Stellenbosch UNIVERSITY IYUNIVESITHI UNIVERSITEIT

ACTI Africa Centre for Therapeutics Innovation

Department of Biochemistry | Isebe i-chemistry yobomi | Departement Biochemie

Postdoctoral Fellowships (4 positions)

Gram Negative Antibacterial Drug Discovery and Development

Africa Centre for Therapeutics Innovation (ACTI)
Department of Biochemistry at Stellenbosch University (SU)

Positions

Applications from suitable candidates are invited for four postdoctoral positions for an initial period of one year, which may be renewable for a further two years (three years total) based on satisfactory performance (annual performance reviews will be held) and the continued availability of funds.

Project and team

Prof Erick Strauss (Project leader, SU) will be leading a multi-site, African-based drug discovery project with co-investigators Prof Adrienne Edkins (Rhodes University), Prof Andrew Whitelaw (SU) and Dr Miquel Duran-Frigola (Ersilia Open Source Initiative), as well as collaborators from SU, University of Johannesburg and University of Cape Town. This three-year project forms part of **The Gram-Negative Antibiotic Discovery Innovator (Gr-ADI)**, a first-of-its-kind consortium funded by The Gates Foundation, Novo Nordisk Foundation, and the Wellcome Trust. Gr-ADI will bring together 18 research teams from across the world will openly share data and learnings and work collectively to accelerate the discovery of urgently needed antibacterials for the treatment of infections by Gram-negative bacteria, one of the leading drivers of AMR-related deaths worldwide

Successful candidates will form an integral part in the establishment of a multidisciplinary team that will pursue the discovery and development of novel Gram-negative antimicrobials that induce the targeted degradation of high-value proteins in *Klebsiella spp*. and potentially other *Enterobacteriaceae*.

Roles and responsibilities

The incumbents of all positions will be involved in general laboratory operations and in the training and supervision of postgraduate students. They will interact with team members locally as well as at other sites to ensure the progress of the project against predetermined milestones. In addition, they should invest in developing those skills that they might be lacking.

Each position will have a different focus, with the associated roles and responsibilities as follows:

1. *Synthetic chemistry focus* - Successful applicant(s) will be involved in the design, synthesis and SAR analysis of target-engaging ligands, Clp protease engaging ligands, as well as the subsequent coupling of these ligands to compounds to form bacterial proteolysis targeting chimeras (BacPROTACs) that engage the protein degradation machinery of our target organisms.

   The preferred incumbents will have a strong skillset in the organic synthesis of small molecules and their structural characterisation via various analytical techniques (e.g. NMR, MS). In addition, the candidates should have a strong interest in the studying the biological activity of such molecules with the view of incorporating the results of such studies in the design of new molecules. They should be able to present the results of the biological tests as an integral part of their projects.

2. *In vitro protein biochemistry focus* – Successful applicant(s) will be involved in the development and execution of biophysical, spectrophotometric and immunological assays to determine the *in vitro* binding and interaction of high-value proteins with target engaging ligands as well as their potential degradation by the target organism's protein degradation machinery.

   The preferred incumbent will have a strong skillset in enzymology and *in vitro* protein activity and binding assay development. They should be able to produce and purify heterologous proteins and should have experience in data analysis. Experience in protein crystallography will be an advantage.

3. *Molecular biology and microbiology focus* – The successful applicant will lead the design and production of protein expression plasmids with desired tags as required by a specific project. The applicant will also use molecular biology techniques to manipulate expression of target proteins within target bacteria of interest, e.g. through CRISPRi engineered knockdown. In addition, the incumbent will be involved in setting up cellular target engagement assays in bacterial targets.

   The preferred incumbent should have experience in a variety of molecular biology techniques related to heterologous protein expression in bacterial hosts, and the manipulation of bacteria (Gram-positive and Gram-negative). Experience in cellular target engagement assays would be an advantage.

Requirements – General

Due to the multidisciplinary nature of project, candidates in all positions must possess:

- Strong communication skills to ensure effective presentation of results and progress to other members of the team, as well as the translation of necessary skills to those team members focussing on different research areas.
- Excellent skills related to time management, teamwork, problem solving and independent thinking.
- Good record keeping and use of online and/or electronic platforms to store, document and manage data, experiments and samples will also be required.

Requirements – Synthetic chemistry focus

- PhD degree in synthetic organic or medicinal chemistry.
- Demonstrable experience in the synthesis and structural characterization of small molecules.
- Experience in the biological activity determination (or application of such data) of small molecules will be an advantage.
- Experience in Gram-negative drug discovery and development would be a distinct advantage.

Requirements – *In vitro* protein biochemistry focus

- PhD degree in Biochemistry/Chemical Biology, Microbiology or Immunology. Candidates with PhD degrees in other fields but with appropriate experience might also be considered.
- Demonstrable experience in enzyme characterization, including heterologous protein expression, protein purification, conducting and developing assays towards their biophysical characterization.
- Experience in advanced data analysis using Excel or Python (preferred).
- Experience with protein binding, immunological and kinetic characterization would be highly advantageous, as well as experience in Gram-negative drug discovery and development, and BSL1 and BSL2 bacterial cell culture.

Requirements – Molecular Biology and Microbiology focus

- PhD degree in Biochemistry, Microbiology or Genetics. Candidates with PhD degrees in other fields but with appropriate experience might also be considered.
- Demonstrable experience in the design and production of protein expression systems related to heterologous expression in bacteria.
- Experience in the generation of bacterial strains via genetic manipulation, e.g. using CRISPRi.
- Experience in BSL2 bacterial cell culture.
- Experience in Gram-negative drug discovery and cellular target engagement assays would be a distinct advantage.

Eligibility: Only applicants who have obtained their PhD degrees within the past five years (or who can provide proof that the requirements for the degree has been satisfied). will be considered. Applicants from African countries in general and South Africa in particular will receive preference.

Location: All positions are at Stellenbosch University in the departments of Biochemistry and/or department of Chemistry and Polymer Science in Stellenbosch, South Africa, with additional work to be performed in the department of Medical Microbiology on the Tygerberg campus. Some travel between these and the sites of other consortium partners may be required.

Award: Appointments will be made at R350 000 per annum, being a non-taxable award.

Deadline and starting date: Applications for the positions must be received by **6 March 2026**. The starting date will be from **1 April 2026** or as soon as possible thereafter.

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Application procedure

- All applications should be made through completion of an online form:
  - For **internal** applicants from Stellenbosch University: https://forms.office.com/r/CABp42KPzV
  - For **external** applicants from outside Stellenbosch University: https://forms.gle/Ra2BDvPZea5A3dLp9
- As part of the application, a cover letter should be submitted that summarises your background, future plans, interests and how your skills match those required for the project.
- A detailed CV that shows your academic and publication record, and the names of at least two contactable references should be included.
- Enquiries can be made to Dr Konrad Mostert (project manager) at kjmostert@sun.ac.za, or to Prof Erick Strauss at estrauss@sun.ac.za.

Note: Postdoctoral fellows are not appointed as employees and as their fellowships are awarded tax free, they are not eligible for employee benefits. The University reserves the right to NOT make an appointment if suitable candidates do not apply.