

# Pimelea project web content

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**Total funding:** \$1.5 million from Meat & Livestock Australia (MLA)

**Period:** Jan/18 –April/2021

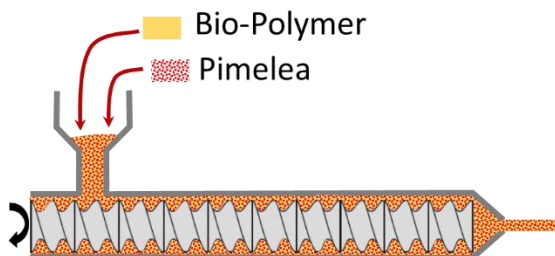
This project seeks to capitalise on the variable response that is observed in cattle with ingestion of plant toxins by isolating microbes capable of degrading toxins (for use as preventative probiotics), and investigating toxin absorbents and/or biopolymers to foster toxin-degrading microbe populations. The approach is to devise strategies to enable toxin breakdown in the rumen before absorption into the bloodstream. Initially this research will be applied to the Pimelea toxin, simplexin, which causes frequently fatal poisoning in cattle grazing inland pastures of Australia. Project aims to produce a rumen inoculum containing microbes able to detoxify the Pimelea toxin, secondly to investigate biopolymer for slow-release systems for the rumen that would have broad utility across a range of plant toxins. Thirdly, toxin sponges or absorbants such as clay which could act as absorbent as well as slow release component to deliver low toxins doses, will be explored.

Our CTPR role in this project is to develop a biopolymer composite for slow toxin release. This will cover the manufacturing, characterisation and performance of the device. The research streams are divided as:

- Develop a novel biopolymers for capacity to hold and release simplexin under simulated rumen conditions in vitro
- Model simplexin release through polymer degradation model.

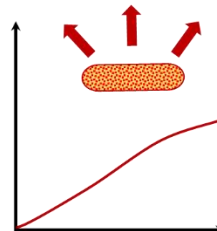
## Manufacturing:

Twin screw extruder



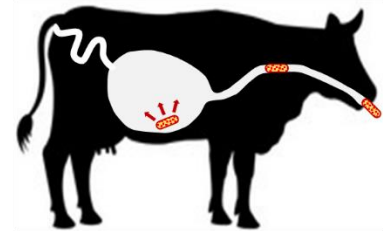
## Characterisation:

Polymer degradation  
Toxin release



## Performance:

Efficacy in cow rumen environment



This project is in collaboration with Queensland Alliance for Agriculture and Food Innovation (QAAFI) at UQ and Department of Agriculture and Fisheries (DAF) at Ecosciences Precinct, it involves over 10 researchers (either full time or part time), several technicians and 3 PhD students.

There are opportunities for undergraduate thesis and summer students to be involved in this project.

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Other related links:

<https://qaafi.uq.edu.au/article/2018/07/new-project-targets-pimelea-poisoning>

<https://qaafi.uq.edu.au/article/2017/12/mla-fund-more-pimelea-research-develop-rumen-inoculum>

<https://www.mla.com.au/news-and-events/industry-news/new-research-targets-pimelea-poisoning>

[https://futurebeef.com.au/wp-content/uploads/2011/09/Understanding\\_pimelea\\_poisoning\\_of\\_cattle.pdf](https://futurebeef.com.au/wp-content/uploads/2011/09/Understanding_pimelea_poisoning_of_cattle.pdf)