

EQUINE GUELPH

Research Update



Volume 19 - 2022

Welcome to Equine Guelph's digital newsletter
including researcher video interviews!

New Equine Fecal Transplant Research

Fecal transplantation has been very successful in treating humans with issues such as C-difficile infection, which is also a leading cause of diarrhea in horses. Ontario Veterinary College researcher, Dr. Luis Arroyo and his team are about to begin a study which could make treating gastro-intestinal (GI) issues in horses using fecal microbiota transplantation (FMT) a viable option. FMT has been given to horses with diarrhea, but so far, there is little evidence-based medicine to support that FMT is efficient in horses. One challenge is the path to the colon is much longer in a horse, precluding administration by enema for example, and therefore requiring delivery into the stomach via the nose instead. The inoculant needs to survive the trip to its intended destination. Another challenge is the preservation of a product that can be on hand when needed.

An altered composition of the intestinal bacteria is called dysbiosis and it is present in horses with intestinal diseases such as colitis and colic. Dysbiosis can also result during treatments involving antibiotics and it can take several weeks for gut microbiota to come back to normal.

"Dysbiosis refers to changes in the normal inhabitants of the gut, and that allows for certain bacteria to overgrow and potentially cause disease," says Arroyo. For example, if you give a horse too much carbohydrates, a certain type of bacteria will overgrow; produce a lot of lactic acid, and that can result in acidosis and can even cause laminitis. The treatment for horses with dysbiosis from colitis aims to decrease inflammation and resolve diarrhea faster.

The 95% success rate of FMT in humans by enema has not been replicable in horses. With an extraordinary long intestine, the FMT would likely never make it to the desired location of the large colon or cecum via enema. Working on an inoculum that is delivered nasogastrically means creating a product that will survive the trip through the stomach and small intestine with the bacterial contents minimally affected



to perform their intended task of re-establishing homeostasis when they reach the gut.

What makes transplantation of fecal microbiota a potentially desirable option is the speed with which one could re-introduce normal microflora into the guts of affected animals. A standardized process will be required to preserve important bacteria when obtaining, diluting, and mixing samples to be used in the FMT inoculum for the bacteria to survive and be viable. Currently over 80% of the bacteria present in feces die during FMT preparation because of exposure to Oxygen and freezing. Arroyo's study will work on optimizing bacterial viability using anaerobic conditions and identifying microbiota patterns associated with higher resistance to storage.

Using different additives will be one method explored for preserving the bacteria. Adding a cryo-preserved product will also be researched to ensure shelf life. *"We want to work on a standard inoculum that is repeatable, and we can have on hand, still viable to an animal that needs it,"* says Arroyo.

-story by Jackie Bellamy Zions

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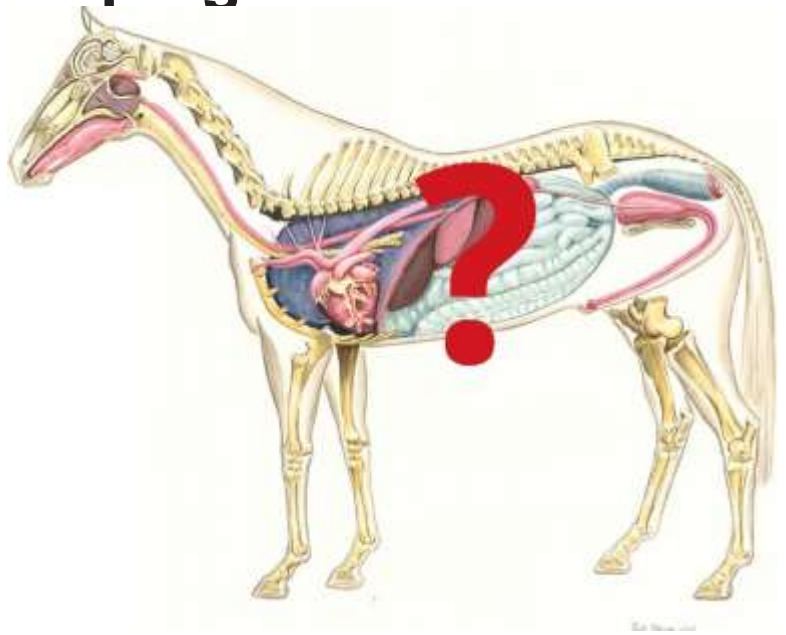
Flexible, online global community
Short Courses on TheHorsePortal.ca
12 week courses at EquineStudiesOnline.ca

2021 Research Recap

See How Research is Helping YOU!

Check out these research story links:

- ✚ EHV-1 research study & infection control tips
- ✚ Are most horses lefties?
- ✚ Equine Robo-gut helps OVC researchers study gastrointestinal diseases in horses
- ✚ What to do about ticks
- ✚ Impact of pollution on equine health
- ✚ Biosecurity gets a bump during EHV-1 concerns
- ✚ Research aimed at improving survival of horses with severe diarrhea and critically ill foals
- ✚ U of G Professor recognized for veterinary guidance during Pandemic
- ✚ OVC researcher contributes to global paper on equine asthma



Sign up for Equine Guelph monthly E-News to stay up to date on all the latest in health studies for 2022!

Anyone wishing to excerpt Equine Guelph should contact jbellamy@uoguelph.ca



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Future Research



2022 Funded Research Projects announced

- Improving fecal transplantation in horses for potential treatment of digestive diseases
- Fecal microbiome and metabolome in neonatal foals - understanding the gut microbial development in foals and revealing potential deviations in health.
- Comparative Anatomy: Equine Pulmonary Arterial Structure and Function to guide continued research into the cause of EIPH
- Investigating the hormones in the intestine that control glucose levels and insulin production in healthy horses and those with gastrointestinal diseases.
- Stem cells for the treatment of equine tendonitis
- Stem cells for the treatment of equine osteoarthritis
- Comparing rates of lidocaine and its effects during anesthesia and the recovery period in horses undergoing elective surgery.

[Read the lay summaries](#) for the Equine Guelph funded research studies.

EquiMania! gains more global followers!

EquiMania! had a virtual presence at the Royal Winter Fair again this year with all of its loyal sponsors pivoting with us. Thanks to their support of EquiMania! and Equine Guelph educational programs, that is not all that was on offer for horse-crazy youth missing out on the live version of the popular EquiMania! exhibit.



An online course geared towards keeping youth engaged in learning about horses was developed and offered from November 6, 2020 – Feb 6, 2021.

The global reach of the free online Horse Behaviour & Safety course was reason

enough to repeat the offer from November 2021 – January 2022. This course has now engaged over 1,000 youth thanks to our amazing sponsors!

Thank you: ESSO, Kubota Canada, Ontario Equestrian, SSG Gloves, Shur-Gain/Trouw, System Fencing and Workplace Safety and Prevention Service.

The [Horse Behaviour and Safety for youth](#) online course is currently available on demand for the low price of \$25 on TheHorsePortal.ca.

EVENTS

Mark your calendar

Equine Guelph Summer
[12-week online courses](#) begin
May 9

[TheHorsePortal.ca short online courses:](#)

Equine First Aid
Feb 7 – 14

Fire/Emergency Preparedness -
Feb 28 – Mar 7

Introduction to Forage -
Mar 21 – Apr 1.

Business 101 – On Demand.

*Visit [TheHorsePortal.ca](#) for a list of exclusive racing industry courses