



## Parasite Control with Dr. Peregrine

### Rotate or rest?

That is a very good question when it comes to the use of deworming products. After speaking with parasitic disease expert and Ontario Veterinary College researcher Dr. Andrew Peregrine, I am not only eager to pick up more poop but I am keen to have it analyzed. When a growing resistance to

being applied to a problem that does not exist. Parasite burdens are not the same for every horse.

“Less than three percent of horse owners perform fecal exams and to date this is the only way to find out if your horse is carrying an unhealthy parasite burden,” says Peregrine. He recommends all horse owners get in the habit of performing a fecal at least once a year, ideally in July or August when strongyles are most active.

There are other physical signs such as weight loss, diarrhea and unusual levels of colic occurrence but these signs are **not exclusive** to parasite overload. They are good reasons to call your vet to determine the cause!

Peregrine advises horse owners to discuss the appropriate parasite control program with their vet to be sure they are following an individual program that is right for their horse. Rotation of deworming products (not just switching brands but switching drug classes) should

not be the only point of conversation. Environment and stage of life plays a key role in determining what measures can be taken to keep the parasite population in check. And of course, the starting point is a fecal exam to learn if the egg count warrants action.

If the fecal egg count is high – another exam two weeks after deworming will let the horse owner know if what they are doing is working.

Peregrine points out a few factors affecting parasite control planning:

- foals are predisposed to roundworms
- horses spending long periods indoors are more at risk for roundworms and pinworms
- horses on pasture are more at risk to pick up strongyles while grazing – this risk increases in paddocks that are overstocked with horses

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Photo: Kayla Dorricott

Picking up manure twice a week is a good practice to decrease parasite populations

dewormers is cited as a major issue concerning horse owners today, a fecal exam to see if your parasite control program is working makes logical sense. The results may indicate it’s time to rotate wormers or perhaps your deworming is

Welcome to a special bi-annual report on the ground-breaking research funded by partners, sponsors and donors to Equine Guelph’s Research Program. This 10th anniversary issue celebrates the latest innovations in equine research. Be sure to follow the links to expanded articles outlining future stem cell therapy ventures and comparative studies analyzing equine footing. We hope you enjoy the feature article showcasing OVC researchers’ success stories and current projects.

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

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### Parasite Control with Dr. Peregrine

While not all horse owners have the luxury of keeping their horse on 5 - 10 acres of pasture (a minimum of two acres/horse is recommended but more is optimal), management of their environment can vastly decrease the chances of parasitic disease:

1. Picking up manure twice a week (more in wet conditions) can have a massive impact decreasing parasite populations.
2. Rotating pastures can be beneficial during grazing season when implemented for 2 – 3 months at a time.
3. Graze other species on the pasture (ie. Cows for one month).
4. Clean stalls daily.
5. Steam clean stall walls and flooring when occupants change.

Funding for Dr. Peregrine's equine parasite research has been provided by Zoetis, the E.P. Taylor Foundation and Ontario Ministry of Agriculture, Food and Rural Affairs/Equine Research Centre.

Work closely with your veterinarian for the right parasite control program for your horse. For more information on how to collect a fecal sample please refer to Equine Guelph's info sheet located at the bottom of the healthcare tools page:  
<http://EquineGuelph.ca/education/healthcare.php>



**help for HORSE OWNERS**

**topic:** DEMONSTRATION OF HOW TO COLLECT A FECAL SAMPLE

**demonstrator:** Dr. Susan Raymond, Equine Guelph Education Officer

Equine Guelph Features Video on Fecal Collection:  
<http://EquineGuelph.ca/videos.php>

Story By – Jackie Bellamy

## Grant Brings Stem Cell Research closer to In Vivo Studies

“The tool box is equipped,” says University of Guelph researcher Dr. Thomas Koch, as he and his team prepare to move on to studies using live horses. Their previous research, along with a \$750, 000 grant for a new laboratory and bioreactor, has put Koch's team at the forefront of equine regenerative research. This year, Koch together with Professor Judith Koenig for the first time ever, injected stem cells isolated from umbilical cord blood into an injured tendon of a thoroughbred race horse. No apparent negative results have been recorded in the first five weeks. This has provided Koch and the regenerative medicine team at the Ontario Veterinary College with a starting point for future in vivo studies to assess the safety and healing potential of stem cells in live horses. **To learn more about this exciting new step in research go to the full story at:**

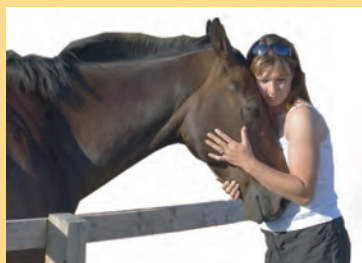
<http://EquineGuelph.ca/news/index.php?content=381>



Dr. Thomas Koch is an assistant professor in the Department of Biomedical Sciences at the Ontario Veterinary College and an adjunct associate professor in the Orthopedic Research Lab at Aarhus University in Denmark. His work is funded by the Danish Research Agency for Technology, Production and Innovation, Grayson Research Foundation of Lexington, Kentucky, BioE Inc. of Minnesota, USA, SentrX Animal Care Inc. of Utah, USA, and Morris Animal Foundation (USA), Pet Trust and the Equine Guelph Research Fund. The \$750,000 grant has been provided by the Canadian Foundation of Innovation – Leaders Opportunity Fund.

Story By – Kathleen Kocmarek

## Help us Celebrate 10 years of 'Helping Horses for Life'



owners and caregivers provide the very best care for our beloved horses.”

“We could not have achieved this milestone without your support,” says Gayle Ecker, director of Equine Guelph. “For ten years our reputation has been built based on equine welfare priorities and we continue to expand our offerings to help horse

We invite you to help us continue to grow by making a special gift this year to our welfare education programs.

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(cheques payable to University of Guelph/ Equine Guelph)

## Tracking Troponin

When it comes to matters of the heart, OVC researcher, Dr. Physick-Sheard has been pumping out successful research. His collaborative research with Dr. Kim McGurrin using transvenous electrical cardioversion has given many racehorses suffering from performance problems due to arrhythmia their careers back. Physick-Sheard has not missed a beat with his next research study, which will examine a possible relationship between exercise-associated arrhythmia, heart muscle damage, and cardiac troponin I levels in race horses. “A known connection has been established between exercise and troponin levels,” says graduate student Dr. Tanya Rossi, who has been working with Dr. Physick-Sheard on this multi-faceted study. Physick-Sheard and Rossi are very interested in delving into the “chicken and egg” like quandary, “has heart muscle damage caused a rhythm disturbance or is it the other way around.”

Measuring troponin levels has been held up as the ‘gold standard’ in diagnostics for human patients with cardiac disease. Troponin is a protein that is released into the bloodstream and can be detected even when there are only low levels of damage. Physick-Sheard will be the first to tell you, “Horses don’t have heart attacks,” but coming up with a standard troponin test for horses may allow vets to detect heart muscle impacts before they can become a cause of poor performance or mortality.



Photo: Dave Landry

Researchers hope to gain a greater understanding of the link between rhythm disturbances and troponin levels

The initial stages of this study are proving intensive as there has been a lack of standardization for analysis of commercially available tests for troponin in equines. To ensure accuracy of results Physick-Sheard and Rossi are testing the ability of commercially available human troponin I assays to detect equine troponin I.

Physick-Sheard jokes that part of the study is testing the hearts of the researchers, as they endure sleep loss and caffeine overloads, following and monitoring a group of racehorses, collecting blood samples from catheters for a full 24 hours! By measuring and examining differences in

both magnitude and time course of troponin I release between ‘normal’ racehorses and those exhibiting arrhythmia, the researchers hope to gain a greater understanding of the link between rhythm disturbances and troponin levels. Results could potentially lead to a standardized post-race test which could help maximize the welfare of horses from the perspective of protecting against cardiovascular disease, using troponin levels as an early detection method.

Funding for this research project has been provided by Equine Guelph and the Ontario Veterinary College Office of Research.

Story By – Jackie Bellamy

## Advances Evolving from Research

It is hard to believe the multitude of achievements made by Equine Guelph in these past ten years. The team has made commendable advances funding research and developing educational pathways, always responding to industry’s expressed needs.

I am pleased to report this issue is overflowing with research information; necessitating links to expanded articles.

Equine Guelph, at the University of Guelph, has been a champion in building partnerships among industry associations, commercial ventures, private organizations and donors and government to fund equine research which improves the health and welfare of the horses in our industry. As the industry continues to experience uncertain times, acquiring future research funding is a challenging but vital mission. As you read through

these pages outlining many discoveries which ultimately benefit the lives of our horses, please recognize your generous contributions are the impetus that drive research forward. Whether your role is big or small; funding of research projects are always a collective effort.

*Dr. Jeff Thomason, Co-chair, Equine Guelph Research Committee*

# Equine Guelph *CELEBRATES* TEN

**Dr. Keith Betteridge**, recipient of the Pioneer Award of the International Embryo Transfer Society and Honorary Chairman of the XIth International Symposium on Equine Reproduction in New Zealand, January 2014, has contributed greatly to increasing understanding of the role played by the embryo itself in maintaining pregnancy.



Studying failing pregnancies is giving insight into identifying potential diagnostic biomarkers of infertility.

**Dr. Thomas Koch** has discovered an ingenious way to isolate mesenchymal stromal cells from umbilical cord blood, putting the UofG on the map as a leader in equine stem cell research. Koch is optimistic that advances in stem cell research will create treatment options for joint cartilage repair and could one day cure previously incurable degenerative diseases.



**Dr. Jeff Thomason** has been conducting ground-breaking research studying riding surfaces in multiple equine disciplines. Results stand to assist footing designers in reducing the chances of injury to horses as they create their next generation of products.



**Dr. Dorothee Bienzle** says, "Our research on heaves in horses has yielded fascinating insight into how the horse lung defends itself against inhaled moulds and dust particles, and how some of the genes involved in this defense have evolved over time."



**Dr. Katrina Merkies** research into horse-human interaction has shown that i) horses do respond positively to calm, pleasant voices; ii) human body posture directly influences horse responses in the round pen; and iii) contrary to common belief, horses are actually less stressed around nervous humans.



**Read the latest news on surfaces at:**

<http://EquineGuelph.ca/news/index.php?content=382>

**From the Ground Up**

Thomason explains the need for cushion & maintenance are shared by different disciplines (racing, jumping...) but purpose built footings each have their challenges.



# YEARS of Innovative Research



**Dr. Tracey Chenier** is unraveling the mysteries associated with freezing embryos



*photo: Kathleen Kocmarek*

for future transfer in the horse. Freezing the embryo is a common practice in cattle but difficult in

horses, due to its unique capsule. Perfecting the freezing process would make international transport of horse embryos a reality.

**Dr. Kim McGurrin & Dr. Peter Physick-Sheard** have had enormous



*photo: Kyle Rodriguez*

success treating arrhythmia in performance horses with a technique they developed using transvenous electrical cardio-version. With a response rate over 98%, this technology has put many a racehorse's career back on track.

**Dr. Scott Weese** is using 'next generation sequencing' to research the mysteries of one of the



most complex bacterial populations on the planet - the equine intestinal tract. Links to gut flora interaction and healthy immune function have been drawn. Further understanding could prove useful in prevention of digestive conditions, metabolic disorders and allergic disorders.

**Dr. Judith Koenig's**

research has yielded wonderful



advances in wound healing. Her work involving shock wave treatment has shown benefits in reducing proud flesh and decreasing healing time of large wounds. Koenig is also collaborating on very promising research in tracking stem cells for use in regenerative therapies.

**Dr. John Prescott** regards the greatest innovations of the research from his



laboratory as being the discovery of the virulence plasmid of *Rhodococcus equi*, obtaining the genome sequence of a foal virulent strain, and the proof of principle that foals can be fully

protected by 3 weeks of age by oral immunization against *Rhodococcus equi*.

Examples of ongoing research topics include: vascular pathologies (Dr. Arroyo), stem cell therapy (Dr. Betts), diagnostic imaging (Dr. Chalmers), colic (Dr. Cribb), neuromuscular disease (Dr. Hanna), bioengineering (Dr. Runciman), colitis & *C. difficile* (Dr. Staempfli), pain management (Dr. Valverde) and respiratory medicine (Dr. Viel).

*Follow this link to view more OVC researcher's profiles and learn about their exemplary work*

<http://EquineGuelph.ca/research/researcher.php>

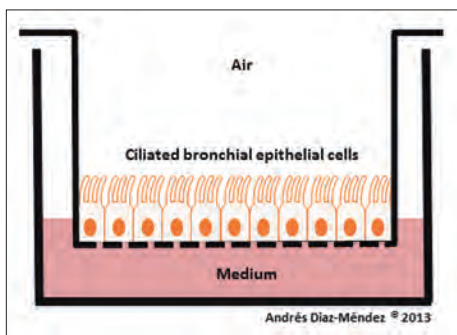


## Rampant Rhinos – A vaccine on the horizon?

As a horse owner, you are very aware of common influenza viral infections and the equine herpesvirus, commonly known as rhinopneumonitis. You may not be aware of the other viral groups simultaneously vying for your equine host that can put them out of commission for weeks or even months with respiratory ailments diminishing their ability to perform.

Ontario Veterinary College researchers, Dr. Laurent Viel and Dr. Andrés Diaz-Méndez have recognized in a recent equine respiratory outbreaks study in Ontario, the role of equine rhinitis viruses. The prevalence of these viruses in the equine horse population in Ontario is equally as high as the influenza virus infections.

To confirm the potential role of equine rhinitis A virus in equine respiratory infection, they were able to show that experimentally infected horses develop clinical disease similar to influenza and herpes virus. They have been on a mission which has been contributing to the development of an equine rhinitis A virus vaccine as a preventative measure against a virus that can lead to the most common respiratory diseases.



Drs. Viel & Diaz-Méndez are able to study the effect of viral infections on airway epithelial cells using an in-vitro model

Little is known about the equine rhinitis viruses A and B, (ERAV & ERBV) but equine rhinitis A virus has been identified in 65% of cases in a prevalence study in Ontario. Equine Influenza was found in 56.5% of affected horses and 17% of horses were found to have both ERAV and

influenza simultaneously which suggests some equine respiratory disease outbreaks may be initiated by a combination of these viruses.

Fever, swollen lymph nodes and mucus production are clinical signs of equine rhinitis viral infections. The diagnosis of these infections is challenging without laboratory testing using both a nasopharyngeal swab and a serum sample taken within 24 – 48 hours of signs.

### About rhinitis A virus

Originally thought to be a fairly trivial illness, only affecting the upper airway; rhinitis A virus is now known to replicate in both the upper and the lower airways and may lead to inflammatory airway diseases. Viel begins by comparing rhinitis viral infections to the common cold, “We became particularly interested in the equine rhinitis viruses because they have discovered that in humans, human rhinovirus is associated with asthma development and asthma exacerbations.

“If a child contracts human rhinovirus at a young age, their chances of developing asthma increase. Viel and Diaz-Méndez are similarly trying to figure out the role equine rhinitis viruses may be playing in exacerbating horses with respiratory airway obstruction (also known as heaves).

With similar replication and transmission (nasal and aerosol) as other respiratory viruses, equine rhinitis

viruses can be hard to detect without laboratory testing using both a nasopharyngeal swab and serum sample. Two blood samples are taken 12 – 14 days apart to look at antibody levels (titers) responding to common equine respiratory viruses. Diaz-Méndez says, “Timing is crucial for virus isolation - ideally in the first 24 hours of clinical signs.” Three weeks of rest is a recommended precaution to guard against the risk of the disease worsening and putting the horse at risk of persistent airway inflammation.

Diaz-Méndez and Viel have been successful in reproducing the disease in an experimental study. Ongoing studies include using a model airway (in-vitro) to challenge bronchial epithelial cells with equine rhinitis viruses and then study the effects on the airways mucosal surface. This will allow further study of how the virus and allergens affect the cells. Information from their intensive research on isolating the rhinitis virus and studying its effect on both the upper and lower airways have contributed greatly to the development of a vaccine which is conditionally approved in the US at the present time and likely available in Canada as early as next year.

Funding for this research has been provided by Boehringer Ingelheim (Canada), E.P. Taylor Research Fund and Equine Guelph.

Story By - Jackie Bellamy

Check out our Healthcare Tools  
<http://EquineGuelph.ca/education/healthcare.php>

# What are the Protocols for Dealing with Highly Infectious Disease like EHV-1 in Canada?

The short answer (to the surprise of many) is that there is no pre-established nation-wide protocol for most equine disease outbreaks. Ontario Veterinary College researcher, Dr. Scott Weese explains, "Every outbreak is managed differently, based on the disease, the types of horses, where exposure might have occurred and a range of other factors." Typically, a disease like EHV isn't going to be noted during a horse show, since it takes some time for illness to develop after exposure. Therefore, the response is more of an investigation of what happened at the show, why and how it can be prevented in the future, and of course trying to prevent further transmission in the community (e.g. identifying exposed horses, communicating with people who have been to the show with recommendations to quarantine and test exposed horses and potentially all horses, surveillance for ongoing transmission from horses that have left the show).

With horses, there's no regulatory body with a mandate to oversee (and fund) this type of investigation unless it's a federally reportable disease like rabies (and even then, assistance may not be forthcoming). Some provinces have more authority and interest (e.g. the Animal Health Act in Ontario gives the province a mandate and powers to intervene) but often investigation is not a priority for regulatory bodies and it's left to whoever is around and interested. There are some good outbreak management guidelines from different institutions or groups (e.g. the American College Veterinary Internal Medicine consensus statements on EHV and strangles) but there is no standard approach. Because testing costs are placed on the owners, responses can be quite varied since getting people to test when indicated can be a challenge. Additionally, getting people to follow quarantine recommendations is a challenge because of inability to effectively quarantine on their farm or unwillingness to do so (usually more the latter). So, each outbreak ends up being managed quite differently.

Weese specializes in tracking disease and infection control.

Content from this article is taken directly from WormsAndGerms.com, an informative blog, co-authored by Weese and Dr. Maureen Anderson. Weese has also been involved with the development of Equine Guelph's Biosecurity eWorkshop which helps horse owners and facility operators learn to identify and reduce the risks associated with infectious disease. "Increasing knowledge of best biosecurity practices stands to benefit the horse industry by reducing the risk of disease transmission and, in turn could create a huge positive economic impact and prevent a potential catastrophic outbreak," says Weese. "Whether you are travelling to a trail head or heading for an event as grand as the Pan Am Games, there are many practical steps you can take to reduce the chances of your horse contracting an infectious disease."

In general, the key points to outbreak investigation and management are:

- **Identification of a problem**
- **Diagnosis of the problem**
- **Communication to let people know what's happening**
- **Identify potentially exposed and infected horses**
- **Quarantine, if appropriate (usually some form of quarantine is indicated, but not necessarily for all diseases)**
- **Develop testing recommendations**
- **Develop and communicate a plan to maximize compliance with quarantine and testing**
- **Create a way to centralize data collection and communications, so that a clear picture of what is happening is obtained**
- **Keep people in the loop as the investigation ensues to maximize compliance and decrease loss of compliance because of boredom or fatigue with the recommendations**

Story By – Dr. Scott Weese



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Next offering of online  
Biosecurity eWorkshop  
is Oct 21 - Nov 3.  
Register at:  
<http://EquineGuelph.ca/eworkshops/biosecurity.php>

# The 'Year of Colic Prevention' Has Been Eventful!

In response to a high industry demand, Equine Guelph has been giving horse owners ample knowledge to digest with its new colic prevention programs. Targeted at reducing colic risk through teaching best management practices, the first offering of Equine Guelph's Colic Prevention eWorkshop sold out quickly. The Colic eWorkshop will join the lineup of Equine Guelph's popular two-week online short courses which already include: Biosecurity and Safety & Behaviour.

The year began with helpful colic prevention tips appearing monthly in Equine Guelph's E-News. These tips along with the introduction of HEALTHflash (seasonal health care reminders), have resulted in an enormous increase in E-News readers. To take advantage of the Equine Guelph Colic Prevention Program:

- 1) Sign up for monthly E-News at <http://equineguelph.ca/news/signup.php>
- 2) Download the PDF poster of all twelve Colic Prevention tips at: [www.EquineGuelph.ca/education/healthcare.php](http://www.EquineGuelph.ca/education/healthcare.php)
- 3) Get a customized colic risk rating for your horse with the new free online tool at: [www.EquineGuelph.ca/Tools/colic\\_risk\\_rater.php](http://www.EquineGuelph.ca/Tools/colic_risk_rater.php)
- 4) Register at <http://equineguelph.ca/eworkshops/colic.php>, for two-week online short course running fall, 2013 & winter, 2014 for only \$75

Investment in this project has been provided by Agriculture and Agri-Food Canada through the Canadian Agricultural Adaptation Program (CAAP). In Ontario, this program is delivered by the Agricultural Adaptation Council.



Agriculture and Agri-Food Canada

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**COLIC Risk Rater**

REDUCE YOUR **COLIC RISK**

## EVENTS

Mark your calendar!

**Colic Prevention eWorkshop**  
Sept 23 – Oct 6

**Milton Fall Fair**  
(EquiMania!) Sept 27 - 29

**Erin Fall Fair**  
(EquiMania!) Oct 11 - 14

**Biosecurity eWorkshop**  
Oct 21 – Nov 3

**Royal Agricultural Winter Fair**  
(EquiMania!) Nov 1 - 10

**Equine Guelph's Online Courses**  
(Next offering January 2013)

Anyone wishing to excerpt Equine Guelph should contact:  
Jackie Bellamy, ext 54756  
[jbellamy@uoguelph.ca](mailto:jbellamy@uoguelph.ca)

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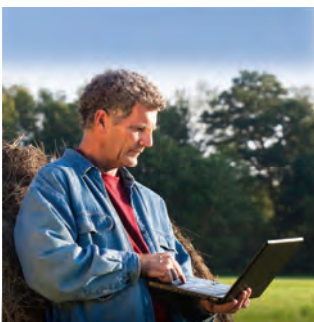
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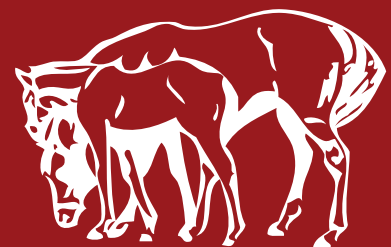
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