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Herz Global Impact Award

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Discovering the Mechanism of Action of a Novel Antimalarial

Malaria is a devastating disease that caused approximately 608,000 deaths in 2022 worldwide. Cases of malaria have increased from previous years because of quick development of resistance to frontline antimalarials such as chloroquine and artemisinin. Due to rising resistance, there is an urgent need to discover and develop new drugs that engage new targets in the malaria parasite. This research focuses on a novel antimalarial called PRC1584.

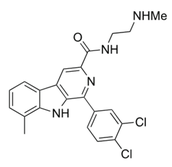
Malaria and the novel antimalarial PRC1584

+249 million cases of malaria

+608,000 deaths

Rapid emergence and spread of resistance to artemisinin's threaten the worldwide malaria control and eradication strategies

PRC1584 meets all the requirements needed to become an early lead antimalarial candidate

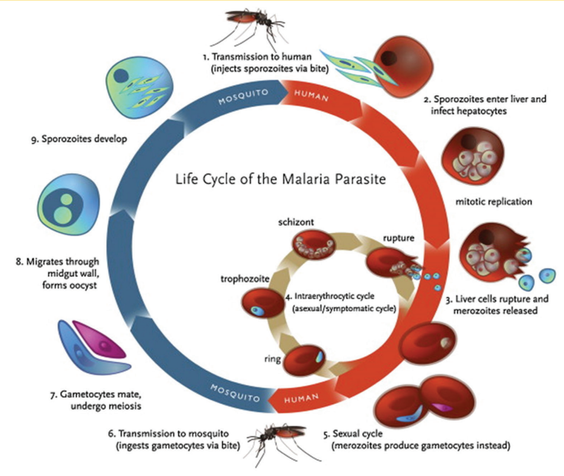


PRC1584
EC_{50} = 50 – 100 nM

Discover the mechanism of action and molecular target(s) of PRC1584

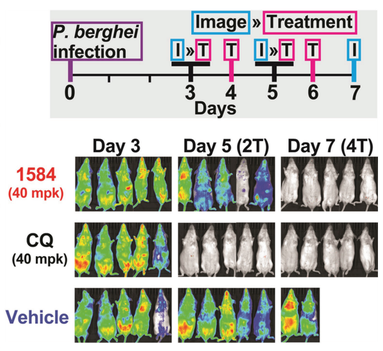
How does it work?

Malaria Life Cycle



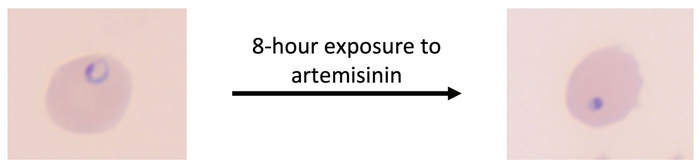
Early Lead Criteria for Antimalarials

Global Health Innovative Technology (GHIT) Fund and Medicines for Malaria Venture (MMV) devised the following disease-specific criteria for early leads for malaria.		PRC1584
EC_{50}	<100 nM for sensitive and multidrug-resistant strains of plasmodium spp.	✓
Selectivity Index	>100 in mammalian cells	✓
In vivo efficacy	When administered orally in blood stages of infection: Clearance at a dose that eradicates 90% of the target (<50 mg/kg) (four doses over 4 days)	✓
Irresistible	Unable to generate resistance	✓

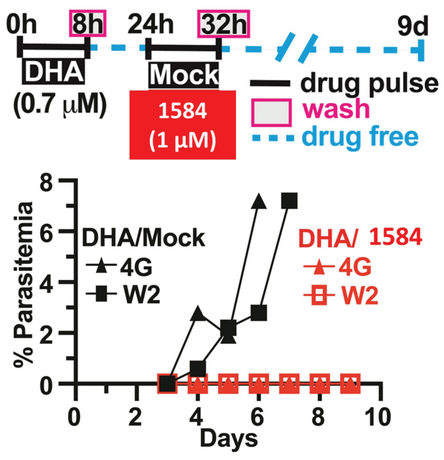


Artemisinin Induced Quiescence

Quiescence is the altered ring stage development in artemisinin-resistant *P. falciparum* in which ring stages persist for extended periods of development in the **absence** of drug.

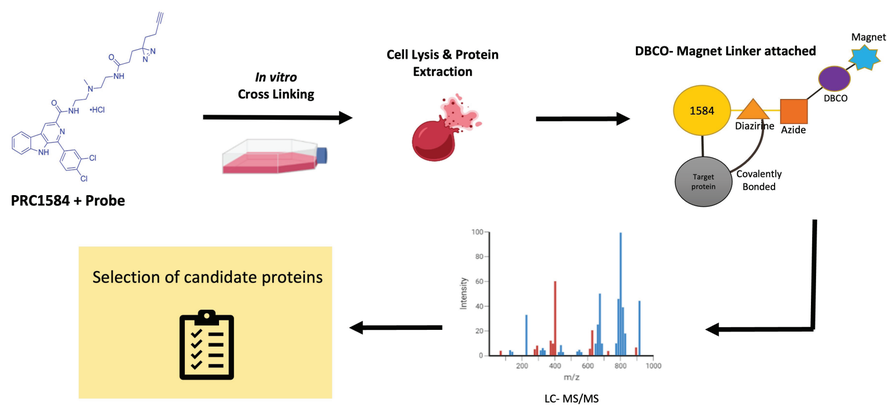


Does PRC1584 kill DHA-induced quiescent ring stage?



Short exposure to PRC1584 kills both proliferating and DHA-induced quiescent ring stages.

Chemoproteomic Approach



Scholar Awards Celebration

November 13, 2024

SCHOLAR AWARDS CELEBRATION ARCS FOUNDATION ATLANTA

Igniting Innovation in Georgia