



# Equine Guelph Update

Volume 5, Number 1

## Following the hoof prints of Equine Guelph

University of Guelph Centre celebrates 5th Anniversary

With Equine Guelph's 5th Anniversary just around the corner, plans are underway to showcase this celebration of partnerships. Founded in 2003, Equine Guelph is the horse owner's Centre at the University of Guelph, supported and overseen by equine industry groups, and dedicated to improving the health and well-being of horses. The success of Equine Guelph is a true reflection of the equine industry joining together with the University for the good of the industry as a whole. Equine Guelph's partners include: the E.P. Taylor Equine Research Fund, the Horsemen's Benevolent and Protective Association of Ontario, the Ontario Equestrian Federation, the Ontario Harness Horse Association, the Ontario Ministry of Agriculture and Food, the Ontario Racing Commission and the University of Guelph.

The industry has much to celebrate. Results of the 2006 Census of Agriculture show that the number of horses in Canada has increased an incredible 16.7% since the previous 2001 Census and 28% in the past 10 years. Ontario's horse population is estimated at 379,412, an increase of approximately 54,000 horses over the past four years. These numbers directly translates into people in the industry with, for example, more than 65,000 people in Ontario working in the racing industry alone. The economic impact of the horse industry is considerable with more than \$2.6 billion of Ontario's income being generated annually by the horse racing and breeding industry.

Equine Guelph's mandate includes all equine activities at the University of Guelph. Equine Guelph focuses on five interrelated areas: research, education and training, performance, healthcare and industry development. These roles support the horse throughout its lifespan by providing a comprehensive continuum of care that optimizes health, addresses performance issues and fully supports the diagnosis and treatment of sick and injured horses. To build this continuum of care, Equine Guelph brings all of the resources at the University of



Photo by Melanie Prosser

Guelph together in partnership with the equine industry. The University of Guelph has a long and proud history of providing service for horses and horse owners, dating to the establishment of the Ontario Veterinary College in 1862. Today, the industry benefits from Guelph's unique combination of resources and campus-wide expertise in the life sciences build upon more than a century of caring for horses at the University of Guelph.

The equine industry benefits from Equine Guelph's successes. Over the past 5 years Equine Guelph's education program has grown in leaps and bounds, and continues to evolve and offer quality, award-winning programming for the equine industry. The

research program has surpassed important milestones including gaining new understanding of; the transmission and diagnosis of MRSA infectious disease, colic, the impact of horse behavior on racing performance, the incidence of horse injuries at the racetrack and the use of new diagnostic tools. Equine Guelph's efforts in the areas of performance and healthcare continue to support both the horse athlete and the beloved backyard pony with state-of-the-art facilities and equipment.

The horse industry, University of Guelph and Equine Guelph, a celebration of partnership – join Equine Guelph to celebrate. Visit [www.EquineGuelph.ca](http://www.EquineGuelph.ca) for news of upcoming events.

- Susan Raymond

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## UPDATE ON EQUINE GUELPH'S WORK

### Healthcare

Crews broke ground for the Ontario Veterinary College's (OVC) new Large Animal Isolation Unit this winter.

When completed in late 2008, the \$5.6-million facility will feature state-of-the-art housing that will enable OVC's equine specialists to treat patients more effectively.

"The Isolation Unit allows us to completely separate potentially infectious patients from other horses that are admitted to the Large Animal Clinic for basic evaluations or diagnostic procedures," states Neil Blair, the Teaching Hospital's acting facilities manager.

The Large Animal Isolation Unit is part of a large infrastructure project funded by Agriculture and Agri-food Canada, Ontario Ministry of Agriculture, Food and Rural Affairs, the University of Guelph, private and corporate donations.

The 9,000 sq. ft. facility will include 12 stalls, a treatment room, diagnostic equipment, video monitoring, a nursing station and biohazard containment equipment. Each stall will have dual access, with interior and exterior doors improving efficiency of clinicians and staff.

"This major improvement to the Teaching Hospital will enhance our ability to provide our clients with the best in veterinary health care," says Wayne Coveyduck, executive director of the OVC Teaching Hospital.

To keep informed on the latest developments, visit Equine Guelph's website and sign up for the E-news.

### Research

Equine Guelph's Research Program has invested over \$500,000 in research projects for 2007-2008. With the growth of the industry, the need for equine research continues to increase and researchers at the University of Guelph strive to meet that need.

One study that received support will evaluate the survival of the bacteria, *Streptococcus equi*, on environmental surfaces under normal outdoor conditions. *Streptococcus equi* is the cause of strangles, a common and often highly frustrating disease, which can occur both sporadically and in outbreaks. Management of affected horses and their environment can be problematic, both because of the nature of the bacteria and the lack of information regarding the bacteria's ability to survive on typical surfaces found on farms. Direct contact with infected or colonized horses is believed to be the main source of infection, but these horses can shed large numbers of *Streptococcus equi* in nasal discharge or pus, and this raises concerns about the role of the farm environment in disease transmission. Dr. Scott Weese, Ontario Veterinary College researcher, and colleagues will evaluate *Streptococcus equi* survival on fencing and feed container surfaces under normal outdoor environmental conditions and will establish important infection control protocols for use on farms.

To learn more about current and past research projects please visit:

[www.EquineGuelph.ca](http://www.EquineGuelph.ca)

### Education

Equine Guelph and the Office of Open Learning are pleased to announce new equine continuing education opportunities through the University of Guelph – The Diploma in Equine Studies and the Certificate in Equine Business Management. These will be offered in addition to the multi-award winning Equine Science Certificate.

The new Diploma in Equine Studies consists of ten courses; the original six first offered in the Equine Science Certificate as well as Equine Behaviour, Equine Genetics, Equine Integrated Therapies and Equine Business Management.

The Certificate in Equine Business Management consists of five core courses; Equine Business Management, Management of the Equine Environment, The Equine Industry, Marketing & Communications in the Equine Industry, and Financial and Risk Assessment; and one elective selected from Equine Journalism, Equine Event Management or Equine Facility Design.

Finally, the Equine Science Certificate will be changed in May, 2008 to four core courses and two electives. The core courses will be Management of the Equine Environment, Equine Nutrition, Health & Disease Prevention and Functional Anatomy. Students will be able to choose 2 electives from Exercise Physiology, Growth & Development, Equine Behaviour and Genetics. These changes will allow students to customize the program to suit their individual needs. Students can choose to continue their studies to receive the Diploma in Equine Studies.

The conceptual drawing illustrates the north elevation of the Large Animal Isolation Unit. Construction began this winter with completion scheduled for late 2008.



# Optimism Stems from Stem Cells

University of Guelph researchers look to stem cell therapy to treat cartilage injuries in horses

Stem cell research has become one of the hottest topics in the human research field, but to researchers at the University of Guelph, it means optimism – especially for horses facing career-ending cartilage injuries.

Currently, there is no effective long-term treatment to repair a cartilage injury in the joint, one of the leading causes of early retirement in horses. The tissue from the cartilage heals extremely slowly and the damaged (or missing) tissue is often irreplaceable, usually leading to osteoarthritis. Enter stem cell therapy and Dr. Dean Betts and doctoral candidate Dr. Thomas Koch, Ontario Veterinary College (OVC) researchers. A stem cell is a cell that can copy itself, divides extensively and with ‘encouragement’ – can diversify itself into a new tissue (such as cartilage). This new tissue may then be transplanted into the joint, replacing the damaged or missing tissue.

This sounds amazing, but there’s one major problem! The stem cells do not easily adhere to the surrounding healthy cartilage or bone, especially when the horse bears weight on its legs. “Currently, there is no feasible transplanting method in existence for horses’ joints,” claims Betts. “In horses, it is impossible to keep them immobile, so it is necessary to devise some way of holding the cells in place. We are looking into the potential of modifying the mosaic grafting technique of bone or cartilage, pioneered by Dr. Mark Hurtig, OVC, to keep the transplanted tissue in place for the healing process to begin in the joint.”

In conjunction with experimenting in potential grafting techniques, Betts and Koch are investigating the best and most practical kind of stem cells to be used as part of this procedure.

Betts and Koch are focusing on stem cells taken from the umbilical cord blood of the horse. Until now, there have been no other scientific reports on isolating horse stem cells from the blood of the umbilical cord. “Cells taken at birth are younger and have better capabilities of dividing and creating different types of tissues,” explains Betts. “Also, younger cells are less likely to be rejected when transplanted



**First horse to be treated at OVC with stem cells (l-r): Dr. Thomas Koch, Heather Baker-Sullivan (owner), Santiago (patient), Drs. Antonio Cruz and Dean Betts.**

to heal cartilage.” He adds, “Taking stem cells from the blood of the umbilical cord is non-invasive and more practical than from an embryo.”

After the birth of a foal, the cord is clamped and blood is extracted, stored at room temperature and sent off to the laboratory, where the blood and stem cells are separated. After one to two weeks, some of the stem cells begin to divide and form colonies.

To date, Betts and Koch have found that the blood from the umbilical cord contains mesenchymal stem cells – cells that are the building blocks of bone, cartilage, fat, muscle and tendon. This important discovery is encouraging to Betts and Koch, and confirms that they are heading down the right stem cell path.

“The horse is an excellent model for human orthopaedic studies,” adds Betts. “The cartilage thickness of horses most closely resembles that of human cartilage. Before we use the stem cells on humans, we need to test it on animals first.”

Perhaps someday, when your horse recovers from a severe joint injury, you will be thanking researchers like Betts and Koch. Perhaps another day later, when you have an injured knee or shoulder repaired with stem cell replacement therapy, you’ll be thanking a horse!

This research is funded by Equine Guelph, the Natural Sciences and Engineering Research Council of Canada, the Ontario Ministry of Agriculture, Food and Rural Affairs and the Danish Research Council (Internationalization Research Grant).

– *Henrietta Coole*

## Recent treatments for the challenging cartilage injury

**Microfracture:** Because cartilage contains no blood, and blood promotes healing, micro-fractures are created around the injury by using a small pick, allowing blood and cells to seep into the injured site

**Mosaic Arthroplasty:** Osteochondral “plugs” of bone and cartilage are taken from a healthy, non-weight bearing site in the horse and transplanted into the injured cartilage

## 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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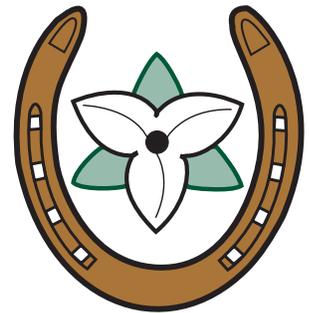
Equine Guelph also publishes a bi-monthly e-newsletter, *Horses@Guelph*. To subscribe to the e-newsletter, please visit [www.equineguelph.ca](http://www.equineguelph.ca)

## Equine Guelph's 5th Anniversary Celebrations kick off with OEF Ride

Mark your calendars and join the fun on the Ontario Equestrian Federation and Equine Guelph Ride, June 1, during Horse Week.

Equine Guelph's 5th Anniversary Celebrations continue ... Sign up for Equine Guelph's E-news to find about upcoming events.

[www.EquineGuelph.ca](http://www.EquineGuelph.ca)



## Would you like to help us?

We value your support.

For donations by phone, please contact: **1 888 266-3108**. To donate online please visit: **[www.EquineGuelph.ca](http://www.EquineGuelph.ca)** and click on "Supporters". You will find an online form.

Donations to Equine Guelph can also be made by credit card (Visa or Mastercard) or by cheque. Please make cheques payable to University of Guelph/Equine Guelph. An official receipt will be sent for donations. Our charitable registration number is 10816 1829 RR 0001.

**Please return to:**  
Equine Guelph Fund  
c/o Alumni House  
University of Guelph, Guelph,  
ON, N1G 2W1

## EVENTS

# Mark your calendar!

March 28 – 29, 2008  
Groom One Orientation Session

March 31 - April 5, 2008  
EquiMania! at Royal Manitoba Winter Fair

April 15, 2008  
Groom One Tuition Award Deadline

April 19 & 20, 2008  
Equine Anatomy Workshops

May 12 – October 26, 2008  
Groom One Online Begins

May 12 – August 3, 2008  
Equine Science Certificate Online Courses Begin

June 1, 2008 (Horse Week)  
Ontario Equestrian Federation/Equine Guelph Ride

July – August (Weekends), 2008  
EquiMania! at Woodbine's Family Area



Keep up to date! Sign up for Equine Guelph's bimonthly E-News at [www.EquineGuelph.ca](http://www.EquineGuelph.ca)