



TECHNOLOGY

Novel Therapeutics to Treat Giardiasis

OVERVIEW

Introduction

The human pathogen *Giardia lamblia* is an anaerobic protozoan parasite that causes giardiasis, one of the most common waterborne diarrheal diseases worldwide. Giardiasis has an estimated worldwide prevalence of 280 million cases annually. Furthermore, *Giardia* infections contribute substantially to the 2.5 million annual deaths from diarrheal disease. Although several drugs are available for the treatment of giardiasis, resistance to these drugs has been reported and is likely to increase, recurrent infections are common, and existing drugs have undesirable effects. The search for new drugs that can overcome the drug resistant *Giardia* strains is an unmet medical need. Furthermore, adopting novel drugs with newer mode(s) of action could potentially bring resolution to the resistance problem.

Innovative Technology

Inventors at the University of Maryland, College Park have developed a novel phenotypic drug screen to identify *Giardia*-killing compounds. This homogenous, robust and high throughput screen was used to test several pharmacologically active molecules, including approved drugs. Among the compounds that were studied, there were 10 novel pharmaceutical compounds that were previously unknown as anti-giardiasis agents. One of the most potent novel compounds is fumagillin, which kills *Giardia* trophozoites with $IC_{50} = 10nM$, suggesting a potential repurposing of this drug as an anti-giardiasis drug. The innovative utility of these drugs as anti-giardiasis agents is an unprecedented and much needed finding to combat drug resistance.

Applications

Novel anti-resistance chemotherapeutics for *Giardia*.
Repurposing of the drug fumagillin against giardiasis.
Potential anti-giardiasis drug for use in animals as well.

Advantages

Novel Compounds for overcoming *Giardia* resistance
A previously unexploited mode of action that translates to lower chances of resistance development.

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Additional Information

INSTITUTION

University of Maryland, College Park

PATENT STATUS

Patent(s) pending

LICENSE STATUS

Available for exclusive or non-exclusive license

CATEGORIES

- Small molecules

EXTERNAL RESOURCES

- [US Patent 9,173,898](#)

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