

EXECUTIVE SUMMARY [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

Although several FDA approved drugs exist against the HIV-1 virus, AIDS is still a devastating disease around the world, including California. The appearance of resistant viruses together with the terrible side effects of the available drugs, emphasize the need for novel antivirals and better assays to discover them. Here, we propose an assay based on the engineering of the green fluorescent protein GFP, a protein that fluoresces when exposed to blue light. With flow cytometry, a technique for the analysis of the physical properties of individual cells, we can study cells expressing engineered forms of GFP.

We will introduce recognition sites for the protease (PR) enzyme of HIV-1 at specific sites within the GFP molecule. PR cuts proteins at these sites, an activity essential for productive HIV-1 life cycle, making PR one of the main targets for antiviral therapy. If PR cuts GFP, we expect the cells to be no longer fluorescent. Importantly, our assay can be applied to high-throughput technologies based on flow cytometry, critical for implementation in a biotechnological setup. A novel cell-based assay for the discovery of PR inhibitors is of high value to California's Biotechnology and Pharmaceutical industries. California, as a biotechnological superpower in Biomedical Sciences has always been at the front line in the battle against HIV-1. Our assay will definitively be an asset to the efforts of California in eradicating HIV-1; benefiting AIDS patients around the world, California in particular.