

**NON -TECHNICAL ABSTRACT:** *(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.)*

The long-term objective of this Joint Venture project is specifically targeted towards the development of an innovative microencapsulation approach that can be used to manage kidney disease currently affecting 7.8% of the American population.

Using inkjet technology, renal cells will be encapsulated in biodegradable capsules subjected to a high concentration uremic environment. The toxin removal capability of the encapsulated renal cells will be evaluated. In addition to participating in research aimed at contributing to the quality of life, students will acquire hands on experience in state of the art fields of microencapsulation using bio-printing/inkjet technology, as well as cell culture and regenerative medicine. They will also improve their analytical skills by applying mathematical modeling and statistical analysis in the interpretation of experimental data. The above-mentioned educational exposures are sought after skills in the biomedical devices, bio-pharmaceutical, diagnostics and research sub-sectors, employing over 75% of California's biomedical workforce. "Bio-Printing of Mammalian Cells" is a unique inter-disciplinary endeavor at SJSU. The deliverables will add on to the research/instrumentation capabilities of the Bioengineering laboratory, a Core facility for collaboration of Biological Sciences and Engineering faculty, students, and CSU collaborators.