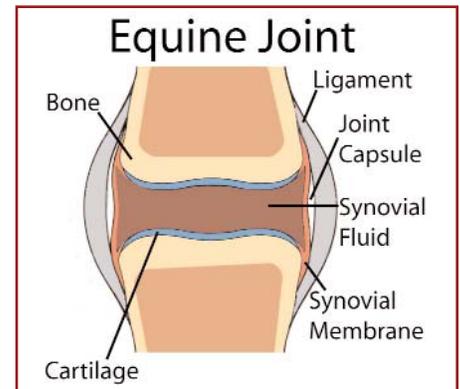


Treating joint infections - hope for tomorrow

Once again Ontario Veterinary College clinicians are leading the way in equine research, this time possible treatments of joint and bone infections are being investigated. Joint infections are challenging to treat and can lead to a debilitating situation for many horses. The joint capsule is like a bubble which prevents blood from directly entering it. Small blood vessels lay along the outside of this bubble, allowing movement across the thin barrier, providing nutrition to the structures within the capsule and removal of waste from it. The joint can become infected if bacteria are able to enter the joint capsule (through a wound or injection site). The 'bubble' structure prevents effective delivery of antibiotics to the site of infection. This allows the infection to go relatively unchallenged by the body. Treatment often involves injection of antibiotics into the joint and 'flushing' of the joint capsule which often produces mixed results and risks further infection by continually entering an already infected joint.



Dr. Ludovic Bouré, with Drs. Nicola Cribb, Scott Weese, Brad Hanna and Shawn Mattson, has been working to improve the efficacy of joint infection treatment. In order to do this, they are going straight to the site of the infection by implanting a bio-absorbable disc carrying high concentrations of antibiotics that release slowly over time.

The implants are a combination of the antibiotic, amikacin, and a natural constituent of the joint called hyaluronan, which contains analgesic, anti-inflammatory, and cartilage protecting effects. This delivery of a high concentration of antibiotics directly into the joint by-passes the weaknesses associated with traditional joint injections. Although work has focused on joint infections, the implant could be suitable for use in other types of infections of the lower limb.

With further research, it is hoped that the information gained from this work will provide the foundation for clinicians to more effectively treat lower limb infections and improve the prognosis for affected horses to return to their regular activities.

- Brianne Henderson



- Photo by Grant Martin

Equine Guelph thanks Alan Meek

At the conclusion of Equine Guelph's 05/06 year, Dr. Alan Meek stepped down as Co-chair of the Advisory Council. "Dr. Meek played an instrumental role in the continued development and growth of the programs of Equine Guelph" stated Jim Whelan, President, Ontario Harness Horse Association. In 2004 Meek completed a 10-year term as dean of the Ontario Veterinary College. Equine Guelph's Advisory Council, committees and staff sincerely thank him for his dedication and leadership and look forward to his continued involvement with Equine Guelph.

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UPDATE ON EQUINE GUELPH'S WORK

Research

Equine Guelph has invested approximately \$370,000 in research for 2006-2007, supporting 19 projects related to equine health.

One project that received support will evaluate a rapid test for identification of methicillin-resistant bacteria, *Staphylococcus aureus* (MRSA) colonization in horses. MRSA infection and colonization is increasing in prevalence in North America. With any emerging infectious disease, rapid identification of affected animals and early implementation of infection control measures can prevent or reduce the introduction of the pathogen into a population; be it a farm, veterinary clinic or geographic region. While culture is now used to detect MRSA colonization, the availability of a test with a rapid turnaround time would allow for earlier identification of carriers. This study will evaluate a potentially valuable diagnostic tool to assist with MRSA eradication and control in horses.

To learn more about this project, and to read about our current and past research projects, visit Equine Guelph's website at www.EquineGuelph.ca.

Performance

One currently funded study being conducted by Drs. Jeff Thomason and Antonio Cruz, department of Biomedical Science and Clinical Studies, respectively, at the Ontario Veterinary College, compares racetrack surfaces using accelerometry and strain measurements on the hoof as biomechanical indicators of the hoof-track interaction. The goal of this study is to make an initial comparison of three track surfaces; dirt, turf and Polytrack™. There is a move to use artificial surfaces at many North American tracks. The consistent behaviour of the synthetic surface on tracks and in varying weather conditions are among its advantages. A second goal of this research is to help develop a practical and repeatable method for assessing whether high-speed exercise on specific track surfaces contributes to wastage, either catastrophic breakdown or by causing lameness, of the performance horse.

This study is part of a larger program aimed at early detection of bone injury, monitoring horses in training, and assessment of racetrack conditions.

Education

Management of the Equine Environment, part of the multi-award winning Equine Science Certificate online program, marked its 10th offering this fall. The course examines how to set-up and manage a safe and environmentally responsible horse housing establishment.

"I believe that we, as caregivers, hold a tremendous responsibility to our horses" says Susan Raymond, instructor. "The environment that we create for them has a considerable impact on their welfare, health and performance ability, regardless of discipline. The continued support from the industry of this course and the entire program shows the strong commitment being made for our horses."

The Equine Science Certificate is in its 4th year and has surpassed 770 students worldwide. This innovative online program enables horse enthusiasts to acquire the skills and knowledge to progress in the industry. It helps owners to improve equine welfare and health through continuing education delivered in a flexible and accessible venue. For more information please visit: www.EquineScienceCertificate.com.

Farm Safety Association and EquiMania! working together

Equine Guelph is pleased to announce a new relationship with the Farm Safety Association. Interactive web resources focusing on farm safety will be developed and added to the EquiMania! website (www.EquiMania.ca) with funds generously provided by the Farm Safety Association. A child's safety is such an important factor when spending time on a farm but is sometimes overlooked. "In Ontario, children and youth between the ages of 1 to 19 years of age account for nearly 18% of farm fatalities and 20% of injuries" says Dean Anderson, CEO and President of the Farm Safety Association. "We hope to increase awareness of the hazards typically found on farms and are excited about this new initiative with Equine Guelph."

Those visiting the EquiMania! website will learn that knowing and dealing with risks is critical to prevent or minimize accidents. Horse enthusiasts of all ages will discover how a horse communicates, sees and hears so that one can work safely with them. Visitors will also hunt for hazards both within the barn and around the farm. In addition, interactive learning resources on fire safety and emergency planning will be incorporated into the site.

Equine Guelph would like to thank the Farm Safety Association for supporting the EquiMania! Youth Education Program. Since 1973, the Farm Safety Association has been providing up-to-date health and safety information to Ontario's agriculture, horticulture and landscaping industries.

EquiMania! is for youth of all ages who love horses and promotes horse health and safety through our virtual barn (www.EquiMania.ca), annual Quiz Challenge and travelling Education Centre. Visit EquiMania! at the Royal Winter Fair (November 3-12) and the Ontario Equestrian Federation's Annual Conference (November 24-26).



New vaccine will challenge *Rhodococcus equi* as leading cause of disease in foals

The first vaccine for Rhodococcus equi will boost survival rates in foals and ease the minds of horse breeders' worldwide.

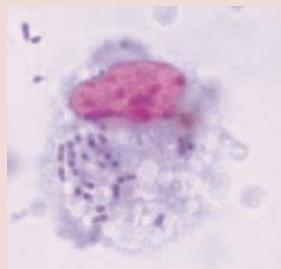
Every horse breeder feels a chill when hearing a foal cough. *Rhodococcus equi* is a bacterium which grows readily in horse manure and thus can easily build up on a horse farm. *Rhodococcus equi* commonly affects foals between the ages of 1-6 months, causing pneumonia with lung abscesses that essentially 'suffocate' the foal.

Dr. John Prescott, a faculty member at the Ontario Veterinary College, is working on a solution for this often heart-breaking infection. Prescott, along with his team, is developing a vaccine for *R. equi* that should stop the bacteria in its tracks.

When the airborne bacteria enter the foal's respiratory tract it generates a response from the body to release white blood cells called 'macrophages'. Under normal circumstances, these macrophages would scavenge the bacteria and notify the body to develop immunity, thus preventing infection. *Rhodococcus equi* is however no normal bacteria. When it is ingested by the macrophages, it is not killed but in fact takes over the macrophage's cellular equipment to make copies of itself. It is fascinating that while *R. equi* is busily making copies of itself, the body doesn't realize what is going on. The bacteria are effectively hiding from the foal's immune system since they are inside the macrophage cells. Not only does this process prevent the foal's immune system from responding appropriately, but additionally the bacterium seems to push the foal's immune response into developing in a way that is guaranteed to be unsuccessful in clearing infection. Macrophages full of *R. equi* bacteria then form abscesses in the lungs of the foal.



- Photo by Dave Landry



***Rhodococcus equi* growing inside an equine macrophage.**

- Mortality rate of foals with *Rhodococcus equi* is 28% since treatment with erythromycin and rifampin was implemented (prior to that, mortality rates were 80%).
- Of those foals which survive, only 54% go on to have at least one race.
- *Rhodococcus equi* is the leading cause of disease in foals between 1 and 6 months of age.

Development of a vaccine has been no easy task. Essentially, the vaccine, when finished, will protect foals by three weeks of age against an attack it doesn't realize is present until a much later stage. If a vaccine can boost the very young foal's ability to respond to the bacteria and prevent replication within the macrophages, it will provide huge relief to veterinarians and breeders alike that struggle every year with this infection.

Dr. Prescott and his team have gone to great lengths to understand the detailed mechanisms by which *R. equi* subverts the immune response and are now using this knowledge to develop the long awaited vaccine. This project is funded by the Natural Sciences and Engineering Council of Canada and Equine Guelph.

- **Brianne Henderson**

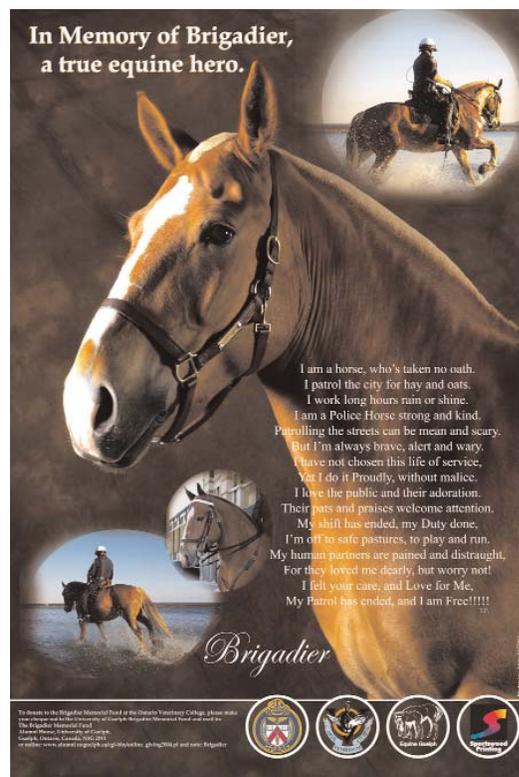
Brigadier poster available

The memory of Brigadier continues to be honoured with the printing of a beautiful poster. A tribute, both in images and words, is made to Brigadier, the police horse that died in the line of duty, in the 24" x 36" colour poster. It is available for sale with proceeds going to the memorial fund created by the Toronto Police Service and the Ontario Veterinary College (OVC) following his death.

"We are deeply touched and honoured to accept gifts in memory of Brigadier," said Dr. Elizabeth Stone, OVC dean. "There is nothing quite like the bond between rider and horse."

All proceeds go directly to "The Brigadier Memorial Fund" at the Ontario Veterinary College to support clinical care for horses at the Large Animal Clinic. The printing of the poster has been graciously donated by Sportwood Printing in honour of the memory of this special equine hero.

To purchase the Brigadier poster, please contact Equine Guelph, (519) 824-4120, ext. 54205 or email: horses@uoguelph.ca. Posters are \$25 plus shipping and handling (\$12 for Ontario/Quebec, and \$18 for Western/Eastern Canada).



About Equine Guelph

Equine Guelph is the horse owner and caregiver's centre at the University of Guelph. We are dedicated to improving the health and well-being of horses through the provision and promotion of research, performance and education.

We welcome your views and encourage you to contact us with your comments or suggestions. Anyone wishing to excerpt *Equine Guelph Update* should contact:

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www.equineguelph.ca

Equine Guelph also publishes a bi-monthly e-newsletter, *Horses@Guelph*. To subscribe to the e-newsletter, please visit www.equineguelph.ca

Equine Guelph Donation Form

I would like to make a donation of \$ _____

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(Please make cheques payable to University of Guelph/ Equine Guelph. An official receipt will be sent for the donation. Charitable registration # 10816 1829 RR 0001.)

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Area of Greatest Need Research Performance Education

Equine Guelph also offers a memorial program to honour deceased horses or people. Please call the office for details.

Please return to:
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 Tel: 519-824-4120 ext 54205 Fax: 519-767-1081