TECHNOLOGY

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A novel class of molecules targeting a broad range of infections

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Background

Infectious diseases caused by parasites and bacteria are a serious global health problem with significant rates of morbidity and mortality. Due to the emergence of treatment-resistant strains of many pathogens, there is a clear need for novel approaches to infectious diseases.

Researchers at the University of Calgary have developed a library of small molecule pro-drugs that are converted into toxic metabolites by enzymes unique to bacteria and protozoa but not found in humans, potentially making these drugs less toxic to the host. Lead molecules identified from *in vitro* infectivity assays have IC_{50} values of 120nM and 60nM for *L. donovani* (which causes Leishmaniasis, the second largest parasitic killer in the world) and *P. falciparum* (which causes Malaria, the world's largest parasitic killer), respectively.

Areas of Application

- First-in-class agents with broad activity against protozoan infections such as Malaria and Leishmaniasis
- Compounds are also potentially active against bacteria

Competitive Advantages

- Compounds target fundamental, evolutionary conserved enzymes of the purine salvage pathway present in protozoa and bacteria, but not mammals
- Compounds are modified to prevent recognition by enzymes present in human cells
- Lead molecules demonstrate *in vitro* activity in the nM range with minimal toxicity in mammalian cells

Stage of Development

- A library of ~100 small molecules, many of which are novel, have been synthesized and evaluated *in vitro* for activity against a variety of parasites
- Lead molecules have been identified with *in vitro* activity in the nM range against *L. donovani* and *P. falciparum*
- Compounds are currently being evaluated for activity against gram negative bacteria
- We are seeking industry partners who can assist in the evaluation of our compounds in animal models of disease and in expanding our pre-clinical development program