

The spread of multi-drug resistant bacterial pathogens is causing havoc in hospitals and communities world-wide, rendering most of the available antibiotic drugs useless. With few new antibiotic drugs in the clinical testing stages, we are facing an unprecedented global health crisis, making it ever urgent to discover and develop new antibiotics. With years of antibiotic drug discovery experience in the biotechnology industry, the applicant has long-term goals of studying bacterial essential proteins (potential drug targets), discovering novel antibacterial compounds and identifying their targets to facilitate their development into antibiotic drugs. With funding from CSUPERB's seed grant, the PI obtained the proof of concept for an innovative strategy of identifying targets of antibacterial inhibitors using a collection of bacterial strains engineered to over-express essential proteins. The initial success helped secure substantial two-year federal funding to construct a complete collection of cell strains and build prototypes of target identification assays. To fully realize the potential of this target identification platform, new antibacterial compounds of diverse structures are urgently needed. In this application, the PI requests funding to collaborate with University of California, Los Angeles (UCLA), to identify a series of new compounds which can inhibit bacterial growth and, subsequently, to link these compounds with cellular proteins they inhibit. The proposed collaborative research with UCLA scientists will likely produce a series of high-value antibiotic inhibitor-target pairs and their underlying shared intellectual properties, which potentially could evolve into entrepreneurial activities to further develop these drug candidates. These activities will contribute to maintaining California's biotechnology leadership in the U.S. and around the world and to creating jobs locally.