into producing quality horses and it is heartbreaking when it does not work out; even more so when you don't know why. *"About 40% of abortions in horses that are submitted to the lab come back with no diagnosis, and an unknown cause; this means we are missing a significant number of potentially infectious and potentially preventable abortions in horses"* shares Dr. Tracey Chenier at the Ontario Veterinary College (OVC).



**Full Story:** <https://www.equineguelph.ca/news/index.php?content=624>

## ***Are You Up to Par with the Equine Code of Practice?***



To better understand the code of practice, visit Equine Guelph's Healthcare tool of the month: **Welfare Code Decoder**. The Code Decoder highlights key takeaways and provides checklists for each section of the code of practice. Once you complete the checklist the Code Decoder will provide recommendations. The code decoder also provides additional resources to learn more about equine welfare. It is a fast, easy way to see if you are up to par with the code. Remember, it is our responsibility as horse owners, caretakers, etc. to ensure the best possible care for our equine friends.

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=625>

## ***Ontario Equestrian and its Members Donate to Lameness Research at OVC***



A team of equine veterinarians and researchers from the Ontario Veterinary College (OVC) are excited to announce clinical trials are ready to begin using allogeneic umbilical cord blood stem cells in the treatment of superficial digital flexor tendonitis or "bowed tendons" in horses. The goal is to develop a readily available

treatment to prevent the formation of scar tissue and create good quality tendon tissue to replace the damaged tissues, which are less prone to re-injury. This wonderful team includes Dr. Thomas Koch, Dr. Nathalie Coté, Dr. Stephanie Nykamp, graduate student Alejandro Merchan Munoz, led by primary investigator Dr. Judith Koenig.

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=626>

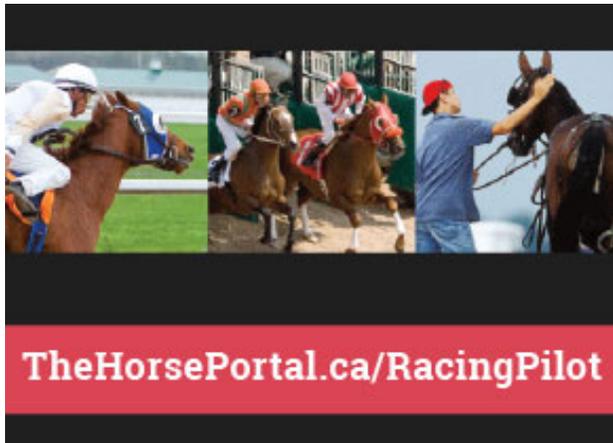
## ***Equine Guelph develops fire prevention & large animal rescue training resources for first responders***

The need for training in prevention and preparedness is highlighted with every media report of yet another horrific barn fire. Equine Guelph has announced it will be providing online resources on barn fire prevention and large animal rescue for all first responders and fire departments across Ontario available at: [TheHorsePortal.ca/FirstResponders](https://www.thehorseportal.ca/FirstResponders)



**Full Story:** <https://www.equineguelph.ca/news/index.php?content=627>

## ***Equine Guelph Announces Industry Ambassadors for Free Online Training Pilot Project***



Equine Guelph has announced that Natalie Elliott, Cameron Lago and Lee-Anne Moffat have been selected as the three Industry Ambassadors to represent Equine Guelph as liaisons and advocates for the horse racing industry during a two-year pilot project. This important training initiative will offer free online courses to Alcohol and Gaming Commission of Ontario (AGCO) licensees on [TheHorsePortal.ca](https://www.thehorseportal.ca) in 2019 and 2020.

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=628>

## Employers in ON Racing – Nominate your Groom for a Tuition Award!

Racehorses are a big investment and we are not talking just financial. It takes time, effort and exceptional care to bring these star athletes up to peak performance. Give your groom outstanding tools to provide the best possible care to your horses. Equine Guelph offers two tuition awards for 12-week online university-accredited courses set up by families passionate about the racing industry and the welfare of the athletes within it. Applications for the 2020 tuition awards are now open.



Give your groom outstanding tools to provide the best possible care to your horses. Equine Guelph offers two tuition awards for 12-week online university-accredited courses set up by families passionate about the racing industry and the welfare of the athletes within it. Applications for the 2020 tuition awards are now open.

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=629>

## *Have you tested your Laminitic Horse For PPID?*

Pituitary Pars Intermedia Disfunction (PPID), also known as Equine Cushing's Disease, is a top cause of laminitis and often isn't tested when laminitis presents. During September and October, Boehringer Ingelheim Animal Health Equine will offer horse owners across Canada over 1000 free PPID tests in partnership with the Guelph Animal Health Laboratory. Interested horse owners simply need to go to [BICanadaEquine.ca](http://BICanadaEquine.ca), answer a short PPID knowledge quiz and then complete the application form.

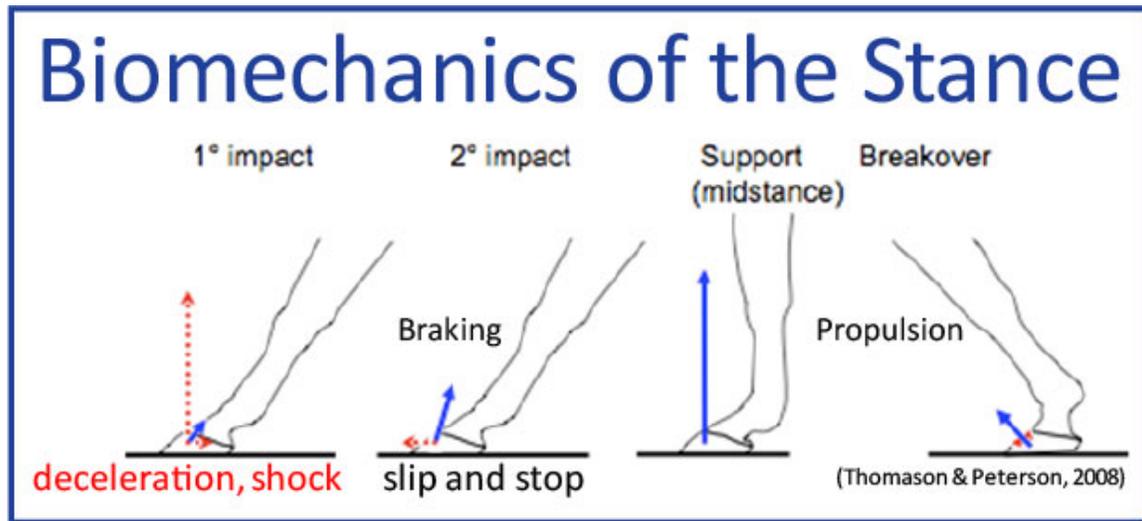


The [Senior Horse Challenge Tool](#) on Equine Guelph's website also contains activities where you can check your savvy at picking up on subtle changes that may lead to early detection of metabolic disorders such as PPID

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=631>

## Future Footing & Training Decisions

Would your choice of footing change if you spent some time looking at the massive collection of data in the laboratory of Dr. Jeff Thomason? How about the way you train on that surface?



Ground-breaking research has been going on at the Ontario Veterinary College (OVC) for quite some time, taking a detailed look at interaction of the hoof with the ground, including the shock and forces acting on the horse's leg. Studies have been conducted using a wide variety of surfaces and conditions in racing and various sport horse disciplines. Thomason has been measuring joint loading since 1985 when he put his first strain gauges on a hoof. Each study adds to the growing body of knowledge, which ultimately serves to optimize surfaces in order to reduce sports injuries.

OVC student, Alexis Szpakowski presented her findings on the interaction between body size and surface type on hoof loading at the International Society for Equitation Science conference held August 2019 at the University of Guelph. OVC graduate student, Danielle Halucha presented findings from her study on *'Asymmetrical limb loading in thoroughbred racehorses as a possible cause for injury'* at the International Society for Equitation Science conference as well. [Video of running horse stances.](#)



**Full Story:** <https://www.equineguelph.ca/news/index.php?content=633>

## ***Emergency Rescue Training, Because it Can Happen To You***

The annual International Society for Equitation Science Conference was hosted by the University of Guelph this year and brought together researchers and industry professionals from all over the world to discuss how to continue to improve the lives of our equine companions. The conference kicked-off with a pre-conference **large animal emergency rescue training workshop** run by Equine Guelph and international experts in emergency rescue.



**Full Story:** <https://www.equineguelph.ca/news/index.php?content=634>

## **Straight from the horse's stomach**

*“If acid splashes up, or their stomach is empty, it can really damage a horse’s stomach,”* explains Jennifer MacNicol, a PhD candidate in the Department of Animal Biosciences. *“But what if we can keep food in there longer and potentially buffer that splashing, or use nutraceuticals to reduce acid production or increase mucus production?”*

MacNicol’s research seeks to *“determine what makes a horse’s gastrointestinal tract tick,”* and to investigate the effectiveness of nutraceuticals proposed by industry.



**Full Story:** <https://www.equineguelph.ca/news/index.php?content=636>

## ***EquiMania! A Royal Favorite!***

The award-winning display of EquiMania! will be featured for a 14th consecutive year at the **Royal Agricultural Winter Fair**, in Toronto this November 1 – 10.

Horsy hopscotch for the little ones, food for thought at the digestion displays, get a grip on great riding gloves, marvel at the massive tree of life, and ample anatomy for all!



In 2003, EquiMania! was developed and has operated on a zero-based budget since inception! Oh, how it has grown into a hugely popular exhibit that has been as far afield as the 2010 World Equestrian Games in Kentucky, USA.

We could not do it without our loyal sponsors and our amazing volunteers: ESSO, Kubota Canada, Ontario Equestrian, Shur-Gain, SSG Gloves, System Fencing and Workplace Safety and Prevention Services.

Kids can also visit [EquiMania.ca](http://EquiMania.ca) to play games online and learn more about horses with amazing interactive activities.

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=637>

## ***Sickness Prevention in Horses This Fall Fair Season***



While spring is prime time for everyone to clean the barn and schedule vaccinations; autumn biosecurity practices often fall by the wayside. It is easy to get caught up in planning fall fairs and other outings; squeezing in every moment of riding time possible before the daylight hours are in short supply. Don't fall victim to the flu or other disease risks this autumn! Staying

vigilant on measures that promote the health of your horse is key. Equine Guelph makes it easy with their **Sickness Prevention in Horses** online short course offered on TheHorsePortal.ca this October 21 – Nov 1.

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=638>

## ***Fast Forage Switches Not Recommended for Horses***

Do you know the first signs your horse's digestive system is in danger? Diarrhea, upset stomach, or in the worst case scenario--colic can all be caused by too quick an adaptation period from one type of forage to another. Whether it is moving barns, moving to a new batch of hay from the supplier, or switching from a lush, moist, grassy paddock to a dry sandy sacrifice paddock and dry hay, the importance of switching forages slowly cannot be overstated. Using an adaptation period of 10 – 14 days to transition new feeds into your horse's diet is recommended.



Table 1: **How to transition feedstuff in your horse's diet**

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=639>

## **Horse Racing Alberta and Equine Guelph Partner in Online Training Program**

Horse Racing Alberta (HRA) has partnered with Equine Guelph to offer their license holders online industry training on The Horse Portal. The partnership offers trainers, grooms, owners, jockeys, drivers and other current license holders significant savings on short online courses that aim to give their racehorses a competitive edge.



*vibrant and progressive racing industry to function in the province of Alberta with high integrity and self-regulated responsibility.*

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=641>

*"HRA is pleased to partner with Equine Guelph to provide an online training program for the horse racing industry in Alberta," says Kent Verlik, CEO of Horse Racing Alberta. "These courses will be invaluable to assist HRA license holders in achieving top performance with their racehorses." Horse Racing Alberta's mission is to lead and enable a healthy,*

## **Equine industry symposium set to spark change**

On November 17, the 4th annual Equine Industry Symposium was hosted by the University of Guelph. Attendees from different areas of the horse industry discussed the theme of "change" and what the word means for the equine community.

*The theme of change was embodied by the three international speakers. The first speaker, zoo archaeologist Dr. Sandra Olsen, captivated the audience with her knowledge and research of horses during ancient times. The second speaker, Debbie Busby, spoke to the audience about "Human Behaviour Change for Animals. The third speaker, Lisa Ashton, entreated all horse lovers to be the change that horses need.*



**Full Story:** <https://www.equineguelph.ca/news/index.php?content=648>

## ***Once Bit, Twice Shy is not the case according to research study***



In 2015, Lara Genik and Dr. C. Meghan McMurtry from the University of Guelph's Department of Psychology conducted a survey at the Royal Agricultural Winter Fair, looking into the prevalence and impact of less studied painful incidents among children while handling and riding horses. Some of the results may surprise you.

A startling result indicated that 75% of the children surveyed had experienced at least one type of painful incident more than once, yet only 7.3% said they had modified their behavior (e.g., keeping fingers away from the horse's mouth after having been bitten). *"We were quite surprised that these incidents had little impact on children's behavior around horses,"* says Genik. *"This implies that the incidents may continue to occur even if they could be prevented – and we know from recent work that many incidents around horses may actually be preventable."*

Full research paper at [ScienceDirect.com](https://www.sciencedirect.com)

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=644>

## ***Learning Horse Behaviour Opens Olympic Door***

Learning the language of equines has set Sandra Rwese on a path to collaborate with the Uganda Olympic Committee and the Uganda Equestrian Association (UEA). After enriching her newfound passion for horses with the Equine Guelph online course 'Horse Behaviour and Safety' in 2018, Rwese was publicly recognized by the UEA. They saw the opportunity to work together promoting horse welfare in Uganda where the equine industry is just in its infancy.



**Full Story:** <https://www.equineguelph.ca/news/index.php?content=645>

### ***Horses Blink Less, Twitch Eyelids More When Stressed, U of G Researchers Find***

How can you tell when a horse is feeling stressed? It's all in the eyes and the way their eyelids twitch, University of Guelph researchers have discovered.

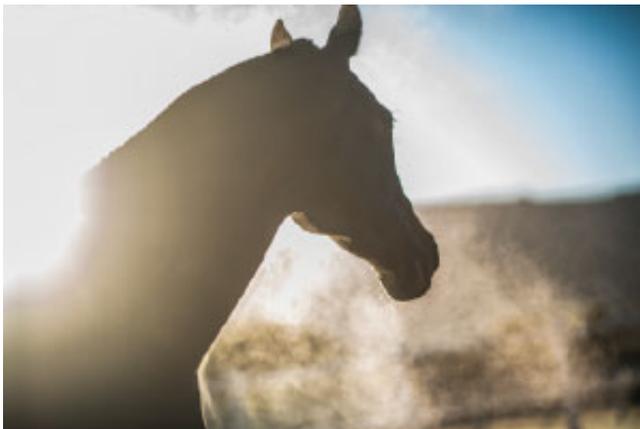
A horse will blink less and twitch its eyelids more when it's under mild stress, the research team found – a new finding that could offer handlers a simple, easy-to-spot sign their animal is becoming agitated.



The study, published in the [journal \*Animals\*](#), is thought to be the first to reveal the significance of eyelid twitches as an indicator of stress, says Prof. Katrina Merkies, the study's lead author.

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=646>

### ***Exercise-Induced Pulmonary Hemorrhage and Air Pollution***



Exercise-Induced Pulmonary Hemorrhage (EIPH) is estimated to affect between 44 – 85% of Thoroughbreds and up to 87% of Standardbreds worldwide. There is concern in racing circles that EIPH can shorten a racehorse's career and in rare worst-case scenarios cause sudden death from massive hemorrhage. Dr. Janet Beeler-Marfisi (OVC, Department of Pathobiology) and her collaborators plan to use data from air

quality monitoring stations and weather stations near Woodbine and Woodbine Mohawk Park racetracks cross referenced with endoscopic exams to determine if there are patterns between EIPH and horses exercising in areas of increased air pollution or in cooler temperatures.

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=651>

### ***Winners Want Equine Welfare Education!***

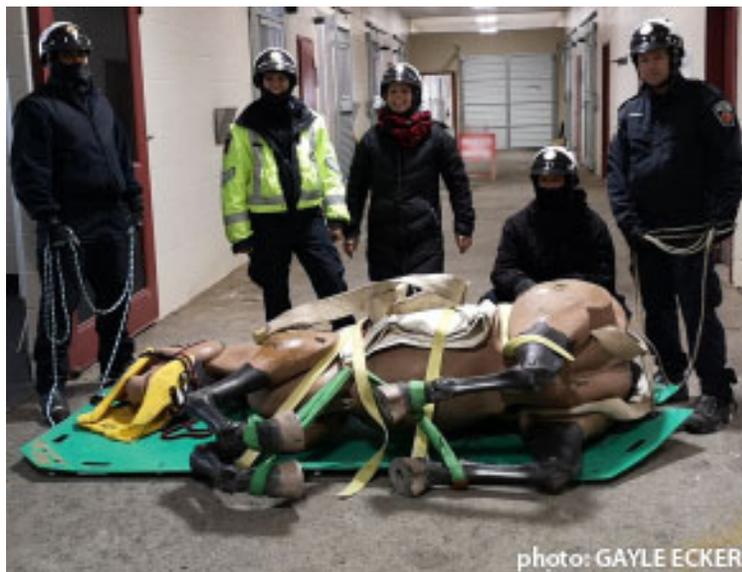
Congratulations to the Ontario Racing Industry Tuition Award Winners and December draw winners! It was a busy month at Equine Guelph and a great way to wind up the year. Thanks to two very generous families, honouring the memory of their loved ones with strong passion for the racing industry, future ambassadors of the sport may apply for tuition into two Equine Guelph 12-week online courses. The Roger L'Heureux Memorial



Equine Award for 2019 has been presented to Holly De Way and the Stuart Stocks Memorial Equine Award has been presented to Natalie Elliott.

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=652>

### ***Large Animal Rescue Refresher for Hamilton Mounted Police***



Anyone who has taken a human first aid course has received a notice that they are due for a refresher. After taking an initial large animal rescue course with Equine Guelph, the Hamilton Mounted Police have been proactive enrolling their officers in a one-day hands-on retraining at Equine Guelph which took place January 9, 2020 at the University of Guelph.

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=653>



## Animal Welfare in Ontario – A Public Concern Now Publicly Funded



*“Continuity and change in animal protection work and policy”* was the topic presented by Dr. Kendra Coulter at the University of Guelph on January 22, 2020. Coulter is the Chair of the Department of Labour Studies at Brock University and holds the Chancellor’s Chair for Research Excellence. Her research projects have studied humane jobs for both people and animals.

To learn more about the upcoming challenges, significance of training and resources in Ontario’s new cruelty investigation model and why public leadership will play an important role moving forward, read the full report: **A More Humane and Safer Ontario: The Future of Animal Cruelty Investigations.**

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=659>

## Exploring Your Future in the Equine Industry



Equine Career night is a chance for equine enthusiasts of all ages to explore what career opportunities are available in the equine industry. The Bachelor of Bio-Resource Management equine event management class will host a number of exhibitors from the equine community including Sunrise Therapeutic Riding Center, Schleese Saddlery Service, Canna Horse and Hope Haven Therapeutic riding Center. Exhibitors will be happy to answer any questions you may have about their business or pursuing a career in a similar field. **Equine Career Night - March 5th @ The University of Guelph**

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=661>

## Equine Guelph named one of the Top 50 Influencers in Canada in the Equine Industry

Thank you, Corinthian Horse Sport Magazine, for recognizing Equine Guelph, as one of the Top 50 Influencers in Canada in the Equine Industry, in your final print edition, Feb 2020.

This world-renowned, non-profit institution has been serving the horse industry through education, research, healthcare, promotion and industry development since it was founded in 2003. It is the world leader in online studies for equine pursuits, boasting 19 accredited courses...



This world-renowned, non-profit institution has been serving the horse industry through education, research, healthcare promotion and industry development since it was founded in 2003. It is the world leader in online studies for equine pursuits, boasting 19 accredited courses. The award-winning 12-week university

### Memorable Moments

"As an educator who is passionate about developing well-informed, evidence-based horse ownership, I take great pleasure in hearing from many of our students who have had the courses profoundly change the way they look at and manage their own horses. As well, I love hearing from those who have gone on to develop their own careers and

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=662>

## Seeing is Preparing – Videos for Mare & Foal Care

When Equine Guelph launched its new “**Mare & Foal Care Tool**”, the “how to” videos received great feedback as tools to prepare owners for the expected and unexpected. The Mare & Foal Care Tool was designed and developed in partnership with PFERA, an equine reproductive biotechnology company, as a resource for horse owners and breeders.



**Full Story:** <https://www.equineguelph.ca/news/index.php?content=658>

## Concussion Care and Reducing Risks



Gone are the days of 'get right back on that horse' and with good reason. Bouncing your brain around and then bouncing right back into action can put an athlete at serious risk. Anytime a concussion is suspected all activity should stop and the person should be sent to a medical doctor.

According to a **2017 federal survey** commissioned by the Public Health Agency of Canada, 97% of participants considered concussions an important health problem. The

survey also revealed, only 51% knew where to get information on avoiding a concussion.

Equine Guelph has resources, [videos on personal concussion stories](#), helmet fitting and a [new barn safety poster](#)...

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=664>

## Equine Guelph Online Equine Community Responds to Industry Request During COVID-19

Are you succeeding in keeping yourself and the kids busy during self-isolation and social distancing? The Ontario Government has enacted a **Declaration of Emergency** to Protect the Public, and this includes the **closure of riding facilities**.

In response to requests coming in from the industry, Equine Guelph has moved up the start date and extended access for both their **(13 – 17)** and **adult offerings** of the Online Horse Behaviour and Safety Course



**Full Story:** <https://www.equineguelph.ca/news/index.php?content=665>

## COVID-19 - Caring for your horse during a pandemic



The situation that we are currently facing world-wide not only impacts people but also our horses (and other animals) in our care.

Download this [resource](#) provided by Ontario Animal Health Network (OAHN)

More [COVID-19 Updates & Resources](#) from Government, health organizations, infectious disease experts and the equine industry are posted on <https://thehorseportal.ca/covid-19-updates-resources/>

It is a time to help support each other, and the care of our animals is part of that.

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=666>

## Protect your Herd – Equine Guelph announces a **FREE** offering of Online Sickness Prevention Course!



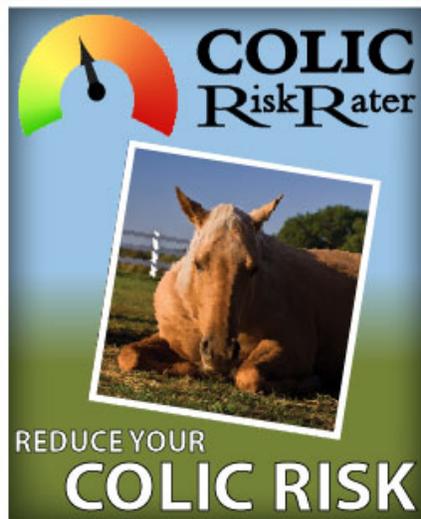
Calculating Biosecurity Risks & Creating Action Plans

Equine Guelph has opened a **FREE** offering of their [online Sickness Prevention in Horses course](#) ( normally \$85 + HST) in response to the Covid-19 pandemic.

TheHorsePortal.ca course is based on the Canadian standard for equine biosecurity. While many are at home for the next few weeks, this is an ideal time to learn online and develop your own action plan and backup arrangements.

**Full Story:** <https://thehorseportal.ca/2020/03/protect-your-herd-equine-guelph-announces-a-free-offering-of-online-sickness-prevention-course/>

## Are You Concerned About Colic During Covid-19?



With many horses seeing their exercise schedules suddenly reduced or eliminated, questions have cropped up if this creates a higher risk of colic. Our [National Code of Practice for the Care and Handling of Equines](#) is clear: *Horses must have some form of exercise or turnout unless under stall rest for medical reasons or severe environmental conditions make this temporarily impossible.* Equine Guelph encourages concerned horse owners and care takers to assess their risk and adjust management practices to help reduce their chance of colic using a free online healthcare tool: [The Colic Risk Rater](#).

**Full Story:** <https://thehorseportal.ca/2020/03/are-you-concerned-about-colic-during-covid-19/>

## Equine Guelph Offers Fire & Emergency Preparedness Online Course in Response to Covid-19

Equine Guelph is offering a special discounted rate for the upcoming offering of their [Fire & Emergency Preparedness online course](#). In response to industry requests during the COVID-19 pandemic, recent updates to the course will address many horse caretaker and facility owner concerns. Topics added include developing plans for business disruptions and back-up planning especially as it relates to the unprecedented circumstances everyone is currently facing.



**Full Story:** <https://thehorseportal.ca/2020/04/equine-guelph-offers-fire-emergency-preparedness-online-course-in-response-to-covid-19/>

## Equine Guelph Survey Part of Covid Initiatives for Horse Owners

From adding special online course offerings to updating a Covid-19 resources page daily, Equine Guelph has been responding to industry requests during this difficult time. You can [take a survey](#) right now to let them know of any additional courses you would like to take while you are staying home.

Great news announced for the [May offering of 12-week online courses](#) with Equine Guelph – the Early Bird Rate of \$549 will not expire = \$50 in savings! (special offer for summer semester 2020).

**STUDY ONLINE** Award Winning Programs  
courses begin: May 3, 2020

**12-WEEK COURSES**

- Equine Welfare
- Equine Behaviour
- Equine Exercise Physiology
- Equine Event Management
- Equine Health & Disease Prevention
- Management of the Equine Environment
- Equine Business Finance & Risk Management

**Full Story:** <https://thehorseportal.ca/2020/04/equine-guelph-survey-part-of-covid-19-initiatives-for-horse-owners/>

## Deciphering Vitamin D in Horses with Diarrhea



Could the same biomarkers linking low vitamin D to seriously ill humans be present in horses? Starting this spring, Ontario Veterinary College researcher, Dr. Luis Arroyo and his team will be collecting and analyzing equine blood samples measuring vitamin D and other biomarkers of inflammation and systemic disease. They expect to find major disorders of hormonal pathways, much like in human studies looking at hypovitaminosis D as a marker of disease severity. This knowledge could be pivotal to future studies looking into clinical intervention at the earliest stages.

**Full Story:** <https://www.equineguelph.ca/news/index.php?content=667>

## Equine Guelph Wins Equestrian Canada Health and Welfare Award



The Equestrian Canada (EC) Health & Welfare Award recognizes an individual or organization that has contributed directly to the improvement of horse health and welfare in Canada through years of hard work and dedication, and Equine Guelph is the deserving recipient for 2019.

Equine Guelph, based at the University of Guelph in Ontario, is recognized as an international leader in promoting the health, welfare and safety of horses and their caretakers. Acting as a vital link between industry, research, and horse owners and caretakers, Equine Guelph has been a

pioneer in the development of evidence-based, award winning online education since 2002.

EC applauds Equine Guelph's invaluable work to drive positive change and continuous learning in the equine industry, and is honoured to recognize this Canadian-based, globally-respected organization with the [2019 EC Health & Welfare Award](#).

**Full Story:** <https://thehorseportal.ca/2020/04/equine-guelph-wins-equestrian-canada-health-and-welfare-award/>

## Colic Prevention – Introduce Spring Pasture Slowly

Spring is upon us and so is the prevalence of gas colic. Equine Guelph is sharing many strategies to prevent it.

An excellent [video discussing safe introduction to spring pasture](#) with expert in equine nutrition, Don Kapper, has just been added to the valuable resources housed on the [Colic Risk Rater](#) web page.

**Full Story:** <https://thehorseportal.ca/2020/04/colic-prevention-introduce-spring-pasture-slowly/>

## Summary of Highlights

As Equine Guelph celebrates its 17th year of partnership with the equine industry in Ontario and beyond, progress continues, despite the world-changing events of 2020.

We continue to support the industry-directed mandate of developing priority programs in support of equine health and welfare, and in turn the sustainability of our equine industry. Equine Guelph has been “developed by the industry and for the industry” and it is a role we are dedicated to develop.

Equine Guelph values the partnership that has been created with equine associations, organizations and individuals of the Ontario industry and those beyond the provincial borders to help direct industry research funding towards industry-identified priorities.

Coming out of 2020, there is no doubt that the equine industry will still be facing many challenges and difficult times. This underscores the need for ongoing equine research on the industry priorities and this remains an important program for Equine Guelph and the industry. The partnership of the University of Guelph and the industry is the important foundation for the success of the research program.

There is a continued need to provide up-to-date information from the research program on biosecurity, performance issues and knowledge in health, welfare and safety for our industry participants, no matter their level. This flows into the new education and training programs, most notably with the exciting launch and ongoing development of the new Alcohol and Gaming Commission of Ontario (AGCO) funded pilot program on TheHorsePortal.ca, where industry participants have access to updated, evidence-based information from the research. The Horse Portal program offers new learning opportunities as short, affordable programs with a focus on industry-designated topics of priority and the Certificate and Diploma 12-week courses continue to build the knowledge-base and speciality interests of our students in Equine Science, Welfare and Business.

New this year was the addition of racing-specific courses and the ability to develop customized courses. Fire safety and emergency preparedness continue to play a strong role in the development of new courses and the enhancement of existing courses. The growing and very pro-active communications program extends the research for knowledge transfer of evidence-based information. This works together to increase awareness and knowledge to support best practices for health, performance and welfare.

Equine Guelph acknowledges and sincerely thanks the members of the Advisory Council and funding/support partners: Quarter Racing Owners of Ontario, Inc., Equestrian Canada, the Horsemen’s Benevolent and Protective Association of Ontario, the E.P. Taylor Equine Research Fund, Standardbred Canada, Ontario Equestrian, the Ontario Ministry of Agriculture, Food and Rural Affairs, the Ontario Harness Horse Association, the Alcohol and Gaming Commission of Ontario, Ontario Racing, the Ontario Veterinary College, and the University of Guelph.

The core values of supporting health, welfare and safety of the horses and the industry - remain the focus of programs for Equine Guelph.

## Appendices

### **Appendix 1: Current Equine Guelph Advisory Council**

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**Appendix 2: Equine Guelph Partners**

**E.P Taylor Equine  
Research Fund**



## **Appendix 3: Equine Guelph Staff**

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#### **Appendix 4: Research Projects for 2019-2020**

##### ***New Projects in 2019-20:***

<b>Investigator</b>	<b>Title</b>
Arroyo, L.	Hyperimmune plasma transfusion for the prevention of R. equi infections in foals
Arroyo, L.	The association of Equine Parvovirus-Hepatitis (EqPV-H) with Theiler's disease and the prevalence of EqPV-H DNA and antibodies in horses in Ontario
Arroyo, L.	Dynamics of vitamin D metabolites in healthy and hospitalized horses with enterocolitis
Beeler-Marfisi, J.	The relationship between EIPH and exposure to ambient air pollution in Thoroughbred and Standardbred racehorses
Chenier, T.	Do mast cells play a role in persistent breeding-induced endometritis in the mare?
Hurtig, M.	The Safety and Efficacy of Intra-Articular Therapies
Koch, T.	Enhancement of Immune-Modulatory Properties of eCB-MSCs
Koch, T.	Vitrified equine MSC cartilage for cartilage repair
Koenig, J.	Effect of Extracorporeal Shock Wave Therapy on Intracellular Stress and Immunomodulatory Function of Equine Umbilical Cord Blood Mesenchymal Stromal Cell in vitro

**Continuing Projects:**

Investigator	Title
Arroyo, L.	Improving Fecal Microbiota Transplantation in Horses
Arroyo, L.	Culture-Based Molecular Profiling of the Colonic Bacteria of Horses with Typhlocolitis
Arroyo, L.	Improving Fecal Microbiota Transplantation in Horses
Arroyo, L.	Effects of exercise and Lasix on the pulmonary artery hemodynamics of EIPH affected horses
Barta, J. and Zeldenrust, E.	Detecting <i>Klossiella equi</i> , a potential cause of renal disease, in Ontario horses
Beeler-Marfisi, J.	Pathogenesis and characterization of inflammatory airway disease in Ontario Thoroughbred and Standardbred racehorses
Bienzle, D.	Ciliary function in horses with inflammatory lung disease
Cribb, N.	Ultrasound examination for assessment of closure of the nephrosplenic space in horses
Koch, T.	Isolation and Culture of Equine Mesenchymal Stromal Cells in Serum-Free Conditions
Koch, T.	Equine Mesenchymal Stromal Cells Ability to Help Fight Bacterial Infections
Koch, T.	Development of Osteochondral Constructs Using Equine MSCs
Koch, T.	Allogeneic Equine Umbilical Cord Blood Mesenchymal Stem Cells for Treatment of EIPH
Koch, T.	MicroRNAs as Equine Joint Health Biomarkers
Koenig, J.	Evaluation of the repeated use of allogeneic umbilical cord blood mesenchymal cells in clinical cases of equine superficial digital flexor tendinitis
Koenig, J.	Effect of extracorporeal shockwave therapy on umbilical cord blood mesenchymal stromal cells
Lillie, B.	Equine Herpes Virus (EHV) and EHV-associated disease in the Ontario Equine Industry - Disease prevalence and prevention
Weese, S.	Characterization of the epidemiology and clinical impact of <i>Clostridium difficile</i> infection in hospitalized foals
zur Linden, A.	Development of 3D printed models of the sacroiliac, hip and cervical articular facet joints for ultrasound guided joint injections training of equine practitioners

## **Appendix 5: Lay Summaries of Research Projects for 2019-2020**

### **New Projects:**

#### ***Arroyo, L. Hyperimmune plasma transfusion for the prevention of R. equi infections in foals***

Rhodococcus equi causes severe pneumonia in foals worldwide as well as other forms of extrapulmonary infections that are also severe. Foals acquire the infection shortly after being born which makes prevention of this disease difficult. Administration of R. equi-specific hyperimmune plasma (HIP) intravenously is the only form of prophylaxis available, as a vaccine does not currently exist. While it does not prevent infection, HIP administration has been shown to decrease severity of pneumonia in newborn foals experimentally challenged, although the protective mechanism of HIP remains poorly understood. The aim of this study is to determine the clinical usefulness of HIP administration under field conditions in Canada, as this has not been previously evaluated.

#### ***Arroyo, L. The association of Equine Parvovirus-Hepatitis (EqPV-H) with Theiler's disease and the prevalence of EqPV-H DNA and antibodies in horses in Ontario.***

Theiler's disease (TD) (aka: equine serum hepatitis) is an acute or subacute hepatitis of horses and is one of the most commonly recognized causes of acute hepatic failure in adult horses. The disease is sudden in onset and rapidly progresses with death occurring within 24-48 hours. Up to 80% of affected horses show signs of hepatic encephalopathy (head pressing, aimless walking, yawning). Horses that develop hepatic encephalopathy have a grave prognosis. The majority of cases occur 4-10 weeks after the administration of an equine biologic ("biologic-associated TD") with the most common biologic being tetanus antitoxin. The administration of equine serum or plasma has also been implicated. In some cases, it has been observed there are horses affected that have not been treated with any equine biologic ("non-biologic associated TD"), and this led to the suggestion that an infectious and possibly contagious agent may be involved. A virus similar to the human hepatitis viruses was considered to be the most likely cause. Since 2011, three novel flaviviruses have been reported to be associated with equine hepatic disease. These include non-primate hepacivirus (NPHV), also known as equine hepacivirus (EqHV), equine pegivirus (EPgV) and Theiler's disease-associated virus (TDAV). Of these viruses only NPHV has been shown to be hepatotropic in the horse. In 2018, a novel equine parvovirus, designated equine parvovirus-hepatitis (EqPV-H) was identified in the serum and liver of a horse that died of Theiler's disease 65 days after treatment with equine origin tetanus antitoxin (TAT). This virus was also found in the administered TAT and it has been suggested that EqPV-H can cause Theiler's disease in horses. EqPV-H had been detected in horses suffering from liver disease in Ontario, therefore, the objective of this study is to determine the prevalence of the virus in a subset of horses in Ontario.

***Arroyo, L. Dynamics of vitamin D metabolites in healthy and hospitalized horses with enterocolitis***

Equine enterocolitis (diarrhea, colitis) is a major cause of morbidity and mortality worldwide.

Consequences of equine colitis include loss of hormonal control, metabolic/ electrolyte / fluid derangements, and organ failure. Vitamin D has a multitude of functions, including regulation of calcium and phosphorus, promotes bone health, controls the immune system, and reduces inflammation. Low vitamin D levels have been linked to mortality in sick people. There is no information on how the blood levels of vitamin D change in sick and healthy adult horses and whether these changes are associated with other hormones, inflammatory factors, and mortality in hospitalized horses with colitis. The goal of this study is to determine whether changes in vitamin D during hospitalization of horses with colitis are associated with laboratory abnormalities, disease severity and outcome.

***Beeler-Marfisi, J. The relationship between EIPH and exposure to ambient air pollution in Thoroughbred and Standardbred racehorses***

Worldwide, the prevalence of exercise induced pulmonary hemorrhage (EIPH) is estimated between 44% to 85% of Thoroughbred (TB), and up to 87% in Standardbreds (SB) racehorses. The condition is important to Ontario racing because affected horses are suspected to have shortened racing careers, and in rare instances, may suffer sudden death from massive hemorrhage. EIPH is caused by stress failure of capillaries in the caudodorsal lung, secondary to repeated high-intensity work. However, Veterinarians who regularly assess racehorses by tracheobronchoscopy at Woodbine and Woodbine-Mohawk Park (Mohawk) racetracks in Ontario, Canada are concerned that their proximity, respectively, to Lester B. Pearson Airport and a major highway is exposing racehorses to excessive air pollution, which might contribute to development of EIPH. Two previous studies showed a relationship with EIPH and cooler temperature, but studies on air pollution and EIPH are lacking. The provincial and federal governments have air quality monitoring stations and weather stations located close to Woodbine and Mohawk. These collect air pollution data including nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>) fine particulate matter less than 2.5 microns in diameter (PM<sub>2.5</sub>), and temperature data.

***Chenier, T. Do mast cells play a role in persistent breeding-induced endometritis in the mare?***

Over 18% of Ontario's 212,000 horses are designated as breeding stock, and reproductive health is critical to the economic success of the industry. Reproductive efficiency in horses is generally low, for a variety of reasons, including infertility caused by uterine disease such as endometritis. Endometritis is the third most common medical condition encountered overall in equine veterinary practice and approximately 60% of mares affected by endometritis are barren. One type of endometritis, persistent breeding induced endometritis, or PBIE, occurs in mares that have an abnormal inflammatory response after breeding. Up to 43% of broodmares suffer from this condition, depending upon the study and the definition used. Given the large number of horses in the breeding sector in Ontario, endometritis and more specifically PBIE, causes a significant economic

impact to the breeding industry. One type of inflammatory cell, the mast cell, may play a role in PBIE. While mast cells are generally thought of as inducing allergic reactions, they are also involved in many chronic inflammatory conditions and can induce fibrosis. Both of these occur in PBIE-affected mares. This study will determine the number of mast cells in the endometrium of PBIE-affected and unaffected mares and evaluate whether cell numbers change in response to artificial insemination. A better understanding of the abnormal inflammation that occurs in PBIE-affected mares will lead to new and improved treatments for this important condition that causes infertility.

### ***Hurtig, M. The Safety and Efficacy of Intra-Articular Therapies***

We intend to compare the efficacy of mesenchymal stromal cells (MSCs) - previously known as mesenchymal stem cells - versus steroid injections in the equine fetlock for treatment of joint injury and osteoarthritis. This project also addresses the safety of steroid injections in joints which continue to be widely debated in the racing and sporting industry. We know from human studies that injection of MSCs result in better and longer results in the human knee than steroids. Also, preliminary studies in equine stifle and fetlock lameness seem to indicate the MSC therapies improve the recovery of the horses. Our own work has shown that we can identify the best MSCs from the specific donors and use these cells in joints to reduce inflammation. In addition, the co-investigators in this proposal have shown that MSCs can be thawed, handled and injected without damaging the cells, and that a single injection of similar MSCs can reduce or stop the progress of osteoarthritis in the knee of sheep. Since chip fractures in the fetlock joint are relatively common source of lameness and contribute to cartilage damage, we will create a small chip fracture in the fetlock joint of research horses and follow the progress of physical and metabolic cartilage injury in horses that receive MSCs or steroids. In order to make this model more aligned with real-life management of these injuries we propose to exercise the horses in the form of galloping and jumping during the evaluation of the treatments.

### ***Koch, T. Enhancement of Immune-Modulatory Properties of eCB-MSCs***

Horses are multi-use livestock that contribute more than \$19 billion annually to the Canadian economy. Joint inflammation due to osteoarthritis or injury is among the most common causes of lost training days or premature retirement in equine athletes. Stem cells hold the promise of novel therapeutic approaches to these difficult-to-treat problems. Mesenchymal stromal cells (MSCs) can be expanded in culture to achieve the desired number for treatment and are capable of modulating cells of the immune system even after long-term storage, which makes them desirable for treatment of immune and inflammatory disorders. We expect that equine cord blood-derived (CB-) MSCs can be enhanced to have improved anti-inflammatory and immunomodulatory properties for future use as treatment of a variety of inflammatory or immune related disorders in horses. Our sole objective of this study is to determine possible in vitro enhancement of equine CB-MSCs using a novel proprietary culture engineering method to improve these immunomodulatory properties. The work will generate pivotal data to support the clinical evaluation of enhanced allogenic equine CB-MSCs to treat joint inflammation in research horses. Upon proving the concept in research horses with induced inflammation, the enhanced equine CB-MSC would be tested in a randomized clinical trial for the treatment

of joint inflammation in client-owned horses suffering from osteoarthritis. Fully implemented, this therapy would provide a safe, efficacious, and technically simple treatment for selected inflammatory or immune-related disorders in horses.

***Koch, T. Vitrified Equine MSC Cartilage for Cartilage Repair***

Horses are multi-use livestock that contribute more than \$19 billion annually to the Canadian economy. Injuries to joints are among the most common causes of lost training days or premature retirement in equine athletes. Stem cells hold the promise of novel therapeutic approaches to these difficult-to-treat problems. Large cartilage defects >4cm<sup>2</sup> are a challenge to treat, but so-called cartilage chips (1x1x1 mm) have shown significant clinical promise in human medicine, regardless of whether the cartilage was sourced from juvenile human cadavers, unrelated adult cadavers, or from the patient. Preclinical work in the horse model has also shown promising results using cartilage harvested from the joints of horses. However, current cartilage chip methods are hampered by a limited supply of donor material, risk of disease transmission, suboptimal graft tissue, and donor site morbidity. Donor age, comorbidities, and harvest site may also negatively influence the biological potency of present cartilage and cell grafting methods. We propose to solve these issues by using cartilage generated in the laboratory from equine cord blood mesenchymal stromal cells (eCB-MSC). We will vitrify (cryopreserve) the cartilage tissue for indefinite storage and availability as an off-the-shelf live-cell cartilage graft that can be implanted using standard surgical methods. We are seeking support to establish a robust vitrification protocol for eCB-MSC-derived neocartilage. The work will generate pivotal data to support the clinical evaluation of cryopreserved allogenic eCBMSC cartilage chips to repair focal cartilage defects in research horses. Fully implemented, this therapy would provide a safe, efficacious, and technically simple treatment for horses as well as provide an opportunity for a Canadian biotechnology business to bank and distribute vitrified cartilage tissue in unlimited quantities to the world market.

***Koenig, J. Effect of Extracorporeal Shock Wave Therapy on Intracellular Stress and Immunomodulatory Function of Equine Umbilical Cord Blood Mesenchymal Stromal Cells***

Electrohydraulic shock wave (ESWT) has been shown to increase proliferation and differentiation of equine umbilical cord blood derived mesenchymal cells (CB-MSCs). The mechanism of this effect is unknown. It could be the result of cell stress or alternatively, due to production of cytokines or other secreted substances. Further evaluation of this mechanism is needed to develop a combined shockwave-CB-MSC treatment to enhance tissue healing.

### **Continuing Projects:**

#### ***Arroyo, L. Culture-Based Molecular Profiling of the Colonic Bacteria of Horses with Typhlocolitis***

Typhlocolitis is an inflammatory process of the cecum and colon that can lead to acute and severe diarrhea horses. Affected horses can develop life threatening hypovolemia, electrolytes and acid-base disorders, toxemia and sepsis. The most common enteropathogens associated with diarrhea in adult horses include *Salmonella* spp., *Clostridium* spp (mainly *C. perfringens* and *C. difficile*), *Neorickettsia risticii* (endemic areas) and coronavirus; but a causal agent for a large proportion of these cases (>60%) cannot be established. In recent years, culture-independent methods revealed that microbial communities of the cecum and colonic contents of healthy horses are dominated by a fairly stable population of Firmicutes and either Bacteroidetes or Verricomicrobiota. This method also showed that there is marked decreased in microbial richness and diversity occurs humans and animal with gastrointestinal disease. The aim of this study is to characterize the anaerobic bacteria within the large colon by combining culture enriched-based methods and molecular profiling of intestinal contents of horses with or without colitis.

#### ***Arroyo, L. Improving Fecal Microbiota Transplantation in Horses.***

Fecal transplantation has saved thousands of lives in other species, but the method needs to be refined before it can be used to treat horses with intestinal flora imbalances (e.g. colic and colitis). The intestinal flora, also called microbiota, is comprised by thousands of microorganisms, especially bacteria. It is now known that the intestinal bacteria are very important to maintain health and that several diseases can occur because of imbalances on the composition of this bacteria (called dysbiosis). Diseases affecting the gastrointestinal tract are the main cause of mortality in horses and bacterial imbalances have been demonstrated in horses with colitis, colic and under stressful situations (e.g. post-partum and shipping). Recent efforts have focused on manipulation of the intestinal bacteria to treat and prevent dysbiosis. Microbiota manipulation can be achieved by controlling diet, by using therapies such as antibiotics and probiotics, or by transferring the bacteria from a healthy individual to a patient. This procedure is called "fecal microbiota transplantation" (FMT). FMT has been used with great success to treat other species, but our preliminary data demonstrated that current recommendations are not efficient in horses. Therefore, a refinement of the method is necessary before FMT can be recommended to be used in horses. In this study, we propose to test new doses to successfully use FMT to restore the normal intestinal bacteria of horses with bacterial imbalance. We will also bypass the proximal portions of the intestine by delivering the microbiota directly into the large colon to try to increase FMT efficacy. Experimental Design: We propose to induce microbiota imbalance in a group of horses by treating them with oral antibiotics (TMS). Then we will evaluate the efficiency of FMT by comparing current recommendations (FMT once a day) with a group receiving the procedure four times per day. Fecal bacteria before and after FMT will be evaluated using next

generation DNA sequencing. Furthermore, we will deliver FMT directly into the distal gut to determine if the FMT efficacy can be increase.

**Arroyo, L. Characterization of the equine hindgut microflora and metabolites using an in-vitro model.**

The equine gastrointestinal tract is a large tubular structure that houses complex microbial ecosystems within multiple compartments along its length. The hindgut compartment (cecum and colon) comprises the larger portion of the tract and it is here where complex sugars are fermented by the resident microbes, providing between 60-70% of the daily energy requirements of the horse. Microbial communities (microbiota) disturbances may affect the health of the host leading to potentially life threatening disorders in horses, such as colitis and laminitis. The composition and function of the equine hindgut microflora is currently a topic undergoing intense research and much knowledge had been generated. However, a better understanding of the microbial ecosystem, in particular how disturbances in microbiota homeostasis change its function and the consequences of these changes to host health, is needed. In order to understand the effects of gut microbiota disturbances, it is imperative to know the status of the microbial ecosystem under healthy conditions. Culture of whole gut microbial communities *in vitro*, under physiologically relevant conditions, can be achieved by using continuous culture (chemostat) systems. The aim of this proposal is to develop an *in vitro* system that mimics the nutritional and environmental conditions of the hindgut of the horse, which (when seeded with GI samples obtained from horses) will allow analysis of the microbial population composition, abundance and distribution and their metabolic products.

**Arroyo, L. Effects of exercise and Lasix on the pulmonary artery hemodynamics of EIPH affected horses.**

Effects of exercise and Lasix on the pulmonary artery hemodynamics of arterial wall remodeling (calcification and fibrosis) occurs in racehorses and is the most important cause of vascular stiffness in humans. There is a growing body of evidence to support the hypothesis that excessive pressure pulsatility resulting from arterial stiffness promotes abnormalities in micro-vascular structure and function, contributing to end-organ damage and dysfunction in humans (Mitchell GF 2008; Tan W et al., 2013). We hypothesize therefore that stiffening of the pulmonary arteries of racehorse's leads to hemodynamic changes (excessive pressure pulsatility) promoting micro-vascular structural and functional abnormalities in the lungs, and that this contributes to the development of EIPH. Our research group is a multidisciplinary team of equine and human clinicians, pathologists and bioengineers that for many years has been conducting equine pulmonary mechanics research (material properties, wall stress, pulse wave quantification, *in vitro* functional testing). We have access to specialized research equipment and clinical facilities necessary for this type of research project and we have already developed both innovative lab and clinical testing methods and analysis strategies. We aim to investigate the compliance of the pulmonary arterial wall of horses with arterial remodeling (i.e. fibro-calcification), the hemodynamics of the pulmonary artery blood flow, and the potential role of these alterations in

the pathogenesis of EIPH in horses.

***Barta, J. and Zeldenrust, E. Detecting Klossiella equi, a potential cause of renal disease, in Ontario Horses***

*Klossiella equi* is a single celled, obligate intracellular parasite (Apicomplexa, Adeleorina) that parasitizes the kidneys of equids, including horses. The prevalence of *Klossiella* infections is unknown because infected hosts usually have no clinical signs. Most infections are found incidentally during necropsy. The infective stages (sporocysts) are difficult to detect in urine making diagnosis of infections in living horses challenging. It has been shown that this parasite can cause damage to equine kidneys in cases of heavy infection, especially in immunocompromised hosts. The proposed research would attempt to establish prevalence of the disease by developing a molecular diagnostic test specific for this parasite. The DNA-based test could be applied retrospectively to previous parasite-positive post-mortem cases as well as for detection of infections in live horses. Without knowing the infection status of a particular horse, it is difficult to associate an infection with this biologically unusual parasite with particular clinical presentations or evaluate any contribution to renal disease. This research will create a sensitive DNA-based test to detect *K. equi* and then apply this assay on kidney tissues, blood or urine from clinically normal horses in Ontario. The newly developed test could provide the prevalence of this potential pathogen, *K. equi*, in Ontario horse populations. *Klossiella equi* was first described in Hungary (Baumann 1946) so it is unknown if the same parasite, or a different species, is responsible for infections in Ontario horses. The next step of this research will to do multi-locus sequence-based genotyping of *Klossiella*-positive samples from Eastern Europe and compare the European sequences to the sequence of the *Klossiella* already sequenced from Ontario horses.

***Beeler-Marfisi, J. Pathogenesis and characterization of inflammatory airway disease in Ontario Thoroughbred and Standardbred racehorses***

Inflammatory Airway Disease is a type of lung inflammation in horses that is similar to mild asthma in people. It is common in racehorses, especially 2 and 3 year olds that are stabled, but the asthma is not caused by an infection and the horse's temperature remains normal. The asthma causes the horse to have a persistent cough, which is made worse by exercise. We think it is partly caused by breathing in barn dust from hay, bedding and the floor (during sweeping). In part, barn dust is made up of very fine mould spores (even from good looking hay), and little pieces of dead bacteria (from manure). Both of these things cause the horse's lungs to react and that reaction causes the asthma. Another thing we think causes horse asthma is air pollution. It is true that in Ontario air pollution causes asthma in people, but we haven't studied whether it does the same in horses. It's important to study this disease because it is costly to treat and means missed training and racing days, so the earnings potential of the horse is decreased. In this project, we will work with Thoroughbred and Standardbred trainers and veterinarians at Woodbine and Mohawk racetracks. When a trainer has a horse that they think is coughing bad enough to call their veterinarian, the vet will do a physical examination on the horse and will use their scope to look in the horse's windpipe and down into the lungs. The vet will

then perform a 'lung wash' on the horse. This is a safe procedure where they put a small amount of sterile saline into the lung and suck it right back out. It doesn't fix the problem, but it allows us to look at the cells and mucus in the lungs and tells us what the horse has wrong with it (asthma, lung infection, or bleeding). Based on what we find we will be able to work out approximately how many racehorses have asthma, and we will see whether air pollution, the mould spores and pieces of bacteria cause asthma. If we can get scientific evidence of these things, we will be able to help racehorses to be healthier and improve their earnings potential to the benefit of all involved.

### ***Bienzle, D. Ciliary function in horses with inflammatory lung disease***

Cilia are small hair-like extensions on cells that line the nose, trachea and larger airways. The function of cilia is to move a layer of mucus produced by cells in the lower airways toward the mouth for swallowing, and therefore to protect the lung from inhaled particles. Thus, cells with cilia that constantly beat to move a layer of mucus "outward" line the entire upper airway. Inhaled bacteria, molds and particles "stick" to the mucus layer and are then moved by beating ciliary toward the mouth. People and animals born with cilia that are defective in the proteins necessary for ciliary movement ("primary ciliary dyskinesia") have recurrent pneumonia throughout their life as well as abnormalities in other organs. In conditions such as asthma and heaves, recurrent inflammation of the airways results in injury to cells lining the airways, including ciliated epithelial cells. It is thought that in these conditions cilia do not regenerate properly, leading to a vicious cycle of poor clearance of particles by shortened or poorly beating cilia and recurring inflammation. Viral infections of the nose and lungs have also very recently been recognized to affect the function of cilia. We will collect epithelial cells from healthy horses' noses with a simple short medical brush, put the cells into culture and measure how well they move particles mimicking bacteria (fluorescent beads). We will compare the results from nasal samples to tracheal samples obtained with a bronchoscope and a longer medical brush. If cilia in samples from the nose function similar to those from the trachea, routine samples for assessments can be readily acquired. Once the functional assays are established, we will collect samples from young and older horses with mild and severe lung inflammation ("inflammatory airway disease", IAD, and "heaves"), respectively, to measure how cilia function in these conditions and to assess their appearance. If abnormal cilia function is a consistent feature of respiratory diseases of horses, inhaled medication to change the composition of mucus and/or to increase the production of mucus may be helpful.

### ***Cribb, N. Ultrasound examination for assessment of closure of the nephrosplenic space in horses***

Currently, preventative laparoscopic surgery for nephrosplenic entrapment colic is the recommendation for horses to reduce the risk of disease of this type. The technique is well established but 2 recent reports in the scientific literature have highlighted our lack of knowledge of aspects of this surgery. The papers have highlighted that firstly, we currently do not know how long the preventative effects from the surgery last, and, secondly, we do not know whether the outcome from the surgery can be evaluated by

ultrasound examination. In our research herd, there are 12 horses that have recently undergone closure of the nephrosplenic space by the PI. It is our aim to follow these horses for up to 3 years following their surgery to determine whether the adhesions last this length of time. These findings will be correlated with a concurrent ultrasonographic examination to see if this imaging modality can be used to determine closure of the space.

### ***Koch, T. Equine Mesenchymal Stromal Cells Ability to Help Fight Bacterial Infections***

Antimicrobial resistance may be one of the biggest medical challenges in the coming decades. This issue transcends species and a one-health approach, including both veterinary and human patients, is therefore desirable to test new potential treatment tactics. One recent approach is the use of mesenchymal stromal cells (MSC) to eliminate microorganisms. MSC have demonstrated antimicrobial effects not only through the modulation of the immune response, but also through the secretion of antimicrobial substances. These properties may allow MSC to make currently ineffective antibiotics effective again against resistant bacteria. Understanding what these MSC secreted substances are may allow us to produce or isolate these substances and use them as regular drugs in combination with currently utilized antibiotics to develop new treatment strategies. We have selected bacteria commonly affecting horses to prove the principle idea of the project that MSC can make antibiotics more effective. MSCs from five horses will be paired with three isolates of anti-microbial resistant bacteria and tested for antimicrobial susceptibility. MSC included in the MSC bacterial co-culture will be harvested following co-culture, and RNA will be isolated for next generation sequencing (NGS) to evaluate which MSC genes could be related to this antimicrobial effect. This work has the long-term potential to discover new therapies that can either potentiate current antimicrobials or maybe even act as novel antimicrobials on their own. This foundational work will support future funding applications to support clinical trials in client-owned horses of natural diseases.

### ***Koch, T. Isolation and Culture of Equine Mesenchymal Stromal Cells in Serum-Free Conditions***

Fetal bovine serum is a central component of current culture media for the isolation and expansion of mesenchymal stromal cells in veterinary medicine. The use of fetal bovine serum supplementation has many drawbacks including increased risk of adverse reactions and batch-to-batch variation that can make it more difficult to predict the efficacy of a given cell-based therapy. For these reasons, so-called serum-free media has been developed to support the isolation and expansion of human mesenchymal stromal cells. Few studies have tested serum-free media on equine cells and the results have been discouraging showing reduced growth rate and other cell alterations compared to cells maintained in fetal bovine serum. These disappointing results could be due to unique metabolic requirements of equine mesenchymal stromal cells or improper coating of culture vessels and poor adaptation protocols when using media developed for human cells. We hypothesize that equine umbilical cord blood-derived MSC can be isolated and

culture expanded in commercially available serum-free media. Our objectives are: 1) To compare the isolation success of equine umbilical cord blood-derived (CB) MSC in FBS containing media and one serum free media on different surfaces. 2) To compare the functional properties of established CB-MSC cultures with regards to differentiation potential towards the adipogenic, osteogenic and chondrogenic cell fates as well as ability to suppress lymphocyte proliferation in vitro. 3) To determine if serum-free grown cells are cryotolerant. We expect that we can establish MSC cultures using serum free conditions. The ability to isolate and expand MSC under standardized conditions is an important step towards more standardized therapeutic effect due to reduced product variability. Reduced risk of adverse reactions is another important goal of this work.

### ***Koch, T. Development of Osteochondral Constructs Using Equine Umbilical Cord-Derived Mesenchymal Stromal Cells for Treating Joint Cartilage Defects***

Co-investigators' names and Departments: Rita A. Kandel, M.D., Department of Pathology, Mount Sinai Hospital, Toronto, ON, Mark Hurtig, Clinical Studies, OVC, Judith Koenig, Clinical Studies, OVC, Ms. Sarah Lepage, PhD Candidate, Biomed Sci, OVC

Orthopedic injuries, constituted mainly of trauma to joint cartilage, are the most common cause of lost training days or premature retirement in the equine athlete. As cartilage tissue has a low intrinsic capacity to heal, repeated injury will eventually result in post-traumatic osteoarthritis in the joint. Though current regenerative therapies for the treatment of focal cartilage defects are showing promising preliminary results, they are wrought with potential complications from secondary surgical sites to isolate patient-specific cells or tissue. Therefore, we propose to investigate the potential of a novel cell type in the generation of osteochondral-like plugs without requiring a secondary surgical site on the patient. We have successfully and reproducibly isolated mesenchymal stromal cells from umbilical cord blood (CB-MSC) and demonstrated their ability to generate cartilage in vitro. We found that by subsequently growing the engineered cartilage on a bone substitute, we could generate an osteochondral construct that could serve as an implant. In 2006, Dr. Rita Kandel's group in Toronto generated similar constructs and implanted them into sheep with induced cartilage injuries; the implants successfully contributed to cartilage repair at 9 months post-surgery. We believe that with further optimization, we can generate an osteochondral-like implant using CB-MSC with superior properties for in vivo repair of focal cartilage defects. The biomechanical properties of cartilage generated in vitro are historically poor, making the graft susceptible to damage upon transplantation. We propose to mechanically mature the cartilage prior to implantation in order to better withstand the large loading forces within the equine joint upon transplantation.

### ***Koch, T. Allogeneic Equine Umbilical Cord Blood Mesenchymal Stem Cells for Treatment of Exercise Induced Pulmonary Hemorrhage***

Exercised induced pulmonary hemorrhage (EIPH) is a common condition in racehorses and a significant equine welfare issue. The etiology of EIPH is poorly understood but pulmonary inflammation is a downstream consequence of frequent bleeding.

Mesenchymal stem cells (MSC) have non-progenitor functions through secretion of various proteins. Through such secreted factors MSC have demonstrated immune modulatory properties in vitro and in vivo. In our lab we have demonstrated that equine umbilical cord blood-derived (CB) MSC are more immune-modulatory than the more commonly used MSCs derived in vitro from adipose tissue or bone marrow aspirates. We have also shown that CB-MSC suppress lymphocyte proliferation in vitro equally immediately after thawing or after one week of culture expansion post-thawing. These CB-MSC have low to no expression of MHC-I and II, suggesting they can be applied in an allogeneic manner. In vivo studies in the horse may lend support to allogeneic application of CB-MSC. Attenuation of pulmonary inflammation from bleeding following intravenous MSC injection has been shown in vivo in humans and non-equine species. The hypothesis of this project is that allogeneic equine CB-MSC will attenuate EIPH associated pulmonary inflammation. Funds are sought to perform a feasibility study to test this hypothesis. Use of allogeneic CB-MSC holds the promise of developing a novel off-the-shelf cell-based product for this important equine disorder.

### ***Koch, T. MicroRNAs as Equine Joint Health Markers***

Injuries involving joint cartilage such as osteoarthritis (OA) are some of the most common causes of lameness and pain in horses. Sophisticated means of monitoring joint health status are needed to allow early detection and intervention as well as monitoring the effect of interventions. MicroRNAs are a class of short non-coding RNAs that participate in various biological processes including cartilage development and homeostasis. MicroRNAs have been measured at the tissue level, in synovial fluid and serum, and may reflect some aspects of the health status of the animal. MicroRNAs may therefore be useful biomarkers of joint health that could be evaluated through frequent blood and or joint fluid sampling and analysis. In the present proposal, operating funds are sought to determine robust methods for detecting microRNAs in synovial fluid and blood plasma from horses and to determine cut-off values for selected microRNAs in healthy horses and horses with joint inflammation.

### ***Koenig, J. Evaluation of the repeated use of allogeneic umbilical cord blood mesenchymal cells in clinical cases of equine superficial digital flexor tendinitis.***

Tendon and ligament injuries are common in the equine athlete. These types of soft tissue injuries result in significant economic loss to the equine industry each year as a result of decreased performance, prolonged rehabilitation, and recurrent injury. Even though tendons heal well, the scar tissue formed in this repair is functionally deficient in comparison to normal tendon. The result is compromised performance of the horse and high re-injury rates. Improved clinical lameness outcome and a better overall prognosis for return to exercise was noted upon injection of simple bone marrow aspirate directly into damaged suspensory ligaments. This observation spurred the interest of biologics for the treatment of equine tendon injuries. Concerns related to the volume of unaltered bone marrow and its content of bone spikes and fat cells on tendon healing lead to the use of cultured stem cells derived from bone marrow (BM) aspirates. Such BM stem cells have been used commercially to treat injured tendons in more than 500 horses with

naturally occurring injuries. Only 18% of these horses were re-injured once they entered full training, which appears more favorable than a 56% re-injury rate reported in a previous study where a routine rehabilitation protocol was used. This much improved reinjury rate of only 18% was only observed when the stem cells were injected in the first 6 weeks after injury. Bone marrow derived stem cells need to be culture expanded in the lab after harvest from the horse's bone marrow, which can take 4 weeks. This requires very prompt action after injury to ensure a diagnosis is established, bone marrow is harvested from the horse and transported to the lab for expansion and back to the veterinarian to be injected within 6 weeks after injury to achieve the reported benefits. We have shown previously, that it is safe to inject allogeneic (unrelated horse) equine umbilical cord blood stem cells into horse's joints and that equine umbilical cord blood stem cells are more immune-modulatory than stem cells from equine bone marrow, even after prolonged freezer storage. These findings support the cell banking of umbilical cord blood stem cells for later allogeneic use, which means they can be taken off the shelf and injected into horses as needed without having to wait for culture expansion.

### ***Koenig, J. Effect of extracorporeal shockwave therapy on umbilical cord blood mesenchymal stromal cells***

Shockwave has been used as a treatment to decrease the healing time and improve the quality of the repair in bone and soft tissue injuries, but the exact mechanism is not completely understood. Intra-lesional (into bowed tendons) administration of stem cells in combination with shockwave has been used as an alternative treatment for orthopedic diseases like tendon and ligament lesions in horses, without scientific evidence, but anecdotally has resulted in faster healing times and return to function. There is a need to evaluate the effect that shockwave has on stem cells. One in vitro study showed that equine fat derived stem cells grow more rapidly and differentiate faster into different tissues, but nothing is known about the secretory function of these cells or the effect of shockwave on bone marrow or umbilical cord blood derived stem cells. Labelling these cells allows tracking of these cells also in vivo. Therefore, we hypothesized that shockwave will enhance the progenitor (their ability to differentiate into different tissue) and nonprogenitor (their anti-inflammatory and secretory) functions of stem cells. Our objectives are to firstly evaluate if shockwave increases umbilical cord blood derived stem cell growth rate, proliferation rate and differentiation in comparison to untreated cells in vitro. And secondly, to evaluate the effect of shockwave on topically injected allogeneic (derived from unrelated foals) umbilical cord blood derived stem cell and follow the cells in a neck wound model in vivo.

### ***Lillie, B. Equine Herpes Virus (EHV) and EHV-associated disease in the Ontario Equine Industry - Disease prevalence and prevention***

Equine herpesvirus-1 (EHV-1) can cause a variety of diseases in horses, from simple runny nose and fevers, to abortion or even neurologic disease and death. We are hoping to better understand abortion rates in Ontario broodmares and determine what effect EHV-1 is having on the industry. One aspect of the virus that was overlooked until recently, is that many horses become infected when they are still with their dams. Once

a horse is infected with the virus, it can remain in the body and can reactivate at any time. Many characteristics of this viral infection are unknown, such as how many horses in a population are infected, when or why it reactivates within the body, and why it causes one form of disease over another. EHV-1 vaccines have been thought to be the reason for a steep reduction in abortion. However, studies have found that the vaccines are not completely protective, outbreaks occur even in vaccinated herds and over-vaccinating can actually decrease the body's protective immune response. Considering that the acceptable rate of abortion is not known, it is difficult to gauge the effect that EHV-1 has on infected mares and therefore the value of vaccination. Vaccinating them after they are infected has not been strongly studied, so the effects of the vaccine to prevent disease in already infected horses is unclear. Further, no vaccines have been labelled protective against the neurologic form. Researchers have recently found a genetic change in the virus from horses.

***Merkies, K. Nutritional and feeding behaviour effects of steaming or soaking hay for horses***

Dried hay is the most common feedstuff for horses in North America. Horse owners supply hay in a variety of formats for a variety of reasons. Two such methods in which dried hay is altered before being offered to horses is soaking and, to a lesser extent, steaming. When grass hay is soaked or steamed the resulting wet or steamed hay has less carbohydrates. Soaking, but not steaming, also results in a loss of protein and micronutrients. A lower carbohydrate-content hay can help to reduce blood glucose, and this is appealing for horses with laminitis, insulin resistance (Cushings), Equine Polysaccharide Myopathy, and those who are overweight. The extent of the effects of soaking and steaming on timothy/alfalfa hay, the most commonly available hay in Ontario, is unknown as the majority of research has been conducted in the United Kingdom where grass hays are more common. Therefore, under commonly-used soaking and steaming practices, this research seeks to understand how soaking and steaming affect the nutrient content of timothy/alfalfa hay and additionally whether soaking or steaming alters the preference horses have for dried, soaked or steamed hay.

***Weese, S. Characterization of the epidemiology and clinical impact of Clostridium difficile infection in hospitalized foals***

Co-investigators' names and Departments: Nathan Slovis DVM, Dipl. ACVIM and Anne Kullmann DVM, Hagyard Equine Medical Institute (HEMI), Diego Gomez-Nieto DVM DipACVIM, Dept of Pathobiology

Neonatal foal diarrhea is a common problem in foals, and Clostridium difficile is an important cause. In Central Kentucky, there has been an increased recognition of C. difficile (CDI) infection in the foals on farms and at an equine hospital, with the latter characterized initially by a subclinical infection that develops clinical disease usually after 48 hours of hospitalization. Disease that is different from classical enterocolitis is consistent with recognition in humans that CDI is not always accompanied by overt diarrhea. Preliminary data have indicated 7 different ribotypes from nine C. difficile

clinically affected foals, something that is consistent with multiple community sources rather than a hospital focus. This prospective case control study will therefore evaluate the prevalence and epidemiology of *Clostridium difficile* colonization in hospitalized foals versus farm-matched controls, evaluate the impact of *C. difficile* colonization on development of disease during hospitalization, characterize *C. difficile* recovered from foals, evaluate diagnostic tests for CDI and evaluate the transmission of *C. difficile* between mares and foals. It will involve collection of fecal samples from foals presented to two equine hospitals (Kentucky, Ontario) for reasons other than diarrhea, plus their mares, age and farm-matched controls and foals with disease potentially attributable to CDI. This study will provide important information about the nature of this important pathogen, the risks associated with *C. difficile* shedding at hospital admission, transmission of *C. difficile* between mares and foals and risk factors for disease, with a goal of better understanding the disease to better diagnose, treat and prevent infections.

***zur Linden, A. Development of 3D printed models of the sacroiliac, hip, and cervical articular facet joints for ultrasound guided joint injections training of equine practitioners***

Three-dimensional models are used to teach various skills and techniques without needing cadavers or practice on live patients. Ultrasound guided injections of the neck, hip, and sacroiliac joints are challenging to perform but very useful for diagnosing and treating arthritis in sports and racehorses. Joint injections are used for diagnosing lameness by injecting local anesthetics or treating arthritis by injecting steroids or other similar substances. These specific injections are often only performed by radiologists or those with advanced training and access to ultrasound machines. With the increased use of ultrasound by equine veterinarians for the diagnosis of tendon injuries in racehorses, this imaging modality can also be used for diagnostic and therapeutic joint injections. One goal of this project is to determine the proper 3D printed material to mimic equine bones via ultrasound examination. The next step is to scan various body parts of a cadaver (neck, sacroiliac joints, and hips) with computed tomography (CT) to create highly accurate digital versions of these joints. These body parts will then be 3D printed in high resolution and embedded in clear ballistics gel to mimic tissue, while allowing the user to directly see the needle and underlying bones. The models will then be assessed for validity by radiologists, equine surgeons, and residents at the Ontario Veterinary College. Once validated, these models will be used to teach interested equine veterinarians in Ontario how to perform these techniques via seminars.

## **Appendix 6: Research Publications:**

### ***Dr. Luis Arroyo***

HorseJournals.com (<https://www.horsejournals.com/horse-care/illness-injury/diseases/airway-disease-racehorses-more-prevalent-previously-thought>), April 2018.

Horse Canada. (<https://horse-canada.com/horse-news/research-university-guelph-targets-equine-virus/>), 12 April 2018.

### ***Dr. Keith Betteridge***

Betteridge, K.J., Raeside J.I., Waelchli R.O., Christie H.L., Hayes M.A. 2018. Patterns of conceptus development and of progesterone concentrations in maternal blood preceding spontaneous early pregnancy failure in mares. *Reprod Fertil Dev.* 2018 Jul;30(8):1066-1076. doi: 10.1071/RD17336.

Maloney SE, Khan FA, Chenier TS, Diel de Amorim M, Hayes MA, Scholtz EL. A comparison of the uterine proteome of mares in estrus and diestrus. *Reproduction in Domestic Animals.* 2019, 54(3).473-479.

“Project Update – Global Lung Epithelial Response to Inhaled Dust,” *Equine Guelph – Research Update*, Spring 2018.

“Internationally Acclaimed Contributions to Embryo Transfer and Reproduction Technologies,” *Equine Guelph – Research Update*, Spring 2018.

### ***Dr. Janet Beeler-Marfisi***

Increased Weekly Mean PM<sub>2.5</sub>, and NO<sub>2</sub> Are Associated With Increased Proportions of Lower Airway Granulocytes in Ontario Horses. Brankston G, Greer AL, Marshall Q\*, Lang B\*, Moore K\*, Hodgins D, Hennessey JTG, Beeler-Marfisi J. *Front Vet Sci.* 2020 May 5;7:185. doi: 10.3389/fvets.2020.00185. eCollection 2020.PMID: 32432128

Exercise-Induced Pulmonary Hemorrhage and Air Pollution, Beeler-Marfisi’s interview with Jackie Bellamy-Zions for “Equine Guelph Research Annual News”, January 2020 was picked up by: Standardbred Canada, Canadian Thoroughbred, Horsetalk in New Zealand, and Paulick Report.

### ***Dr. Dorothee Bienzle***

Couetil L, Cardwell JM, Leguillette R, Masan M, Richard E, Bienzle D. Equine asthma: current understanding and future directions. *Frontiers in Veterinary Science.* In press, May 2020

Lee GKC, Tessier L, Bienzle D. Salivary scavenger and agglutinin (SALSA) is expressed in mucosal epithelial cells and decreased in bronchial epithelium of asthmatic horses. *Frontiers Vet Sci.* 6:418, 2019

Tessier L, Côté O, Clark ME, Viel L, Diaz-Méndez A, Anders S, Bienzle D. Gene set enrichment analysis of the bronchial epithelium implicates contribution of cell cycle and tissue repair processes in equine asthma. *Sci Rep.* 2018 Nov 6;8(1):16408.

***Dr. Nicola C. Cribb***

Delli-Rocili M, Cribb NC, Trout DR, Thomason J, Valverde A. Effectiveness of a paravertebral block versus local portal blocks for laparoscopic closure of the nephrosplenic space: A pilot study. *Veterinary Surgery* 2020:1-8. Early View.

***Dr. Amy Greer***

Spence, K., T. O'Sullivan, Z. Poljak, and A.L. Greer. (in press: July 2018). A longitudinal study describing horse characteristics and movements during a competition season in Ontario, Canada in 2015. *Canadian Veterinary Journal* 59.

Spence, K., T. O'Sullivan, Z. Poljak, and A.L. Greer. (2018). Using an agent-based modeling approach to determine the potential impact of infection prevention and control measures on a facility-level equine influenza outbreak. *Canadian Journal of Veterinary Research* 82: 89-96.

Spence, K., T. O'Sullivan, Z. Poljak, and A.L. Greer. (2018). Estimating the potential for disease spread in horses associated with an equestrian show in Ontario, Canada using an agent-based model. *Preventive Veterinary Medicine* 151:21-28.

Spence, K., T. O'Sullivan, Z. Poljak, and A.L. Greer. (2017). Descriptive and network analyses of the equine contact network at an equestrian show in Ontario, Canada and the application to potential disease transmission. *BMC Veterinary Research* 13:191.

***Dr. Mark Hurtig***

Nelson BB, Mäkelä JTA, Lawson TB, Patwa AN, Barrett MF, Wayne McIlwraith C, Hurtig MB, Snyder BD, Moorman VJ, Grinstaff MW, Goodrich LR, Kawcak CE. "Evaluation of Equine Articular Cartilage Degeneration After Mechanical Impact Injury Using Cationic Contrast-Enhanced Computed Tomography." *Osteoarthritis Cartilage.* 2019 May 7. pii: S1063-4584(19)30962-8. doi: 10.1016/j.joca.2019.04.015. [Epub ahead of print] PMID: 31075424

Villamagna IJ, Gordon TN, Hurtig MB, Beier F, Gillies ER. "Poly (ester amide) particles for controlled delivery of celecoxib." *J Biomed Mater Res A.* 2019 Jun;107(6):1235-1243. doi: 10.1002/jbm.a.36632. Epub 2019 Feb 22.

Horse Canada. ([https://horse-canada.com/magazine\\_articles/joint-medication-of-the-future/](https://horse-canada.com/magazine_articles/joint-medication-of-the-future/)), Feb 2018.

Sustained Release Intra-articular Medication. Equine Guelph – Research Update. Spring 2017. pp1-2

**Dr. Thomas Koch**

Lepage S, Alizadeh AH, Lee O, Koch TG. Equine cord blood MSCs has greater differentiation and similar immunosuppressive potential to donor-matched cord tissue MSCs. Intended journal for submission is Stem Cells and Development, June 2018. Alizadeh AH, Bria R, Villagomez DAF, King WA, Koch TG. Cell identity, proliferation, and cytogenetic assessment of equine umbilical cord blood mesenchymal stromal cells. Submitted to Stem Cell and Development on May 26, 2018 (SCD-2018-0105).

Costa L, Dennis D, Hewson J, Koch TG. "Evaluation of cell function and viability of Molday ION™ Rhodamine B labeled equine cord blood mesenchymal stromal cells." Poster presentation by Lisa Costa at the National Veterinary Scholars Symposium 2017.

**Dr. Judith Koenig**

J Koenig, Amy Westlund, S Nykamp, D Kenney, L Melville, N Cribb, D Oberbichler Case-control comparison of cervical spine radiographs from horses with a clinical diagnosis of cervical facet disease, with normal horses. Journal of Equine Veterinary Science accepted for publication June 2020

J Koenig, Amy Westlund, S Nykamp, D Kenney, L Melville, N Cribb, D Oberbichler. Cervical facet disease: Data of Sports horses with diagnosis of cervical facet disease, compared with normal horses Data in Brief, *accepted for publication June 2020*

Ramés Salcedo-Jiménez<sup>1</sup>, Judith B. Koenig<sup>1\*</sup>, Olivia Lee<sup>2</sup>, Thomas W.G. Gibson<sup>1</sup>, Pavneesh Madan<sup>2</sup>, Thomas G. Koch<sup>2</sup> Effect of extracorporeal shock wave therapy on equine umbilical cord blood mesenchymal stromal cells in vitro; Vet Surgery (abstract) 2018; Dec & Vet Surgery (abstract) 2020 July

Ramés Salcedo-Jiménez<sup>1</sup>, Judith B. Koenig<sup>1\*</sup>, Olivia Lee<sup>2</sup>, Thomas W.G. Gibson<sup>1</sup>, Pavneesh Madan<sup>2</sup>, Thomas G. Koch<sup>2</sup> Extracorporeal shock wave therapy enhances the in vitro metabolic activity and differentiation of equine umbilical cord blood mesenchymal stromal cells. Frontiers under review

Rames Salcedo-Jimenez: Effect of extracorporeal shock wave therapy on equine umbilical cord blood mesenchymal stromal cells in vitro DVSc thesis 2019

**Dr. Brandon Lillie**

HorseTalk (<https://www.horsetalk.co.nz/2018/04/12/ehv-link-equine-abortions/>) 12 April 2018.

Horse Canada. (<https://horse-canada.com/horse-news/research-university-guelph-targets-equine-virus/>), 12 April 2018.

**Dr. Katrina Merkies**

DuBois C, DeVries T, Haley DB, Lawlis P, Merkies K. 2018. Putting an On-Farm Welfare Assessment Tool into Practice in the Canadian Equine Industry – A Pilot Study. *J Eq Vet Sci* 63:35-40

HorseJournals (<https://www.horsejournals.com/popular/rescue-welfare/major-threats-equine-welfare-identified-research-study>). 29 March 2018.

DuBois C, Hambly-Odame H, Haley DB, Merkies K. 2017. An Exploration of Industry Expert Perception of Equine Welfare Using Vignettes. *Animals* 7:102-110

doi:10.3390/ani7120102

HorseTalk (<https://www.horsetalk.co.nz/2017/12/25/welfare-risk-horses-study/>) 25 Dec 2017.

HorseTalk. (<https://www.horsetalk.co.nz/2017/12/07/whinny-non-horse-ey-now-researchers/>) 7 Dec 2017.

**Dr. Patrick Physick-Sheard**

“TVEC Goes Global,” *Equine Guelph - Research Update*, Spring 2018.

Estimates of heritability of atrial fibrillation in the Standardbred racehorse. Kraus, M. P.W. Physick-Sheard, L.F. Brito, F.S. Schenkel. *Equine Veterinary Journal*, 2017. Vol 49 (6): 718-722.

**Dr. Elizabeth Scholtz**

Endometrial nitric oxide synthase activity in mares susceptible or resistant to persistent breeding-induced endometritis and the effect of a specific iNOS inhibitor in vitro. Khan, FA, Chenier, TS, Foster, RA, Hewson, J, Scholtz EL. *Reproduction in Domestic Animals*. 2018. Vol 53 (3): 718-724.

Dose-dependent inhibition of uterine contractility by nitric oxide: A potential mechanism underlying persistent breeding-induced endometritis in the mare. Khan, FA, Chenier, TS, Murrant, CL, Foster, RA, Hewson, J, Scholtz EL. *Theriogenology*. Vol 90 (2017): 59-64.

***Dr. Jeff Thomason***

D. Halucha, W. Sears, J. Thomason. Future Footing & Training Decisions, <https://equineguelph.ca/news/index.php?content=633>, Equine Guelph Press Release, August 2019

“Health Studies with an Impact – Reducing Catastrophic Racing Injuries,” Equine Guelph – Research Update, Spring 2018.  
Horse Talk (<https://www.horsetalk.co.nz/2017/08/03/shoe-equine-joint-pressure-loading/>) 3 Aug, 2017

***Dr. Scott Weese***

The Horse (<https://thehorse.com/18361/exploring-the-equine-microbiome>) 7 Aug 2017  
Horse Canada ([https://horse-canada.com/magazine\\_articles/miraculous-microbes/](https://horse-canada.com/magazine_articles/miraculous-microbes/)).  
Sept 2017

The Horse (<https://thehorse.com/139445/quick-response-key-in-equine-antimicrobial-resistance-cases/>) 30 Jan 2018.

***Dr. Alex zur Linden***

Alexandra Beaulieu, Alex zur Linden, John Phillips, Luis G. Arroyo, Judith Koenig, Gabrielle Monteith. Various 3D printed materials mimic bone ultrasonographically: 3D printed models of the equine cervical articular process joints as a simulator for ultrasound guided intra- articular injections. PLOS ONE | <https://doi.org/10.1371/journal.pone.0220332> August 6, 2019

## **Appendix 7: Research Presentations:**

### ***Dr. Janet Beeler-Marfisi***

ACVP/ASVCP Annual Meeting 2020: Abstract being submitted on flow cytometric analysis of equine BALF cells, supported in part by EG 2017-01

January-February 2020: primary literature-supported content, visuals, and lecturer in Equine Guelph's "Respiratory Health – Exclusive to Racing" course

April 2019 on behalf of Equine Guelph: Can-Am All Breeds Equine Expo – Build Your Own Equine Upper Airway

August 2018: Bronchoalveolar lavage in horses to equine vet members of the Central Canadian Veterinary Association in Kemptville, ON.

2017 & 2018 Four CORE platform & poster presentations – Quinn Marshall & Sylvie Becker – 2017, Brittany Lang & Kai Moore – 2018

### ***Dr. Keith Betteridge***

Raeseide, J.I. and Christie, H.L. 2019. A 'new' estrogen metabolite: an epoxide of estrone as a sulfated steroid. So what! Southern Ontario Reproductive Biologists Ann Mtg June 2019

Bruce, P., Lillie, B. N., Hammermueller, J. D., Hayes, M. A., & Betteridge, K. J. 2017. The relationship of blood progesterone levels to endometrial gene expression in mares during spontaneous pregnancy loss. Summer CORE Symposium, Guelph, Canada-Ontario.

### ***Dr. Dorothee Bienzle***

Bienzle D, Katavolos P, Côté O, Tessier L, Lee G, Viel L. Insights into equine asthma pathophysiology from transcriptomics. Equine Asthma: Current understanding and future directions, Custer State Park, Custer, South Dakota, USA – May 22-25, 2019

Invited to speak on equine asthma at Eastern Ontario Thoroughbred Association Annual Meeting (2019)

Presented a seminar on drug use detection and lung disease to officials at the Annual Alcohol and Gaming Commission of Ontario (AGCO) meeting in Niagara Falls on Feb. 17, 2017

**Dr. Nicola C. Cribb**

Massimo Delli-Rocili, DVSc candidate, presented the following research in a poster competition and won first place! Delli-Rocili M, Cribb NC, Trout DR, Thomason J, Valverde A. Effectiveness of a paravertebral block versus local portal blocks for laparoscopic closure of the nephrosplenic space: A pilot study. *Veterinary Surgery* 2020:1-8. Early View. Presented at 2019 ACVS symposium.

**Dr. Amy Greer**

Spence, K., T. O'Sullivan, Z. Poljak, and A.L. Greer. Using longitudinal questionnaire data to create networks of horse movements in Ontario, Canada. International Conference on Network Science (NetSci 2018) satellite symposium: Integration of Empirical data in network epidemiology. Paris, France. June 2018. Oral.

Spence, K., T. O'Sullivan, Z. Poljak, and A.L. Greer. A longitudinal study describing horse characteristics and movements during a competition season in Ontario, Canada in 2015. Conference for Research Workers in Animal Disease. Chicago, IL. December 2017. Oral.

Spence, K.L., T.L., O'Sullivan, Z. Poljak, and A.L. Greer. Using an agent-based model to describe the potential spread of equine influenza within a network of horses attending an equestrian show. Modeling in Animal Health Conference. Nantes, France. June 2017. Oral.

Spence, K.L., T.L., O'Sullivan, Z. Poljak, and A.L. Greer. Dynamic network analysis of equine travel patterns during the 2015 competition season in Ontario, Canada. Canadian Association of Veterinary Epidemiology and Preventive Medicine. Calgary, AB. June 2017. Poster.

**Dr. Thomas Koch**

Costa L, Dennis D, Hewson J, Koch TG. "Evaluation of cell function and viability of Molday ION™ Rhodamine B labeled equine cord blood mesenchymal stromal cells." Poster presentation by Lisa Costa at the National Veterinary Scholars Symposium 2017.

Roberts E, Dang T, Lepage SIM, Alizadeh HA, Walsh T, Koch TG, Kallos MS. Improved Expansion of Equine Cord Blood Derived Mesenchymal Stromal Cells on Microcarriers in Stirred Suspension Bioreactors. *Journal of Biological Engineering J Biol Eng.* 2019 Mar 21;13:25. doi: 10.1186/s13036-019-0153-8. eCollection 2019.

Lepage SIM, Robson N, Carvajal D, Davis O, Gilmore H, Hooper A, Kamesan V, St. John S, Gelis P, Hurtig M, Koch TG. A look below cartilage: The role of the osteochondral unit in joint health and disease. *Tissue Eng. Part B Rev.* 2019 Apr;25(2):114-125. doi: 10.1089/ten.TEB.2018.0122.

Lepage SIM, Sharma R, Dukoff D, Stalker L, LaMarre J, Koch TG. Gene expression profile is different between intact and enzymatically digested equine articular cartilage. *Cartilage*. 2019 Mar 6:1947603519833148. doi: 10.1177/1947603519833148.

Lepage SIM, Lee OJ, Koch TG. Equine cord blood mesenchymal stromal cells have greater differentiation and similar immunosuppressive potential to cord tissue mesenchymal stromal cells. *Stem Cells Dev*. 2019 Feb 1;28(3):227-237. doi: 10.1089/scd.2018.0135. Epub 2019 Jan 14.

Alizadeh AH, Briah R, Villagomez DAF, King WA, Koch TG. Cell identity, proliferation, and cytogenetic assessment of equine umbilical cord blood mesenchymal stromal cells. *Stem Cells Dev*. 2018 Nov 10. doi: 10.1089/scd.2018.0105.

### ***Dr. Judith Koenig***

Outcome of the evaluation of the significance of arthropathy of the caudal facet joints in horses Amy Westlund, J Koenig, S Nykamp, D Oberbichler, D Kenney, L Melville: CORE @ Ontario Veterinary College, Guelph, Ontario, 2018

Evaluation of the significance of arthropathy of the caudal facet joints in horses. J Koenig, Amy Westlund, S Nykamp, D Oberbichler, D Kenney, L Melville: ACVS Annual Scientific Meeting 2018 (abstract in *Veterinary Surgery* December 2018)

Evaluation of the significance of arthropathy of the caudal facet joints in horses J Koenig, Amy Westlund, S Nykamp, D Oberbichler, D Kenney, L Melville: ECVS Annual Scientific Meeting 2019, Budapest, Hungary (abstract in *Veterinary Surgery* August 2019)

### ***Dr. Brandon Lillie***

Botts, M. B., Cooper, C. J., Hammermueller, J. D., Arroyo, L. G., & LILLIE, B. N. (2017, August). Comparison of nasal and vaginal equine herpesvirus-1 shedding in Ontario broodmares. OVC Summer CORE Research Symposium, Guelph, Canada-Ontario. August.

Cooper, C. J., Arroyo, L. G., & LILLIE, B. N. (2018). EHV-1 vaginal shedding occurs in healthy broodmares. American Association of Equine Practitioners 64th Annual Convention. Abstract accepted for podium presentation. December.

Arroyo L. G. et al. (2018). Merck Animal Health-Ontario Equine Practitioners CE event. Orangeville, ON. January.

Mantel, K. Research targets equine herpesvirus. (2018) In *Canada's Equine Guide* 2018. Special Annual Issue of *Canadian Horse Journal*. January.

Mantel, K., Research targets equine virus. (2018). Equine Guelph - Equine News. January.

***Dr. Katrina Merkies***

Preliminary results of the conditioning phase of the trial were presented at the University of Guelph Animal Behaviour and Welfare Group seminar  
DuBois C, Haley DB, DeVries TJ, Lawlis P, Robinson A, Merkies K. On-farm horse welfare assessment tool: value as an educational opportunity? Campbell Centre for the Study of Animal Welfare (CCSAW) Annual Research Symposium. Guelph, ON, May 2017

DuBois C, Haley DB, Lawlis P, DeVries T, Merkies K. Examining the usefulness of qualitative data to supplement an on-farm equine welfare assessment tool. UFAW International Symposium, Surrey, UK, June, 2017.

***Dr. Jeff Thomason***

Asymmetrical limb loading in Thoroughbred racehorses as a possible cause for injury, D. Halucha, W. Sears, J. Thomason. 15th Annual (ISES) Conference, University of Guelph, August 19 - 21, 2020

***Dr. Scott Weese***

Data presented at OVC Practitioner Night, Dec 14, 2016, and the OAEP Annual Meeting, Feb 2017

***Dr. Alex zur Linden***

Research presented at ACVR Scientific Conference, October 2018, Fort Worth Texas. "Ultrasonographic evaluation of three-dimensional printed models of the equine cervical articular process joints." (A. Beaulieu, A. zur Linden, J. Phillips, G. Monteith, Judith Koenig, Luis Arroyo.

## **Appendix 8: Presentation and Talks Given by Equine Guelph**

### ***Presentations & Talks by Gayle Ecker***

#### **2019**

June 7 & 8 – “The Horse Health Check” and “Body Condition Scoring”, Horse Day, Erin Fall Fair, Erin, Ontario

June 27-30 – OSPCA officer training on Equine Welfare Assessment, University of Guelph, Guelph, Ontario

June 1 – Update on Equine Guelph Fire Prevention and LAR training, OMAFRA Fire Prevention Committee, Woodstock, Ontario

October 11-14 – “The Horse Health Check” and “Body Condition Scoring”, Erin Fall Fair, Erin, Ontario

#### **2020**

January 9 – Large Animal Rescue Table Top Simulations, Hamilton Mounted Police Training, Guelph, Ontario

January 20 – Equine Welfare Assessment, Guest Speaker for Animal Welfare Audit course, University of Guelph, Guelph, Ontario

January 27 – Common Issues and Identification of Equine Welfare Situations, Guest Speaker for Animal Welfare Audit course, University of Guelph, Guelph, Ontario

January 31 – The Education and Training Programs of Equine Guelph, Equine Guelph, Guelph, Ontario

March 9 – “BCS, Cresty Neck and Topline Assessment” and “Horse in the Loft – emergency training preparedness!” Presentations made to Equine Diploma and Certificate students with tour and training, Equine Guelph, Guelph, Ontario

## ***Presentations & Talks by Susan Raymond***

### **2019/2020**

S. Raymond, "Recipe for Successful Rescue, Large Animal Rescue Training – Best Practices, as part of Large Animal Rescue Training course, International Society for Equitation Science Conference, August 18, 2019, University of Guelph, ON

S. Raymond, "Equine Guelph – Volunteer Opportunities", Undergraduate degree BBRM, September 13, 2019, University of Guelph, Guelph, ON

S. Raymond, "Fire Prevention and Emergency Preparedness", Undergraduate degree BBRM, April 7, 2020, University of Guelph, Guelph, ON

## ***Events and Seminars***

Over 12 talks and seminars were given at meetings, tradeshow and other equine events over the year to the equine industry (over 9 talks by Gayle Ecker, and 3 by Susan Raymond) on several educational topics and to promote the programs of Equine Guelph. Equine Guelph also attended 15 events and tradeshow with displays.

## ***Prominent Events, Training and Updating Attended by Equine Guelph***

### **2019**

June 5 – Emergency Response Training for Agriculture, Guelph, Ontario (part one)

December 3 - Emergency Management for Agriculture Training Workshop, Guelph, Ontario (part two)

### **2020**

November 13 – World Horse Welfare Conference, Royal Geographical Society, London, UK

November 20-22 – Violence Link Conference, Toronto, Ontario

## **Appendix 9: Educational Offerings by Equine Guelph**

### ***Educational Courses offered by Equine Guelph and Open Learning and Educational Support***

Advanced Equine Health through Nutrition (Instructor: Dr. Kathleen Crandell, PhD)  
Advanced Equine Behaviour (Instructor: Lindsay Nakonechny, MSc & Kelly Hecker, MSc)  
Advanced Functional Anatomy (Instructor Dr. Jeff Thomason, PhD)  
Equine Behaviour (Instructor: Lindsay Nakonechny, MSc) and Zoe Thorbergson MSc)  
Equine Business Finance and Risk Management (Instructor: Dr. Julie Fischer MBA, D.M.)  
Equine Business Management (Instructors: Rachael Hunter & Christine Polhkamp)  
Equine Event Management (Instructor: Shelby Pennington)  
Equine Genetics (Instructor: Dr. Dianne Winkelman-Sim, PhD)  
Equine Nutrition (Instructor: Nicole Weidner, MSc)  
Equine Welfare (Instructors: Gayle Ecker, MSc)  
Exercise Physiology (Instructor: Dr. Amanda Waller, PhD)  
Functional Anatomy (Instructors: Dr. Jeff Thomason, PhD, Dr. Janet Douglas, PhD, Cathy Wentworth Stanley MSc)  
Global Perspectives in Equine Welfare (Instructor: Dr. Tamara Tadich, PhD, DVM)  
Management of the Broodmare, Stallion and Foal (Instructor: Dr. Pat Meyers)  
Health & Disease Prevention (Instructor: Dr. Ev Post)  
Management of the Equine Environment (Instructors: Dr. Susan Raymond & Kathy Femes)  
Marketing & Communications (Instructor: Tracy Dopko)  
Stewardship of the Equine Environment (Instructor: Dr. Susan Raymond, PhD)  
The Equine Industry (Instructor: Gayle Ecker, MSc)

### ***Short Online course offered by Equine Guelph on TheHorsePortal.ca***

Equine First Aid (Instructor: Dr. Laura Frost, DVM; Dr. Kristen Frederick, DVM)  
Fire and Emergency Preparedness (Instructor: Dr. Susan Raymond, PhD)  
Gut Health and Colic (Instructor: Nicole Weidner, MSc)  
Horse Behaviour and Safety (Instructor: Dr. Susan Raymond, PhD)  
Horse Behaviour and Safety for Youth (Instructor: Jackie Bellamy-Zions)  
Horse Care and Welfare (Instructor: Gayle Ecker, MSc)  
Sickness Prevention (Instructor: Dr. Susan Raymond, PhD)

## **Appendix 10: Summary of the Equine Studies program**

### **Diploma in Equine Studies**

The diploma in equine studies requires 6 core and 4 elective courses. We are seeing an increase in students beginning the program with the intent to complete the Diploma in Equine Studies. In 2009 we awarded our first Diploma in Equine Studies. With 49 diplomas awarded in 2019/20, the total number of diplomas awarded has increased to 309.

#### **Program Requirements:**

Management of the Equine Environment	Core
Health & Disease Prevention	Core
Equine Nutrition	Core
Functional Anatomy	Core
Equine Behaviour	Core
Stewardship of the Equine Environment	Core

*Students can continue with electives from the Equine Science specialty*

Growth & Development	Elective
Exercise Physiology	Elective
Equine Genetics	Elective

*and/or combine Equine Business Management courses*

Equine Business Management	Elective
Marketing & Communications in the Equine Industry	Elective
Finance & Risk Management	Elective
The Equine Industry	Elective
Equine Journalism	Elective
Equine Event Management	Elective

*and/or combine Equine Welfare courses*

Equine Welfare	Elective
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### **Equine Science Certificate**

The Equine Science Certificate requires 4 core and 2 elective courses. The first Equine Science Certificates were awarded in 2004/05 to 36 students. With 31 Equine Science Certificates awarded in 2019/20, to date 449 Equine Science Certificates have been awarded.

#### **Program Requirements:**

Management of the Equine Environment	Core
Health & Disease Prevention	Core
Equine Nutrition	Core
Functional Anatomy	Core
Growth & Development	Elective
Equine Behaviour	Elective
Exercise Physiology	Elective
Equine Genetics	Elective

### ***Certificate in Equine Business Management***

The Certificate in Equine Business Management requires 5 core and 1 elective course. With 13 Certificates in Equine Business Management awarded in 2019/20, to date 81 Equine Business Management Certificates have been awarded.

#### ***Program Requirements:***

Management of the Equine Environment	Core
Equine Business Management	Core
Marketing & Communications in the Equine Industry	Core
Finance & Risk Management	Core
The Equine Industry	Core
Equine Journalism	Elective
Equine Event Management	Elective
Stewardship of the Equine Environment	Elective

### ***Equine Welfare Certificate***

The Equine Welfare Certificate requires 3 pre-requisite courses, 4 core and 2 elective courses. The Equine Welfare Certificate is a partnership between Equine Guelph, Campbell Centre for the Study of Animal Welfare and Open Learning and Educational Support. With 7 Certificates in Equine Welfare awarded in 2019/20, to date 25 Equine Welfare Certificates have been awarded.

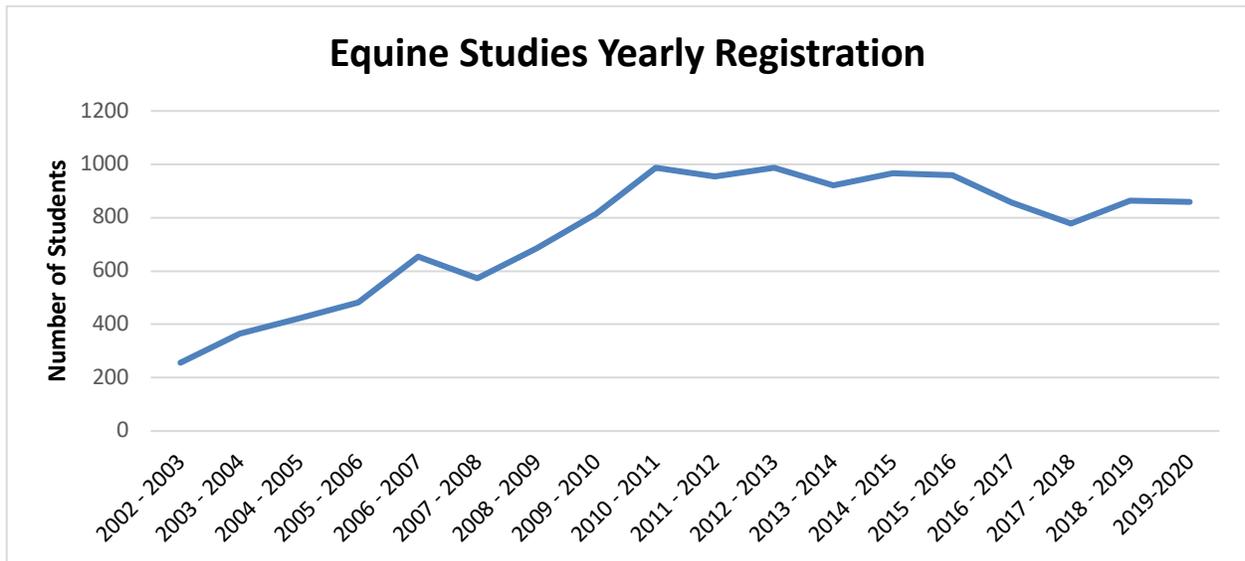
#### ***Program Requirements:***

Management of the Equine Environment	Pre-requisite
Equine Behaviour	Pre-requisite
Course of your choice from Equine Science or Business	Pre-requisite
Equine Welfare	Core
Advanced Equine Behaviour	Core
Advanced Equine Health through Nutrition OR Equine Nutrition	Core
Global Perspectives in Animal and Equine Welfare	Core
Health & Disease Prevention	Elective
The Equine Industry	Elective
Equine Nutrition OR Advanced Equine Health Through Nutrition	Elective
Advanced Equine Anatomy	Elective

### ***2019 – 2020 Student Registration Profile***

Number of individual students	516
Total number of registrations	860

## Equine Yearly Student Registration Summary



## Yearly Student Registration All Programs and Courses

Year	# of reg	Projections	# of Students
2002 - 2003	256	180	
2003 - 2004	365	360	
2004 - 2005	422	480	
2005 - 2006	483	540	
2006 - 2007	653	760	
2007 - 2008	572	600	
2008 - 2009	684	710	
2009 - 2010	814	888	
2010 - 2011	987	1009	503
2011 - 2012	954	949	524
2012 - 2013	987	1125	487
2013 - 2014	920	1110	503
2014 - 2015	966	995	516
2015 - 2016	958	975	530
2016 - 2017	856	975	540
2017 - 2018	778	900	545
2018 - 2019	863	920	562
2019 - 2020	860	920	516

**Student Enrolment Numbers 2019 - 2020**  
 New Students - 242  
 Individual Students - 516

## **Enrollment Registrations by Course 2019-2020**

### **Summer 2019**

2200000	Management of the Equine Environment	47
2200002	Equine Behaviour	60
2200004	Equine Health and Disease Prevention	39
2200008	Equine Genetics	26
2200012	Equine Business Finance and Risk Management	23
2200014	Advanced Equine Health through Nutrition	15
2200013	Equine Welfare	16

### **Fall 2019**

2200000	Management of the Equine Environment	62
2200002	Equine Behaviour	49
2200004	Equine Health and Disease Prevention	31
2200005	Equine Functional Anatomy	54
2200006	Equine Nutrition	50
2200010	Stewardship of the Equine Environment	31
2210002	Equine Business Management	33

### **Winter 2020**

2200000	Management of the Equine Environment	57
2200002	Equine Behaviour	62
2200004	Equine Health and Disease Prevention	27
2200005	Equine Functional Anatomy	60
2200006	Equine Nutrition	39
2200011	The Equine Industry	37
2200017	Global Perspectives in Equine Welfare	9
2240000	Marketing & Communications in Equine Industry	33
<b>Total Enrollments</b>		<b>860</b>

### **Advanced Courses**

No Advanced courses (included in the Equine Welfare Certificate) were offered this year

### **Equine Welfare Certificate Courses**

The Equine Welfare Certificate is a partnership between Equine Guelph, Campbell Centre for the Study of Animal Welfare and Open Learning and Educational Support.

<b>Course</b>	<b>Semester</b>	<b># of reg</b>
Global Perspectives in Equine Welfare	W20	9
Equine Welfare	S19	16
	<b>Total</b>	<b>25</b>

### **Course Distribution**

#### **Number of courses offered each year**

<b>Year</b>	<b>Courses</b>
2002 - 2003	4
2003 - 2004	6
2004 - 2005	8
2005 - 2006	9
2006 - 2007	13
2007 - 2008	10
2008 - 2009	12
2009 - 2010	16
2010 - 2011	19
2011 - 2012	21
2012 - 2013	24
2013 - 2014	21
2014 - 2015	22
2015 - 2016	22
2017 - 2018	21
2018 - 2019	26
<b>2019 - 2020</b>	<b>22</b>

#### **Different individual courses available**

<b>Year</b>	<b>Courses</b>
2002 - 2003	3
2003 - 2004	4
2004 - 2005	6
2005 - 2006	7
2006 - 2007	8
2007 - 2008	7
2008 - 2009	11
2009 - 2010	14
2010 - 2011	15
2011 - 2012	17
2012 - 2013	19
2013 - 2014	16
2014 - 2015	17
2015 - 2016	17
2017 - 2018	16
2018 - 2019	17
<b>2019 - 2020</b>	<b>14</b>

## Where are our students coming from?

### Canadian Students

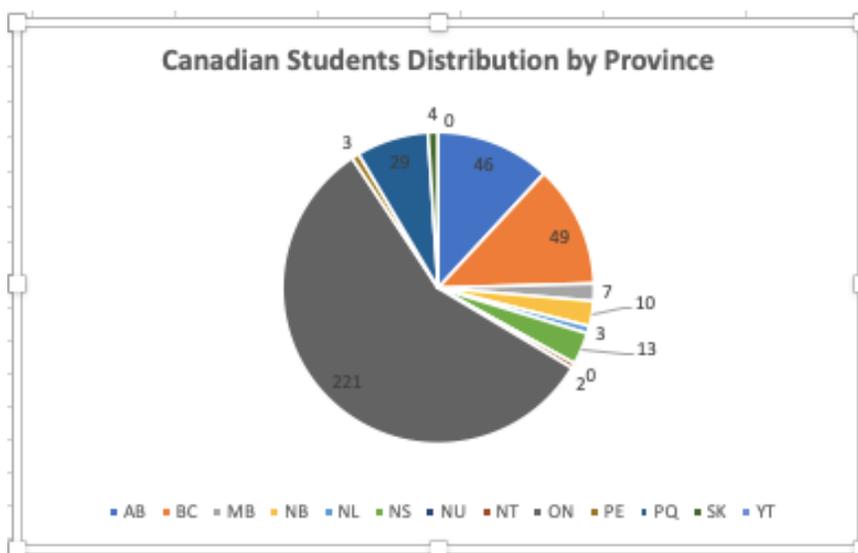
Student numbers	
AB	46
BC	49
MB	7
NB	10
NL	3
NS	13
NU	0
NT	2
ON	221
PE	3
PQ	29
SK	4
YT	0
<b>TOTAL</b>	<b>387</b>

### International Students

Student numbers	
Australia	10
Austria	2
Belgium	1
Cayman Isl.	1
Columbia	2
Costa Rica	1
Denmark	1
Finland	4
Germany	2
India	1
Ireland	1
Kazakhstan	1
Kenya	1
Mexico	2
Netherlands	1
New Zealand	3
Pakistan	1
Portugal	1
Qatar	1
Saudi Arabia	1
South Africa	2
Switzerland	1
Taiwan	1
UAE	1
UK	1
<b>TOTAL</b>	<b>44</b>

### US Students

Student Numbers	
CA	12
CO	5
DC	1
FL	3
GA	4
IA	2
IL	1
IN	2
KY	1
KS	1
MD	3
ME	2
MI	2
MO	4
NC	2
NH	1
NJ	3
NV	1
NY	6
OH	1
OR	2
PA	5
SC	2
TN	1
TX	5
UT	1
VA	3
WA	9
<b>TOTAL</b>	<b>85</b>



**Year to Year Comparison by student geographic location**

	2010	2011	2012	2013	2014	2015	2017	2018	2019
CAN	482	451	459	442	461	451	428	428	387
US	27	19	31	54	38	44	40	40	85
INT	15	17	13	20	23	45	80	94	44
	<b>524</b>	<b>487</b>	<b>503</b>	<b>516</b>	<b>522</b>	<b>540</b>	<b>548</b>	<b>562</b>	<b>516</b>

**Year by Year Comparison of the geographic location of Canadian Students**

	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20
AB	39	49	54	48	49	48	61	50	58	46
BC	47	48	64	63	66	70	60	67	70	49
MB	10	13	10	4	7	14	10	11	13	7
NB	4	8	7	5	4	6	9	8	10	10
NF	2	2	3	4	4	7	4	6	4	3
NS	11	10	15	18	16	13	7	11	11	13
NU	0	1	0	0	0	0	0	0	0	0
NT	0	0	0	3	3	1	0	2	2	2
ON	338	296	275	259	275	249	229	223	208	221
PI	0	0	4	3	1	2	0	2	2	3
PQ	19	18	12	21	20	22	29	30	32	29
SK	10	6	14	14	16	17	15	13	18	4
YT	2	0	1	0	0	2	0	2	0	0
	<b>482</b>	<b>451</b>	<b>459</b>	<b>442</b>	<b>461</b>	<b>451</b>	<b>424</b>	<b>425</b>	<b>428</b>	<b>387</b>

**Graduates of our Certificates and Diploma Program of Studies**

	<b>ESC</b>	<b>CEBM</b>	<b>DipES</b>	<b>WEL</b>
2004/05	36	n/a	n/a	
2005/06	27	n/a	n/a	
2006/07	32	n/a	n/a	
2007/08	25	n/a	n/a	
2008/09	38	n/a	n/a	
2009/10	20	n/a	22	
2010/11	30	2	13	
2011/12	30	6	23	
2012/13	28	7	29	
2013/14	19	9	25	
2014/2015	21	6	20	
2015/2106	50	14	38	3
2016/2017	27	6	34	3
2017-2018	15	8	29	4
2018-2019	20	10	27	8
2019-2020	31	13	49	7
	<b>449</b>	<b>81</b>	<b>309</b>	<b>25</b>

ESC - Equine Science Certificate	
CEBM - Certificate in Equine Business Management	
DipES - Equine Studies Diploma	
WEL - Certificate in Equine Welfare	

## The Horse Portal 2019 – 2020

### Course Offering Overview 2019-2020

Course	Enrollment Total	Enrollment PTSO	# Paid Students	% Paid Enrollment	Revenue
Horse Care and Welfare F19*	106	13	28	26%	\$2,448.39
Equine First Aid - F19	36	10	31	86%	\$2,233.16
Sickness Prevention in Horses F19*	87	3	14	16%	\$1,089.91
Gut Health and Colic Prev. F19	26	11	23	88%	\$2,028.25
Behaviour and Safety - Youth - F19	16	5	12	75%	\$506.25
Behaviour and Safety F19	23	9	19	83%	\$1,648.25
Gut Health and Colic Prev., Racing**	80	0	0	0%	\$0.00
Fire and Emerg Preparedness - W20	19	7	17	89%	\$1,355.75
Equine First Aid - W20	119	22	41	34%	\$3,208.75
Racehorse Respiratory Health, Racing**	123	0	0	0%	\$0.00
Lameness/Injury Prev., Racing**	111	0	2	2%	\$190.00
Behaviour and Safety - Youth - W20	38	0	23	61%	\$994.50
Behaviour and Safety W20	54	26	49	91%	\$4,284.50
Sickness Prevention in Horses - S20 †	260	38	7	3%	\$595.00
Fire and Emerg. Preparedness - S20	55	11	45	82%	\$2,700.00
<b>Total</b>	<b>1153</b>	<b>155</b>	<b>311</b>	<b>49%</b>	<b>\$23,282.71</b>

\* Free coupons offered to AGCO licence holders as part of AGCO Pilot Project

\*\* Free course offered exclusively to AGCO licence holders as part of AGCO pilot project.

† Free course offered by Equine Guelph to assist the equine community during COVID-19

### **Course Enrollment Stats**

<b>Year</b>	<b>Total Enrollment</b>	<b>Federation Enrollment</b>	<b>% Federation Enrollment</b>
2016-2017	58	35	60%
2017-2018	434	207	48%
2018-2019	681	333	49%
2019-2020	1153	155	13%

### **Provincial Breakdown**

<b>PTSO</b>	<b>Registered Students – 2019-20</b>
Alberta (AEF)	27
British Columbia (HCBC)	19
Manitoba (MCH)	1
New Brunswick (NBEA)	2
Newfoundland (NEA)	1
Nova Scotia (NSEF)	14
Ontario (OE)	85
Prince Edward Island (IHC)	-
Saskatchewan (SHF)	5
Yukon (EAY)	1
<b>Totals</b>	<b>155</b>
<b>% of Registrations:</b>	<b>13%</b>

### **What our students are saying**

I did not know many of the issues discussed during the Stewardship of the Equine Environment even existed I wish I had taken the course earlier (if not first) in my Equine Diploma Studies, as I feel it gives a great basis for all the other courses. Although the Equine Guelph Courses are complete in themselves, I have found that many of the courses dovetail into each other, one course may just touch on a subject introducing it, and then later in another course that same information (which has been already introduced) will lead to an in-depth discussion on it.  
Jennifer Olley

The Equine Business Management course has given me the tools to start an equine business, with a solid understanding of the requirements and a business plan to use. Analyzing the costs



beforehand, during operation, and projecting income really opened my eyes to what was needed to be successful and profitable. This course is so thorough in dissecting all the details – market research to financials to the human resources side. My focus during the course was on opening a boarding facility; I can use the principles I learned to open any type of equine venture.  
Monica Laane-Fralick

Completing a Diploma in Equine Studies through the University of Guelph allowed me to remain on our family farm in Saskatchewan while furthering my knowledge regarding the welfare and care of

horses. The knowledge I gained through this program has assisted me in personal and professional environments. I am thankful that I now have the skill set and confidence to make sound decisions for the horses in my care.

Erin van Stuyvenberg Grenfell, Saskatchewan

It has been a great journey, from a first horse to a commercial breeding operation. And I learned what I needed through Guelph online, without leaving home or my horse. Thank you for your part in the offering of these courses. Everyone provided a piece that I needed along with many other details that have turned out to be quite useful. I'm sure we have saved money, time and injury through my online study.

Laureen at Bar TT Cowhorse

This has been absolutely the best class I have taken online! I've taught and taken courses online over many years. This course far outweighs all of them not only in ease of online access but, most importantly, in content. Thank you!

Gail Staines, Management of the Equine Environment Course Participant

## **Appendix 11: Equine Guelph's Promotional Events**

Another busy year kept the Equine Guelph staff on the road, taking the message of education, lifelong learning, career pathways, safety and horse welfare out to the equine community in Ontario and beyond!

### ***Displays and Events for Equine Guelph programs***

#### ***Events Calendar – 2019***

Barn Fire Prevention & Action Plan Information Evening, Rockwood - March 19

Equine Emergency First Aid Workshop, Erin, ON - March 27

EquiMania! at Can-Am All Breed Equine Expo, Markham, ON - April 05 – 07

Barn Fire Safety Seminar, Mohawk Raceway, Campbellville, ON - April 10

EquiMania! at Woodbine Mohawk Park Fireworks & Family Fun Night - May 18

EquiMania! at Brooklin Fair, Brooklin, ON - May 30 - June 02

EquiMania! at Paris Fairground with Pony Club - July 10

EquiMania! at Horse Capades - July 27 - August 15

EquiMania! at Canadian National Exhibition Toronto, ON - August 16 - September 02

15th Annual (ISES) Conference, University of Guelph - August 19 – 21

EquiMania! at Minnesota State Fair St. Paul, MN - August 22 - September 02

Guelph/Eramosa Fire Department Farm Safety, Rockwood, ON - October 04

Best Horse Practices Summit, Pineland Farms, Maine - October 19 – 20

EquiMania! at Royal Agricultural Winter Fair, Toronto, ON – November 01 - 10

#### ***Events Calendar – 2020***

Equestrian Theory NCCP Workshop - February 01

Competition Coach NCCP Workshop Guelph, ON - February 02

Equine Career Night, Peter Clark Hall - University of Guelph - March 05

## **Appendix 12: Media Coverage Summary**

<b>Topic</b>	<b>Articles (May 1, 2019-April 30,2020)</b>
Research	76
Education	68
Special Projects	169
EquiMania!	4

### ***Coverage of Special Event, Program or Research Project***

<b>Topic</b>	<b>Articles (May 1, 2019- April 30, 2020)</b>
International Society for Equitation Science Conference Guelph 2019	47
Biosecurity	23
Racing Pilot Program with AGCO on TheHorsePortal.ca	21
Covid-19	21
Research - Hay	12
Large Animal Emergency Rescue Workshops	10
Dave Mellor biting talk at UofG	10
Equine Welfare	9
Equine Behaviour	9
Fire Safety	9
Senior Horse Tool	8
Research – Eye blinks/stress	8
Research – Reproduction/Parasites	8
Colic Risk Rater Tool	7
Mare & Foal Tool	6

### **Total Features: 317**

Equine Guelph's media pick up is up 19% from last year! Additionally, there was an uptake in a number of high quality industry news distributors. The discerning audience currently following Equine Guelph's releases and re-publishing them include: national and provincial equine associations, veterinary practices, equestrian media outlets, racing associations, feed companies, insurance companies, newspaper companies, stable

owners and industry professionals. The engagement of this audience results in further reach to the industry in Ontario and beyond. 100% of the 51 media releases sent out by Equine Guelph were picked up for further distribution. Equine Guelph's releases are distributed to a media list of over 160 equine media outlets!

Equine Guelph continues to maintain a presence on many social media platforms including Facebook, Twitter, LinkedIn and YouTube. Followers include many equine media associations and: Woodbine Entertainment Group, Canadian Horse Racing News, AGCO Racing, Ontario Racing, many raceways, racing fans, many Canadian and Ontario Fire Departments, horse trainers, therapeutic riding academies, breed organizations, saddle fitters, rescue and rehoming facilities, equine trade shows, EquiMed, the Royal Agricultural Winter Fair, American Farriers Journal, Tack shops, AAEP American Association of Equine Practitioners, OAVT Ontario Association of Veterinary Technicians, The College of Veterinarians of Ontario, Ontario Veterinary Medical Association and Canadian Vet Medical Association. Equine Guelph sent out 206 tweets garnering 206,060 impressions. Equine Guelph shared 314 posts on Facebook and those posts resulted in a collective reach of 175,433.

Of the traffic to visit the Equine Guelph and Horse Portal websites from social media channels, over 90% came from Facebook.

Late in 2019, Equine Guelph was also able to add an Instagram account to their social media channels. This was made possible due to a University of Guelph student volunteer. The channel quickly grew to over 500 followers.

Equine Guelph launched The Horse Portal, in 2017, partnering with 10 provincial equestrian federations and Equestrian Canada (Canada's national equine association). Articles and news pertaining to The Horse Portal continue to be very popular. The launch of the Racing Pilot program in 2019, created in partnership with the Alcohol and Gaming Corporation of Ontario (AGCO), received exceptional distribution by racing media outlets.

Many links to pages of Equine Guelph's website continue to be developed by a variety of industry groups including educational websites, provincial equine associations and veterinary pages, student graduates of our program and many of our sponsors. Equine Guelph's membership with American Horse Publications (AHP) results in a much wider audience as 2 media articles per month are distributed to a broad list of U.S. equine publications.

## Media Coverage List

19-May	OVC bulletin	Do you know what care your senior horse needs?
19-May	HorseTalk.co.nz	New tool offers helping hand in caring for senior horses
19-May	SystemEquine.com	Rubber & Soil Stabilizer Sale eblast - Included Link to Equine Guelph Spring HEALTHflash
19-May	OVC bulletin	Celebrating Somebeachsomewhere: Film Event Raises Funds for OVC
19-May	uoguelph.ca/ccsaw/events	15th Annual International Equitation Science Conference
19-May	TheHorse.com	Healthy Broodmares Can Shed EHV-1 Vaginally (Carina Cooper, DVM, UofG PhD candidate)
19-May	BestHorsePracticesSummit.org	2019 Summit Sponsors (Equine Guelph mention)
19-May	HarnessLink.com	Somebeachsomewhere film raises funds
19-May	HarnessLink.com	What care does your senior horse need?
19-May	AmericanHorsePubs.com	What care does your senior horse need?
19-May	EquineChronicle.com	What care does your senior horse need?
19-May	HarnessLink.com	Somebeachsomewhere documentary screening
19-May	HorseJournals.com	Biosecurity for Horse Owners
19-May	HorseJournals.com	Intense Exercise can be Hazardous to Horses
19-May	TROT	Stem Cell Therapy For the Equine Athlete
19-May	The Rider	A Short Evolutionary Note of Equitation Science to be Presented by Dr. Camie Heleski
19-May	The Rider	Take the Quiz: How Will Your Horse's Risk of Colic Change this Spring?
19-May	The Rider	Introducing Maple Stirrup!
19-May	HorseJournals.com	Licking and Chewing – Submission or Stress?
19-May	EquiMed	Do You Know What Care Your Senior Horse Needs?
19-May	HarnessLink.com	Somebeachsomewhere film raises funds
19-Jun	Bulletin.ovc.uoguelph.ca	Online Horse Behaviour and Safety Education: Is it Effective?
19-Jun	TheHorse.com	Online Horse Behaviour and Safety Education: Is it Effective?
19-Jun	StandardbredCanada.ca	ISES Conference Deadline Extended
19-Jun	NickerNews.net	Research on soaking and steaming hay
19-Jun	NickerNews.net	Assess your colic risk, with Risk Rater
19-Jun	Horse-Canada.com	National Equine Biosurveillance Pilot Program Launched
19-Jun	OVC-Bulletin	Can You Detect Lameness?
19-Jun	Paulick Report	Canadian Biosurveillance Program Launched to Promote Equine Welfare

19-Jun	Horse and People Magazine-Editor's Pick E-News	Large Animal Rescue Training at 2019 ISES Guelph (direct link to blog post)
19-Jun	horsetalk.co.nz	Nationwide Equine Biosecurity Programme Launches in Canada
19-Jun	OVC Bulletin	Results in from Guelph Study on Soaking Hay and Steaming Canadian Hay
19-Jun	Race Line	Equine Guelph Delivers First Round of Online Training to Racing Industry
19-Jun	Horse Sport	ISES 2019-Guelph: International Equitation Science Conference full page ad
19-Jun	TheRider.com	Celebrating Somebeachsomewhere: Film Event Raises Funds for OVC
19-Jun	TheRider.com	15th Annual International Society for Equitation Science Conference
19-Jun	TheRider.com	Celebrating the Can-Am Community
19-Jun	TheRider.com	Better Advocates to Promote Positive Equine Welfare
19-Jun	TheRider.com	15th Annual International Society for Equitation Science Conference
19-Jun	TheRider.com	Communicating science horse owners and managers
19-Jun	TheRider.com	If the Unspeakable Happens, Are you Ready?
19-Jun	Horse Canada	Learn How to Assess Lameness in Horses with Free Online Tool
19-Jun	OVC Bulletin	Register today for the 15th International Equitation Science Conference Aug 19, 2019 to Aug 21, 2019
19-Jun	OVC Bulletin	First National Equine Biosurveillance Program of its Kind Launched Across Canada
19-Jun	Horses and People Magazine-Editor's Pick E-News	The Technology of Rein Contact and Performance at 2019 ISES Guelph
19-Jun	Horses and People Magazine-Editor's Pick E-News	Bringing Science to the Stable ISES 2019- Guelph Ad
19-Jun	Campbell Centre for the Study of Animal Welfare E-News	15th Annual International Society for Equitation Science Conference (Ontario-Yours to discover)
19-Jun	newvision.com	Uganda's Rweze Complete Horse Behaviour and Safety Course
19-Jun	NickerNews.net	Equine Guelph has New Compelling Lameness Lab
19-Jun	NickerNews.net	Research on Soaking and Steaming Hay, From Our Friends at Equine Guelph
19-Jun	StandardbredCanada.ca	Update On Steamed/Soaked Hay Study
19-Jun	American Horse Publications	15th Annual International Society for Equitation Science Conference: Ontario-yours to discover
19-Jun	The Equine Chronicle	Dry, Soaked, or Steamed Hay?
19-Jun	Canadian Horse	Fire Safety Checklist
19-Jun	HorseJournals.com	Let's Talk MUD
19-Jun	HorseJournals.com	Results of Study on Soaking and Steaming Canadian Hay
19-Jun	HorseJournals.com	Winds of Change Are Blowing Through Canada's Horse Industry
19-Jun	NickerNews.net	Results in from Guelph study on soaking and steaming Canadian hay
19-Jun	HarnessLink.com	Conference - Bringing Science to the Stable
19-Jun	HarnessLink.com	First national equine biosurveillance program
19-Jun	CosaOnline.com	Update On Steamed/Soaked Hay Study
19-Jun	HarnessLink.com	Results in from Guelph study on steaming hay
19-Jun	HarnessLink.com	Equitation Science Conference

19-Jul	HarnessLink.com	A Parasite that may cause Equine Abortions
19-Jul	Horse Sport	Predicting Equine Disease Spread
19-Jul	Horse Sport	ISES 2019-Guelph: 15th International Equitation Science Conference full page ad
19-Jul	Horse Canada	ISES 2019-Guelph: 15th International Equitation Science Conference full page ad
19-Jul	Horse Canada	Fighting Disease Spread in Horse Populations
19-Jul	Horse Canada	Ontario Study Shows Steamed Hay is Superior for Equine Athletes
19-Jul	HorseDVM	HorseDVM's Horse Tool Index: Biosecurity Risk Calculator
19-Jul	HorseDVM	HorseDVM's Horse Tool Index: Colic Risk Rater
19-Jul	HorseDVM	HorseDVM's Horse Tool Index: Vaccination Equi Planner
19-Jul	OVC Bulletin	OVC Researchers to Conduct First Study in Canada Investigating a Parasite That May Cause Equine Abortions
19-Jul	OVC Bulletin from CCSAW	Register Today for the 15th International Equitation Science Conference Aug 19, 2019 to Aug 21, 2019
19-Jul	HorseTalk.co.nz	Neospora Caninum Parasite's Link to Equine Abortion Explored
19-Jul	System Equine	e-Blast: Equine Guelph HEALTHflash ad promo
19-Jul	Horse Canada	Study to Determine Prevalence of Tick-Borne Infections in Ontario Horses (Dr.Arroyo)
19-Jul	Paulick Report	Upcoming Study: Is a Common Cattle Parasite Responsible for Equine Abortions
19-Jul	gossip-pony.com	Neospora Caninum Parasite's Link to Equine Abortion Explored
19-Jul	Animal Tracks (Dept. Animal Biosciences Newsletter)	ISES 15th Equitation Science Conference
19-Jul	nickernews.net	Test Your Hay Knowledge: An Infosheet from Equine Guelph
19-Jul	Horse Canada	Study Investigates Parasite That May Cause Equine Abortions
19-Jul	OVC Bulletin	Conferences Reflect U of G Strengths in Equine Health, Welfare, and Regenerative Medicine
19-Jul	OVC Bulletin	Equine Guelph: Are You Up to Par with the Equine Code of Practice?
19-Jul	Equestrian Canada	ISES Comes to Guelph
19-Jul	The Rider	15th Annual International Society for Equitation Science Conference
19-Jul	The Rider	First National Equine Biosurveillance Program of its Kind Launched Across Canada
19-Jul	The Rider	Results in from Guelph Study on Soaking and Steaming Canadian Hay
19-Jul	The Rider	Horse Day Erin was a Resounding Success
19-Jul	The Rider	Can You Detect Lameness?
19-Jul	nickernews.net	Test Your Hay Knowledge. An Informative Sheet from Equine Guelph
19-Jul	The Horse	What We're Learning from Horse Racing Research (mentions Dr. Peter Physick-Sheard's research)
19-Jul	The Horse	Help Your Horse Beat the Heat (UofG research mention and link to previous article republished by thehorse)
19-Jul	Horse Canada	Countdown to Equitation Science Conference is On!
19-Jul	The Horse	Summer Riding: When The Rider is Hot, The Horse is Hotter
19-Jul	Horses and People	Bringing Science to the Stable ISES 2019-GUELPH (banner)
19-Jul	Horses and People	Riding Clothing That Improves Your Position?

19-Jul	Quarter Horse News	Canada Launches Equine Biosurveillance Program
19-Jul	Horse Canada	Thoroughbreds Needed For Superficial Digital Flexor Tendonitis Study
19-Jul	OVC Bulletin	Tracey Chenier: Study Investigates Parasites That May Cause Equine Abortions-Horse Canada
19-Jul	Horse-Canada	Fire Prevention, Large Animal Rescue Training for First Responders
19-Jul	HorseJournals.com	Canada's Horse Industry Builders
19-Jul	HorseJournals.com	Equine Welfare - Why is it SO Important?
19-Aug	Horse Sport	ISES 2019-Guelph 15th International Equitation Science Conference (full page ad)
19-Aug	Standardbred Canada	Industry Ambassadors Announced
19-Aug	Trot Magazine	Industry Ambassadors Announced
19-Aug	MNstatefair.org	EquiMania! Minnesota
19-Aug	CBC.ca	Ontario woman searching for missing mare after couple charged for allegedly selling her horses (Ecker interviewed)
19-Aug	OAHN	OVC Study Investigating Possible Role of Neospora Caninum in Equine Abortions
19-Aug	HorseTalk.co.nz	Stem cell researchers to tackle bowed tendons in horses
19-Aug	OVC bulletin	Equine Guelph Research Competition
19-Aug	OVC Bulletin	How do you move a 700-pound horse? Very carefully - Guelph Today
19-Aug	EquineScienceUpdate.blogspot.com	Study finds preference for steamed rather than soaked hay
19-Aug	Horse-Canada	Fire Prevention, Large Animal Rescue Training for First Responders
19-Aug	HorseJournals.com	First National Equine Biosurveillance Program of its Kind Launched across Canada
19-Aug	HorseJournals.com	How To Test Your Horse for Dehydration
19-Aug	HorseJournals.com	When the Rider is Hot, the Horse is Hotter
19-Aug	CosaOnline.com	Employers in ON Racing - Nominate your Groom for a Tuition Award!
19-Aug	CosaOnline.com	Industry Ambassadors Announced
19-Aug	HarnessLink.com	Nominate your Groom for a Tuition Award
19-Sep	QROOI Enewsletter	Last Call to Grooms & Trainers for free online course
19-Sep	StandardbredCanada.ca	Test Laminitic Horses For PPID
19-Sep	StandardbredCanada.ca	Last Call Free Online Course (Horse Care and Welfare Portal course)
19-Sep	HorseTalk.co.nz	The potential role of the misstep, and other footfall insights in horses
19-Sep	OVC Bulletin	Emergency Rescue Training Because it Can Happen to you
19-Sep	OVC Bulletin	The potential role of the misstep, and other footfall insights in horses
19-Sep	StandardbredCanada.ca	Partners Unite at the Summit
19-Sep	International Society for Equitation Science	Lost in Translation
19-Sep	Horses and People	Getting Involved in Improving the Communication of Science
19-Sep	Horses and People	Research into Arena and Racetrack Surfaces
19-Sep	Paulick Report	Get a Load of This: Study Helps Determine Potential Mechanical Cause of Injury
19-Sep	HorseTalk.co.nz	The Potential Role of the Misstep, and Other Footfall Insights in Horses

19-Sep	HorseTalk.co.nz	Free PPID Tests for Canadian Horses on Offer
19-Sep	HorseJournals.com	Future Footing & Training Decisions
19-Sep	HorseJournals.com	Equine Science: Lost In Translation
19-Sep	HorseJournals.com	Insurance for Horses and Their People (Equine Guelph mention)
19-Sep	CosaOnline.com	Online Course To Prevent Sickness
19-Sep	CosaOnline.com	Last Call: Free Online Course
19-Sep	OVC Bulletin	Ontario Equestrian and its Members Dontae to Lameness Research at OVC
19-Sep	StandardbredCanada.ca	Donations For OVC Lameness Research
19-Sep	OVC Bulletin	Straight From the Horse's Stomach
19-Sep	HorsesAndPeople.com.au	Best Horse Practices Conference Promises Educational Opportunities
19-Sep	StandardbredCanada.ca	Online Course To Prevent Sickness (Racing promotion)
19-Sep	OVC Bulletin	Sickness Prevention in Horses This Fall Fair Season
19-Sep	BestHorsePracticesSummit.org	Open Ed and Dog Not Gone Join the Sponsorship Family (Best Horse Practices Summit)
19-Oct	NickerNews.net	Hey – What do you know about Hay?
19-Oct	OVC Bulletin	Lost in Translation presented by Cristina Wilkins & Kate Fenner
19-Oct	StandardbredCanada.ca	'Horse Portal' Partnership Announced
19-Oct	OVC Bulletin	'Horse Portal' Partnership Announced
19-Oct	OVC Bulletin	Lost in Translation presented by Cristina Wilkins & Kate Fenner (ISES conference Guelph)
19-Oct	TheHorses.com	Horse Racing Alberta and Equine Guelph Partner in Online Training Program
19-Oct	StandardbredCanada.ca	Fall Sickness Prevention Course
19-Oct	AmericanHorsePublications	Sickness Prevention in Horses This Fall Fair Season
19-Oct	EquineScienceUpdate	Blink of Eye - Stress Level Indicator? (Dr. Merkies behavioural research)
19-Oct	EquineScienceUpdate	Response of horses to increased rider's weight
19-Oct	AGCO Race Line	Industry Ambassadors Announced
19-Oct	HorseJournals.com	Barn on Fire!
19-Oct	EquiMed	Sickness Prevention in Horses This Fall Fair Season
19-Oct	EquiMed	Straight From the Horse's Stomach
19-Oct	HarnessLink.com	HRA and Equine Guelph Online Training Program
19-Oct	HarnessLink.com	Straight From The Horse's Stomach
19-Oct	CosaOnline.com	Straight From The Horse's Stomach
19-Oct	CosaOnline.com	EquiMania! A 'Royal' Favourite
19-Oct	TROT	Free online courses - Racing pilot
19-Oct	OVC Bulletin	Rider Weight on Horses' Welfare
19-Oct	American Horse Publications	Straight from the Horse's Stomach
19-Nov	News.UoGuelph.ca	Horses Blink Less, Twitch Eyelids More When Stressed Research Says (Dr. Merkies)
19-Nov	CayuseCommunications.com	Cayuse Communications Enews(Mentioned Equine Guelph online course raffle)

19-Nov	OVC Bulletin	Horse Behaviour Course Opens Olympic Door
19-Nov	HorsesandPeople.com	Stress Can Be Seen in The Horse's Eyelid Blinks and Twitches
19-Nov	CBC.ca/radio	A woman's fight to rescue horses from slaughter in the B.C. Interior (Gayle Ecker also interviewed)
19-Nov	OVC Bulletin	A woman's fight to rescue horses from slaughter in the B.C. Interior (Gayle Ecker also interviewed)
19-Nov	OVC Bulletin	Learning Horse Behaviour Opens Olympic Door
19-Nov	HorseJournals.com	How to Cool Out a Hot Horse in Winter
19-Nov	HorseJournals.com	Winter Watering Options for Your Horse Farm
19-Nov	EquiMed	A Horse's Eyes - A Key to State of Stress
19-Nov	EquiMed	Learning Horse Behavior Opens Olympic Door
19-Nov	NickerNews.net	Guelph researchers find that horses blink less and twitch their eyes more when they are stressed.
19-Nov	HarnessLink.com	Equine industry symposium set to spark change
19-Nov	CosaOnline.com	Equine Guelph's Global Reach
19-Oct	Canadian Vet Practice	Case Study: Animal Welfare and Ethical Issues
19-Dec	HorseJournals.com	Winter Management for the Outdoor Horse
19-Dec	HorseJournals.com	Rider Weight on Horses' Welfare
19-Dec	HorseJournals.com	Whip Use in Equestrian Sports
19-Dec	HorseJournals.com	Horses Blink Less, Twitch Eyelids More When Stressed
19-Dec	HorseJournals.com	Innovation Helps Horses with Asthma. (UofG research)
19-Dec	OVC Bulletin	Fourth Annual Equine Industry Symposium discusses Change in the Equine Industry...
19-Dec	HorsesandPeople.com	Whip Use in Equestrian Sports
19-Dec	OVC Bulletin	Fourth Annual Equine Industry Symposium discusses Change...
19-Dec	QROOI News	Promotion for First Racing-Exclusive Course in January - Gut Health
19-Dec	Raceline	Tuition Awards for Racing
19-Dec	Raceline	Industry Ambassadors Announced
19-Dec	NickerNews.net	Guelph researchers find that horses blink less and twitch their eyes more when they are stressed
19-Dec	NickerNews.net	Lameness Lab
19-Dec	Canadian Thoroughbred	Free online courses - Racing pilot
19-Dec	CosaOnline.com	Free "Racing-Exclusive" Course in January - Gut Health & Colic Prevention
19-Dec	CosaOnline.com	Equine Stress Indicator Analyzed
20-Jan	HorseJournals.com	When Horses Get Allergies. (Dr. Pearson study at UofG)
20-Jan	HorseJournals.com	Air Quality In The Horse Barn
20-Jan	HorseJournals.com	Do Smog and Cold Weather Affect Racehorse Health?
20-Jan	OVCBulletin	Exercise Induced Pulmonary Hemorrhage and Air Pollution
20-Jan	HorseTalk.co.nz	Air pollution's link to pulmonary hemorrhage in horses under scrutiny
20-Jan	StandardbredCanada.ca	Last Call for Free Online Course (Gut Health for Racing)
20-Jan	OMFPOA.com	Ontario Municipal Fire Prevention Officers Association Post EG Fire Prevention Course January 20 - 27

20-Jan	OpenEd.uoguelph.ca	Disaster Response Specialist Joins OpenEd and Equine Guelph as Guest Speaker
20-Jan	PaulickReport.com	Canadian Researchers Embark On Study Of Air Pollution And EIPH - Horse Racing News   Paulick Report
20-Jan	WellingtonAdvertiser.com	Philanthropic support totalling \$13,000 is provided to local groups by Grand River Agricultural Society
20-Jan	WellingtonAdvertiser.com	OMAFRA REPORT: Preventing barn fires; reducing risks (EG course and tool mention)
20-Jan	Horse-Canada.com	Hamilton Mounted Police Get A Refresher Course in Large Animal Rescue
20-Jan	OVCBulletin	Hamilton Mounted Police Get A Refresher Course in Large Animal Rescue
20-Jan	HorseNation.com	Winter Cool Down
20-Jan	HarnessLink.com	Donations awarded by Grand River Society
20-Jan	TROT	Free online courses - Racing Pilot
20-Jan	Canadian Horse Annual 2020	New in online learning
20-Jan	EquineScienceUpdate.com	How do we measure a horse's quality of life?
20-Jan	EquineScienceUpdate.com	Would Your Horse's Noseband Pass the Pressure Test?
20-Jan	OVC Bulletin	Would Your Horse's Noseband Pass the Pressure Test?
20-Jan	HBPA.on.ca	Back on Track with JobTrack
20-Jan	HBPA.on.ca	Large-animal-rescue-refresher-for-Hamilton-mounted-police
20-Jan	HBPA.on.ca	last-call-to-grooms-trainers-for-free-online-course- Gut Health
20-Jan	HBPA.on.ca	Equine Guelph Research Annual Volume 17
20-Jan	EquiMed	Large Animal Rescue Refresher for Hamilton Mounted Police - A One-day Hands-on Retraining at Equine Guelph
20-Jan	EquiMed	The Equine Guelph Research Annual is Now Posted
20-Jan	HarnessLink.com	Winners want Equine Welfare Courses
20-Jan	HarnessLink.com	Jobtrack is back on track at Equine Guelph
20-Feb	CosaOnline.com	Last Call for Free Equine First Aid Course
20-Feb	CanadinaHorseJournal.com	Preaching to the Converted (Kathy Fremes mentions EG course)
20-Feb	CanadinaHorseJournal.com	Open Education EG course ad
20-Feb	OVC Bulletin	Seeing is Preparing – Videos for Mare & Foal Care
20-Feb	Horse-Canada.com	Equine Guelph's Top Tips for Finding your Perfect Equine Partner
20-Feb	StandardbredCanada.ca	Last Call for Equine Guelph course (First Aid)
20-Feb	Horse-Canada.com	Equine Guelph's Mare and Foal Care Tool a valuable resource
20-Feb	HarnessLink.com	Once Bit, Twice Shy is not the case
20-Feb	Horse-Canada.com	Once Bitten, Twice Shy? Not necessarily, according to survey
20-Feb	HorseTalk.co.nz	Free foaling guide helps horse owners through breeding journey
20-Feb	CosaOnline.com	Bits And Breathing In Horses
20-Feb	HBPA.on.ca	Dr. David Mellor Discusses Bits and Breathing in Horses
20-Feb	HBPA.on.ca	Last Call to Grooms & Trainers for Free Equine First Aid Online Course
20-Feb	HBPA.on.ca	last-call-new-racehorse-respiratory-course
20-Feb	StandardbredCanada.ca	Bits And Breathing In Horses

20-Feb	OVC Bulletin	Equine Guelph Recognized in top 50 influencers in equestrian sport
20-Feb	StandardbredCanada.ca	Equine Guelph's Mare & Foal Tool
20-Feb	Horse-Canada.com	Animal welfare expert discusses bits and breathing in horses
20-Feb	StandardbredCanada.ca	Standardbreds Dodge Barn Fire (mention of EG resources)
20-Feb	HorseSport.com	Animal welfare expert discusses bits and breathing in horses
20-Feb	Horse-Canada.com	Dr. Kendra Coulter speaks on Animal Welfare in Ontario
20-Feb	Horse-Canada.com	Discover Your Future in the Equine Industry at Equine Career Night
20-Feb	HorseJournals.com	Dr. David Mellor Discusses Bits and Breathing in Horses
20-Feb	Horse-Canada.com	Discover Your Future in the Equine Industry at Equine Career Night
20-Feb	WellingtonAdvertiser.com	How to find your equine partner
20-Feb	HorseJournals.com	How Do We Measure A Horse's Quality of Life?
20-Feb	HorseJournals.com	Would Your Horse's Noseband Pass the Pressure Test?
20-Feb	HorseJournals.com	Dr. David Mellor Discusses Bits and Breathing in Horses
20-Feb	NickerNews.net	Another Equine Guelph post on mare and foal care. Read it here.
20-Feb	HarnessLink.com	Dr. David Mellor discusses bits and breathing
20-Feb	CosaOnline.com	Bits And Breathing In Horses
20-Mar	Farm Safety Gazette	Closing the Barn Door on Fires
20-Mar	Horse-Canada.com	Survey on Horse Welfare in Canada reveals a few surprises
20-Mar	HorseJournals.com	COVID-19 Caring for your horse during a pandemic
20-Mar	StandardbredCanada.ca	Equine Guelph Online Course Moved Up
20-Mar	HorseTalk.co.nz	Coronavirus a chance for burst of online equine education
20-Mar	HorseTalk.co.nz	Vet clinics may help amid coronavirus pandemic (mentioned EG HF special bulletin on Covid-19)
20-Mar	AmericanHorsePubs.org	Early and Extended Access to ONLINE Horse Behaviour and Safety Course for Youth & Adults
20-Mar	HarnessLink.com	Concussion care and reducing risks
20-Mar	Horse-Canada.com	A Reminder About Concussion Care and Reducing Risks
20-Mar	HorseJournals.com	Equine Behaviour Research Questionnaire
20-Mar	HorseJournals.com	Videos Help You Prepare for Mare & Foal Care
20-Mar	HorseJournals.com	Keeping Children Safe While Handling Horses - the research may surprise you
20-Mar	HorseJournals.com	Horse Welfare in Canada
20-Mar	HorseJournals.com	Horse Council BC - An Important Update on COVID-19. (EG pandemic post linked)
20-Mar	HorseJournals.com	Alberta Equestrian COVID-19 (Coronavirus) Updates. (EG pandemic post linked)
20-Mar	HorseJournals.com	Ontario Equestrian Coronavirus Updates. (EG pandemic post linked)
20-Mar	HorseJournals.com	New Brunswick Equestrian Association Suspends Activities due to Coronavirus ((EG pandemic post linked)
20-Mar	HorseJournals.com	Equestrian Canada Statement on Coronavirus (EG pandemic post linked)
20-Mar	EquiMed	Talking Horse Welfare in Canada: How Do We See Our Industry?
20-Mar	EquiMed	Big Believer in Biomechanics in Equine Muscle Development

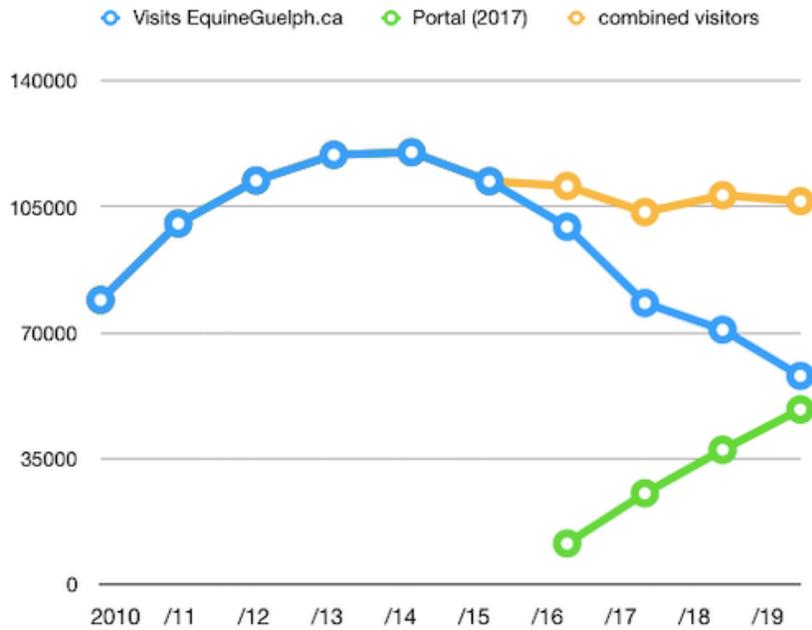
20-Mar	HarnessLink.com	Concussion care and reducing risks
20-Mar	HarnessLink.com	Horse Behaviour and Safety Course
20-Mar	HarnessLink.com	COVID-19 advisory Equine Guelph HEALTHflash
20-Mar	CosaOnline.com	Equine Guelph Online Course Moved Up
20-Mar	NickerNews.net	"What are some of the biggest myths about barn fires?" - Rebecca Gimenez-Husted, PhD
20-Mar	CosaOnline.com	Free Course: Horse Sickness Prevention
20-Apr	HarnessLink.com	Protect your herd - Equine Guelph
20-Apr	Horse-Canada.ca	Equine Guelph offers FREE Online Sickness Prevention Course
20-Apr	OntarioEquestrian.ca	Exclusive Ontario Equestrian Member Benefits (incl Equine Guelph Covid Initiatives- Courses...)
20-Apr	Horse-Canada.ca	Equine Guelph Wins EC Health and Welfare Award
20-Apr	OVC Bulletin	Equine Guelph Wins EC Health and Welfare Award
20-Apr	StandardbredCanada.ca	Equine Guelph Lands Award
20-Apr	Horse-Canada.ca	Equine Guelph Discounts Fire & Emergency Online Course
20-Apr	HorseTalk.co.nz	Discount offered on fire and emergency course for horse owners
20-Apr	StandardbredCanada.ca	Equine Guelph Courses Survey
20-Apr	EquineChronicle.com	Are You Concerned About Colic During Covid?
20-Apr	HorseTalk.co.nz	Deciphering Vitamin D in Horses With Diarrhea
20-Apr	HarnessLink.com	Deciphering Vitamin D in Horses With Diarrhea
20-Apr	Horse-Canada.com	OVC Research to Decipher Vitamin D in Horses with Enterocolitis
20-Apr	HorseJournals.com	Animal Welfare in Ontario. (Coulter at UofG)
20-Apr	HorseJournals.com	Major Threats to Equine Welfare Identified in Research Study
20-Apr	HorseJournals.com	University of Guelph - Equine Guelph and the Centre for Open Learning and Educational
20-Apr	HorseJournals.com	Protect Your Herd – Equine Guelph
20-Apr	HorseJournals.com	Are You Concerned About Horse Colic During COVID-19?
20-Apr	WellingtonAdvertiser.com	Equine industry feeling fallout of COVID-19 pandemic. (Gayle Ecker interviewed)
20-Apr	HorseJournals.com	Congratulations to the 2019 Equestrian Canada National Award Recipients!
20-Apr	HorseJournals.com	Biosecurity on the Horse Farm
20-Apr	HorseJournals.com	Equine Guelph - COVID-19 - Caring for your Horse During a Pandemic
20-Apr	CosaOnline.com	Equine Guelph Online Course Update
20-Apr	Horse-Canada.com	Strategies to Prevent Equine Gas Colic in the Spring
20-Apr	CosaOnline.com	Equine Guelph Wins Equestrian Canada Health and Welfare Award
20-Apr	CosaOnline.com	Equine Guelph Courses Survey
20-Apr	HorseJournals.com	Video: Jec Ballou Talks About the Equine Guelph Exercise Physiology Course
20-Apr	HarnessLink.com	Colic is the #1 killer of horses
20-Apr	HarnessLink.com	Deciphering Vitamin D in horses with Diarrhea
20-Apr	The Rider	Protect your herd - Equine Guelph

20-Apr	The Rider	Talking Horse Welfare in Canada: How Do We See Our Industry?
20-Apr	The Rider	OVC 5th in New World Veterinary College Ranking
20-Apr	The Rider	Dr. David Mellor Discusses Bits and Breathing in Horses
20-Apr	The Rider	COVID-19 Caring for your horse during a pandemic
20-Apr	HarnessLink.com	Survey part of Covid-19 initiatives

## **Appendix 13: Web Site Report**

**May 1, 2019 – April 30, 2020**

	EquineGuelph.ca	TheHorsePortal.ca	Combined Total
Visits/Sessions	57,975	48,628	106,603
Page Views	125,504	217,293	342,792
New Users	35,813	26,752	62,565
Avg. Session Time	01:54	05:42	N/A



### **TECHNOLOGY OVERVIEW**

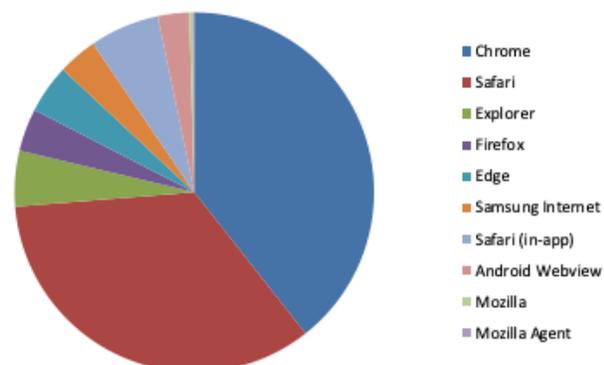
**(Audience – Mobile – Overview)**

Device	EquineGuelph.ca		TheHorsePortal.ca	
	Sessions	Percentage	Sessions	Percentage
Mobile	18,179	49.59%	28,115	57.82%
Desktop	15,879	43.32%	16,902	34.76%
Tablet	2,597	7.08%	3,611	7.43%

## TOP 10 BROWSERS – OPERATING SYSTEM (Audience – Technology – Browser)

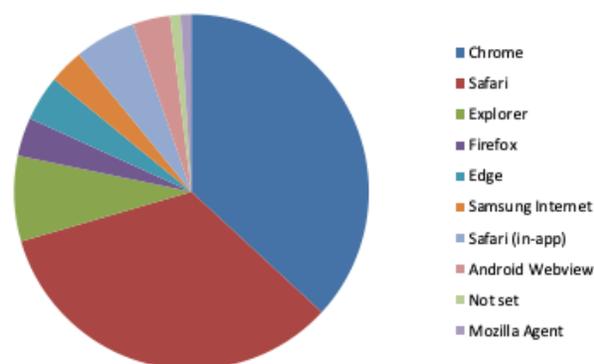
Equine Guelph.ca

Operating system	Sessions	Percentage
Chrome	22,669	36.17 %
Safari	19,761	34.87%
Safari (in-app)	3,601	8.95%
Internet Explorer	2,880	5.11%
Android Webview	1,627	4.42%
Edge	2,524	3.54%
Firefox	2,211	3.08%
Samsung Internet	2,023	2.93%
'Mozilla	178	0.48%
Mozilla Comp. Agent	82	0.23%



HorsePortal.ca

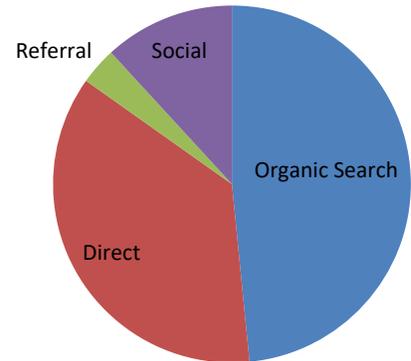
Browser	Users	Sessions
Chrome	9,803(36.24%)	9,736(36.37%)
Safari	8,976(33.19%)	8,872(33.14%)
Internet Explorer	2,088(7.72%)	2,056(7.68%)
Safari (in-app)	1,481(5.48%)	1,472(5.50%)
Edge	1,122(4.15%)	1,094(4.09%)
Firefox	947(3.50%)	926(3.46%)
Android Webview	898(3.32%)	897(3.35%)
Samsung Internet	846(3.13%)	835(3.12%)
Mozilla Comp. Agent	259(0.96%)	259(0.97%)
(not set)	256(0.95%)	256(0.96%)



**ACQUISITION CHANNELS (Acquisition – All Traffic – Channels)**

EquineGuelph.ca

	Channel	Sessions	Percentage
1	Organic Search	26,458	45.64%
2	Direct	19,878	34.29%
3	Social	6,453	16.88%
4	Referral	1,837	4.81%
5	Email	282	0.88%



TheHorsePortal.ca

	Channel	Sessions	Percentage
1	Direct	17,047	(35.06%)
2	Organic Search	14,125	(29.05%)
3	Referral	12,880	(26.49%)
4	Social	4,426	(9.10%)
5	Email	144	(0.30%)
6	(Other)	6	(0.01%)



**TOP REFERRAL SOURCES (Acquisition – All Traffic – Source/Medium)**

<b>EquineGuelph.ca - Source</b>	<b>Sessions</b>	<b>Percent</b>
1. google/organic	25,351	43.73%
2. direct	19,878	34.29%
3. m.facebook.com/referral	5,622	9.70%
4. equineguelph.ca / referral	917	1.58%
5. facebook.com / referral	877	1.51%
6. bing / organic	776	1.34%
7. courselink.uoguelph.ca / referral	533	0.92%
8. hbpa.on.ca / referral	299	0.52%
9. myemail.constantcontact.com/referral	284	0.38%

	<b>The HorsePortal.ca - Source / Medium</b>	<b>Sessions</b>	<b>Percentage</b>
1	(direct) / (none)	9,520	(35.56%)
2	google / organic	7,501	(28.02%)
3	m.facebook.com / referral	2,474	(9.24%)
4	equineguelph.ca / referral	1,271	(4.75%)
5	standardbredcanada.ca / referral	1,347	(5.03%)
6	courses.opened.uoguelph.ca / referral	605	(2.26%)
7	equimania.ca / referral	579	(2.16%)
8	facebook.com / referral	562	(2.10%)
9	albertaequestrian.com / referral	365	(1.36%)
10	bing / organic	333	(1.24%)

**TRAFFIC SOURCES SOCIAL MEDIA. (Acquisition – Social – Network Referrals)**

EquineGuelph.ca

<b>Social Network</b>	<b>Sessions</b>	<b>Percentage</b>
1. Facebook	6,672	95.14%
2. Twitter	185	2.64%
3. YouTube	50	0.71%
4. Instagram	48	0.68%
5. Pinterest	28	0.40%
6. LinkedIn	23	0.33%
7. Tumblr	5	0.07%
8. paper.li	2	0.03%

HorsePortal.ca

<b>Social Network</b>	<b>Sessions</b>	<b>Percentage</b>
1 Facebook	<b>4,022</b>	<b>(90.87%)</b>
2 WordPress	<b>209</b>	<b>(4.72%)</b>
3 Twitter	<b>113</b>	<b>(2.55%)</b>
4 LinkedIn	<b>43</b>	<b>(0.97%)</b>
5 YouTube	<b>22</b>	<b>(0.50%)</b>
6 Weebly	<b>9</b>	<b>(0.20%)</b>
7 paper.li	<b>3</b>	<b>(0.07%)</b>
8 Instagram	<b>2</b>	<b>(0.05%)</b>
9 Naver	<b>1</b>	<b>(0.02%)</b>
10 Pinterest	<b>1</b>	<b>(0.02%)</b>

## CONTENT

### TOP 10 LANDING PAGES. (Behaviour – Site Content – Landing Pages)

	<b>EquineGuelph.ca Pages</b>	<b>Sessions</b>	<b>Percentage</b>
1.	/jobtrack/jobs.php	12,020	20.73%
2.	/education/programs_list.php	3,083	5.32%
3.	/jobtrack/index.php	2,297	3.96%
4.	/news/index.php?content=264	2,240	3.86%
5.	/education/individ_courses.php	1,551	2.68%
6.	/Tools/lameness_lab.php	1,539	2.65%
7.	/education/index.php	1,348	2.33%
8.	/Tools/fireprevention.php	1,167	2.01%
9.	/education/store.php	1,117	1.93%
10.	/Tools/biosecurity.php	1,109	1.91%

	<b>TheHorsePortal.ca Pages</b>	<b>Sessions</b>	<b>Percentage</b>
1	/	7,330	(15.07%)
2	/courses/	3,980	(8.18%)
3	/partner/racingpilotproject/	2,837	(5.83%)
4	/course/ises-2019/	2,538	(5.22%)
5	/12-week-courses/	2,304	(4.74%)
6	/my-account/	1,590	(3.27%)
7	/course/sickness-prevention-in-horses-s20/	1,518	(3.12%)
8	/equimania/	1,360	(2.80%)
9	/log-in/	956	(1.97%)
10	/stop-think-act/	896	(1.84%)

## Appendix 14: Sponsors

Equine Guelph would like to thank the following sponsors for their contributions and support of Equine Guelph's program.



- Senior Horse Challenge
- Equine Guelph E-News



- EquiMania! Youth Safety Initiative



- EquiMania! Exhibit



- Colic Risk Rater Tool
- Hoofprints Tribute Program
  - Education Patron
  - Risk Series Brochures
- Short Course on The Horse Portal



- National Training Partner



- EquiMania! Youth Safety Initiative



- HEALTHflash
- Short Course on The Horse Portal



- EquiMania! Youth Safety Initiative



- EquiMania! Exhibit



- EquiMania! Nutrition Display



- EquiMania! Youth Safety Initiative



- Industry Education Partner



- EquiMania! Youth Safety Initiative
- HEALTHflash



- EquiMania! Youth Safety Initiative

**Equine Guelph Financial Report 2019-2020**  
As at April 30, 2020

	Holding Accounts				To Program Support	Programs				Total Equine Guelph	
	E. P. Taylor	HIP/QH	HBPA	General Research		Education	Communi-cations	Research Support	Sponsorship		
	710655	045878	046071	022298	022298-800001	022201	022202	022299	022203		
<b>FUND BALANCE, Previous Year-end</b>	<b>145,208</b>	<b>23,800</b>	-	<b>117,000</b>	<b>55,685</b>	-	<b>183,916</b>	<b>27,574</b>	<b>15,925</b>	<b>190,129</b>	<b>759,236</b>
<b>REVENUE</b>											
Funds Received from Funding Agencies	103,242	-	-	- <sup>2</sup>	67,272 <sup>4</sup>	-	-	-	-	-	<b>170,514</b>
HIP Funds	-	123,250 <sup>1</sup>	-	-	-	-	-	-	-	-	<b>123,250</b>
Quarter Horse Program	-	14,500	-	-	-	-	-	-	-	-	<b>14,500</b>
Alumni House Donations (individuals)	-	-	-	-	-	-	40,144	-	-	-	<b>40,144</b>
Tuition & Workshops (S19, F19, W20)	-	-	-	-	-	112,464	-	-	-	-	<b>112,464</b>
Other University Contributions	-	-	-	-	-	-	-	-	-	-	-
External Contributions	-	-	-	-	-	357,324	-	-	66,625	-	<b>423,949</b>
<b>TOTAL REVENUE</b>	<b>103,242</b>	<b>137,750</b>	-	-	<b>67,272</b>	-	<b>469,788</b>	<b>40,144</b>	-	<b>66,625</b>	<b>884,821</b>
<b>INTERNAL TRANSFERS:</b>											
From Agency Fund to Support	-	(27,550)	-	(13,000) <sup>2</sup>	-	40,550	-	-	-	-	-
From Agency Fund to Program	-	-	-	-	-	-	-	-	-	-	-
From Support to Program	-	-	-	-	-	(40,550)	27,169	13,382	-	-	-
Transfers b/w EG accounts	-	-	-	-	-	5,000	9,000	(14,000)	-	-	-
Transfer from Sponsorship	-	-	-	-	-	17,000	-	-	(17,000)	-	-
<b>TOTAL TRANSFERS</b>	-	<b>(27,550)</b>	-	<b>(13,000)</b>	-	-	<b>22,000</b>	<b>36,169</b>	<b>(619)</b>	<b>(17,000)</b>	-
<b>PROGRAM EXPENDITURES</b>											
Research Projects	(166,621) <sup>3</sup>	(34,527)	-	(54,000)	(123,868) <sup>4</sup>	-	-	-	-	-	<b>(379,016)</b>
Research Support	-	-	-	-	-	-	-	(175)	-	-	<b>(175)</b>
Education	-	-	-	-	-	(427,813)	-	-	-	-	<b>(427,813)</b>
Communications	-	-	-	-	-	-	(93,041)	-	-	-	<b>(93,041)</b>
Sponsorship	-	-	-	-	-	-	-	-	(957)	-	<b>(957)</b>
<b>TOTAL PROGRAM EXPENDITURES</b>	<b>(166,621)</b>	<b>(34,527)</b>	-	<b>(54,000)</b>	<b>(123,868)</b>	-	<b>(427,813)</b>	<b>(93,041)</b>	<b>(175)</b>	<b>(957)</b>	<b>(901,002)</b>
<b>FUND BALANCE as at April 30, 2020</b>	<b>81,829</b>	<b>99,473</b>	-	<b>50,000</b>	<b>(910)</b> <sup>5</sup>	-	<b>247,891</b>	<b>10,845</b>	<b>15,132</b>	<b>238,797</b>	<b>743,056</b>

1) HIP/QH 2018-19 Holdbacks Received in Q1, 2019-2020 Research Funds in Q3  
2) HBPA 2019-20 Revenue received late Q4. Admin support amount transferred in Q1  
3) OVC Grant in Aid remaining balance, Chenier OMAFRA support transferred in Q2.  
4) Includes \$31k from Ontario Equestrian from 18/19. Has been transferred to J. Koenig project  
4) Includes \$31k from Ontario Equestrian from 19/20. Has been transferred to T. Koch projects  
5) Research funding: \$190k of carryforward has been allocated to 19/20 projects. \$40k available for 20/21 competition and expenses