

EXECUTIVE SUMMARY [NON-CONFIDENTIAL, NON-TECHNICAL ABSTRACT FOR PUBLIC INFORMATION OR PROGRAM PROMOTION]: State in layman's terms the application's broad, long-term objectives and specific aims, making reference to the potential public benefits of the project relevant to California. Do not include proprietary or confidential information. This may be distributed before the funding decision has been finalized.

Understanding the mechanisms by which enzymes work is important for gaining insight into human diseases of metabolism, for the design of therapeutics and for many biologically-based industrial applications including food processing and chemical production. A major difficulty in performing studies of enzyme function is that the enzymes are often available in very limited quantities. To overcome this problem, we are proposing to develop a highly sensitive laser-based assay system that will be very flexible and potentially useful for many applied and basic research projects. The proposed project will focus on studying the enzymatic properties of mutant versions of the protein myosin, the molecular motor of muscle. By determining the role of particular domains of this protein in breaking down its energy source (ATP), we can better understand its function in normal and diseased muscle. This project is relevant to human health in that mutations in myosin are implicated in familial hypertrophic cardiomyopathy, a form of human heart disease that is a major cause of young adult death.