

# Trojan Horse Drug Delivery: for treatment of parasitic infections



Parasitic infections and related diseases affect millions of people, livestock and companion animals globally. Platyhelminthes and Apicomplexan protozoa are two prominent groups of parasitic pathogens, which contribute to human and veterinary diseases such as, liver fluke, toxoplasmosis, cryptosporidiosis and malaria. These organisms rely on the uptake of lipids from their host for survival.

Targeting the parasites own mechanism of lipid uptake, researchers at The Australian National University (ANU) have developed an effective drug delivery method to treat such infections using a novel drug-lipid conjugate. Parasitic uptake of the conjugate leads to bioaccumulation of the anti-parasitic drug in the targeted cell and has been shown to be effective in virulent and transmissible stages of parasite development.

## Potential benefits

- > **Novel delivery method:** New means of delivering antimicrobial substances to parasites
- > **Utilization of existing metabolites:** Use of existing compounds and natural metabolites paired with the exploitation of the parasitic essential nutrient uptake mechanism
- > **Lower dosage:** Lower dose of drug-lipid conjugate needed in comparison to current drug only treatment for malarial parasites.
- > **High efficacy of drug mechanism:** The conjugate affects both the asexual parasitic stage (disease causing) as well as the sexual stages (transmissible stage).
- > **Improved drug efficacy of existing drugs and wide application range:** This method improves the drug efficiency in treatment for other related apicomplexan parasites.

## Potential applications

- > Agriculture
- > Veterinary
- > Anti-parasitic drugs
- > Biochemical
- > Pharmacology
- > Immunology
- > Therapeutics
- > Ecology
- > Blood product services

## Opportunity

ANU is seeking feedback from industry and/or a partnering arrangement with a commercial R&D entity to further develop the technology in return for an end option/license. ANU has the ability to facilitate and leverage government funding for a commercial research grant for the progression of this technology.

## IP status

The unique drug conjugate, its preparation and composition are owned by the ANU and is the subject of a patent application

## Key research team

- > Alexander Maier, Research School of Biology
- > Malcolm McLeod, Research School of Chemistry
- > Charles Claudianos, Research School of Population Health
- > Merryn Fraser, Research School of Biology
- > Blake Curtis, Research School of Chemistry
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