**Project title**

Investigating neutrophils in Tuberculosis-associated fibrosis

**About the project**

Tuberculosis (TB) is one of the of the most prevalent and lethal infectious diseases worldwide, with an estimated 10 million people infected with *Mycobacterium tuberculosis* (Mtb), the causative agent of TB. Despite successful treatment of TB with antibiotics, up to 94% of recovered patients develop permanent lung abnormalities such as lung fibrosis. This fibrotic process leads to the destruction of the lung, difficulties in breathing and ultimately shortened life expectancy. The mechanisms behind TB-associated fibrosis are poorly understood and there is a lack of host-directed therapies to aid recovery. Neutrophils are key immune cells recruited during Mtb infection and have also been shown to promote fibrosis in other fibrotic lung diseases. The aim of this PhD studentship is to define the role of neutrophils in TB-associated fibrosis and identify new anti-fibrotic therapeutic targets. This will be achieved through a combination of novel *in vitro* cell culture systems, *in vivo* animal models of TB infection and may include *ex vivo* analysis of neutrophils from TB patients.

The full supervisory team will consist of Professor Jon Friedland, Dr Deborah Chong and Dr Rajko Reljic.

**Skills development**

The student will be trained in various aspects focused towards studying immunological and fibrotic responses.

Specific techniques that the student will acquire include:

(i) cell biology techniques including cell culture of primary fibroblasts, neutrophil isolation from blood, functional assays such as cell proliferation, differentiation and collagen deposition.

(ii) biochemical techniques including Western blot, qPCR and immunofluorescence microscopy.

(iii) immunological techniques including processing human blood, flow cytometry and ELISA

(iv) microbiology techniques including culturing Mtb (category 3 pathogen)

(iv) *in vivo* animal model of TB, where the student will be required to obtain an animal licence (training will be provided).

**Funding notes**

You will have a minimum of a 2:1 or equivalent in your first degree. A Master’s qualification in an appropriate discipline will be a distinct advantage.

You will have excellent written and verbal communication skills in English. Applicants whose first language is not English are expected to meet the [minimum University](https://www.sgul.ac.uk/study/life-at-st-georges/international-student-support/english-language-requirements) requirements for postgraduate studies e.g. 6.5 [IELTS](https://www.ielts.org/about-the-test/how-ielts-is-scored), with higher scores being a distinct advantage.

Students will receive a stipend and will have three years of fees paid for them. This fully-funded PhD studentship is open to UK/EU students only

**References**

**How to apply**

Please complete the application form and ask your referees to complete the reference form All forms should then be returned to researchdegress@sgul.ac.uk by Sunday 9th August.

**Contact for information**

Dr Deborah Chong - dchong@sgul.ac.uk