

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.

Current research into therapy developments for cancer, heart disease, and diabetes has illuminated the importance of regulating cell physiology. Common to each of these ailments is the critical use of phosphotyrosine (a phosphorylated amino acid) in the transfer of signals within a cell – signals that regulate cell proliferation, differentiation, and metabolism. Hence, phosphotyrosine detection has become of significance to both fundamental research into cell physiology and the commercial development of therapeutic modalities. Accordingly, our research proposal entails the synthesis and analysis of chemical probes designed for phosphotyrosine detection. Our probes contain a critical lanthanide metal component that confers both light-emitting and magnetic properties and are thus amenable to luminescent and MRI analysis. Hence, the ultimate goal will be to develop cost-effective and rapid detection protocols for phosphotyrosine that are applicable to both field and laboratory-based assays.