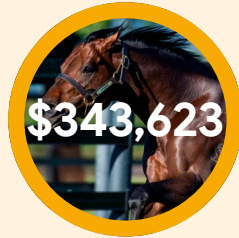


Industry update

Vol. 2 No.1



17
Current
projects



\$343,623

**RD&E
investment
Jan - March
2020**



\$1.4M

**RD&E
investment
committed
from 1 April
2020**

Thoroughbred Horses Advisory Panel

- Prof. Nigel Perkins (Chair)
- Dr Catherine Chicken (Deputy Chair)
- Derek Field
- Jacqueline Stewart
- Dr Craig Suann
- Tas Reilley
- Annelies McGaw (AgriFutures Australia)

No horsing around when it comes to equine fertility

Looking at them you wouldn't think thoroughbred horses would have any issues with fertility but looks can be deceiving. Thanks to the ground breaking work of University of Newcastle postdoctoral researcher Dr Zamira Gibb, a team of researchers and funding from AgriFutures Thoroughbred Horses Program, that trend is being reversed with a small device that can predict stallion sperm quality at the time of breeding.

Dr Gibb works with the thoroughbred horse industry including the Hunter Valley Equine Research Centre and equine reproductive specialists, using natural methods to improve fertility and improve reproductive outcomes, with a focus on stallions.

Dr Gibb and her team at the University of Newcastle have been trialling a device which allows a test to be performed on-farm which is a greater predictor of the success of a cover than conventional methods.

To read more about this project and the AgriFutures Thoroughbred Horses Program visit agrifutures.com.au/thoroughbred-horses

Project overview: Science fact not fiction - Detecting gene edited racehorses

AgriFutures Australia Project No:
PRJ-011777

Primary Investigator: Dr Natasha Hamilton, Equine Genetics Research Centre, Racing Australia

The horseracing industry relies on the principle of fair play in competition. This is important for both for the welfare of its horses and consumer confidence in wagering, a major source of income to the industry. Antidoping control is one way the industry can protect itself from breeches to integrity.

Gene doping is the non therapeutic transfer of genes or genetically modified cells (gene therapy) to artificially enhance athletic performance in humans and animals. The World Anti-Doping Agency (WADA) and horseracing authorities have been aware of the threat of gene doping for the racing industry for around 15 years.

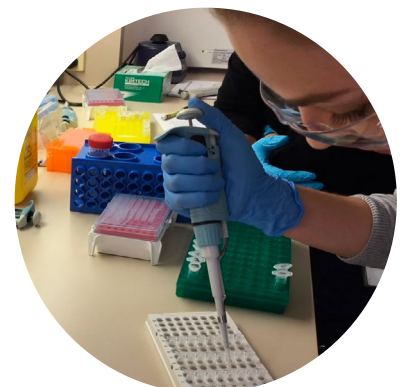
Technology has continued to evolve and gene editing, a more refined way of performing gene therapy that is most successful when performed on an embryo, is now attracting the attention of the thoroughbred industry. The technology presents a new challenge for the industry particularly given all forms of artificial reproductive technologies are banned in the breeding of thoroughbred horses.

Currently, the only way to identify whether a horse has been gene edited is to compare its DNA

sequence to that of its parents via whole genome sequencing (technology that maps the horse's entire blueprint of DNA). Differences in a foal's sequence compared to its parents could indicate an artificially created mutation – the result of gene therapy. While effective this approach is expensive, requires specialist knowledge interpret the analysis, and creates a large amount of data that must be securely stored.

This project will develop a cheaper and easier to use method, compared to the currently available method, to detect gene editing in horses. It will give Australian and International Stud Books a relatively cheap and easy method to identify illegally edited horses. This will help the industry uphold integrity and protect the welfare of its most important participants.

Read more about this project agrifutures.com.au/thoroughbred-horses



Current projects

Project ID	Project Name	Finish	Principal Investigator	Research Organisation
PRJ-011357	Postgraduate Scholarship - UoA Laura Nath	1/12/2019	Nath, Laura	The University of Adelaide
PRJ-011628	Rapid diagnosis of infectious agents of equine reproductive loss	30/01/2020	Jenkins, Cheryl	NSW DPI
PRJ-011237	Computational modelling of limb loads from galloping horses on different tracks	30/04/2020	Whitton, Chris	The University of Melbourne
PRJ-011268	PhD Understanding, reducing the effects of heat stress on TB stallion fertility	1/07/2020	Swegen, Aleona	The University of Newcastle
PRJ-011248	The uterine microbiome- key to equine infertility?	31/08/2020	Krekeler, Natali	The University of Melbourne
PRJ-011159	Non-invasive ventilatory support for foals	31/10/2020	Raidal, Sharanne	Charles Sturt University
PRJ-011233	Improved bacterial identification and antimicrobial susceptibility testing	31/12/2020	Raidal, Sharanne	Charles Sturt University
PRJ-011758	Coxiella burnetii infection in association with equine abortion	31/12/2020	Devlin, Joanne	The University of Melbourne
PRJ-011192	Improving jockey safety through virtual reality and biomarkers of concussion	15/05/2021	Wright, Brad	La Trobe University
PRJ-011777	Science fact not fiction: Detecting gene edited racehorses	16/06/2021	Hamilton, Natasha	Racing Australia Limited
PRJ-011191	Improving the detection of parasitic infections and control strategies of horses	30/11/2021	Jabbar, Abdul	The University of Melbourne
PRJ-011188	Maintaining welfare and integrity in Australian Racing	20/12/2021	Noble, Glenys	Charles Sturt University
PRJ-011271	Wellbeing: Racing demographics, reasons for retirement & post racing destinations	30/12/2021	Flash, Meredith	The University of Melbourne
PRJ-011402	Understanding the epidemiology of Chlamydia psittaci infections in mares	31/12/2021	Timms, Peter	University of the Sunshine Coast
PRJ-011712	A Novel Device for the On-farm Assessment of Stallion Sperm Fertility	31/05/2022	Gibb, Zamira	The University of Newcastle
PRJ-011748	Developing a novel diagnostic test for early pregnancy in the mare	31/12/2022	Swegen, Aleona	The University of Newcastle
PRJ-011719	The pathology and epidemiology of equine pregnancy loss	1/07/2023	Brookes, Victoria	Charles Sturt University