

Equine Guelph

**Spread the Word**  
not the germs  
Protect your horse from getting sick

CAUSES STRANGLES



CAUSES FLU AND SWAMP FEVER



The Year of Biosecurity

Annual Report

May 1, 2015 – April 30, 2016

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## Executive Summary

The level of awareness and desire for higher animal welfare continues with the general public in Canada and other countries. Equine Guelph has made an unwavering commitment to provide programming that helps support the health and well-being of horses in Canada and beyond since its creation in 2003. The past year has included significant achievements and recognition for these programs and this was achieved by passionate and committed industry leaders, corporate sponsors, donors, volunteers and staff as part of this unique partnership between the equine industry and the University of Guelph.

Working together we have been building a strong foundation of programs over the last 13 years, resulting in Equine Guelph receiving acknowledgements for its leadership in health and welfare as a result of the Equine Guelph/Industry-funded research program. The goal of the research program is strongly focused on research that supports new treatments, diagnostics and prevention methods for horses of all sectors of the industry. With a closely linked extension/communications program, the results of the evidence-based and applied studies of this research program are disseminated to the equine industry in Canada and beyond in several ways including: videos, new audio podcasts, research articles, monthly e-blasts, targeted informational seminars and much more. This new information flows into the industry communication channels and can be used by owners, caretakers and veterinarians in the industry to support health and wellness of horses for life.

Equine Guelph's dedicated Research Committee reviews research proposals annually and then allocates the available funding according to the scientific peer review and industry priorities. In 2015/2016, over \$130,000 was invested into the research program to support new and ongoing projects; a lower number than in previous years due to uncertainties in research funding. This approach ensures a strong return on the investment into research that is made annually by the horse industry. Innovative programs continue to research important industry priorities, including new approaches to stem cell therapy, emerging disease concerns, failure of pregnancy, and new approaches to modelling and tracking biosecurity issues and risks. These important projects on industry-identified priorities underscore the need for the continuation of industry investment in partnership with Equine Guelph to fund these programs at the University of Guelph. This also provides important training opportunities for future vets and develops local expertise in these important areas so that the evidence-based information can be shared with veterinarians and members of the industry.

Special news was received in June of 2015, when the international equine community recognized the innovative and legacy-building programs of Equine Guelph by the awarding of the Equine Industry Vision Award, sponsored by the American Horse Publications Group and Zoetis to Gayle Ecker, Director. It was noted that Equine Guelph had a long and active history of promoting welfare of horses through its research-based education and training programs and through its novel methods for communications. This is the only time a Canadian has been honoured with this award.

The partnership with the Campbell Centre for the Study of Animal Welfare continues to grow and has included the inclusion of Masters and PhD students in the complimentary welfare programs of Equine Guelph. The ongoing partnership also includes the annual training that is completed each year for investigators from the Ontario SPCA and training on horse welfare assessment and the application of the Equine Code of Practice for Welfare.

Equine Guelph sincerely thanks the Council partners as they continue to provide support and guidance for the programs of Equine Guelph on industry priorities - E.P. Taylor Equine Research Fund, Equine Canada, the Horsemen's Benevolent and Protective Association of Ontario, the Ontario Equestrian Federation, the Ontario Harness Horse Association, the Ontario Racing Commission, Ontario Ministry of Agriculture and Food, Standardbred Canada, the Quarter Racing Owners of Ontario, Inc. and the University of Guelph.

This annual report provides the details on the 2015-2016 activities of Equine Guelph and salutes the partnerships that make these achievements possible for the benefit of the equine industry and the horse. This partnership continues to provide important support to the horse industry for the future sustainability of our industry.



# UNIVERSITY of GUELPH



Dear Partners and Supporters of Equine Guelph,

The challenges facing the racing industry, while not over, are showing some positive directions for the future. It is a very different future than what has been, but with changes come opportunities.

The need for research funding is more important than ever to provide the Ontario industry with new knowledge and answers to challenges in order to keep the Ontario scene competitive on the world stage. Advances in stem cell research continue to provide fascinating opportunities in helping horses maintain health and continue in their racing careers, as well as new hope for second careers of racehorses due to injury. The advancements in “training” stem cells to become better cartilage cells, for an example, offer new hope for many horses and less economic impact on their owners.

Other exciting and important areas of research include the welfare aspects of thyroxine, studies on joint inflammation biomarkers, infectious diseases such as *C. difficile* in foals, colitis, exercise induced pulmonary hemorrhage, Potomac horse fever, hindgut microbials and many other areas.

Despite the challenges of funding, Equine Guelph continues to provide high quality services to the equine industry in Ontario and far beyond. Nowhere is this as evident as the recent international award given to Equine Guelph. In June, 2015, the prestigious “Industry Vision” award, sponsored by Zoetis, was presented to Gayle Ecker, director of Equine Guelph, at the annual convention of the American Horse Publications group in Texas. The only Canadian to be so honoured, this very competitive award is given out to acknowledge innovation and leadership. This speaks to the growing international recognition of the programs of Equine Guelph and the dedication of the staff to provide high-quality, evidence-based education and communications programming to the industry, with a strong focus on health and welfare of the horse.

In 2015, the focus on “Full-Circle-Responsibility” continued and new programming was developed for training response to industry needs. This included Large Animal Emergency Rescue for horse owners, trainers and first responders and included staff from several racetracks, training barns and other agricultural sectors, with a strong focus on prevention of risks.

In 2016, the focus continues to be on Biosecurity and prevention of disease, in preparation for the release of the new Biosecurity standard for Canada. With the unfortunate rash of fires in horse barns, Equine Guelph launched the Fire Prevention program that provided valuable information for the prevention of fires, included a social media blitz, sponsored by and in partnership with Mike King, of Intercity Insurance and the Can-Am Equine Expo tradeshow.

Crafting a new future is never easy, but a challenge worthy of every effort. Strong research programs that include both discovery research and finding solutions to industry problems are an important part of that pathway forward. Training and education will always be an important component of the future success of any industry and the need continues to provide ongoing and new programming that includes the latest information on health, welfare, business and risk reduction.

We would like to sincerely thank the many donors, corporate sponsors and the members of the Advisory Council for their past and ongoing support. This support is crucial to the ability of Equine Guelph to respond to industry needs for programming. There are also hundreds of volunteers that have come forward to eagerly help on spreading the information at the many events such as tradeshow and seminars throughout the year.

With the strong partnership that is forged at the Advisory Council table and the focus on the future, Equine Guelph and OVC are positioned well to continue to work closely with the industry in developing new programs for future sustainability of the industry.

Yours sincerely,



Dr. Jefferey Wichtel  
Co-Chair, Equine Guelph  
Dean, Ontario Veterinary College



Mr. Al Patterson  
Co-Chair, Equine Guelph

## Introduction

“The Centre for the horse owner at the University of Guelph” -- Equine Guelph was created in 2003 by the horse industry to create and operate programs for the horse industry as an important partner in future sustainability.

Equine Guelph, celebrates its 13th year on July 1, 2016. Progress continues as Equine Guelph builds strategic partnerships within the industry and beyond. It has been and continues to be a unique partnership between the equine industry and the University of Guelph. Equine Guelph continues to play an important role as a committed partner in working together with the industry for the health and welfare of our horses and a sustainable future.

The Annual Report for the 2015 – 2016 fiscal year will highlight the important achievements and showcase the development and progress of the programs of Equine Guelph.

The Advisory Council of Equine Guelph has been created by leaders of the industry, working together on the common goal of supporting the health and welfare of the equine industry — Equine Canada, The Horsemen’s Benevolent and Protective Association of Ontario, Ontario Equestrian Federation, Ontario Harness Horse Association, Ontario Ministry of Agriculture, Food and Rural Affairs, Ontario Racing Commission, Standardbred Canada, Quarter Racing Owners of Ontario, Inc. and the University of Guelph. Funding for research is also contributed by the E.P. Taylor Equine Research Fund, managed by the UofG. A special funding agreement with OMAFRA continued into 2016 to help support “The Year of Biosecurity” program that promotes higher management strategies to reduce the risks of infectious disease.

The Co-Chairs of the Equine Guelph Council, newly appointed OVC Dean, Dr. Jeff Wichtel and Mr. Al Patterson, Equine Canada oversee the funding and program initiatives of the Council to ensure the ongoing focus on industry priorities and a return of the industry investment. Gayle Ecker is the Director of Equine Guelph and heads up the dedicated team of Susan Raymond, David Finlay, Jackie Bellamy-Zions, Diane Gibbard and Henrietta Coole.

## Programs of Equine Guelph

### Research

The pace is picking up. Research productivity into equine health and welfare is accelerating worldwide, and the research sponsored through Equine Guelph (primarily at the Ontario Veterinary College) is contributing to that success. As you might expect, disease and concerns about biosecurity are common research themes at a Veterinary College, and several researchers are contributing in those areas. (Titles of their recent publications are in Appendix 6.) Dr. Henri Staempfli continues his work on the bacterium *Clostridium difficile*, which is a cause of diarrhea in horses at any age, particularly juveniles, and also in humans. He collaborates with Dr. Scott Weese, Director of the Centre for Public Health and Zoonoses. Dr. John Prescott has recently published some ground breaking findings on another pathogen that is troublesome for horses, *Rhodococcus equi*, which he has been chasing for many years. A team led by Dr. Amy Greer is approaching issues of biosecurity using mathematical models that allow the tracking, spread and efficacy of treatment to be more efficiently pursued.

Breeding is another area of focus, with Dr. Keith Betteridge's team continuing the extended project on the reasons for the failure of early pregnancy. The team led by Drs. Elizabeth Scholtz and Tracey Chenier studied a means to prevent and treat uterine infections that prevent successful breeding.

Equine Guelph is pleased to support a number of high quality projects at the University of Guelph, by virtue of funding provided by the industry: from the Horse Improvement Program (administered by the Ontario Racing Commission), from the Horsemen's Benevolent and Protective Association (which has shown considerable foresight in making this contribution for many years), and from the E.P. Taylor Foundation, started by veterinarians in the Thoroughbred industry, and now maintained in trust by the University and Equine Guelph.

Nine new research projects include: Kritchevsky, J. The effect of thyroxine supplementation on measures of performance in racehorses; Koch, T. Development of Osteochondral Constructs Using Equine Umbilical Cord-Derived Mesenchymal Stromal Cells for Treating Joint Cartilage Defects; Koch, T. MicroRNAs as Equine Joint Health Biomarkers; Weese, S. Characterization of the epidemiology and clinical impact of *Clostridium difficile* infection in hospitalized foals; Staempfli, H. A prospective study on the use of fecal oral transfaunation as adjunct treatment in horses with acute colitis and diarrhea; Koch, T. Allogeneic Equine Umbilical Cord Blood Mesenchymal Stem Cells for Treatment of Exercise Induced Pulmonary Hemorrhage; Arroyo, L. Seroprevalence of Potomac Horse Fever in Ontario; Arroyo, L. Characterization of the equine hindgut microflora and metabolites using an in-vitro model and Merckies, K. Determination of practical physical measures of equine welfare.

Continuing research projects include: Bienzle, D. The global lung epithelial response to inhaled dust; Betteridge, K. Proteins involved in failure of early pregnancy; Scholtz, E. Nitric



Oxide's role in Persistent Endometritis in Mares and Physick Sheard, P. ORC Death Registry: An in-Depth Analysis.

Dr. John Baird was selected by industry agencies to act as a voice for them as the Industry co-Chair of the Equine Guelph Research Committee. He partners with Dr. Jeff Thomason, the University co-Chair, and has already made a positive contribution to the activities of the Committee. His next task is to solicit discussion of priorities for research in the next funding cycle.

The timing of funding awards from external agencies continued to be erratic during 2015, as the racing industry continued reorganization. Research activity continued notwithstanding, and, at the time of writing this summary, the future is looking considerably more stable and several intriguing and positive opportunities to enhance the research effort are on the horizon.

Summaries of each new project are found in Appendix 5, and a list of publications and research presentations in Appendices 6 and 7.



Equine Guelph, in partnership with Norm Borg, announcer for Trot Radio's podcast, continues its innovative program called **"Research Radio,"** which has now expanded into the foray of YouTube videos. This program, first launched in April 2014, and sponsored by SSG Gloves, provides a monthly interview with an equine researcher on current research findings and developments or others who are interviewed on current programs. Standardbred Canada continues to provide the home for this podcast on its website and the programs have enjoyed considerable media coverage since the program began. There are now 25 podcasts bringing research to the public.

The **"Report on Research"** program continues to draw interest as it highlights the work of equine researchers with links created to resource material.



Equine Guelph's research also received extensive coverage. The Research Committee is composed of designated members from the equine industry funding groups who evaluate research proposals, give funding recommendations after following an external peer review process, and then monitor the outcomes and completion of the funded research projects. This process and its leadership structure are well-respected within the industry and continue to provide a wealth of academic and veterinary expertise.

## Education and Training

Research, education and training are critical components to be developed for any industry that wishes to grow and increase sustainability during challenging times. Equine Guelph assists the horse industry by providing an education and skills-training program, incorporating the evidence-based information from research as part of an industry-wide program for building a sustainable future.

Equine Guelph provides opportunities for those involved in the horse industry to develop their skills and knowledge through an award-winning online program that offers the largest number of online courses from an accredited university. During this year, 958 students joined our learning community with 259 new students, taking part in one or more of the 22 courses offered during the 3 semesters. The majority of our students are from Ontario (55%) with 26% of students hailing from BC and AB. Our international students come to us from over 20 different countries, reflecting the passion of the horse world-wide and the draw to Equine Guelph's course offerings. We now have 170 graduates with the Diploma in Equine Studies, 356 completing the Equine Science Certificate, and 44 completing the Equine Business Certificate. We have recently seen 3 of our students complete the Equine Welfare Certificate and a growing number are interested in adding this Certificate on top of their Diploma in Equine Studies.

Through a defined process of growth and renewal, Equine Guelph continually develops and improves the award-winning programs, providing industry access to the quality education programs from the University with over 20 online programs and many other programs for education and training. Equine Guelph successfully completed all targets for the education program, most recently with the completion of the new Equine Welfare Certificate which offers the third certificate option to students, along with the Equine Science Certificate, the Equine Business Certificate and the Equine Studies Diploma. Equine Guelph, in partnership with OpenEd, is the leader in online offerings (20+ courses) of evidence-based courses from an accredited university.

### **Other highlights include:**

Equine Guelph continues to develop the equine welfare assessment program, a 4-day training program offered annually to the Ontario SPCA in partnership with CCSAW, with partial funding received from OMAFRA as an important part of the "Full Circle Responsibility" for the Equine Welfare program.

Equine Guelph, in response to feedback from the industry, has developed 3 short courses (Colic Prevention, Equine Behaviour and Safety, Equine Biosecurity) are offered annually from the industry reporting that "time and money" were challenges for continuing education. These 2-week short courses focus on a specific topic and are available for only \$75, giving great value to the students who have cited "time and money" as challenges to their ongoing professional development.

The large animal emergency training program continues to draw praise and interest from a number of first responders, fire departments, veterinarians and emergency planners, and more programs will be rolled out in 2016 that build on this foundation of training that

benefits all horses (and other large animals) in Ontario when faced with emergency rescue situations.

Fifteen educational events and tradeshow featured Equine Guelph and/or EquiMania! displays, and promoted Equine Guelph's Research and Education program along with EquiMania!

Over 20 talks/presentations were made by Gayle Ecker and Susan Raymond, to the industry and general public on a wide variety of educational topics.

Tuition and workshop revenue contributed over \$120,000 towards education operating costs for Equine Guelph and the remainder was covered by grants and corporate sponsorships.

### **EquiMania!**

EquiMania! – our award-winning interactive youth education program continues to be a popular travelling display; engaging children, families and the equine industry. EquiMania! has been a regular participant at the Royal Agricultural Winter Fair, the Erin Agricultural Fair and the Can-Am All Breeds Equine Expo. EquiMania! returned to the Minnesota State Fair (2<sup>nd</sup> largest fair in the U.S. with over 1.8 million annual visitors) for its fourth year of a five year agreement. Through this partnership, the entire EquiMania! display was replicated and shipped down to the Minnesota State Fair horse barn where it will remain for five years to develop a new fan club in the U.S. and its popularity continued in 2015. It has won two international awards for its innovation and partnership.

Equine Guelph values the strategic partnerships that have developed and ensure the success of these programs. We thank our continuing relationships with our sponsors: Boehringer Ingelheim, Can-Am All Breeds Expo, Equine Canada, Greenhawk, Intercity Insurance Services, Kubota Canada, Merck Animal Health, Omega Alpha, Ontario Equestrian Federation, The Royal Agricultural Winter Fair, Shur-Gain, SSG Gloves, Standardbred Canada, System Fencing, Vétoquinol, Workplace Safety & Prevention Services, and Zoetis.

EquiMania! could never be possible without the support of our important sponsors and the many dedicated and loyal volunteers who join in our mission to give back to the horse industry by encouraging valuable conversations and discussions to take place on welfare issues for the horse industry.

## **Full-Circle-Responsibility Equine Welfare Education Program**

Equine Guelph has worked closely with OMAFRA on a 3-year TPA that is now at an end. It has been a very beneficial and effective working partnership that has provided benefits to the horse industry, to Equine Guelph and to OMAFRA in leading the development of several new and innovative programs that support and enhance horse welfare in Ontario. Equine Guelph has achieved all its designated milestones within allocated budgets and has maintained an open and accountable relationship with OMAFRA staff for its TPA which ended in March, 2016.

Many projects were developed and continued throughout the 3 year program including; the awareness campaign, specialised equine welfare training for OSPCA officers, large animal rescue training for first responders and development of welfare training resources.

### **Year Three - Deliverables Summary**

#### **1. Awareness Campaign**

Communications include:

- Monthly enews (over 5,600), news release to media database (160+) and Horse Publications Group and social media contacts.
- Program webpages on Equine Guelph website with appropriate links to other groups, resources and educational opportunities (portal).
- Special events (display, printed promo items and presentations).
- Welfare presentations to special interest groups.

Monthly enews focused on a specific chapter of the new National Code of Practice for Equine Welfare (2015) and Equine Biosecurity National Standard (2016).

#### **2. OSPCA training for Equine Welfare Assessment**

The four-day training program in Equine Welfare Assessment was attended by over 14 OSPCA officers in partnership with the Campbell Centre for the Study of Animal Welfare (which runs the other agricultural species training). Approximately, half of all OSPCA officers have now received this training. Each participant received a training manual specific to equine welfare. EG produced the manual which included the following: enhanced training materials such as the “carry-around” Body Condition Scoring instructions and poster, the Horse Health Check poster, the on-site welfare assessment checklist for horses/facilities and the four-day slide deck. Officers had over five hours of hands-on training with horses. The last day covers multi-media presentations on case studies, and participants work with the OSPCA regulations and the application of the new Code of Practice to develop assessment skills. Course feedback from OSPCA officers continues to be positive and next training is scheduled with all new officers for June 2016.

#### **3. Technical Large Animal Emergency Rescue Training**

- October 2015 (Grand River Raceway, Elora, ON): Dr. Rebecca Gimenez returned and a 2-day awareness course was held attracting a very high number of participants (over 90 people with 30 turned away) representing several fire departments, veterinarians, and farm owners. This training initiative was the result of invitation and full support by the racing sector in recognition of its value to this industry. This offering also included a two-day “Train the Trainer” seminar to allow Equine Guelph to expand the reach of the training program by developing specialized assistant trainers in Ontario.



-Strategic development of this program has been progressive year to year and now is developing into a program with significant positive impact on Ontario for all large animals

-More materials have been developed for use by those who have identified themselves as potential assistant instructors, and these are being collated as a resource.

-Woodbine invited a presentation from Equine Guelph on large animal rescue, and a commitment from a Woodbine racing representative was made to assist in bringing the awareness and training for this to the racing sector, starting with Woodbine, then possibly Mohawk. Other tracks will be encouraged to follow.

-Important strategic partnerships were developed and are continuing to be developed due to the networking and open dialogue/team development that was encouraged during the seminar sessions.

-Development of further partnerships and identification of “champions” from many sectors including fire departments, racing, equine associations, veterinary school, OSPCA and more is ongoing.

-June 2016, Dr. Gimenez is scheduled to present at the OSPCA education conference, conduct a specialised training session for the Large Animal Clinic (Ontario Veterinary College) and participate in the production of training videos for first responders.

#### **4. Horse Rescue Facility guidelines and ongoing program development including supplementary materials**

Equine Guelph staff members, Gayle Ecker and Susan Raymond attended provincial equine welfare committee and subcommittee meetings and Equine Guelph has offered assistance for a program once industry direction is finalised for support training of horse rescue facility managers and staff. Existing rescue facility guides from other countries were reviewed for possible application in Ontario. A draft document on Horse Rescue Guidelines has been developed and is currently being reviewed by Drs. Liz Shiland and Mary Bell, prior to final distribution of the guidelines to the subcommittee on equine rescues. Further discussions have been ongoing with OEF, OAEP and OSPCA on rolling out this standard.

A program goal is to collect information on resources and programs relative to the rescue issue. Ongoing research continues to develop secondary materials that may be of value for rescue operations in Ontario beyond facility guidelines such as self-assessments to ensure compliance with the Code of Practice, biosecurity and others.

## 5. Growing Forward 2 Grant on Biosecurity (now completed)

Equine Guelph (EG), in partnership with the Ontario horse racing industry, developed a targeted, racing-specific biosecurity awareness and training blitz to ALL levels of the industry.

This multi-level campaign, “BIOSECURITY – Spread the word not the germs,” trained key stakeholders using a ‘championing’ strategy within the province’s three horse racing disciplines – Standardbred/Thoroughbred/Quarter Horse – to help protect the industry from the threat of infectious disease.



This innovative, hierarchical approach started with the training of Ontario Racing Commission (ORC) officials, extended to track and facility managers and culminated with grassroots caregivers (owners, trainers, grooms). Support of ORC officials and the licensees they govern was achieved and sustained through the development of ‘champions’ at each level:

### LEVEL 1 – HORSE RACING OFFICIALS:

EG developed a ½-day horse racing-customized seminar for 14 ORC Investigators (including OPP officers) and 23 Judges/Stewards. This seminar took place April 7, 2015 in Guelph. Following the seminar, all 37 racing officials participated in a two-week online biosecurity short course hosted by EG.

### LEVEL 2 – RACETRACKS/TRAINING CENTRES:

Videos featuring Dr. Scott Weese focused on assessments and practical solutions for facility management of two key facility types – a racetrack paddock (typically turns over 100+ horses per racing card) and a large training centre barn. Videotaping occurred in May and delivery over summer 2015 was ongoing.

### LEVEL 3 – RACEHORSE OWNERS/TRAINERS/GROOMS:

#### 1. Marketing Research:

a) PRE: Pre-blitz marketing research was conducted in the form of two focus groups (including all racing sectors) and three in-depth interviews with owners, trainers and grooms to understand attitudes towards biosecurity and barriers to compliance within horse racing. The focus groups occurred January 28 and 29, 2015. The interviews were conducted in February 2015. Both methods provided attitudes, opinions and experiences with respect to biosecurity, and their communication preferences. The results helped to frame the development of the educational resources and will continue to provide direction for our ongoing program through 2016.

b) POST: Post-blitz interviews were conducted in two racing paddocks (Grand River Raceway and Mohawk Racetrack) to measure the effectiveness of the campaign. 42 trainers were interviewed.

2. Awareness/Training Blitz Campaign: A summer long, two-phase grassroots blitz using innovative teaching tools and a peer-to-peer strategy was developed. Materials (4,000 of each) were distributed personally by ORC personnel and racetrack officials to racehorse caregivers in all 10 Ontario race tracks paddocks and race offices as well as approximately 20 major training centres:

PHASE I:

- a) Single-use Disinfectant Tablet Samples (including instructions)
- b) Barn Posters (printed version for posting in barns)

PHASE II:

- a) "Spread the word not the germs" USB Sticks featuring:
  - 'Scribble Video' Series – two innovative four-minute animated 'whiteboard' videos on general biosecurity and biosecurity specific to racing
  - Testimonial Videos – three two-minute video clips using interviews with trainers on biosecurity techniques
  - Racetrack/Training Centre Videos
  - Biosecurity Checklist Tool – assessment tool
  - Barn Poster pdf – Top 10 poster (specific to racing)



Phases I and II were supported by an aggressive web and print campaign directed to the racing industry in April through September of 2015.

The goal was to engage all levels of this low-compliance target audience in dialogue and learning – bringing everyone together to discuss infectious disease control. The intensive, innovative training blitz will raise awareness and provide the essential training to help avert a potential crisis in the horse racing industry. Industry resources developed included a web page for Racing Industry, Poster, Checklist and interviews on Research Radio.

**Note:** Equine Guelph was identified as a major contributor to the education surrounding biosecurity in Canada. Gayle Ecker (Susan Raymond as alternate) are part of the national committee developing Codes of Practice for equine biosecurity. This task team continues to meet and Equine Guelph will be a main distribution point for Ontario for the new information and standards throughout 2016. Gayle Ecker is also on 2 subcommittees, Education and Training and Facilities development as part of this larger initiative.

## **6. GF2 welfare project (ongoing)**

### **Animal Welfare Training**

Equine Guelph in partnership with the equine industry is developing an equine welfare training program, which includes developing “Canada’s Equine Welfare Training Portal” for welfare training for equine, based on national standards as a pilot program in Ontario.

### **Equine Guelph Professional Development**

Staff of Equine Guelph worked to upgrade their skills and knowledge in ways that would help move the Welfare agenda forward in Ontario, as part of this program for future sustainability.

Gayle Ecker completed Level 2 Equine Cruelty Investigation Certification, May 2014, Durango, CO (Code 3 Associates), and is now a Certified Equine Investigator, Colorado State University

Susan Raymond completed the following training:

- Technical Large Animal Emergency Rescue training – operations level (re-certification), May 2015, KY
- Technical Ropes Training, May 2015, KY
- Level 1 Equine Cruelty Investigation Certification, August 2015, Durango, CO (University of Colorado/Code 3 Associates)



## Communications and Marketing

Great feedback continues to be received from our equine industry for the communications and extensive pickup of our articles continues from the horse industry and its publications in its published print and web articles. The media paid special attention to the Industry Vision Award won by Equine Guelph’s director, Gayle Ecker in 2015. This great success story was published at least 30 times in popular horse journals in both Canada and the U.S.! New media attention was attracted by the extensive campaign for Equine Guelph’s biosecurity resources launched for the racing and non-racing industry throughout 2015. This interest continued into 2016 with the announcement of a focus on biosecurity which would disseminate information on the new National Farm and Facility Level Biosecurity standard for the Equine Sector.

Much coverage was recorded after the press release of research article “Good Things in Small Packages,” featuring advances in Stem Cell Therapy. Exceptional coverage has also resulted, both in print and on the air, from Equine Guelph’s response with fire safety resources to an industry which suffered devastating losses early in 2016. In addition to over 25 stories reaching the public about fire safety resources provided by Equine Guelph, Gayle Ecker was also interviewed by several local radio stations and the television media, airing on CTV, CHCH and CBC News.

This was not the only TV coverage for Equine Guelph. An awareness campaign aired in two 15 second spots on CTV and CTV2 networks during the Talkin’ Horses program breaks promoting Equine Guelph online education opportunities.

### NEWSLETTER

# Equine Guelph

*Research Update*

Spring 2016



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## Lights, Camera, Digestion

The successful capture of video footage of the inside of the horse's digestive tract has earned Equine Guelph's scientist Diane Hubbard her Masters degree. Hubbard defended her horse research investigating capsule endoscopy (CE) as an imaging tool for horses on August 19, 2015. Congratulations go out to Diane and her advisor, Dr. Jeff Thomason of the Ontario Veterinary College, whose research produced high quality video footage capturing healthy intestinal villi and exposing common parasites and lesions in various parts of the small intestine.

In the last ten years, CE has emerged on the scene as a more potent, flexible procedure in human medicine to help diagnose intestinal disorders by detecting bleeding, lesions, inflammation and ulcers in the small intestine.

Traditional endoscopy procedures, via mouth or rectum, are incapable of reaching and assessing the small intestine. CE works



Photo by: *Cherie Gilbert*

has both great appeal and challenges. Like humans, horses suffer from a variety of GIH disorders and being able to access sections of the GIH for examination is even more challenging given the much longer length of the intestinal tract (21.00m) and larger anatomy.

Potential CE applications include diagnostics for recurring colic and malabsorption syndrome when oral tests present with similar symptoms including weight loss.

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CHANGING LIVES  
IMPROVING LIFE

We hope the research updates that benefit both the racing and non-racing sectors give you an informative overview of the current state of research being funded with the help of the industry partners of Equine Guelph.

Dr. Jeff Thomason, Co-Chair  
Equine Guelph Research Committee

Equine Guelph's colour, printed newsletter is now distributed annually in the spring. It has a research focus and is partially supported by the research program. Distribution is over 26,000 members of the horse industry and it is available in printable PDF format on the website. Distribution of the newsletter has been supported by the Ontario Equestrian Federation (Whoa!). The newsletter has also been distributed to members of the Thoroughbred industry by inclusion with Canadian Thoroughbred.

"Research Radio", audio files, are now available on Equine Guelph's YouTube channel as well as on our Research web page. This communications program, now 24 episodes strong, continues to achieve pick up on several sites including Ontario Racing, OVC bulletin, HBPA, Horsetalk.co.nz in New Zealand, Stablemanagement.com in the U.S and Standardbred Canada, disseminating research to the racing industry and beyond.

### **E-news, HEALTHflash and the annual campaign for 2016 - Biosecurity**

The media pick-up of Equine Guelph communications continues to reinforce the interest of the industry in our programs, research findings and events. According to statistics from Constant Contact, Equine Guelph emails achieve a 14% higher open rate than the education industry average.

As the "2015 year of Full-Circle-Responsibility" program came to a close, highlighting one section of the new Equine Code of Practice each month in Equine Guelph's e-news bulletin, welfare continues to be top of mind marching into 2016 with a biosecurity focus. The foundation was well laid in 2015 with the launch of new biosecurity resources for the racing and non-racing sectors including: whiteboard videos on infection control, videos from racing professionals talking about their protocols, a "virtual tour" video though facilities with biosecurity expert Dr. Scott Weese and many more tools and information sheets available in both print and web version. Media interest in "Spreading the Word and not the Germs" continued into 2016 when Equine Guelph announced they would be disseminating key points from the new National Farm and Facility Level Biosecurity standard for the Equine Sector. Biosecurity has been a hot topic with at least 34 publications being distributed this fiscal year by the main stream equine media from EG releases.

HEALTHflash, consisting of 4 seasonal email reminders + monthly health alerts, introduced in January 2013, continues to be highly popular and links have been created from equine media across North America including: Equine Canada, Horse-Canada.com and EquiMed to name a few.

### **Website**

Equine Guelph's website continues to grow with the goal of providing resources to the horse industry that will result in improved welfare to the horse including; research advances, diagnosis capabilities and educational investments. New website initiatives include a fire safety resources web page. The website has also expanded to include new resources in healthcare tools (including the new Code Decoder) and welfare initiatives (including web resources teaching the basics of infection control with videos and fact sheets created for the racing and non-racing sectors).

In the past year, Equine Guelph's website received over 112,173 unique visits with the most popular pages, not including the home page, being Job Track, Education, followed by the Equine Guelph healthcare tool page featuring the new Horse Health Tracker App. There has been an increase in traffic interested in Equine Guelph's Horse Behaviour and Safety eWorkshop. New users are up by nearly one percent and traffic reaching us by mobile devices is on the rise. For a complete website report, please see Appendix 13.

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

For a complete list of seminars and presentations given by Equine Guelph staff, please see Appendix 8. Releases are communicated on a regular basis to both equine industry media and associations to facilitate publication in print or electronic form. Over 287 articles have been published about the programs of Equine Guelph in the industry media, a 3.5 % increase over last year, (see Appendix 12), demonstrating the interest of the industry media in the programs of Equine Guelph and the efforts of the staff and Communication and Marketing Committee members.

The positive response to Equine Guelph articles continues with a broad range of the industry publications, including racing and non-racing sectors, providing enhanced coverage of the programs. Regular monitoring of industry magazines, newsletters and websites continues for Equine Guelph presence and these are filed in our media archives. Over the past year, the programs of Equine Guelph have received coverage in the general press including; Canadian Vet Magazine, Quarter Horse News, Trail Rider, Greenhawk flyers, The Wellington Advertiser, At Guelph and OVC's News Bulletin. Equine Guelph continues to receive coverage from many Ontario-based horse industry publications such as; Trot, The Rider, Ontario Horse Racing, Ontario Equine Vets and Whoa! Features were also printed in Canadian horse industry publications such as; Canadian Thoroughbred, Horse Sport, Horse Journals and Horse-Canada. American coverage examples include: TheHorse.com, and EquiNews (Kentucky Equine Research).

In addition, Equine Guelph received coverage from international horse industry websites such as; HarnessLink.com, TheHorse.com, StandardbredCanada.com, HorseTalk.co.nz, Horse-Canada.com, AmericanFarriers.com, TheRider.com, StableManagement.com, HorseJournals.com, HBPA.com, and Equine Science Update. Links to Equine Guelph resources continue to be created from sites including: Equine Canada, Provincial Equestrian Federation websites, Veterinarian web sites, and blogs from social media sites (i.e. Barn Mice, Facebook and Twitter). Information and service sites are also actively posting links to Equine Guelph resources i.e.: Intercityinsurance.com and SystemsFence.com directing the public to Equine Guelph's online courses, horse owner tools and research.

The Ontario Equestrian Federation (OEF) continues their support of Equine Guelph with their e-broadcast program to OEF members highlighting new educational opportunities and special events. This provides important assistance that helps to build the student enrollment numbers and increased member awareness of Equine Guelph's education programs. OEF continues its support of the programs of Equine Guelph by providing several links from their pages including news, equine welfare and a special Equine Guelph page is featured in OEF's education tab. Several other sponsors such as Equine Canada, Central Ontario Standardbred Association, and provincial equine organizations have been posting buttons on their sites to the aforementioned plus new initiatives such as Full-Circle-Responsibility welfare articles and programs including the Behaviour & Safety Train the Trainer kit.

## **Information Inquiries**

Equine Guelph continues to be seen by the equine industry as the source for information. During 2015/16, Equine Guelph received an increasing number of information requests and continued to address the needs of the horse industry on an individual basis through a significant number of emails, phone calls, information packages, walk-ins and letters. Many people attend equine tradeshow and approach Equine Guelph's displays for information requests on a variety of topics as there is a confidence in the evidence-based information provided to the horse industry. This information

service is recognized as an important function by associations and individuals for industry development and sustainability. While Equine Guelph is uniquely positioned to act as the “bridge” or information broker to the equine industry this freely provided service is unfunded by the industry or government and adds considerable demands on the small staff. There is an important program role that needs to be developed for predominantly new horse owners for an enhanced “portal” for the industry to help fill that on-going and increasing need for a respected information source for the industry. The most popular topics included questions on fire safety, biosecurity, identifying disease specialists and new disease concerns, over population of horses and rehoming/retraining questions, and nutritional queries.

**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>FY14-15 Amount Raised</b>	<b>FY15-16 Amount Raised</b>	<b>FY15-16 No. of Unique Donors</b>	<b>FY15-16 Median Gift</b>
Area of Greatest Need	\$22,660.31	\$18,456.32	92	\$30
Education	\$12,753.30	\$5,779.32	122	\$25
Research	\$17,176	\$2,589	21	\$100
OEF-War Horse Equine Welfare Education Fund	\$1,625	\$1,530	8	\$10
Sponsorship	\$66,500	\$82,750	12	\$5,000
<b>TOTAL</b>	<b>\$120,714.61</b>	<b>\$111,104.64</b>	<b>255</b>	

TABLE I - Funds raised from private donations to EG accounts during FY14-15 and FY15-16 including number of donations (unique donors which includes repeat donors) and the median size of gift for each account.

Overall, sponsorships increased significantly this year while donations were down.

**1. Annual Appeal:** Over the past six years, Equine Guelph has included donation cards with its bi-annual newsletters as a more cost-effective alternative to a special annual appeal mailing (i.e., the newsletter is being mailed regardless). This past year, Equine Guelph made the decision to mail its printed newsletter annually (spring) versus bi-annually as a further cost-savings measure. The total value of donations received through this year’s mailing are down in comparison to the last three years, however the total number of gifts returned have increased significantly.

	<b>Total Value Gifts Returned</b>	<b>Total # Gifts Returned</b>
2010-11 Newsletter Mailings (fall and spring)	\$4,915	39
2011-12 Newsletter Mailings (fall and spring)	\$6,763	67
2012-13 Newsletter Mailings (fall and spring)	\$6,442	67
2013-14 Newsletter Mailings (fall and spring)	\$6,788	88
2014-15 Newsletter Mailings (fall and spring)	\$4,317	73
2015-16 Newsletter Mailing (spring only)	\$3,566	107

TABLE II – Comparison of select metrics for the past six fiscal years.

The 2016 spring newsletter mailing included a newsletter (focus on research and biosecurity), donation card, return envelope, biosecurity poster and fecal collection bag.

One month after the mailing, a chaser appeal followed, encouraging those who had not yet responded to please do so. This was sent electronically to past donors with active e-mail addresses who had not yet given in FY15-16 – a total of 128 individuals. Stats related to the e-mail message are below. While these numbers appear discouraging at first, it is worth noting that there were more gifts returned in response to the mailed appeal than previous years, which may be attributable to the reminder message. Given that there is zero cost to this initiative, it is worth repeating next year to monitor result trends.

	<b>FY2014-15</b>	<b>FY2015-16</b>
Recipients	132	128
Open rate	63 (48.8%)	61 (48.41%)
Recipient click-through	3 (2.3%)	1 (0.79%)
Recipient actions	0	0
Forwarded opens	22	32
Unsubscribes/Opt-outs	2	1

TABLE III – FY14-15 and FY15-16 chaser e-mail results

**2. Ontario Equestrian Federation Annual Membership Mailing Fundraising Program:**

Each year the Ontario Equestrian Federation (OEF), through its annual membership renewal form, gives members an opportunity to donate to a cause (Equine Guelph is one on a list of choices). FY2015-16 donations total **\$3,225** and were directed to the Education account.

**3. Pet Trust Program:** In this past fiscal year, \$1,030 was raised for Equine Guelph through OVC's Pet Trust fundraising initiatives. This reflects the situation in which a prospect responds to a Pet Trust appeal but specifies that they prefer their donation to be directed to Equine Guelph. Given the overlap in prospects between Pet Trust and Equine Guelph, this is not unusual.

**4. Corporate Sponsorship Program:** The FY2015-16 sponsorship program has resulted in 100% sponsor retention and total billings of \$82,750 – an increase of 12% from FY2014-15.

Not only has Equine Guelph retained all of its sponsors, but welcomes two new sponsors onboard for FY2016-17 – Heartland Insurance and Bucas Ltd.

**Online Tools & Education Programs (\$44,500):**

- a. **Vétoquinol** – biosecurity tool, biosecurity poster and fecal bag distribution (\$14,000)
- b. **Zoetis** – joint and lameness tools (\$8,000)
- c. **Intercity** – *Hoofprints* tributes + colic tool (\$7,500 + additional memorial contributions + printing of colic/fire brochures)
- d. **Boehringer Ingelheim** – senior horse tool (\$5,000)
- e. **Merck** – *HEALTHflash* initiative (\$5,000)
- f. **Omega Alpha** – welfare grant funding (\$5,000)
- g. **Heartland Insurance** – fire prevention & safety tool (\$5,000 – note: agreement received in FY2015-16, but invoice will be issued in the next fiscal year so is not included in total billings for this fiscal year)
- h. **Bucas Ltd** – thermo-regulation tool (\$5,000 – note: agreement received in FY2015-16, but invoice will be issued in the next fiscal year so is not included in total billings for this fiscal year)

**EquiMania! (\$38,250):**

- a. **SSG Gloves** – safety activity (\$15,000)
- b. **Workplace Safety & Prevention Services** – safety activity (\$10,000)
- c. **Kubota** – safety activity (\$5,000)
- d. **Shur-Gain** – nutrition display (\$5,000)
- e. **Standardbred Canada** – harness racing display (\$3,250)
- f. **Zoetis** – parasite display (included above with online tools)

**B. Equine Guelph Grants:** Equine Guelph was successful in securing **\$114,002** in grant funding for FY2015-16.

A major grant from Growing Forward 2 totaling \$114,002 (total project cost of \$168,856) was acquired by Equine Guelph for Phase II of the industry welfare training program including portal development and online training pilot in Ontario for the Code of Practice and new Biosecurity Standard.

As well, additional funds are being realized through revenue-generating tools developed as a result of a previous GF2 grant on welfare: Horse Health Tracker App, First Aid Kit and Horse Health Check posters (see below section for more details).

- C. **Equine Guelph Store:** Made possible by a GF2 grant secured in FY2012-13, Equine Guelph has developed new tools which will help grassroots caregivers give the best possible care to their horses when they're healthy and sick. Not only do these three tools support the welfare of the horse, but they provide critical revenue to support Equine Guelph's welfare education program.

Total revenue raised in FY2015-16 is **\$4,593.35** with a breakdown by item below:

### 1. Horse Health Check (HHC) Posters:



Posters were sold through Greenhawk corporate stores in Ontario (Mississauga, Ottawa, Gormley, London, Beamsville, Barrie, Orangeville, Campbellville, Whitby and Toronto) and Equine Guelph/EquiMania! events in FY2015-16. Greenhawk donates all proceeds to Equine Guelph. Total poster revenue was **\$649.59**.

### 2. 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 an active participants in their horse's healthcare. Total revenue generated in FY2015-16 was \$3,223.76 (Note: Apple sales were \$2,379.84 and Google Play sales were \$843.92).

3. **First Aid Tote:** This extensive equine first aid kit was specifically developed for horse caregivers by Equine Guelph. Designed to keep horse caregivers organized, the kit will prepare them to be ready to deal with emergency situations with their horses.



The Equine Guelph First Aid Kit is available at eight Greenhawk corporate stores in Ontario as part of the pilot. Net proceeds from kit sales are donated by Greenhawk to Equine Guelph in support of its welfare education programs. Total revenue generated in FY2015-16 was **\$720**.

## 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 \$1,225,817 (previous year: \$ 811,815) for the fiscal year with funding provided by our funding partners, donations, tuition and a substantial portion coming from grants and increased sponsorships. Program expenditures totaled \$609,257 (\$866,103 last fiscal year) using planned carry forwards from the previous year to buffer the anticipated decrease in revenue.

The research program allocated \$37,690 (\$289,660 last year) for research projects (this amount was decreased due to uncertainties in research funding due to changes in the racing industry). Expenditures for the education program were \$339,882 which included program development and exhibits as specified from grant money). Expenditures for the Communications and Marketing program were \$83,494. The online education program returned \$122,743.

The majority of the funding for the education/communications program continues to come from tuition, sponsorships and successful grant proposals. Research funding has decreased due to the ongoing and significant challenges that are being faced by the racing industry. Working together with the industry, stable funding for Equine Guelph continues as a high priority as the industry develops its plan for sustainability.



## Highlights and Special Events

### EquiMania! On the Pulse at Can-Am

#### New Fire Prevention and Safety Initiative

"Learning about safety is always relevant and EquiMania! makes it interactive and engaging," says Equine Guelph director, Gayle Ecker.

Equine Guelph and Mike King of Intercity Insurance have partnered up to present a new Fire Safety and Prevention initiative at the upcoming Can-Am Equine Expo, in Markham April 1 – 3.



Back again for 2016, the interactive EquiMania! Explorer safety initiative takes youth through a series of stations where they learn how to be safe around horses, in the stable, around equipment and in the barn yard. This year's spotlighted safety topics for youth will be fire prevention and safety on the farm. "This is a partnership that has made sense for over 10 years," says Dean Anderson, executive director of Workplace Safety & Prevention Services. "We are delivering a critical safety message in a fun, interactive way to kids and if it prevents one accident or saves one life, it is a wise investment."

The strength of great partnerships has made EquiMania! a popular exhibit not only in Ontario but at popular events across North America, including the Minnesota State Fair. Without our loyal sponsors and fantastic volunteers we could not cater to the thousands of eager participants who stampede to EquiMania! for a unique experience. There is always something new to learn!

EquiMania! Thanks our partners:

10 YEAR SPONSORS - Shur-Gain, Workplace Safety & Prevention Services

9-YEAR SPONSORS - Ontario Equestrian Federation, Kubota Canada, SSG Gloves, Standardbred Canada, System Fencing

4-YEAR SPONSOR – Greenhawk

## Equine Guelph Focuses on Reducing Risk Through Education

Gayle Ecker, director of Equine Guelph, has been interviewed by a number of media outlets for tips and advice surrounding safety around barns and how to deal with frightened animals in these types of situations. The Centre for the horse owner at the University of Guelph, in partnership with the Ontario Veterinary College, is dedicated to improving the health and well-being of horses.

She encourages two key points to reduce fire risks on farm: if possible, store all straw and hay in a separate building and check all electricals. Horse barns can put more demand on an existing electrical system in barns converted from other uses, with increased lighting, heated water buckets and heated tack rooms.

A fire safety checklist on the Equine Guelph website helps farm owners to check their barns for possible fire hazards.

Ecker encourages farm owners to meet with their local fire prevention officer to walk through their property and look for fire risks. "Their role is to help you reduce the risk," she adds.

Visit Equine Guelph's education pages and fire prevention page at [EquineGuelph.ca](http://EquineGuelph.ca)  
**Full Story:** <http://www.equineguelph.ca/news/index.php?content=468>



## Good Things in Small Packages – Stem Cell Therapy Updates



"It's approximately four millimeters in diameter," exclaimed Ontario Veterinary College researcher, Thomas Koch, unable to contain his excitement. The tiny disk of equine cartilage, manufactured in the OVC lab, is full of potential.

A cartilage injury can mean the end of an athlete's career. Damaged joint cartilage does not repair on its own and often leads to early osteo-arthritis.

Great progress has been made, in Koch's lab, by PhD student Sarah Lepage, in collaboration with Dr. Rita Kandel from the University of Toronto. They are putting

together a protocol for making tissue engineered cartilage constructs. The next step will be evaluating them in live horses.

**Full story:** <http://www.equineguelph.ca/news/index.php?content=469>

### **World Horse Welfare**

Equine Guelph's year of "Full-Circle-Responsibility" welfare campaign, ended with a wonderful journey. Gayle Ecker was an invited guest to the World Horse Welfare conference in England! Presentations from this invitation only event can be viewed on the [World Horse Welfare website](#).



Ecker also attended information meetings at the World Horse Welfare headquarters near Norwich, followed by a tour through Hall Farm (one of their major horse rescue centres). The trip continued on to The Horse Trust to learn about their horse rescue operations and education programs. A visit to the Hampshire Fire and Rescue also provided information on training of first responders for technical large animal rescue in the UK. Can you say whirlwind tour?

"The World Horse Welfare conference was excellent and demonstrates that we share many welfare concerns between Ontario and the UK, including the need for more education for horse owners to support equine welfare," says Ecker. "Important relationships were developed with these organizations. This will result in information sharing to move forward the important initiative of advancing horse welfare."

### **Puslinch Horse Rescued by Fast Acting Emergency Crew**



Among the firefighters who responded, three of them had recently attended the Technical Large Animal Emergency Rescue (TLAER) course only eight days earlier, organized by Equine Guelph, University of Guelph through Susan Raymond, PhD. Communications & Programs Officer. The TLAER course, instructed by Dr. Rebecca Gimenez (TLAER Inc.) was conducted over 2 days (October 3rd & 4th) at the Grand River Raceway in Elora, ON. The course was very informative and covered both in-class sessions and practical scenarios on both artificial and live animals.

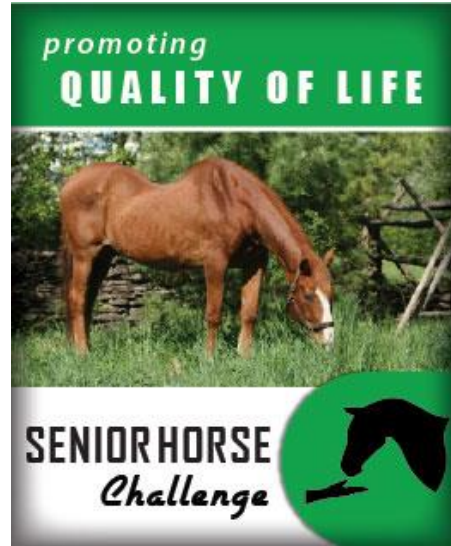
"Utilizing the information from this course proved valuable both in maintaining personal safety zones around the animal and scene while coming up with an effective plan to quickly and safely extricate the large animal," said firefighter Michael Dailous.

**Full Story:** <http://www.equineguelph.ca/news/index.php?content=465>

## Senior Horse Challenge Sharpens Skills

This online healthcare tool goes beyond testing general management knowledge of hoof care, nutrition and dental care. Understanding health challenges including diseases, disorders and conditions that are common to the aging equid are all part of becoming an educated horse owner. There is also a special section geared toward becoming adept at pain recognition.

“Boehringer Ingelheim (Canada) Ltd is very pleased to be able to partner with Equine Guelph on the Senior Horse Challenge project,” says Alison Brodie, Brand Manager for Cattle and Equine at Boehringer-Ingelheim. “We believe that this educational tool will be highly valuable for those who own or care for senior horses. By increasing the awareness of health issues and management of aging horses, we hope this will result in improved health and animal welfare for these seniors.”



Learn about general senior horse management, physical changes, pain recognition, metabolic conditions and more; by spending ten minutes on Equine Guelph's website taking the Senior Horse Challenge.

## Dressed to Kill – rider safety is always in fashion



If you enjoyed Equine Guelph's "Plan A Head" article last August, you already understand the importance of wearing a helmet. You are not willing to risk vegetable brain to avoid helmet head and you know the importance of choosing a helmet safety approved for horse riding not cycling; but what about the rest of your ensemble? Regardless of your riding discipline, safety starts at the head and continues all the way down to the toes.

Learn why you should: give improper footwear the boot, axe accessories, get a grip with a pair of well-fitting gloves and dress for the weather and for safety...

**Full Story:** <http://www.equineguelph.ca/news/index.php?content=463>



## EquiMania! Gallops Back Into Toronto for the 2015 Royal Winter Fair!

EquiMania! gallops back into Toronto for the third time this year for the Royal Agricultural Winter fair November 6 -15! Equimaniacs can't get enough of the hands-on activities and love to immerse themselves in Equine Guelph's well-travelled, award-winning display.

Check out the new rider safety display and play the popular EquiMania! Explorer game. Kids and parents will learn more about horses and their welfare including: how to care for a horse, how to bandage legs, equine nutrition, the different breeds, how to braid a tail, identify horse bones and learn about parasites. "It is important to deliver critical safety messages in a fun, interactive way to kids," says Gayle Ecker, Director of Equine Guelph. "Young EquiMania! Explorers will be rewarded for their investigative work by receiving stamps in a passport and our ever-popular horse hat!"



**Full Story:** <http://www.equineguelph.ca/news/index.php?content=462>

## First Responders Learn How to Rescue Large Animals



Dr. Rebecca Gimenez was speaking at a two-day large animal emergency rescue awareness training program organized by Equine Guelph at the Grand River Raceway in Elora, Ont., earlier this month. The raceway allowed a 15-foot-deep pit to be dug on the property so participants could practice different ways of removing a horse mannequin that had "fallen" into the pit. The class was at capacity, with

90 people taking part, most of them firefighters, police officers, veterinarians and horse owners. Funding for the training came from the Ontario Ministry of Agriculture, Food and Rural Affairs and the Grand River Agricultural Society.

Gimenez says her focus is teaching people rescue techniques with an emphasis on working together. "Fire departments have the equipment, but not the expertise on working with live animals," she says. "Horse people, cattle farmers and veterinarians know the animals, but not how to respond in an emergency or use the equipment.

We're trying to close the circle of communication so everyone can work together and save the animals."

**Full Story:** <http://www.equineguelph.ca/news/index.php?content=461>

### **Spread the Word Not the Germs – Infection Control Blitz is on!**

Since launching last month, the word has been spread far and wide about newly available infection control resources from Equine Guelph. 4,000 USB sticks packed with information on how to prevent horses from getting sick have been distributed by Ontario Racing Commission personnel and racetrack officials to racehorse caregivers in all 10 Ontario race tracks paddocks and race offices as well as 20 major training centres.

Not only is this information invaluable to trainers and grooms in the racing industry, but to any horse caregiver. Contents of the USB sticks are also available on the new Equine Guelph Infection Control Resources page.

The information includes easy-to-understand whiteboard videos introducing the basics of good infection control practices and how these practices can be applied at home and at the track. Testimonial videos from industry leaders of all three horse racing disciplines talk about their biosecurity practices and ways to prevent sickness in the barn.



This is followed by videos featuring international expert, Dr. Scott Weese, providing a guided tour through a training centre and racing facility pointing out the key areas to focus on to make sure horses are protected from germs and ready to race. PDF's of biosecurity checklists and barn posters are also included.

These tools, resources and videos have been made available to help protect the racing and non-racing industries from the threat of infectious disease.

In partnership with the Ontario Ministry of Agriculture, Food and Rural Affairs, Equine Guelph is developing a 'Full-Circle-Responsibility' equine welfare educational initiative which stands to benefit horses in both the racing and non-racing sectors.

This project is funded in part through Growing Forward 2 (GF2), a federal-provincial-territorial initiative. The Agricultural Adaptation Council assists in the delivery of GF2 in Ontario. Other partners include: Central Ontario Standardbred Association, Equine

Canada, Grand River Agricultural Society, Horsemen's Benevolent and Protective Association, Ontario Harness Horse Association, Ontario Ministry of Agriculture, Food and Rural Affairs, Ontario Racing Commission, Ontario Veterinary College, Quarter Horse Racing Association, Standardbred Canada and Vétouquinol Canada Inc.

### **Responsible, Purposeful Breeding**

The words responsible and breeding should be an inseparable pairing in the horse industry. The successful future of a foal depends heavily on the investment of the breeder to:

1) financially project costs from conception to sale or lifespan of the horse if it is to be kept.



2) research, research, research! The homework list is a long one including choosing a mare and stallion with great conformation and temperament, investigating their performance records, checking fertility rates, health records, offspring records and more...



3) educate themselves and plan ahead. Impeccable stable management and genetics knowledge combined with understanding special nutrition and healthcare requirements for the broodmare, foal and breeding stallion are all prerequisites to breeding horses responsibly.

Two experienced and successful horse breeders: Dr. Moira Gunn of Paradox Farm and Doug Nash, formerly from Glengate have taken the time to share some of their vast knowledge.

**Full Story:** <http://www.equineguelph.ca/news/index.php?content=457>

### **Progress in Pain Recognition**

Hiding pain is one of the top survival skills of the horse. An important part of horse ownership is learning to recognize the signs a horse may be in discomfort rather than dismissing certain subtle cues as just bad behaviour. Dr. Brianne Henderson recently gave a well-received lecture to a room full of horse owners in Hillsburgh, ON. The attendees were interested in ensuring the welfare of their equine companions by honing their skills for detecting pain.



Dr. Henderson went on to briefly explain pain scales used by veterinarians that focus on physiological parameters and behavior patterns. One included the Composite Pain Scale (CPS) which looks at the change in frequency of normal behavior patterns such as eating, the presence of pain-related behaviours such as kicking at the abdomen and physiological parameters such as elevated vitals. There is a long list of signs that are scored from 0 – 3. Some of these

indicators, including vitals, can also be assessed using a quick 16-point health check poster developed by Equine Guelph. The poster or handy new Horse Health Tracker app are invaluable tools for horse owners to provide important health data to their veterinarian.

**Full Story:** <http://www.equineguelph.ca/news/index.php?content=455>

### **Gayle Ecker Receives Prestigious 2015 Equine Industry Vision Award - Lifelong equine wellness educator honored for leadership and innovation**

Gayle Ecker, director of Equine Guelph, was named the recipient of the 14th annual Equine Industry Vision Award. Zoetis, in partnership with American Horse Publications (AHP), presented the award to Ecker at the AHP Seminar in San Antonio, Texas.

The Equine Industry Vision Award is the first major award to showcase innovation across the equine industry. Established and sponsored by Zoetis, the prestigious award recognizes ingenuity and service, and it serves to inspire those qualities in others.

“We are proud to recognize Gayle for her heartfelt work in connecting people, especially youth, with horses,” said Kate Russo, equine biologicals marketing manager, Zoetis. “Gayle’s passion for utilizing science-based knowledge to educate people on the health of horses is unmatched. Zoetis is proud to present her with an award to recognize her lifelong commitment to advancing the equine industry.”



Ecker is director of Equine Guelph, which she has led since its inception in 2003. The center at the University of Guelph in Guelph, Ontario, Canada, supports the health and well-being of horses through education, research, health care promotion and industry development. It is supported and overseen by equine industry groups.

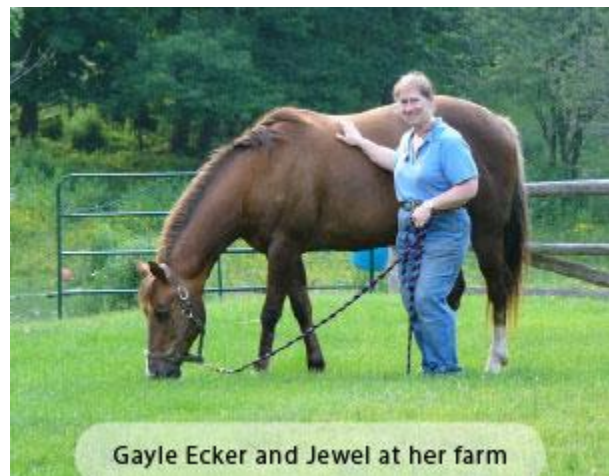


Ecker was instrumental in the creation of the center by writing the grant that led to the development of its education and communications programs. She was a pioneer in online education. In 2002, she established a first-of-its kind educational approach that provides virtual learning pathways for career development in the equine industry. She also serves as an instructor for the program.

She also led the development of Equine Guelph's youth exhibit, EquiMania!, which features interactive stations that teach young horse enthusiasts about equine safety and wellness. The exhibit first appeared at the 2005 Can-Am All Breeds Equine Expo and also has traveled to the 2010 World Equestrian Games™ in Lexington, Kentucky, and the Minnesota State Fair. Each year, Ecker and her team improve the exhibit with up to 25% new materials based on attendee feedback.

"I am so grateful for the opportunity to be recognized," Ecker said. "My passion is truly my students — seeing their thirst for knowledge and knowing the time I invest will be tenfold when they go out and make a difference."

As a former researcher, Ecker's expertise is in exercise physiology. She has been the assistant chef d'equipe for the Canadian Endurance Team, traveling around the globe to support the team at international events, such as the Pan American Games, the World Equestrian Games and World Endurance Championships. These days, Ecker enjoys trail riding aboard her two quarter horses.



Gayle Ecker and Jewel at her farm

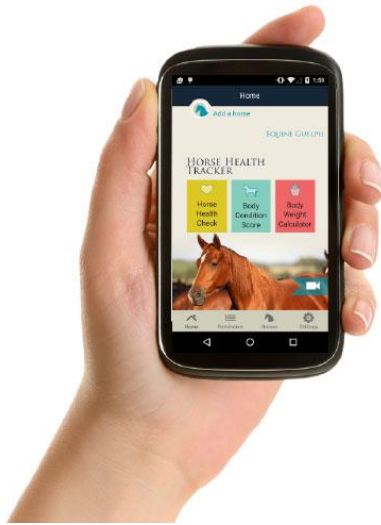
Ecker also was named to the Can-Am All Breeds Equine Expo Hall of Fame in 2014, when she received the Builder Award. In 2010, she received the Readers' Choice Award in the exceptional equestrian category from the Equine Consumers' Guide 2010. Ecker also was named one of the top 15 horse people of the year by Western Horse Review in 2008.

**Full Story:** <http://www.equineguelph.ca/news/index.php?content=452>

### **New App Helps Horse Owners Monitor Vital Health Data**

Equine Guelph's Horse Health Tracker app is available as a free download.

As with most animals, it can be difficult to tell if a horse is feeling ill, and horse owners sometimes worry they might be missing the early signs of a health problem.



Equine Guelph's new Horse Health Tracker app can help. Available as a free download, it allows owners to monitor the vital health data of up to two horses, as well as evaluate the body condition of their horse and calculate the animal's weight.

An upgraded version with additional features is available for a fee.

Since debuting in April, the app has been downloaded more than 1,000 times.

Upgrade features include the ability to monitor information such as heart rate, temperature and respiration of up to 50 horses, and track this data over 13 months. Instructional videos show how to properly perform health assessments, and the upgraded app allows owners to share the data with healthcare professionals by email. Owners can also create custom profiles for each horse and sync healthcare appointment reminders with their smartphone calendars.

"This scheduler app is great," says Quarrington. "It is so easy to lose track of when a horse is due for the farrier or the vet."

Gayle Ecker, director of Equine Guelph, says the app is a "must-have management tool for every educated horse person."

It is available from both the [Apple App Store](#) and [Google Play](#)

### **90% Preparation Saves the Day – Technical Large Animal Emergency Rescue**

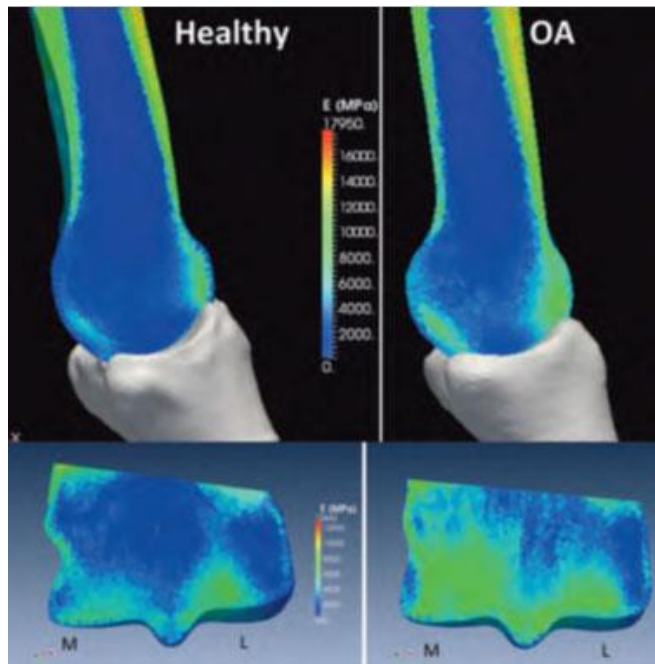
"A successful emergency rescue is about 90 percent preparation and 10% action," reiterated Ontario SPCA officer Bonnie Bishop. Bishop can't say enough about how the Technical Large Animal Emergency Rescue program, presented by Equine Guelph last fall, has helped her on the job. On March 17, 2015 preparation was put into action when a bull trapped down a well, just north of Napanee, was successfully rescued with Bonnie helping triage the situation on the end of a phone line with agent Tex Ridder on the scene.

**Full Story:** <http://www.equineguelph.ca/news/index.php?content=449>

### **The Impact of Impact on Bone Health**

Ontario Veterinary College, graduate student, Cristin McCarty is no stranger to joint health issues having to work through her own athletic injuries from rowing. As an avid rider since age 5, McCarty bought an ex-racehorse in her early teens for repurposing

into a hunter/jumper and immediately began an education in joint problems and maintenance options aimed towards keeping her newly purchased horse sound. McCarty's interest in how osteoarthritis begins was born from experience. After pursuing an education in biology, McCarty was very excited to be given the opportunity to work with Dr. Jeff Thomason and Dr. Mark Hurtig at the University of Guelph, where groundbreaking research is looking at joint loading of horses travelling at high speed. Thomason specializes in biomechanics, studying mechanics of locomotion in horses, in-vivo bone strain and finite-element (FE) modelling of skeletal mechanics. Hurtig is an expert on the mechanical causes of osteoarthritis.



McCarty has been working with FE, gathering and analyzing data on loads acting at the fetlock joint and stresses in the cannon bone. By creating a computer generated model using computed tomographic (CT) or MRI images of an equine fetlock joint they are working on determining the internal bone stress under varying loading conditions (rates, directions and magnitudes) using FE software. This method of analysis could provide further insight into the biomechanical role impact has on the stress distribution in areas of high remodeling, which are associated with osteoarthritis in racehorses.

**Full Story:** <http://www.equineguelph.ca/news/index.php?content=447>

### **Equine Foundation Donation to aid in Lameness Evaluation**

Equine Guelph and researcher Dr. Judith Koenig would like to thank the Equine Foundation of Canada, for their recent donation to support horse welfare. EFC has contributed \$16,000, 80% of the purchase, of an Equinosis Lameness Locator® which will benefit both research projects and education by providing an objective method of determining equine limb lameness.



**Full Story:** <http://www.equineguelph.ca/news/index.php?content=444>

## Equine Welfare Article Series Continued through 2015

Welfare tip articles were press released and sent out to Equine Guelph enews subscribers throughout 2015.

Three feature stories were included: Progress in Pain Recognition, Responsible Purposeful Breeding and Know Your Horse Health.



**Full stories on website:** <http://www.equineguelph.ca/news/archives.php>

### Know Your Horse Health with Dr. Laura Frost and Dr. Brianne Henderson

No one spends more time with your horse than you. Naturally, the role of primary caretaker and advocate for horse health falls on the person in closest contact with said equine. The well-rounded horse person is more than a good rider. They are educated in normal parameters of horse health and keen observers, on the look-out for anything that is abnormal, for that individual horse. In this article Dr. Laura Frost and Dr. Brianne Henderson will discuss the important role the horse owner plays in maintaining and optimizing their horse's health.

**Full Story:** <http://www.equineguelph.ca/news/index.php?content=448>

### 2016 – The Year of Biosecurity



Welfare continues to be top of mind in Equine Guelph Communications. "Spread the word, not the germs" will be the biosecurity mantra for 2016 monthly e-news features; preparing horse owners for the new National Farm-Level Biosecurity standard for the Equine Sector. The standard will be the first document

of its kind, providing a detailed scientific approach to biosecurity, making it a good reference tool. A producers guide will also be published giving horse owners useful "how to" information. Both aim to help reduce the risk of disease transmission, minimize the impact of outbreaks and improve the health and welfare of horses.

Key points from the voluntary standard and producers guide will be discussed in Equine Guelph's monthly e-news to spread the word and help protect horses from getting sick.  
**Sign up at EquineGuelph.ca**

## Summary

Now in its 13<sup>th</sup> year of partnership, Equine Guelph continues to carry out its important mandate to support the health and welfare of horses and the success of our equine industry. We continue our work with the equine industry in Ontario and beyond to develop research programs and new initiatives and resources that are helpful to the industry. We distribute evidence-based information to our industry through our partners and the communications program and incorporate new information into all the education programs including the practical application of this new knowledge to support horse health and welfare.

The leadership role of Equine Guelph for education and training was once again the focus with the awarding of a prestigious media award. The recognition from the American Horse Publications and Zoetis, naming Gayle Ecker as the winner for their Industry Vision award, shows strong support of the leadership role of Equine Guelph as a strategic leader in support of the horse industry through research funding, personal development and equine welfare.

There is and always will be a strong need for equine research, education and welfare and that remains a central focus for Equine Guelph's mandate. The partnership with the equine industry is the foundation that makes this possible and this includes the many donors, volunteers and corporate sponsors who are members of this important team.

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

We sincerely thank each of these individuals, groups and associations for their important contributions and for working as partners with Equine Guelph. We continue to honour the commitment made to the industry to provide important services and programs to the industry, while sharing its core values of equine welfare and industry sustainability.

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## Appendix 4: Research Projects for 2015-2016

### New Projects:

<b>Investigator</b>	<b>Title</b>
Kritchevsky, J	The effect of thyroxine supplementation on measures of performance in racehorses
Koch, T	Development of Osteochondral Constructs Using Equine MSCs
Koch, T	MicroRNAs as Equine Joint Health Biomarkers
Weese, S	Characterization of the epidemiology and clinical impact of Clostridium difficile infection in hospitalized foals
Staempfli, H	A prospective study on the use of fecal oral transfaunation as adjunct treatment in horses with acute colitis and diarrhea
Koch, T	Stem Cells for EIPH
Arroyo, L	Seroprevalence of Potomac Horse Fever in Ontario
Arroyo, L	Characterization of the equine hindgut microflora and metabolites using an in-vitro model
Merkies, K	Determination of practical physical measures of equine welfare

### Continuing Projects:

<b>Investigator</b>	<b>Title</b>
Bienze, D	Global lung epithelial response to inhaled dust
Betteridge, K	Proteins involved in failure of early pregnancy
Scholtz, E	Nitric Oxide's role in Persistent Endometritis in Mares
Physick Sheard, P	ORC Death Registry: An in-Depth Analysis

## Appendix 5: Lay Summaries of New Research Projects for 2015 - 2016

**Kritchevsky, J**            The effect of thyroxine supplementation on measures of performance in racehorses

Co-investigators names and Departments: Laurent L. Couetil, Veterinary Clinical Sciences, Purdue University

For the pari-mutuel racing industry to maintain its integrity, it is important that horses compete without receiving substances that alter their performance. Investigative personnel in Ontario report seeing open containers of thyroxine in many barns visited during out-of-competition testing. Finding extremely elevated blood concentrations of thyroxine has been documented on numerous occasions on post-race blood testing of some horses from Ontario racetracks. Despite this, the effect of excess thyroid hormone on equine performance has never been reported. We are proposing an experiment designed to determine whether giving high doses of thyroid hormone to racehorses alters their performance in any way. We will do this by giving thyroid supplement at 2 and 5 times the recommended dosage to fit Standardbreds, and then evaluating how they perform during standardized exercise testing. Horses will also perform the standardized exercise testing with no thyroid supplement as a control. The exercise will be performed on a high speed treadmill that allows horses to reach exercise intensity that is similar to that reached during races.

In order to determine how the horses' blood thyroid concentrations vary in response to strenuous exercise, we will measure blood thyroid hormone concentrations before, during, and then shortly after strenuous exercise in control and supplemented horses.

High blood thyroid concentrations have been associated with the abnormal heart rhythm atrial fibrillation in humans. The horses in this study will wear an ECG monitor during exercise so that their cardiac function can be monitored continuously and any abnormal activity can be documented.

**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**                      MicroRNAs as Equine Joint Health Biomarkers

Co-investigators' names and Departments: Jonathan LaMarre, Biomedical Sciences, Judith Koenig, Clinical Studies

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.

**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.

**Staempfli, H**                      A prospective study on the use of fecal oral transfaunation as adjunct treatment in horses with acute colitis and diarrhea

Co-investigators' names and Departments: Scott Weese, Pathobiology

Acute equine enterocolitis concerns the equine industry because of high mortality and economic costs of treatments. The underlying cause for the diarrhea is rarely known and routine treatments are mainly supportive, with intravenous fluid treatment and if needed antibiotics and anti-inflammatories. Recently in human medicine there has been growing scientific evidence that oral or rectal transfaunation with fecal cocktails from healthy donor individuals are beneficial to treat and prevent recurrent *C. difficile* infections. Central to acute diarrhea is disruption of a normal healthy bacterial flora maintaining health and function of the large colon, which in horses is crucial for providing energy in form of fatty acids. The main goal of this research is to use this technology by transfaunating fresh feces from a healthy horse via nasogastric intubation to the horse with acute diarrhea. The transfaunated feces should accelerate the healing of the colon and the reestablishment of a normal healthy functioning ceco-colonic flora. The research will be using a prospective objective study to compare horses not receiving the transfaunation with horses receiving transfaunation in order to find out benefit of such a cheap adjunct treatment. We will use complex DNA sequencing methods to establish evidence that indeed the transfaunated feces will accelerate recovery from diarrhea, will change the damaged colonic flora and will cause less devastating side effects often observed in such cases. This will be a practical study with client cases of diarrhea randomly assigned to transfaunation.

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

Co-investigators' names and Departments: Laurent Viel, Department of Clinical Studies

Exercised induced pulmonary hemorrhage (EIPH) is a common condition in race horses 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.

**Arroyo, L**                      Seroprevalence of Potomac Horse Fever in Ontario

Potomac Horse Fever (PHF) is a seasonal infectious disease caused by the bacterium *Neorickettsia risticii*. PHF occurs in Ontario mainly during the summer months (July to September). The clinical disease is usually sporadic with most of the cases reported from eastern and south-western Ontario. The severity of the clinical signs varies between horses, but in general characteristic clinical signs include depression, decreased appetite, fever, diarrhea and colic. A high percentage of cases (up to 40%) of horses suffering from PHF may develop laminitis, which is the most serious and life-threatening complication.

Recent studies conducted on the life cycle of *N. risticii* have shown that fresh water snails and aquatic insects, such as caddisflies, mayflies, and dragonflies, are common carriers of the bacterium. Ingestion of contaminated hay, grain, pasture or drinking water with dead insects may result in clinical disease. Currently, there is an increasing concern among horse owners in Ontario because of the lack of information about the epidemiology and prevalence of the disease, natural reservoir of the bacterium, and biosecurity measures to prevent and control the disease. Preliminary data at the Ontario Veterinary College support clinical, serological and molecular evidence of the presence of the disease in different parts of the province. However, up to date there are only 2 published cases of PHF from horses in Ontario.

The objectives of this preliminary study are to investigate the seroprevalence of PHF in horses from Ontario, and b) to isolate the endemic strain (s) of *N. risticii* from horses with clinical disease in Ontario for molecular analysis.

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

Co-investigators' names and Departments: Dr. Emma Allen-Vercoe, Department of Molecular and Cellular Biology, University of Guelph

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, 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.

**Merkies, K**                      Determination of practical physical measures of equine welfare

Co-investigators' names and Departments: Derek Haley, Pop Med, Penny Lawlis, OMAFRA, Gayle Ecker, Equine Guelph (consultation role), Cordy Dubois, PhD student – APS

Equine Guelph declared 2014 as the year of Equine Welfare, dedicated to promoting the welfare for all equines in all stages. "Welfare" is a buzz word attracting media attention and public scrutiny, and most equine organizations have stated that equine welfare in their sport is of paramount importance. The racing associations in Canada are no exception, boldly declaring that they are educated to racehorse welfare and encourage routine inspection to achieve the highest possible standards. The issue of who is conducting routine inspections, what their qualifications are, and what exactly they are inspecting is the focus of this research. In cooperation with the National Farm Animal Care Council (NFACC), Equine Canada, Equine Guelph and OMAFRA, an equine welfare assessment model is being developed to provide a standardized testing procedure for animal, resource, and management-based measures. Inherent in this, specific measures need to be selected, tested and validated for inclusion in such a model. For example, an animal-based measure might look at body condition score; a resource-based measure might determine feed trough height; and a management-based measure could record feeding intervals. These three measures together could provide insight to the quality of welfare a horse experiences in regards to good feeding practices. Once appropriate measures are selected and tested for reliability and repeatability, a standardized training program to certify equine welfare evaluators can be developed. This proposal is seeking funding for the portion of the larger study to select and validate these measures.

## **Lay Summaries of Continuing Research Projects for 2015 - 2016**

**Bienzle, D**                      The global lung epithelial response to inhaled dust

Co-investigators' names and Departments: L. Viel, Clinical Studies

Horses that are stabled indoors are prone to develop Recurrent Airway Obstruction (RAO) or "heaves". The disease is caused by an exaggerated response to inhaled mould spores and bacterial components in dusty air and poor quality hay. Affected horses have lung inflammation that improves when they are moved to non-dusty environments and treated with anti-inflammatory and bronchodilatory drugs. Lung inflammation recurs when horses are re-exposed to poor quality air. RAO is slowly progressive, and affected horses cough and eventually become unable to race or to be ridden. From past work we have good understanding of the nature of the inflammatory response during active RAO. However, the lung epithelium is the first tissue to respond to inhaled antigen and to initiate inflammation, and little is known about the factors that cause release of inflammatory mediators from the bronchial epithelium and increase in mucus production. Recent advances in

molecular techniques (RNA-Seq technology) allow sequencing of all expressed genes in tissues less than 1 gram. The resultant sequences are analyzed relative to the equine genome to determine how many copies of each gene are expressed, what the function of the gene is and whether related genes are expressed together. We will apply this technique to tiny biopsy samples collected by endoscopy from horses with and without RAO before and after exposure to dust, and then perform a global molecular analysis. We anticipate that this study will identify key differences between horses that develop RAO and those that do not develop RAO.

**Betteridge, K**                      Proteins involved in failure of early pregnancy

Co-investigators: M. Anthony Hayes (Co-PI) and Brandon Lillie, Pathobiology; James I. Raeside, Biomedical Sciences

During the third week of pregnancy, the horse conceptus (embryo and associated membranes) moves around in the uterus, transiently protected by a thin capsule. At about Day 17, the capsule starts to degrade so the placenta can develop. At this critical stage of early pregnancy, the embryo appears to be more vulnerable. Some proteins normally involved in protecting the non-pregnant uterus from infection are potentially harmful to the unprotected embryo so their production is normally suppressed when the capsule is lost. However, those that persist in excess during uterine inflammation or spontaneous pregnancy failure have the potential to harm the embryo when the capsule becomes more permeable. Using various new technologies, we have identified many proteins produced by the equine endometrium, and several that are suppressed as pregnancy is established but increased in pregnancy failure of inflammation. Our prime objectives are to identify the proteins that are most likely to harm the embryo, and those that might be most useful in the assessment of uterine health in barren mares. To do this, we are comparing sequential changes in uterine proteins in cycling mares, mares with endometritis, mares in which pregnancy failure occurs spontaneously, and mares in which pregnancy failure is induced experimentally by injection of cloprostenol at Day 18 (when the conceptus is more vulnerable to early embryonic death). Funding is requested for the sample collection and laboratory analysis needed to further characterize several of these endometrial proteins that are most likely to be involved in early embryonic death.

**Scholtz, E**                              Nitric Oxide's role in Persistent Endometritis in Mares

Co-investigators: Tracey Chenier, Population Medicine; Firdous Khan, Population Medicine.

Endometritis, or uterine inflammation, causes huge economic losses to the horse breeding industry in Ontario and worldwide. It is in fact considered "the third overall most important clinical problem in equine practice after colic and respiratory tract disorders" (Troedsson, 1999). Persistent endometritis is thought to occur due to failure of the uterine muscles to contract, resulting in accumulation of debris in the uterus following breeding. Recent research shows that mares susceptible to this problem have increased levels of an enzyme (iNOS) that synthesizes nitric oxide (NO), a smooth muscle relaxant, and greater levels of NO in the uterus than resistant mares. Nitric oxide may be involved in the development of persistent endometritis. We hypothesize this is mediated through the relaxant effect of NO on uterine muscles. This study will test whether a) NO inhibits uterine contractions in the mare, b) the activity of NO synthesizing enzymes is greater in the uterus of susceptible mares than in resistant mares, and c) inhibiting iNOS activity will reduce NO production in the uterus of susceptible mares. In experiment 1, uterine tissue obtained from mares immediately after euthanasia/slaughter, will be used to test the effect of NO on uterine contractions.

In experiment 2, production of NO, with or without the addition of an iNOS inhibitor, will be measured in uterine biopsy samples from susceptible and resistant mares. This study will provide valuable insight into the development of persistent endometritis and form a basis for the therapeutic use of iNOS inhibitors in controlling the problem.

### **Physick Sheard, P** ORC Death Registry: An in-Depth Analysis

The Ontario Racing Commission (ORC) Death Registry was inaugurated in 2003, and contains a record of all racehorses dying within 60 days of participation in racing in the Province of Ontario. Most recorded horses were subjected to post mortem examination. General overviews of Registry data have previously been presented and subsets have been extracted and published to support specific studies. In-depth analysis of accumulated data has not been performed and overall Registry integrity has not been assessed. Over the last two years we have compiled a secure, detailed database of all horses entering the Registry to the end of 2011. This database contains Registry data, plus detailed race line information. It adds expanded results from post-mortem and ancillary reports, including categorization of post-mortem findings not appearing in the list of final diagnoses, and expanded details on circumstances of death. Each record now contains almost 1000 variables. All entries have been error-checked. Data has also been gathered on races taking place in the province from 2003-2011 to allow outcomes such as gender, age, and (where applicable) gait-specific mortality risk to be assessed. These expansions allow much greater detail to be extracted from Registry data, aiding in group-specific selection of targeted preventive strategies. Analysis will provide information of great significance to Ontario racing, while direction will be provided to aid in further development of this most valuable Provincial resource.

## **Appendix 6: Research Publications**

### Dr Luis Arroyo

“Arterial Calcification in Horses”, Equine Guelph Fall 2014 Newsletter.

### Dr Keith Betteridge

“Early Embryonic Loss”, Equine Guelph 2015 Spring Newsletter.

Diel de Amorim, M., Chenier T., Quinn B.A., Yekkala K., Rannala V., Velianou, S. Scholtz E., Gartley C.J., Hayes M.A. 2014. Endometritis-associated alterations in major proteins in uterine flush fluids from mares. *J. Eq. Vet. Sci.* 34:150.

Betteridge K.J., Waelchli R.O., Raeside J.I., Christie H.L., Quinn B.A., Hayes M.A. 2014. Changes accompanying spontaneous embryonic loss in nine mares during the first month of pregnancy. *J. Eq. +Vet. Sci.* 34:195-197.

Betteridge, K.J. 2014. Therio-ontology: a personal view of 40 years of farm animal embryo form and function. *Theriogenology* 81:85-95.

Diel de Amorim, M., 2014. Diagnostic aspects and proteomic analysis of uterine flush fluid from mares with endometritis D.V.Sc Thesis, University of Guelph.

Horse Health Annual, February/March 2013. The work of Dr. Betteridge was highlighted in the report on research section story “Champions of the Cause”.

Dr. Amy Greer

Spence, K., T. O'Sullivan, Z. Poljak, and A.L. Greer. (In review). Using an agent-based modeling approach to determine the potential impact of infection prevention and control measures on a facility-level equine influenza outbreak.

Spence, K., T. O'Sullivan, Z. Poljak, and A.L. Greer. (In review). Descriptive and network analyses of the equine contact network at an equestrian show in Ontario, Canada and the application to potential disease transmission. Submitted.

Dr. Thomas Koch

Lepage S, et al. 2014. Generation, characterization and multilineage potency of mesenchymal-like progenitors derived from equine iPS cells. *Stem Cells and Development*

"Grant Brings Stem Cell Research closer to In Vivo Studies", *Equine Guelph Fall Newsletter* 2013

Sparks, Carley. "Stem Cell Reality Check: The Science and Science Fiction of Stem Cell Therapy." *The Corinthian Horse Sport* 01 2013: 28.

Dr. Judith Koenig

Williams LB, Tessier L, Koenig JB, Koch TG. Post-thaw non-cultured and post-thaw cultured equine cord blood mesenchymal stromal cells equally suppress lymphocyte proliferation in vitro. *PLoS One*. 2014 Dec 1;9(12)

Bourzac CA, Koenig JB, Link KA, Nykamp SG, Koch TG. Evaluation of ultra small superparamagnetic iron oxide contrast agent labeling of equine cord blood and bone marrow mesenchymal stromal cells. *Am J Vet Res*. 2014 Nov;75(11):1010-7

"Unravelling the Mysteries of Colic" Page 26 - 31, January, 2014 - *Horse-Canada & Horse Sport Horse Health Annual*

Dr. John F. Prescott

Prevalence of netF-positive *Clostridium perfringens* in foals in southwestern Ontario. Finley, A., Gohari, I., Parreira, V.R., Abrahams, M., Staempfli, H., John Prescott (in press, 2016). *Canadian Journal of Veterinary Research*

*Clostridium perfringens* and its arsenal of toxins, Prescott, J. Published by GroupBMJ.com from *Veterinary Record*, February, 25, 2016

NetF-positive *Clostridium perfringens* in neonatal foal necrotizing enteritis in Kentucky. Iman Mehdizadeh Gohari, V. R. Parreira, J.F Timoney, L. Fallon, J. F. Prescott. From *Veterinary Record*, group.bmj.com, February, 25, 2016

NetF-positive *Clostridium perfringens* in neonatal foal necrotizing enteritis, Prescott, J. *Veterinary Record*, Feb 22, 2016.

Plasmid Characterization and Chromosome Analysis of Two netF + *Clostridium perfringens* Isolates Associated with Foal and Canine Necrotizing Enteritis. Iman Mehdizadeh Gohari, Andrew M. Kropinski, Scott J. Weese, Valeria R. Parreira, Ashley E. Whitehead, Patrick Boerlin, John F. Prescott. *PLOS ONE* | DOI:10.1371/journal.pone.0148344, February 9, 2016

A Novel Pore-Forming Toxin in Type A *Clostridium perfringens* Is Associated with Both Fatal Canine Hemorrhagic Gastroenteritis and Fatal Foal Necrotizing Enterocolitis. Iman Mehdizadeh Gohari, Valeria R. Parreira, Victoria J Nowell, Vivian M. Nicholson, Kaitlyn Oliphant, John F. Prescott. PLOS ONE | DOI:10.1371/journal.pone.0122684 April 8, 2015

#### Dr. Henry Stämpfli

*Clostridium difficile* prevalence in foals on Ontario breeding farms: a longitudinal study. M. Abrahams, H. Staempfli, M. Walker, J.S. Weese. J Vet Intern Med 2014; 28:976–1134 (page 1118) Poster Ontario Veterinary College, Guelph, ON.

#### Dr. Scott Weese

“Emerging Diseases in the Equine Industry” Spring 2015 Equine Guelph Newsletter

“Infection Control in Canada’s Horse Industry” Spring 2015 Equine Guelph Newsletter

“Tracking Map Aids Disease Prevention” Fall 2014 Equine Guelph Newsletter

“What are the Protocols for Dealing with Highly Infectious Disease like EHV-1 in Canada?”, 2013 Fall Equine Guelph Newsletter.

“Investigating Gut Function to Prevent Disease”, 2013 Spring Equine Guelph Newsletter.

Costa, H Staempfli, LG Arroyo, RG Gomes, JS Weese. Effects of parenteral antimicrobial is on the equine fecal microbiome investigated by next generation sequencing. Proceedings of the 2013 ACVIM Forum

The Horse (<http://www.thehorse.com/articles/31247/microbiomes-its-all-about-balance>) Jan 23, 2013

## **Appendix 7: Research Presentations**

#### Dr. Luis Arroyo

“Duodenitis Proximal-Jejunitis in Horses. What is the culprit? What is the evidence?” OVC-Pathobiology, Departmental Seminar. November 7th, 2014.

“Investigation of *Clostridium difficile* toxins to experimentally induced duodenitis proximal jejunitis in horses”. Arroyo, L.G., Costa, M.C., Guest, B.B., Beaudoin-Kimble, M., Lillie, B., Weese, J.S. Eleventh Equine Colic Research Symposium, Trinity College Dublin, Dublin, Ireland. July 7th-9th, 2014. (Podium Presentation)

2013 World Equine Airway Symposium in Calgary, Canada. (Podium Presentation) Ex-vivo Pulmonary Arterial Perfusion System to model biomechanical and hemodynamic phenomena in equine pulmonary arteries

#### Dr. Keith Betteridge

“Endometritis-associated alterations in major proteins in uterine flush fluids from mares” XIth Int Symp Equine Reprod, Waikato University, Hamilton, New Zealand, Jan 26 – 31, 2014

“Changes accompanying spontaneous embryonic loss in nine mares during the first month of pregnancy” XIth Int Symp Equine Reprod, Waikato University, Hamilton, New Zealand, Jan 26 – 31, 2014

KJ Betteridge was Honorary Chairman of the XIth International Symposium on Equine Reproduction, Waikato University, Hamilton, New Zealand, and January 2014. (See: Stout, TAE. 2014. Tribute to the Honorary Chairman, Honorary Chairman of the Eleventh International Symposium on Equine Reproduction Keith J. Betteridge BVSc, MVSc, PhD, FRCVS. J Equine Vet Sci 34:10-11.)

“Conceptus morphology: reading the entrails” Havemeyer workshop on equine implantation, Savannah, GA October 27-29, 2013

“Uterine protein alterations associated with pregnancy failure and endometritis in mares” presented by Sophie Velianou, Merit-NIH Veterinary Scholars Program, Michigan State Univ, Michigan, August, 2013

“Uterine protein alterations associated with pregnancy failure and endometritis in mares” presented by Sophie Velianou, OVC, Guelph, ON, August, 2013

“Proteomic analysis of the uterine flush fluid from mares with endometritis” Mariana Diel de Amorim, Soc. Study Reprod, Montreal, Quebec, July, 2013

Amorim, M., Chenier, T., Quinn, B.A., Scholtz, E., Gartley, C., Betteridge, K. and Hayes, T. (2013) Proteomic analysis in the uterine flush fluid from mares with endometritis. Abstract submitted to the Society for the Study of Reproduction, Annual Conference, Montreal.

2013 Betteridge K. Combating infertility in mares. Equine Guelph Report on Research Day, Guelph, Ontario, Saturday, April 6th, 2013.

#### Dr Amy Greer

Spence KL, Goh B, O’Sullivan TL, Poljak Z, and Greer AL.

Characterization of the equine contact network at a single equestrian show. OVC Graduate Student Symposium. Guelph, ON, December 2015.

Spence KL, O’Sullivan T, Poljak Z, Greer AL. Preventing equine disease outbreaks using mathematics. OMAFRA Emergency Management Expo. Guelph, ON. December 2015.

Spence KL, O’Sullivan T, Poljak Z, Greer AL. Identifying factors influencing the probability of an equine influenza outbreak in an equine training facility. 5<sup>th</sup> International Conference on Infectious Disease Dynamics. Clearwater Beach, FL. Abstract. December 2015.

Spence, K.L., T.L., O’Sullivan, Z. Poljak, and A.L. Greer. Describing the Ontario equine movement network to understand the risk of disease introduction and spread. Canadian Association for Veterinary Epidemiology and Preventive Medicine. Guelph, ON. Abstract. May 2015.

Spence KL, Goh B, O’Sullivan T, and Greer AL. Social network analysis of a single equestrian show to determine the potential for infectious disease transmission in horse populations. OVC Graduate Student Symposium. Guelph, ON. December 2014.



Spence KL, Goh B, O'Sullivan T, and Greer AL. Using social network analysis to understand epidemic potential in equine populations: a pilot study. Conference for Research Workers in Animal Diseases. Chicago, IL. Abstract. December 2014.

#### Dr. Thomas Koch

PhD Candidate Ms. Sarah Lepage presented her work in induced pluripotent stem cells  
The International Society for Stem Cell Research, Vancouver, 2014

PhD Candidate Ms. Sarah Lepage presented her work in induced pluripotent stem cells. The Till and McCullough Meetings, Ottawa, 2014

#### Dr. Judith Koenig

2013 Abstract submitted for review to the Annual Meeting of the American College of Veterinary Surgeons (October 2013, San Antonio, TX)

2013 Koenig J. Extracorporeal shock wave therapy in horses. Equine Guelph Report on Research Day, Guelph, Ontario, Saturday, April 6th, 2013.

2013 Poster presented at the OAEP Annual Meeting in March 2013

#### Dr. Henry Stämpfli

"The effect of a newly designed probiotic on prevention of diarrhea and fecal pathogen shedding of foals during the first two months of life" conference abstract (oral presentation) presented at the annual conference of the European College for Equine Internal medicine 2014 in Prag Tschech republic.

Clostridium difficile prevalence in foals on Ontario breeding farms: a longitudinal study Presented at ACVIM Forum June 2014, Nashville, TN

Clostridium difficile prevalence in foals on Ontario breeding farms: a longitudinal study Presented at OVC Graduate Student Research Symposium, November 12, 2014, Guelph, ON

Clostridium difficile prevalence in foals on Ontario breeding farms: a longitudinal study Presented at the Woodbine research update, May 22, 2014 Woodbine Racetrack Toronto, ON

Infectious agents in diarrheic foals on Ontario breeding farms: a case control study  
M Abrahams, H Staempfli, C Leutenegger, JS Weese. Poster Presented at the International Society for Companion Animal Infectious Diseases Symposium, October 2014, Niagara-on-the-Lake, ON

Infectious Agents in Diarrheic Foals on Ontario Breeding Farms: A Case Control Study.  
M Abrahams, H Staempfli, C Leutenegger, JS Weese. Poster. Presented at OVC Graduate Student Research Symposium, November 12, 2014, Guelph, ON

#### Dr. Scott Weese


2012 JS Weese. Beat the bugs: equine farm biosecurity. Equine Guelph. Guelph, ON, Sept 13, 2012.

2012 JS Weese. Therapeutic manipulation of microbiomes. Research Rounds. Western College of Veterinary Medicine, Saskatoon, SK, Dec 4, 2012.

2012 JS Weese. Microbiomes, and their role in health and disease. International Society for Companion Animal Infectious Diseases Conference. San Francisco, CA, Nov 17, 2012

2012 JS Weese. The equine intestinal microbiome in health and disease. International Conference on Equine Infectious Diseases IX. Lexington, KY, Oct 23, 2012.

2012 JS Weese. Probiotics; manipulating the immune system naturally? Annual Forum of the American College of Veterinary Internal Medicine. New Orleans, LA, May 31, 2012.5.



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

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

“Code of Practice, including Horse Health Check, Body Condition Scoring and Biosecurity”,  
Palmerston and area horse owners’ seminar, Palmerston, ON, May 14, 2015

“Me, You and Horses (digestive tract)”, Toronto Horse Day, June 6, 2015

“Engage” - Presentation on Welfare and Equine Guelph’s Programs, American Horse Publications  
Group, Accepted “Vision” Award, San Antonio, Texas, June 19, 2015

“Horse Health Check, Body Condition Scoring,” Ontario Regional Pony Club Camp, Paris, ON, July 6,  
2015

Horse Experience, presentation on Equine Guelph, part of the Pan-Am Horse Experience tour,  
Guelph, ON, July, 20, 2015

“Horse Health Tracker,” International Society for Equestrian Science Conference, Vancouver, BC,  
August 8, 2015

“Equine Guelph’s Biosecurity program”, National Committee on Equine Biosecurity standards,  
Toronto, ON, February, 8, 2016

“Fire Safety in the Barn”, Research Night, Guelph, ON, March, 3, 2016

“Do You Know the Code? -- Canada’s Welfare Code of Practice”, Central Ontario Agriculture  
Conference, Barrie, ON, March, 4, 2016

“Equine Guelph’s Programs,” Dean’s Council meeting, Guelph, ON, March, 10, 2016

“The Code of Practice – Do You Know the Code?” Can-Am All Breeds Expo, Markham, ON, April 2,  
2016

“Equine Studies with Equine Guelph”, Can-Am All Breeds Expo, Markham, ON, April, 3, 2016

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

“Horse Behaviour”, Technical Large Animal Emergency Rescue “Train the Trainer”, Elora, ON,  
October 6, 2015.

“Overview of Equine Guelph”, Ontario Livestock and Poultry Council, Guelph, ON, October 16, 2015.

“Fire Prevention for Horse Owners”, Can-Am All Breed Equine Expo, Markham, ON, April 1, 2016.

“Preparing for Disaster: Building Resilient Shelters and Communities”, National Animal Welfare Conference, Toronto, ON, April 19, 2016.

“Overview of Equine Guelph’s Emergency Preparedness Program”, Food and Farm Care meeting, Guelph, ON, April 21, 2016.

Equine Guelph, Rockwood Fire Department Open House, Rockwood, ON, April, 30, 2016

“Large Animal Rescue Training” and “Equine Biosecurity”, interviews for Equine Guelph Research Radio, 2016

## **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: *Kelly Jimmerson, MSc*)

Advanced Functional Anatomy (Instructor: *Dr. Jeff Thomason, PhD*)

Biosecurity online two-week eWorkshop (Instructor: *Dr. Susan Raymond, PhD*)

Equine Behaviour (Instructor: *Dr. Sid Gustafson, DVM*)

Equine Business Finance and Risk Management (Instructor: *Nicole Velozo*)

Equine Business Management (Instructor: *Heather Gentles, MBA & Christine Polhkamp*)

Equine Event Management (Instructor: *Marjory Gaouette, MA*)

Equine Genetics (Instructor: *Dr. Dianne Winkelman-Sim, PhD*)

Equine Journalism (Instructor: *Barbara Sheridan*)

Equine Nutrition (Instructor: *Dr. Kathleen Cavanagh, DVM*)

Equine Welfare (Instructor: *Cordy DuBois, MSc*)

Exercise Physiology (Instructor: *Dr. Amanda Waller, PhD*)

Functional Anatomy (Instructor: *Dr. Brianne Henderson, DVM*)

Global Perspectives in Equine Welfare (Instructor: *Dr. Tamara Talich, PhD, DVM*)

Growth & Development (Instructor: *Dr. Pat Meyers*)

Health & Disease Prevention (Instructor: *Dr. Ev Post*)

Management of the Equine Environment (Instructor: *Dr. Susan Raymond & Kathy Fremes*)

Marketing & Communications (Instructor: *Heather Gentles, MBA*)

Stewardship of the Equine Environment (Instructor: *Dr. Susan Raymond, PhD*)

The Equine Industry (Instructor: *Gayle Ecker, MSc*)

## Appendix 10: Summary of the Equine Studies program

### **Diploma in Equine Studies**

The diploma in equine studies requires 6 core courses and 4 electives. 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 38 diplomas awarded in 2015/16, the total number of diplomas awarded has increased to 170.

#### **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 courses and 2 electives. The first Equine Science Certificates were awarded in 2004/05 to 36 students. With 50 Equine Science Certificates awarded in 2015/16, to date 356 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 courses and 1 elective. With 14 Certificates in Equine Business Management awarded in 2015/16, to date 44 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 courses and 2 electives. The Equine Welfare Certificate is a partnership between Equine Guelph, Campbell Centre for the Study of Animal Welfare and Open Learning and Educational Support. In the 2015 winter semester the Equine Welfare course had 15 enrollments. 3 Equine Welfare Certificates have been awarded as of April 15, 2016.

#### ***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

## **Equine Veterinary Technician Certificate**

The Equine Veterinary Technician Certificate requires 3 pre-requisite courses, 3 core courses and 3 practicum.

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

Equine Nutrition	Pre-requisite
Equine Behaviour	Pre-requisite
Functional Anatomy	Pre-requisite
Equine Health through Nutrition	Core
Advanced Equine Behaviour	Core
Advanced Equine Functional Anatomy	Core
Equine Reproduction	Practicum
Equine Critical Care	Practicum
Equine Dentistry	Practicum

## **2015 - 2016 Student Registration Profile**

### **Student Numbers 2015-2016**

Number of individual students	540
Number of new students	259
Total number of registrations	958

### **Registrations by Program**

#### **Enrollment Registrations 2015 - 2016**

<b>Summer 2015</b>	
Advanced Equine Behaviour	13
Exercise Physiology	52
Equine Nutrition	54
Management of the Equine Environment	35
Equine Business Financial and Risk Management	23
Functional Anatomy	56
Equine Event Management	25
<b>Fall 2015</b>	
Management of the Equine Environment	58
Equine Nutrition	58
Equine Growth & Development	46
Equine Behaviour	61
Health & Disease Prevention	46
Equine Business Management	33
Stewardship of the Equine Environment	49
Equine Journalism	21
Global Perspectives in the Equine Environment	12



Winter 2015	
Equine Behaviour	53
Equine Genetics	55
Management of the Equine Environment	58
The Equine Industry	46
Marketing & Communications	43
Functional Anatomy	61
<b>Total Enrollment</b>	<b>958</b>

### Advanced Courses

Course	Semester	Enrollment
Advanced Equine Functional Anatomy	Not offered	0
Advanced Behaviour	S15	13
Advanced Equine Health Through Nutrition	Not offered	0
<b>Total</b>		<b>15</b>

The Advanced courses are included in the Equine Welfare Certificate and the Equine Veterinary Technicians Certificate.

### Behaviour & Safety 2-week online short course

Course	Session	Enrollment
Behaviour & Safety Online	Spring 2016	78

### Biosecurity 2-week online short course

Course	Session	Enrollment
Biosecurity Online	Fall 2015	43

### Colic Prevention 2-week online short course

Course	Session	Enrollment
Colic Prevention Online	Spring 2016	22

## 2015 - 2016 Statistical Profile Equine Studies

Year to Year Comparison by student geographic location

	2008	2009	2010	2011	2012	2013	2014	2015
CAN	340	457	482	451	459	442	461	451

US	27	32	27	19	31	54	38	44
INT	13	14	15	17	13	20	23	44
	<b>380</b>	<b>503</b>	<b>524</b>	<b>487</b>	<b>503</b>	<b>516</b>	<b>522</b>	<b>539</b>

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

	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/2016
AB	37	47	39	49	54	48	49	48
BC	33	38	47	48	64	63	66	70
MB	7	7	10	13	10	4	7	14
NB	2	5	4	8	7	5	4	6
NF	1	2	2	2	3	4	4	7
NS	6	5	11	10	15	18	16	13
NU	2	0	0	1	0	0	0	0
NT	0	1	0	0	0	3	3	1
ON	238	313	338	296	275	259	275	249
PI	0	2	0	0	4	3	1	2
PQ	10	27	19	18	12	21	20	22
SK	2	5	10	6	14	14	16	17
YT	2	5	2	0	1	0	0	2
	<b>340</b>	<b>457</b>	<b>482</b>	<b>451</b>	<b>459</b>	<b>442</b>	<b>461</b>	<b>451</b>

**Where are our students coming from?**

**Canadian Students**

Student numbers	
AB	48
BC	70
MB	14
NB	6
NF	7
NS	13
NU	0
NT	1
ON	249
PI	2
PQ	22
SK	17
YT	2
<b>TOTAL</b>	<b>451</b>

**International Students**

Student Numbers	
Australia	12
Belgium	1
Bermuda	1
China	1
Egypt	1
France	3
Germany	1
Ireland	1
Italy	1
Kenya	1
New Zealand	3
Norway	1
Qatar	2
Russia	1
South Africa	3
Singapore	1
Spain	1

**US Students**

Student Numbers	
AK	2
AL	1
CA	5
CO	2
CT	1
FL	2
GA	2
IL	2
IN	2
MA	2
MD	1
ME	1
MI	2
MN	3
MT	3
NE	1
NJ	1

Switzerland	3
UAE	3
UK	3
<b>TOTAL</b>	<b>44</b>

NY	2
PA	1
TX	3
VA	5
<b>TOTAL</b>	<b>44</b>

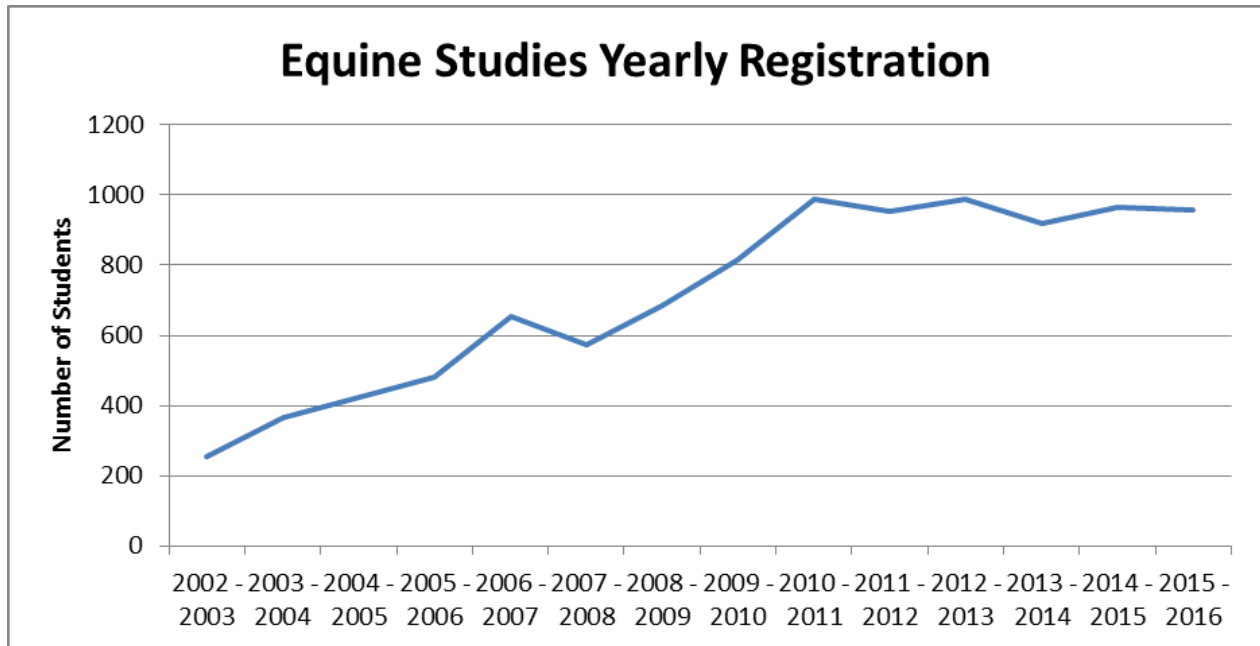
**Number of courses offered each year**

Year	Courses
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

**Different individual courses available**

Year	Courses
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

**Equine Yearly Student Registration Summary**



## **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 for Equine Guelph programs**

May 02, 2015	Rockwood Fire Hall Open House and Emergency Preparedness Information Day (Rockwood, ON)
June 04 - 07, 2015	EquiMania! at Brooklin Fair (Brooklin, ON)
June 06, 2015	EquiMania! at Toronto Horse Day (Toronto, ON)
June 13, 2015	Waterloo Rural Women's Annual Children's Farm Safety Day (Waterloo, ON)
June, 14, 2015	Sunrise Therapeutic Riding Centre, EquiMania! (Puslinch, ON)
July 20, 2015	Horse Experience 2015 tour to the Ontario Veterinary College (Guelph, ON)
Aug 02 - 20, 2015	EquiMania! at Horse Capades (Toronto, ON)
Aug 27 -Sept 7, 2015	EquiMania! at Minnesota State Fair (Minnesota, USA)
Aug 21 - Sept 07, 2015	EquiMania! at the EX (Toronto, ON)
Oct 03 - 04, 2015	Technical Large Animal Emergency Rescue Awareness Level Seminar (Elora, ON)
Oct 04, 2015	EquiMania! at Harvest Halton (Halton, ON)
Nov 06 - 15, 2015	EquiMania! at the Royal Winter Fair (Toronto, ON)
Feb 6, 2016	Equine Guelph at Career Night, BBRM students (Guelph, ON)
April 1 - 3, 2016	EquiMania! at Can Am All Breed Equine Expo, Markham Fair (Markham, ON)
April 30	Equine Guelph, Rockwood Fire Department Open House (Rockwood, ON)

## Appendix 12: Media Coverage Summary

<b>Topic</b>	<b>Articles (May 1, 2015- April 31, 2016)</b>
EquiMania!	11
Research	54
Education	44
General	178

### Coverage of Special Events and Programs

Biosecurity	34
Gayle Ecker Winner of 2015 Industry Vision Award	30
Welfare articles, including Pain Recognition in Equines	29
Fire Safety	28
Technical Large Animal Rescue	25
eWorkshops	14
Horse Health Tracker App	9
Lameness Locator Donated to OVC	8
Rider Safety is Always in Fashion	7
Senior Horse Tool	5
Good Things in Small Packages – Stem Cell Therapy	5

### Special coverage featuring Equine Guelph

Canadian Thoroughbred Magazine, and Whoa Magazine	Spring Equine Research Update (7 EG research stories)
The Rider, The Wellington Advertiser & Horse Sport	Gayle Ecker Wins Equine Industry Vision Award for 2015
Horse Sport	What is the Proper Way to Collect Manure for a Fecal Egg Count Pg. 28, May 2015
Horse Sport	Horse Show Epidemic (Dr. Weese)pg. 48 – 51, May 2015
Canadian Vet	New app helps horse owners monitor vital health data pg. 20, July/Aug 2015
Trot Magazine & Canadian Thoroughbred	Equine Guelph's Biosecurity Poster July, 2015
Whoa! Magazine	Barn Fire Safety Pg. 19-20, Spring 2016
CBC News, CTV & CHCH	Fire Safety and Prevention (Gayle Ecker interviewed on the Jillian Deacon show Jan 6, 2016)
Canadian Horse Health Annual	Getting Inside the Gut (Dr. Thomason & Diane Gibbard, January 2016)

### **Total Features: 287**

Equine Guelph's media pick up saw a rise of at least 10 more articles published this year over last. Our loyal followers and subscribers indicate a high quality audience including: veterinary practices, equestrian media moguls, stable owners and industry professionals. This is resulting in even further reach and engagement of Equine Guelph's news. 100% of this year's Equine Guelph media releases have received pick up beyond the Equine Guelph news archive on our website. Equine Guelph's e-News database has grown 23% since last year. Our press releases go out to over 160 equine media moguls with a combined reach potentially over 8 million!

Equine Guelph continues to grow in popularity on social media platforms such as Facebook and Twitter. Followers include: Woodbine Entertainment Group, Spruce Meadows, Canadian Horse Racing News, Talking Horses TV (HBPA), Equestrian Hour (networking in UK), EquiMed, the Royal Agricultural Winter Fair, Veterinary Daily, Ont. Vet Med Assc., and Canadian Vet Medical Association. Our Facebook followers have increased 15% over last year. In response to a focus on increasing our twitter activity we have 27% more followers than last year.

2016 began with tragedy for the horse industry with a prominent racing barn in Ontario destroyed by fire. Always seen as an industry leader in education for the equine industry, Equine Guelph received a rash of phone calls, emails and requests from TV, radio and print media for interviews on fire safety. EG was swift to oblige with over 28 stories reaching the public and a special fire safety resources page posted on the website including YouTube videos with industry experts. Equine Guelph also distributed fire prevention booklets, with the help of its partners and launched a #stopbarnfires social media campaign. The team at Equine Guelph is always on the pulse of current concerns effecting the industry.

This was not the only TV coverage for Equine Guelph. An awareness campaign aired in two 15 second spots on CTV and CTV2 networks during the Talkin' Horses program breaks promoting Equine Guelph online educational opportunities.

Research Radio on Equine Guelph's website has continued to receive positive distribution, and has been modified for posting on YouTube as well. Boasting 24 episodes, pick up has also been received by: Stablemanagement.com, Horse-Canada.com, HorseRacing Ontario.com, HBPA, OVC, StandardbredCanada.ca and Horsetalk.co.nz in New Zealand.

Links to the Equine Guelph webpage continue to be created by education websites, provincial equine associations, veterinary pages and sponsors. Equine Guelph's membership with American Horse Publications (AHP) continues to prove effective reaching a wider audience in the U.S. through mass distribution of 2 media articles per month to top U.S. equine publications.

## **Media Coverage List**

<b>Date</b>	<b>Magazine or Website</b>	<b>Article Title</b>
15-May	HorseTalk.co.nz	Rescue Course Pays Off For Owner of Stricken Horse
15-May	StandardbredCanada.ca	Large Animal Rescue Seminar Details
15-May	HarnessLink.com	Casting Call for Technical Large Animal Emergency Rescue
15-May	Horse.on.ca	Casting Call for Technical Large Animal Emergency Rescue
15-May	The Rider	Can-Am All Breed Equine Expo 2015- EG education booth picture
15-May	The Rider	Can-Am Celebration of Partnership with Equine Guelph
15-May	EquineVista.com	New App From Equine Guelph Empowers Horse Owners
15-May	Greenhawk Flyer	Be Empowered - Get the App
15-May	Quarter Horse News	New App From Equine Guelph Empowers Horse Owners
15-May	The Rider	New App From Equine Guelph Empowers Horse Owners
15-May	HorseTalk.co.nz	Don't Spread Germs Message for Canadian Racing
15-May	HarnessLink.com	Equine Industry Vision Award Finalist
15-May	Horse.on.ca	Gayle Ecker is Equine Industry Vision Award Finalist
15-May	atGuelph	Equine Guelph Director Finalist for Prestigious Industry Award
15-May	HorseCanada.com	Gayle Ecker is Equine Industry Vision Award Finalist
15-May	OVC bulletin	Gayle Ecker, Equine Industry Vision Award Finalist for 2015
15-May	The Rider	Code Decoder Continues Full-Circle-Responsibility Crusade
15-May	HorseTalk.co.nz	Canadian Equine Leader up for Equine Industry Vision Award
15-May	HorseCanada.com	Horse Show Epidemic (Dr. Weese)
15-May	EquiMed.com	Casting Call for Technical Large Animal Emergency Rescue
15-May	BarnMice.com	Can Am Celebration of Partnership with Equine Guelph
15-May	EquiMed.com	Equine Guelph's Full-Circle-Responsibility Code: Feed and Water for your Horse
15-May	Practical Horseman May eblast	Detecting Horse Joint Damage: Electroarthrography
15-May	Horse.on.ca	Equine Foundation Donation to Aid in Lameness Evaluation
15-May	TheHorse.com	Equine Foundation Donation to Aid in Lameness Evaluation

15-May	Topix.com	Equine Foundation Donation to Aid in Lameness Evaluation
15-May	HarnessLink.com	Equine Foundation Donation to Aid in Lameness Evaluation
15-May	Horsetalk.co.nz	Donation allows Canadian university to invest in lameness technology
15-May	EquiMed.com	Equine Foundation Donation to Aid in Lameness Evaluation
15-May	Horse Sport	What is the Proper Way to Collect Manure For a Fecal Egg Count
15-May	Horse Sport	Horse Show Epidemic (Dr. Weese)
15-May	The Rider	Horse Movement Study
15-May	BarnMice.com	Gayle Ecker, Equine Industry Vision Award Finalist for 2015
15-May	TheRider.com	Gayle Ecker, Equine Industry Vision Award Finalist for 2015
15-May	HorseNation.com	The Dangers of Medicating
15-May	Horse-Canada.com	Equine Foundation Donation to Aid in Lameness Evaluation
15-May	TheRider.com	Equine Foundation Donation to Aid in Lameness Evaluation
15-Jun	The Rider	TLAER ad
15-Jun	The Rider	Casting Call for Technical Large Animal Emergency Rescue
15-Jun	HarnessLink.com	90% Preparation Saves the Day - Technical Large Animal Rescue
15-Jun	OVC bulletin	Register now for Equine Guelph Technical Large Animal Rescue Seminar
15-Jun	atGuelph	New App Helps Horse Owners Monitor Vital Health Data
15-Jun	HarnessLink.com	Know Your Horse Health
15-Jun	Horse Sport	Equine Guelph /Greenhawk Equine First Aid Kit
15-Jun	American Farriers Journal	Equine Guelph Director Receives Equine Industry Vision Award
15-Jun	BlackBurnNews.com	Equine Guelph Director Recognized for Leadership and Service
15-Jun	Canadian Vet Link	Gayle Ecker, Equine Industry Vision Award Winner
15-Jun	The Rider	Gayle Ecker, Equine Industry Vision Award Finalist for 2015
15-Jun	AmericanHorsePubs.org	2015 Equine Industry Vision Award
15-Jun	AtGuelph.uoguelph.ca	Gayle Ecker Wins 2015 Equine Industry Vision Award
15-Jun	Harnesslink.com	Prestigious Equine Industry Vision Award
15-Jun	Horse-Canada.com	Gayle Ecker Wins 2015 Equine Industry Vision Award



15-Jun	Horsetalk.co.nz	Equine Educator honored for leadership, innovation
15-Jun	News.uoguelph.ca	Gayle Ecker Receives 2015 Equine Industry Vision Award
15-Jun	OEF news	Gayle Ecker Receives Prestigious 2015 Equine Industry Vision Award
15-Jun	OVC Online News	Gayle Ecker, Equine Industry Vision Award Winner for 2015
15-Jun	StableManagement.com	Gayle Ecker Receives Prestigious 2015 Equine Industry Vision Award
15-Jun	TheHorse.com	Gayle Ecker Receives 2015 Equine Industry Vision Award
15-Jun	The Rider	Equine Foundation Donation to aid in Lameness Evaluation
15-Jun	BarnMice.com	90% preparation Saves the Day - Technical Large Animal Rescue
15-Jun	EquiMed.com	90% Preparation Saves the Day - TLAER
15-Jun	EquiMed.com	Know Your Horse Health – now theres an app for that
15-Jun	BarnMice.com	Gayle Ecker, Equine Industry Vision Award Winner for 2015
15-Jun	EquiMed.com	Gayle Ecker Receives Prestigious 2015 Equine Industry Vision Award
15-Jun	StandardbredCanada.ca	Equine Industry Vision Award To Ecker
15-Jun	BarnMice.com	Know Your Horse Health
15-Jun	EquiMed.com	Equine Guelph: Know Your Horse Health
15-Jun	EquiMed.com	Biosecurity Becomes More Important as new Outbreaks of Horse Disease Occur (EG mention)
15-Jun	EquiMed.com	Progress Made in Pain Recognition in Horses
15-Jun	TheHorse.com	Nutrition for Optimum Equine Performance
15-Jun	EquiMed.com	The Impact of Impact on Horse Bone Health
15-Jul	The Rider	90% Preparation Saves the Day - Technical Large Animal Rescue
15-Jul	Wellington Advertiser Equine Edition	Calm education resources vital to success during equine emergencies
15-Jul	Wellington Advertiser Equine Edition	Good preparation saves the day
15-Jul	The Rider	Horse Day Rides off into the Sunset (EquiMania! Mention)
15-Jul	Wellington Advertiser Equine Edition	Ecker Key in Developing EquiMania! For Kids
15-Jul	Canadian Vet	New app helps horse owners monitor vital health data

15-Jul	Canadian Thoroughbred	Biosecurity for Racing Industry Poster (polybagged)
15-Jul	Trot Magazine	Biosecurity Poster
15-Jul	EquiMed.com	6 Top Seasonal Tips for Horse Health from Equine Guelph (HEALTHflash)
15-Jul	StableManagement.com	Progress in Equine Pain Recognition (HEALTHflash)
15-Jul	EquiSearch.com	Progress in Equine Pain Recognition (HEALTHflash)
15-Jul	Wellington Advertiser Equine Edition	Pain Recognition skills vital prevention tools for owners
15-Jul	Horse Sport	Feeding Horses with Cushing's Disease (Senior Horse Tool Mention)
15-Jul	Alberta Equestrian Federation enews	Gayle Ecker Wins Equine Industry Vision Award
15-Jul	The Rider	Gayle Ecker Receives Prestigious 2015 Equine Industry Vision Award
15-Jul	Wellington Advertiser Equine Edition	Gayle Ecker Wins Equine Industry Vision Award for 2015
15-Jul	Wellington Advertiser Equine Edition	Horse Welfare is everyone's responsibility
15-Jul	Harnesslink.com	A Canadian Horse Industry Showcase (OVC tour)
15-Jul	Harnesslink.com	Nutrient replacement for optimum performance
15-Jul	OVC.uoguelph.ca	OVC and Equine Guelph participating in Horse Experience 2015
15-Jul	Wellington Advertiser Equine Edition	New Code for Equine Welfare
15-Jul	Harnesslink.com	The Impact of Impact on Bone Health
15-Jul	horse.on.ca	The Impact of Impact
15-Jul	Horse-Canada.com Magazine	Radiology 101 - Photos courtesy of OVC
15-Jul	HorseTalk.co.nz	When Joints Hurt Horses: getting to the source of OA
15-Jul	OVC.uoguelph.ca	Research looks at how infectious disease can spread at horse shows
15-Jul	TheHorse.com	Researchers Study Impact's Impact on Bone Health
15-Jul	Wellington Advertiser Equine Edition	The Impact of Impact on equine bone health
15-Aug	HCBC.ca	Equine Guelph - Distance Learning web page
15-Aug	Bulletin.ovc.uoguelph.ca	Biosecurity Whiteboard Videos help spread the word

15-Aug	COSAonline.com	Spread the Word, Not Germs
15-Aug	Equine Care News	Equine Guelph - Infection Control Resources
15-Aug	EquineCanada.ca	Biosecurity with Mark and Dan
15-Aug	EquineCanada.ca	Protect your horse from getting sick
15-Aug	EquineInfoExchange.com	Biosecurity with Mark and Dan
15-Aug	Harnesslink.com	Spread the word not the germs - Video
15-Aug	HBPA.on.ca	Biosecurity with Mark and Dan
15-Aug	HBPA.on.ca	Equine Guelph - Infection Control Resources
15-Aug	Horse.on.ca	Biosecurity with Mark and Dan
15-Aug	Horse-Canada.com	ORC Initiates Infection Control Blitz
15-Aug	OntarioHorseRacing.ca	Equine Guelph Launches Infection Control Resource Page
15-Aug	QROOL.com	Infection Control Resources
15-Aug	StableManagement.com	Guelph Offers Infection Control Resources Online
15-Aug	StandardbredCanada.ca	Spread the Word, Not Germs
15-Aug	The Rider	Biosecurity with Mark and Dan
15-Aug	Wormsandgerms.com	Biosecurity with Mark and Dan
15-Aug	AEF Enews	Progress in Equine Pain Recognition (HEALTHflash)
15-Aug	BarnMice.com	Progress in Pain Recognition
15-Aug	Harnesslink.com	Progress in Pain Recognition
15-Aug	Horse Sport	Gayle Ecker Honoured
15-Aug	Harnesslink.com	Responsible, Purposeful Horse Breeding
15-Aug	Horse.on.ca	Responsible, Purposeful Breeding
15-Aug	theHorse.com	Responsible, Purposeful Horse Breeding
15-Aug	Horse-Canada.com Magazine	Radiology 101 - Photos courtesy of OVC
15-Aug	StableManagement.com	The Impact of Impact on Bone Health
15-Aug	The Rider	The Impact of Impact on Bone Health
15-Aug	EquiMed.com	Biosecurity with Mark and Dan

15-Aug	HorseJournals.com	Biosecurity with Mark and Dan
15-Aug	EquiMed.com	Progress Made in Pain Recognition in Horses
15-Aug	EquiMed.com	Making Responsible, Purposeful Breeding of Horses a Priority
15-Aug	HorseJournals.com	The Impact of Impact
15-Sep	EquiMed.com	Hoofprints Memorial - Remembering Jesse
15-Sep	HorseNation.com	Progress in Pain Recognition
15-Sep	Horse-Canada.com	EquineStudiesOnline.ca
15-Sep	Horse-Canada.com	Equine Studies online ad
15-Sep	Horse-Canada.com	Equine Studies online ad
15-Sep	Harnesslink.com	Spread the word not the Germs
15-Sep	Horse.on.ca	Spread the Word, Not Germs - Infection Control Blitz is on!
15-Sep	OEF eblast	Protect your Horse From Infectious Disease
15-Sep	The Rider	Spread the Word Not the Germs - Infection Control Blitz is on!
15-Sep	Wellington Advertiser Equine Edition	Are Your Horses Healthy? AD Biosecurity eWorkshop
15-Sep	Horse-Canada.com	Unravelling the Mysteries of Colic
15-Sep	Harnesslink.com	Remembering Jessie
15-Sep	KPPUSA.com	Progress in Pain Recognition
15-Sep	StableManagement.com	Progress in Pain Recognition
15-Sep	StableManagement.com	Progress in Pain Recognition
15-Sep	KPPUSA.com	Skin Diseases and Allergies in Horses
15-Sep	TheRider	Hoofprints Memorial - Remembering Jesse
15-Sep	TheRider	Responsible, Purposeful Breeding
15-Oct	EquiMed.com	First Responders Learn How to Rescue Horses and other Large Animals
15-Oct	BarnMice.com	First Responders Learn How to Rescue Horses and other Large Animals
15-Oct	Harnesslink.com	First Responder Training Photo Receives Award
15-Oct	Horse-Canada.com	First Responders Learn How to Rescue Horses and other Large Animals

15-Oct	StableManagement.com	Guelph Hosts First Responders Learning to Rescue Horses & Other Large Animals
15-Oct	StandardbredCanada.ca	EquiMania! Returns to the Royal
15-Oct	EquiMed.com	Spread the Word Not the Germs- Infection Control Blitz is On for Horse Owners
15-Oct	EquiMed.com	Now is the Time to Prepare Your Horse Watering Systems for Winter
15-Oct	Horse-Canada.com	First Responder Training Photo Receives Award
15-Oct	HorseJournals.com	Drugs and Your Horse
15-Oct	HorseJournals.com	Adopting a Rescue Horse (Gayle Ecker interviewed)
15-Oct	HorseJournals.com	At the Starting Gate of a New Direction (with EG files)
15-Oct	HorseTalk.co.nz	Horses don't know you're there to help (TLAER)
15-Oct	BarnMice.com	EquiMania! Gallops back into Toronto
15-Oct	Horse-Canada.com	EquiMania! Gallops back into Toronto
15-Oct	Trail Rider	New Health Tracker App
15-Oct	Horsetalk.co.nz	Canadian awards recognize equine rescue image
15-Nov	OntarioHorseRacing.ca	Study online Equine Guelph
15-Nov	BarnMice.com	Senior Horse Challenge Sharpens Skills
15-Nov	Horse-Canada.com	In Memoriam: Neil Ishoy (donations to Equine Guelph)
15-Nov	EquiMed.com	Horse Rescued by Fast Acting Emergency Crew
15-Nov	Harnesslink.com	Horse Rescued by Fast Acting Emergency Crew
15-Nov	Horse-Canada.com	Puslinch Horse Rescued by Fast Acting Emergency Crew
15-Nov	StandardbredCanada.ca	Puslinch Horse Saved by Rescue Crew
15-Nov	BarnMice.com	Dressed to Kill - Rider Safety is Always in Fashion
15-Nov	EquiMed.com	Dressed to Kill - Horseback Rider Safety is Always in Fashion
15-Nov	HorseJournals.com	Rider Safety is Always in Fashion
15-Nov	horsenation.com	Dress For Safety
15-Nov	kppusa.com	Dressed to Kill - Rider Safety is Always in Fashion
15-Nov	EquiMed.com	Senior Horse Challenge Sharpens Skills

15-Nov	HorseJournals.com	How to Test your Horse for Dehydration
15-Dec	HorseJournals.com	Senior Horse Challenge Sharpens Skills
15-Dec	Stablemanagement.com	Guelph's Senior Horse Challenge Sharpens Skills
15-Dec	HorseJournals.com	Gayle Ecker Receives Prestigious 2015 Equine Industry Vision Award
15-Dec	BarnMice.com	Equine Guelph: World Horse Welfare
15-Dec	EquiMed.com	Equine Guelph's Gayle Ecker Participates in World Horse Conference
15-Dec	Harnesslink.com	World Horse Welfare
15-Dec	Horse-Canada.com	World Horse Welfare Conference
15-Dec	HorseJournals.com	World Horse Welfare Conference
15-Dec	EquiMed.com	Research Team to Determine If Horses Distinguish Between Neurotypical & Mentally...
15-Dec	News.Uoguelph.ca	Horse Welfare Focus of Equine-Assisted Therapy Study
15-Dec	Puslinch Pioneer	Puslinch Horse Rescued by Fast Acting Emergency Crew
15-Dec	TheLinkNewspaper.ca	Hoofing It (Equine Guelph mention)
15-Dec	TheHorse	Rider Safety is Always in Fashion
15-Dec	HBPA	Equine Guelph December Enews
15-Dec	HorseTalk.co.nz	Equine therapy: What effect is there on horses?
16-Jan	EquiMed.com	Why is Colic so Common in Domestic Horses?
16-Jan	BarnMice.com	Eye Opener - Equine Guelph Behaviour and Safety eWorkshop
16-Jan	EquiMed.com	An Eye-opener for Horse Owners - Equine Guelph Behaviour and Safety eWorkshop
16-Jan	EquineCanada.ca	Eye Opener - Equine Guelph Behaviour and Safety eWorkshop
16-Jan	StableManagement.com	Equine Guelph Behavior and Safety eWorkshop
16-Jan	EquiMed.com	...Biosecurity a Top Priority for Horse Owners in 2016 - EG biosecurity poster mention
16-Jan	AlbertaEquestrianFederation.com	Horse Shed Near Didsbury Destroyed by Fire (EG resources mentioned)
16-Jan	AllAboutHorses.com	Equine Guelph Stress Importance of Fire Safety Education (linked to AM 980 post)
16-Jan	AM 980 London News	Equine Guelph Stress Importance of Fire Safety Education After Over 50 Horses Killed...

16-Jan	CBC News	Fire Safety and Prevention (Gayle Ecker interview for news)
16-Jan	CHCH	Barn Safety (Gayle at EG interviewed)
16-Jan	Classical 93 Radio	Fire Safety and Prevention (Gayle Ecker interviewed for news)
16-Jan	Cosaonline.com	Equine Guelph's Farm Fire Safety Tips
16-Jan	Country1073.ca	U of G issues plea to horse barn owners
16-Jan	CTV News.ca	Barn Fires Prompt Fire Officials to Call For Changes (Gayle quoted)
16-Jan	Easy101.com	U of G issues plea to horse barn owners
16-Jan	EquiMed.com	Prevent Barn Fires - Resources for horse owners
16-Jan	HorseCanada.com	Officials Urge Safety Precaution in Wake of Third Ontario Barn Fire (EG mention)
16-Jan	Kitchener.ctvnews.ca	Over 500 goats and dozens of Cattle dead after barn fire in Delaware, ON (EG resources)
16-Jan	News 103.1	Equine Guelph Stress Importance of Fire Safety Education
16-Jan	OntarioEquineVets.ca	Equine Guelph's Farm Fire Safety Tips
16-Jan	OntarioFireSafety.com	Equine Guelph Stress Importance of Fire Safety Education (linked to AM 980 post)
16-Jan	StandardbredCanada.ca	Reducing Fire Risk on your Farm (EG links)
16-Jan	The.Motts.ca radio show	Horse and Barn Fire Safety with Rebecca Gimenez (1:30 min to 9:05 min on podcast)
16-Jan	thestar.com	Fire Kills 12 Horses in Mount Forest... (EG resources mentioned)
16-Jan	thestar.com	Advocates call for better safety as 2,000 pigs die in latest barn fire (Gayle interviewed)
16-Jan	Horse.on.ca	Make fire safety a priority at your stable (OEF site - with mention of EG TLAER course)
16-Jan	HorseJournals.com	Progress in Equine Pain Recognition (HEALTHflash)
16-Jan	OEF enews	Winter HEALTHflash
16-Jan	EquiMed.com	What are You Doing this Winter to Prevent Lameness in Your Horse
16-Jan	EquiMed.com	Ice Advice from Health Flash
16-Jan	Canadian Horse Annual	Getting Inside the Gut

16-Jan	Eventbrite.ca	Equine Research Day - Research for Riders
16-Jan	HorseCanada.com	Getting Inside the Gut
16-Jan	HorseJournals.com	Horse Welfare Focus of Equine-Assisted Therapy Study
16-Jan	OVC.uoguelph.ca	Equine Guelph Research Competition
16-Jan	StandardbredCanada.ca	Professor to Study Equine Therapy
16-Jan	TheHorse.com	When the Heart of a Champion Gives Out (Physick-Sheard interviewed)
16-Feb	EquineCanada.ca	Eye-Opener - Equine Guelph Behaviour & Safety eWorkshop
16-Feb	Harnesslink.com	Behaviour and Safety eWorkshop
16-Feb	EquineInfoExchange.com	Equine Guelph Reducing Risk through Education (fire safety)
16-Feb	Harnesslink.com	Reducing Risk Through Education
16-Feb	Horse-Canada.com	Fire Safety Tips From Equine Guelph
16-Feb	TheRider.com	Equine Guelph Focuses on Reducing Horse Barn Fires Through Education
16-Feb	Wellington Advertiser	Equine Guelph Focuses on Reducing Horse Barn Fires Through Education
16-Feb	EquiMed.com	Equine Guelph Focuses on Reducing Horse Barn Fires Through Education
16-Feb	Whoa!	Dressed to Kill
16-Feb	Horsenation.com	Equine Guelph Explains Winter Cool Down Procedure
16-Feb	HorseNation.com	Reducing the risk of respiratory ailments
16-Feb	kppusa.com	Winter cool down...
16-Feb	kppusa.com	Reducing the risk of respiratory ailments
16-Feb	BarnMice.com	Good Things in Small Packages- Equine Cartilage Stem Cell Therapy Update
16-Feb	Harnesslink.com	Stem Cell Therapy Update
16-Feb	Horse-Canada.com	OVC Researchers Manufacture Equine Cartilage
16-Feb	EquiMed.com	Good Things in Small Packages- Equine Cartilage Stem Cell Therapy Update
16-Feb	Plos One	A Novel Pore-Forming Toxin ... Clostridium perfringens Is...Foal Necrotizing Enterocolitis- Prescott
16-Feb	theHorse.com	Zika Virus: Are Horses at Risk?

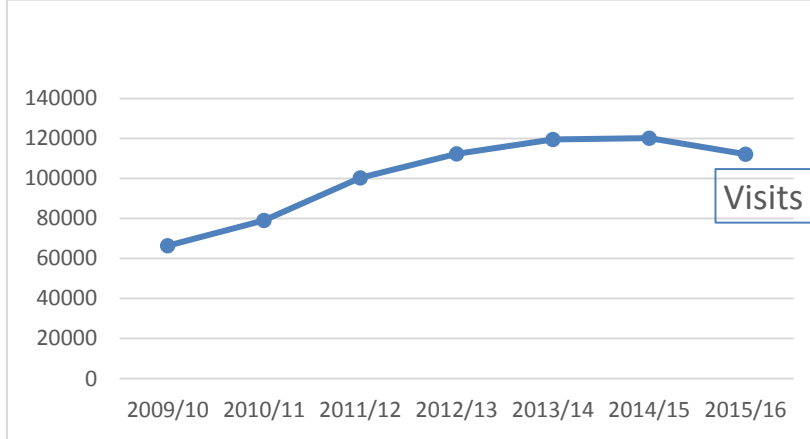


16-Feb	veterinaryrecord.bmj.com	NetF-positive Clostridium perfringens in neonatal foal necrotizing enteritis (Dr. Prescott)
3-Mar	Horse-Canada	How Does Equine Assisted Therapy Affect Horses?
16-Mar	BarnMice.com	Why is Colic so Common in Domestic Horses?
16-Mar	EquineCanada.ca	Why is Colic so Common in Domestic Horses?
16-Mar	Harnesslink.com	Why is Colic so Common in Domestic Horses?
16-Mar	OVC bulletin eblast	Why is Colic so Common in Domestic Horses?
16-Mar	Stablemanagement.com	Equine Guelph Asks: Why is Colic so Common in Domestic Horses?
16-Mar	StandardbredCanada.ca	Equine Guelph Offers Colic Eworkshop
16-Mar	Whoa! Magazine	Equine Guelph Research Update- A Decade of fun at the RAWF
16-Mar	Whoa! Magazine	Protect your horse from getting sick
16-Mar	Whoa! Magazine	Equine Guelph Research Update - 2016 Year of Biosecurity
16-Mar	Whoa! Magazine	Barn Fire Safety
16-Mar	Whoa! Magazine	Equine Guelph Research Update - Keep Your Horse Safe (Healthcare tools)
16-Mar	EquiMed.com	Getting Foal Nutrition Right From the Start
16-Mar	HorseJournals.com	How to Safety Transition Feed in Your Horse's Diet
16-Mar	Whoa! Magazine	Equine Guelph Research Update- Stem Cell Therapy Updates
16-Mar	Portico	Do human patients impact therapy horses?
16-Mar	Whoa! Magazine	Equine Guelph Research Update- Lights Camera Digestion
16-Mar	Whoa! Magazine	Equine Guelph Research Update- Deep in the Data Mine for Heaves Research
16-Mar	Whoa! Magazine	Equine Guelph Research Update- How Does Equine Assisted Therapy Affect Horses?
16-Apr	Canadian TB Magazine	Equine Guelph Research Update - A Decade of fun at the RAWF
16-Apr	HorseJournals.com	11 Reasons for not Wearing a Helmet?
16-Apr	HorseJournals.com	Riding Helmets Save Lives

## Appendix 13 : Web Site Report

Visits	MAY 01, 2015-APRIL 30, 2016	112,173	-7.9%
New Visitors		57,897	+9.64%

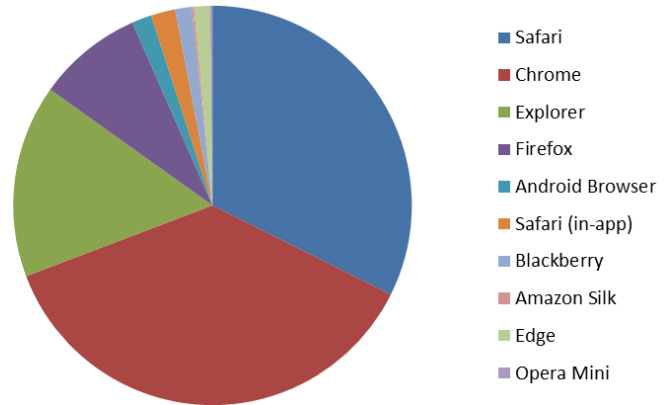
Steady growth has been recorded in Equine Guelph web traffic:



### TOP 10 BROWSER – OPERATING SYSTEM

(use order plus % change over previous year)

1. Chrome	+24.30%
2. Safari	+ 1.75%
3. Internet Explorer	-43.18%
4. Firefox	-31.62%
5. Safari (in-app)	-8.28%
6. Android Browser	-52.19%
7. Blackberry	+23.75%
8. Edge	+ ∞ %
(+ ∞% means 0 previous year)	
9. Opera	+ 162.65%
10. Amazon Silk	-55.65%



### TECHNOLOGY OVERVIEW

112,173 people visited the Equine Guelph site

	From last year
1. Desktop	(-19.84%)
2. Mobile	(+23.95%)
3. Tablet	(-5.77%)

# TRAFFIC

112,173 people visited the EG site

	<b>From last year</b>
Organic Search	-9.88%
Direct Traffic	-2.44%
Referral Traffic	+4.15%
Email	-17.36%
Social	-27.28%
Other	-35.57%



## TOP REFERRAL SOURCES

Source	<b>From last year</b>
1. equineguelph.ca	+34.11%
2. m.facebook.com	-26.04%
3. ovc.uoguelph.ca	-16.23%
4. facebook.com	-16.83%
5. standardbredcanada.ca	+84.89%
6. Horseandrider.com	∞%
7. aaep.org	+51.17%
8. Equimania.ca	-37.79%
9. l.facebook.com	-60.06%
10. uoguelph.ca	-38.06%

## TRAFFIC SOURCES – SOCIAL MEDIA

Social Network	<b>From Last Year</b>
1. Facebook	-33.62%
2. Twitter	+126.98%
3. Pinterest	+63.33%
4. LinkedIn	-9.52%

5.	You Tube	+5.56%
6.	Blogger	-27.27%
7.	Google+	+66.67%
8.	Naver	+400.00%
9.	Paper.li	-55.56%
10.	Tumblr	+100.00%

## CONTENT

### TOP 10 LANDING PAGES

(use order plus % change over previous year)

1.	/jobtrack/jobs.php	-3.90%
2.	/index.php	-10.02%
3.	/jobtrack/index.php	-36.61%
4.	/education/programs_list.php	+8.97%
5.	/Tools/app.php	+ <b>331.33%</b>
6.	/education/index.php	-66.10%
7.	/eworkshops/behaviour_safety.php	+54.53%
8.	/Tools/equiplanner.php	-27.27%
9.	/education/eworkshops.php	-7.52%
10.	/education/infection_control_resources.php	+∞% (means 0 previous year)

## Appendix 14: Sponsors

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



Website  
Senior Horse Challenge



EquiMania! Exhibit



EquiMania!  
Youth Safety Initiative



HEALTHflash



Hoofprints Memorial Program  
& Education Patron



EquiMania!  
Youth Safety Initiative



HEALTHflash



Welfare Initiative



EquiMania!  
Youth Safety Initiative



EquiMania!  
Exhibit



EquiMania!  
Nutrition Display



EquiMania!  
Youth Safety Initiative  
& Research Radio



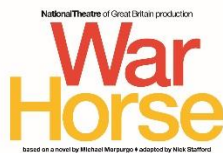
EquiMania!  
Youth Industry Display



EquiMania!  
Youth Safety Initiative  
& HEALTHflash



Website  
Equine Bio-Security Calculator,  
Behaviour & Safety e-workshop,  
fecal bags & HEALTHflash



Equine Guelph-OEF 'War Horse'  
Welfare Education Fund



EquiMania! Youth  
Safety Initiative



Website  
Joint & Lameness Tools  
& EquiMania! Parasite Display

**Equine Guelph Financial Report 2015-2016**  
As at April 30, 2016

	Holding Accounts					To Program Support	Programs						Total Equine Guelph
	E. P. Taylor	ORC	SRA	HBPA	General Research		Education	Communi- cations	Develop- ment	Research Support	Sponsorship	OMAF-TP	
	710655	045878	046069	046071	046960	046073	046077	046079	046851	048865	048864	051180	
<b>FUND BALANCE, Previous Year-end</b>	101,121	(125,195)	-	-	32,560	-	276,290	101,511	13,014	6,607	109,955	54,017	569,879
<b>REVENUE</b>													
Funds Received from Funding Agencies	86,324 <sup>1</sup>	-	-	81,000	-	-	-	-	-	-	-	-	167,324
HIP Funds	-	394,800 <sup>2</sup>	-	-	-	-	-	-	-	-	-	-	394,800
Quarter Horse Program	-	42,250 <sup>2</sup>	-	-	-	-	-	-	-	-	-	-	42,250
OMAF TP	-	-	-	-	-	-	-	-	-	-	-	100,000	100,000
Alumni House Donations (individuals)	-	-	-	-	11,387	-	41,712	23,505	-	-	-	-	76,604
Tuition & Workshops (S13,F13, W14)	-	-	-	-	-	-	122,743	-	-	-	-	-	122,743
Other University Contributions	-	-	-	-	-	-	-	-	-	-	-	-	-
External Contributions	-	-	-	-	16,000	-	223,347	-	-	-	82,750	-	322,097
<b>TOTAL REVENUE</b>	<b>86,324</b>	<b>437,050</b>	<b>-</b>	<b>81,000</b>	<b>27,387</b>	<b>-</b>	<b>387,801</b>	<b>23,505</b>	<b>-</b>	<b>-</b>	<b>82,750</b>	<b>100,000</b>	<b>1,225,817</b>
<b>INTERNAL TRANSFERS:</b>													
From Agency Fund to Overhead	-	(87,410)	-	(16,200)	-	103,610	-	-	-	-	-	-	-
From Agency Fund to Program	-	-	-	-	-	-	-	-	-	-	-	-	-
From Overhead to Program	-	-	-	-	-	(103,610)	-	69,419	-	34,191	-	-	-
Transfers b/w EG accounts	-	-	-	-	-	-	15,000	20,000	-	(20,000)	-	(15,000)	-
Transfer from Sponsorship	-	-	-	-	-	-	65,500	-	-	-	(65,500)	-	-
<b>TOTAL TRANSFERS</b>	<b>-</b>	<b>(87,410)</b>	<b>-</b>	<b>(16,200)</b>	<b>-</b>	<b>-</b>	<b>80,500</b>	<b>89,419</b>	<b>-</b>	<b>14,191</b>	<b>(65,500)</b>	<b>(15,000)</b>	<b>-</b>
<b>PROGRAM EXPENDITURES</b>													
Research Projects	(16,360) <sup>3</sup>	(49,060)	-	44,230 <sup>5</sup>	(16,500)	-	-	-	-	-	-	-	(37,690)
Research Support	-	-	-	-	-	-	-	-	(7,523)	-	-	-	(7,523)
Education	-	-	-	-	-	-	(339,882)	-	-	-	-	-	(339,882)
Communications	-	-	-	-	-	-	-	(83,494)	-	-	-	-	(83,494)
Development	-	-	-	-	-	-	-	-	(832)	-	-	-	(832)
Sponsorship	-	-	-	-	-	-	-	-	-	-	(7,681)	-	(7,681)
Welfare	-	-	-	-	-	-	-	-	-	-	-	(132,155)	(132,155)
<b>TOTAL PROGRAM EXPENDITURES</b>	<b>(16,360)</b>	<b>(49,060)</b>	<b>-</b>	<b>44,230</b>	<b>(16,500)</b>	<b>-</b>	<b>(339,882)</b>	<b>(83,494)</b>	<b>(832)</b>	<b>(7,523)</b>	<b>(7,681)</b>	<b>(132,155)</b>	<b>(609,257)</b>
<b>FUND BALANCE as at April 30, 2016</b>	<b>171,085</b>	<b>175,385</b> <sup>3</sup>	<b>-</b>	<b>109,030</b>	<b>43,447</b> <sup>4</sup>	<b>-</b>	<b>404,710</b>	<b>130,941</b>	<b>12,182</b>	<b>13,275</b>	<b>119,524</b>	<b>6,862</b>	<b>1,186,440</b>

1 - 2016-2017 E.P Taylor revenue. To be carried over to 16/17 fiscal year.

2- Rec'd 2014-2015 & 2015-2016 HIP/QH funds -15% holdback and holdbacks from 2012-2014. Awaiting 15% holdback from 2015-2016.

3 - \$16,360 committed from 14/15 research project

4 - Allocated to research project

5- Return of 2012 project funding #050087