

NON-TECHNICAL ABSTRACT: One of the key challenges in drug discovery today lies in the development of methods that allow rapid and effective drug development by analyzing complex effects in pathogens when exposed to putative drug molecules. Such effects are important because the influence of a possibly successful drug can be manifested through a variety of complex morphological and behavioral phenotypes in pathogens. Therefore such phenotypes need to be considered to ensure that promising drug candidates are not overlooked. The proposed research constitutes a highly inter-disciplinary R&D effort and will lead to a method where video recordings of disease causing parasites will be automatically analyzed using computers to rapidly and accurately determine the effectiveness of the drugs being tested. In addition to its scientific value, such a method will fundamentally reduce the cost/time associated with pharmaceutical drug discovery. Therefore, this research will not only have a strong impact on the evolution of Biotechnology, but also have a broad impact on issues related to human health and disease control, not just in California, but across the nation and the world.