**UQ Summer Research Project Description**

|  |  |
| --- | --- |
| **Project title:** | **Drug eluting nanoporous scaffolds** |
| **Project duration:** | *10 weeks* |
| **Description:** | Localized and controlled delivery of drug and proteins to the disease site is a key prerequisite for efficient treatment and faster healing. Smart nanomaterials have enabled fabrication of new generation of scaffolds with multidimensional capabilities. Traditionally, these scaffolds are made from polymers, which suffer from disadvantages like uncontrolled drug release kinetics, stability issues in complex biological environment, incompatibility with protein based drugs, and low encapsulation capacity. We have developed a porous silicon/silica based scaffold, which is like a sponge that can soak up a variety of drug payloads including small molecules and proteins. Also, the release properties can be tuned to cater disease conditions based on oxidation. This project will involve optimising these nanoporous scaffolds and check loading capacity of several drugs in these nanoporous scaffolds and testing their in-vitro release characteristics. |
| **Expected outcomes and deliverables:** | The project will generate new fundamental insight into nanoporous materials and their application in the field of pharmaceutical formulations. The outcome of the project may be disseminated as a journal article. This is a good opportunity to get essential research experience for Biotech and Pharmacy Honors/Masters degree students who plan to apply for PhD in the future. |
| **Suitable for:** | We are looking for motivated individuals with experience in working on nano materials, drug delivery and/or Pharmacy. People with polymer chemistry skills are also encouraged to apply. |
| **Primary Supervisor:** | Tushar Kumeria  School of Pharmacy  The University of Queensland  Queensland, Australia  Phone: +610426008500  Email: t.kumeria@uq.edu.au |
| **Further info:** |  |