

2022/2023 Summer or Winter Research Project Description

Project title:	Nanoparticles for drug delivery
Project duration, hours of engagement & delivery mode	8 weeks, full-time.
Description:	Mesoporous silica nanoparticles (MSNs) have attended frenzy of attention in past 20 years as an emerging biocompatible drug delivery and diagnostic system. Lot of these formulations based on MSNs are now in Phase I and II clinical trials.[1] However, despite use of colloidal silica (Aerosil©) as common tablet excipients since past 50 years, the full translational potential of MSNs as oral drug delivery agents is not realised. Our group focuses on use of MSNs nanocomposites to overcome multiple biological barriers (Gut, Tumour, and BBB). We are particularly interested in effective oral delivery of hydrophobic drugs and macromolecules. For instance, by harnessing the high surface functionality of MSN we have prepared various pH and enzyme responsive drug delivery systems based on MSNs for targeting small intestine and inflamed gut. Additionally, we have evaluated the potential of library of silica particles in delivery of variety of small and macromolecules for the treatment of IBD, Diabetes, TB, and recently glioblastoma. Student enrolled in my lab will be working on one of these ongoing projects.
Expected outcomes and deliverables:	The student will gain valuable skills in both materials science and pharmaceuticals including translating medicine into practice.
Suitable for:	Pharmacy, biotech students
Primary Supervisor:	Amirali Popat
Further info:	For further information please email : a.popat@uq.edu.au