

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.

Damage to DNA caused by radiation, carcinogens or metabolic waste products if left unrepaired by normal cellular process can lead grave health consequences such as cancer etc. A study of electron transfer and radical-cation migration in DNA will provide insights into the mechanism of charge transfer through different media and valuable information for understanding DNA damage *in vivo*. A greater understanding in this area may have an additional clinical impact through the development of novel diagnostic tools for screening nucleic acids, proteins or carcinogens. The overall goal of this project is to design a new approach for evaluating electron transfer through oligonucleotides involving a modified nucleotide base, guanine analog. The focus of this proposal is to synthesize this guanine analog.

Undergraduates involved in this project will have opportunities to have "hands on" personal contact with chemistry, learn analytical skills, and, more importantly, to understand the impact of the fundamental biomedical research.