PhD opportunity in the Clinical Epidemiology & Mycobacteriology (CLIME) group, Division of Molecular Biology & Human Genetics, Stellenbosch University, Cape Town, South Africa

Deadline: 21 February 2025

To apply, visit: https://rb.gy/p29j93

The CLIME group is offering an exciting PhD position to investigate microbiome and metabolomic shifts during treatment in people with drug-resistant tuberculosis (TB). TB is the single biggest infectious cause of death globally and Cape Town, with its high burden of TB and world class research infrastructure, is an ideal place to research this topic.

Project description

Antibiotics profoundly impact on the microbiome, yet little is known about their effects in people with TB where hundreds of pills are administered for cure. Treatment-related microbial disturbances could be linked to poor health outcomes such as post-TB treatment sequalae. This project will evaluate microbiome changes before, during, and after drug-resistant TB treatment, how these changes correspond to pharmacokinetic profiles (a key determinant of long-term cure), how specific taxa correlate with microbially-derived metabolites (short-chain fatty acids), and the microbiome's association with outcomes. This could result in the development of interventions to improve treatment outcomes and the lifelong effects experienced by people successfully treated for TB. Prospective candidates are encouraged to first familiarise themselves with the field (e.g., https://rb.gy/tfrbvn) and publications from CLIME members.

The successful candidate will:

- Work with a multidisciplinary team of laboratory staff, clinicians, students, and researchers headquartered at the new SU BMRI Facility
- Oversee specimen processing in a BSL-3 facility
- Perform DNA extractions from diverse samples (sputum, stool, breastmilk, vaginal swabs, rectal swabs)
- Collaborate with leading international experts to apply advanced metagenomics and multi-omics analytical techniques
- Lead the writing of manuscripts and contribute to other group publications
- Present research findings at seminars and conferences, with support to apply for funding for international travel

What we offer

- Competitive tax-free bursary
- Assistance in applying for additional funding, which can be used alongside the base bursary
- Training and mentorship in cutting-edge research methodologies (both laboratory and *in silico*)

Requirements

1. MSc in Molecular Biology or Computer Science (or a related fields), with an average of ≥70%
2. Fluency in English

Recommendations

1. Proficient in R and/or Python
2. Experience as a lead author on at least one international, peer-reviewed journal article
3. Previous participation in microbiome-related courses or workshops
4. Research experience in infectious diseases, particularly tuberculosis

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