

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.

The ability to visualize biological processes at the microscopic level is a critical aspect of modern biomedical research and biotechnological innovation. The research in my lab is heavily dependent upon advanced microscopy techniques to study cellular and molecular aspects of nerve cell function. The purpose of this proposal is to acquire the funds to purchase imaging software and microscopy hardware to advance our understanding of nerve cell biology and train undergraduate and graduate students in important techniques relevant to biomedical and biotechnological applications. My specific research interests are geared towards understanding the development of neuronal form, and thus function.

Neurons are morphologically asymmetric, or polarized cells with two primary domains: the axon and the dendrites. Axons are responsible for the transmission of information, whereas dendrites receive and decode information from neighboring cells. Establishing and maintaining these two domains is critical in the development of the neuron, and the nervous system as a whole. At the molecular level, the axon and dendrites contain a distinct set of proteins that we can identify and analyze at the microscopic level. The requested equipment will allow us to make novel and substantial observations on the molecular events that effect neuronal development.