

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.

Sol-gel derived silica is a biologically inert, biodegradable, inorganic material that is compatible with various biomolecules. The PIs have conducted preliminary studies showing that enzymes encapsulated in sol-gel derived silica particles remain active even after being dried and stored at room temperature for over weeks. Furthermore, these enzymes can be released from the particles at a controlled rate. Factors that control the amount of enzyme released include particle size and time.

This proposal aims to conduct a more detailed study on the relationship between particle size and protein release rate in order to determine the mode of release. The effects of pore size will also be investigated. The results of this project will aid in the design of injectable vehicles for controlled drug delivery.

The potential benefit of this study is far-reaching. Many different types of medical treatments require drugs to be injected to a specific site or directly into the bloodstream. However, this often means that the patient is exposed to a high dose of drug immediately after injection and the effects of the drug can fade quickly. Biodegradable, injectable vehicles that can release drugs at a controlled rate can aid in the management of patient care and reduce the frequency of injections needed in chronic illnesses.