Presenter: Natalie Oyler

Session & Time: Poster III

Room/Time: GLH / 3:30-4:30

Discipline: Biology

Faculty Mentor: Tyler Johnson

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Title: Screening a Sponge-Derived Natural Product Library Against P. falciparum Identifies Microtubule Stabilizers as Novel Therapeutic Lead Chemotypes to Treat Malaria

Abstract:

Malaria is a devastating global health concern. The plant-derived frontline therapeutic artemisinin, was developed in light of the malaria parasites resistance to chloroquine. Now, growing rates of resistance to artemisinin are apparent, emphasizing the need for novel chemotypes to treat malaria. Marine natural products have emerged as potent chemotypes towards cancer, as well as antibacterial, antifungal, antiviral, anti-inflammatory, and antiparasitic properties. As such, ten distinct chemotypes derived from marine sponges were investigated for their ability to inhibit the malaria parasite P. falciparum. Two compounds zampanolide and laulimalide (fijianolide B), known as potent and selective microtubule stabilizers, were identified as novel therapeutic leads showing ~1.0 nanomolar and ~500 picomolar inhibitory activity respectively, against P. falciparum. These activities are on par and twice as potent as the World Health

Organization (WHO) standard anti-malarial, de-hydroartemisinin (IC50 1.4 nM). Our findings indicate marine sponge-derived microtubule stabilizers are a new source of potent chemotypes to serve as next generation therapeutic lead compounds to treat malaria.