

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.

Chromium is a transition metal that can exist in many different forms, the most stable of which are chromium(VI) and chromium(III). Chromium(VI) is a major pollutant in the California environment and has been the suspected cause of a variety of cancers.³ Chromium(VI) is also referred to as hexavalent chromium and is extremely water soluble. Biological systems can develop mechanisms to eliminate toxic transition metals and one such approach is to sequester metal ions into non-reactive protein complexes. This project is concerned with investigating the sequestering and reduction of chromium(VI) into chromium(III)-protein complexes. Chromium(III) is considered non-toxic due to little chemical reactivity. Studying the structure and formation of these chromium(III)-protein complexes will contribute understanding into toxic transition metal poisoning and detoxification. The project proposed here focuses on how bovine liver eliminates chromium(VI) by forming non-reactive chromium(III) protein molecules. In collaboration with SSU student researchers I have isolated two such chromium(III)-proteins from bovine liver and will investigate the structure and function of these molecules.