

HR191	POSITION DESCRIPTION	 UNIVERSITY OF CAPE TOWN IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD
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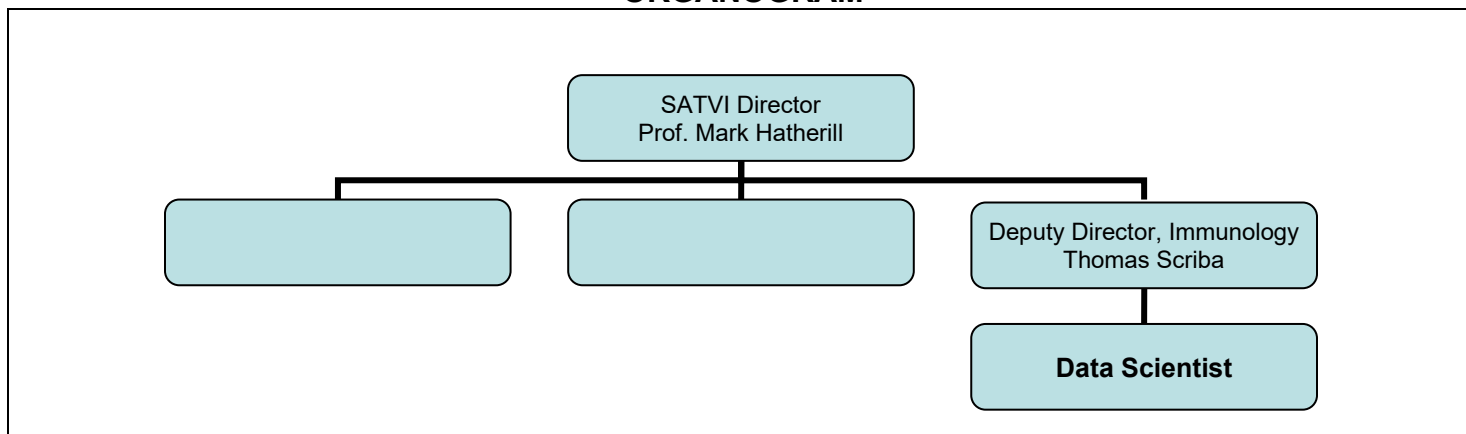
NOTES

- Forms must be downloaded from the UCT website: <https://forms.uct.ac.za/forms.htm>
- This form serves as a template for the writing of position descriptions.
- A copy of this form is kept by the line manager and the position holder.

POSITION DETAILS

Position title	Data Scientist		
Job title (HR Business Partner to provide)			
Position grade (if known)	PC10 (PASS Tech/Sci)	Date last graded (if known)	
Academic faculty / PASS department	Health Sciences		
Academic department / PASS unit	Pathology		
Division / section	Immunology, South African Tuberculosis Vaccine Initiative		
Date of compilation	25 November 2025		

ORGANOGRAM



PURPOSE

The Data Scientist (PC10) will be responsible for the design, development, and execution of computational analyses of high-dimensional omics and immunology datasets, including single-cell RNA sequencing (scRNAseq) and flow cytometry data relating to studies of *M. tuberculosis* infection, TB disease and/or vaccine trials of TB vaccines. The role will integrate domain knowledge of TB pathogenesis and vaccine trial immunology with data analysis approaches. The Data Scientist may also develop, implement and maintain reproducible analysis pipelines, computational workflows, and data-management systems, perform rigorous QC and ensure best practices for coding, version control, data sharing and documentation. The role will provide bioinformatics and biostatistical support, advice and solutions to SATVI investigators and collaborators, contribute to study design and participate actively in internal and external project meetings and discussions.

Additional responsibilities include contributing to publication of results, supporting grant applications and providing support, management and technical mentorship and training to postdoctoral fellows and postgraduate students.

The Data Scientist will play a central role in strengthening SATVI's computational capacity in conjunction with the SATVI Senior Data Scientist and work under the line management of the SATVI Deputy Director, Immunology and supervision of relevant study PIs.

CONTENT				
Key performance areas		% of time spent	Inputs (Responsibilities / activities / processes/ methods used)	Outputs (Expected results)
1	Design, development, and execution of bioinformatic, and computational analyses for scientific projects	35%	Design and implement statistical analysis plans and data integration strategies for high-dimensional immunology and omics datasets (e.g., flow cytometry, scRNA-seq, spatial transcriptomics). Lead and oversee data curation, QC, preprocessing and reproducible workflow development and implementation (R and HPC cluster). Support teams to execute laboratory experiments where needed. Interpret, visualize and communicate results, contribute to writing and reviewing scientific reports, manuscripts and presentations in collaboration with other project team members. Apply innovative thinking, bioinformatics skills and use immunological research skills to guide research projects and analyses.	Successful design, implementation and completion of high-quality and reproducible statistical, data management and bioinformatic analysis plans delivered timeously and aligned with project needs. Analytical outputs (figures, results, summaries, reports) and contributions to scientific manuscripts, internal reports and scientific presentations according to project timelines. Analyses performed using current best-practice statistical methodology, computational methods, version-controlled code and cluster resources with appropriate programming languages. Effective, proactive communication and collaboration with multidisciplinary project teams.

2	Design and development of flow cytometry immunology assays for clinical trials, and analyses of resulting data.	35%	Design and develop immunological assays, flow cytometry panels, experiments and analysis plans for TB vaccine and immunopathology studies. Review and analyse flow cytometry optimization experiments and troubleshoot and refine panels in collaboration with project teams. Review and perform analysis of flow cytometry data analysis, QC, gating strategy development and standardised reporting of flow cytometry datasets from vaccine trials. Prepare high-quality visualisations, interpretation, written outputs and presentation of results for internal and external stakeholders.	Successful design and optimization of panels, assays and analysis plans. Flow cytometry analysis completed and reported with rigorous QC, reproducible code and adherence to trial SOPs and standards in a timeous manner and according to the requirements of the project. Contributions to reports, scientific manuscripts and presentations incorporating accurate and interpretable results according to project timelines. Analyses completed using up-to-date methodology and appropriate statistical frameworks. Effective, consistent communication and collaboration with relevant project teams.
3	Develop tools, pipelines and computational models. Provide support, advice and solutions to SATVI scientists	15%	Design, maintain and support computational infrastructure for SATVI projects, including but not limited to: a) Databases and data-tracking systems b) Reproducible pipelines and workflows c) Code repositories and version control d) Secure data storage solutions e) Documentation, SOPs and QMS-aligned processes Provide support, troubleshooting and consultation to SATVI investigators, postdocs, students and laboratory teams. Facilitate meetings and technical sessions, contributing to analytical strategy, QC standards and reproducible research practices. Ensure alignment with SATVI data-sharing, confidentiality and code-governance requirements.	Well-designed, efficient databases, pipelines and computational tools, delivered timeously and aligned with project needs. SOPs and documentation created or updated and maintained in accordance with QMS requirements, in a timely manner. Accessible, version-controlled code repositories with clear documentation for internal use. Tools and pipelines that integrate smoothly into the SATVI research workflow and QMS. Troubleshooting and technical issues resolved effectively, timeously and communicated effectively to stakeholders. Effective support of SATVI scientists in areas of data sciences, i.e. computation, statistics, code, reproducibility and data sharing.

4	Professional development, capacity building and broader engagement	15%	Presentation at journal clubs and meetings. Attend and present at conferences and workshops as and when availability allows. Contribute to and participate in SATVI HR activities (e.g. recruitment panels, onboarding and training). Provide mentorship, technical training and capacity-building for SATVI postgraduate students, postdocs and staff.	Attendance and participation in meetings, and presentation at meetings and internal activities. Conference attendance and contributions that enhance SATVI's visibility and scientific output. Documented contribution to SATVI HR activities. Demonstrated growth of SATVI staff, postdocs and students in computational and analytical competencies through training, teaching and mentorship.
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MINIMUM REQUIREMENTS

Minimum qualifications	PhD in Immunology, computational biology, statistics or related field			
Minimum experience (type and years)	At least 2 years of postdoctoral experience Experience in clinical/vaccine trial immunology Expertise in analysis of high-dimensional immunology datasets and experience in scripting/programming languages (R or Python) Excellent verbal and written communication, presentation skills and fluency in English			
Skills	Cellular and tissue immunology Single-cell sequencing Flow cytometry staining and analysis Laboratory quality management systems GCP and GCLP Use of HPC clusters for large-scale computational analysis Development and implementation of reproducible workflows, pipelines and documented processes. Experience with version controlling (i.e. Git) Scientific writing Technical protocol writing Excellent verbal and written communication, presentation skills, teaching skills Fluency in English Organizational skills, time-management and project coordination Ability to work independently and collaboratively within multi-disciplinary research teams			
Knowledge	Computational biology (systems biology) Bioinformatics Applied statistics Team management Quality management systems Biosafety Level 2 and 3 standard operating procedures and safety practices Immunology and disease-specific (Tuberculosis) knowledge			
Professional registration or license requirements	None			
Other requirements (If the position requires the handling of cash or finances, other requirements must include 'Ability to handle cash or finances'.)	Sense of responsibility and accountability and a positive mindset Ability to work effectively both independently and as part of a team Ability to take initiative, exercise sound judgement, make decisions and solve problems Excellent interpersonal and communication skills Good documentation practice and record-keeping Willingness to engage in ongoing training and professional development			
Competencies (Refer to UCT Competency Framework)	Competence	Level	Competence	Level
	Analytical Thinking/problem solving	2	Communication	2
	Initiating Action/Initiative	2	Adaptability/flexibility	2
	Professional knowledge and skills	2	Planning and organizing /work management	2
	Conceptual thinking	2	Results focus	2
	Strategic leadership	2	Research support skills	2
	Teamwork/collaboration	2	Written communication	2

SCOPE OF RESPONSIBILITY

Functions responsible for	Experimental and statistical data planning, designing, execution and interpretation. Design and computational analysis for SATVI research projects, including flow cytometry experiments for clinical vaccine trials. The position oversees the development of analytical pipelines, ensures adherence to QMS standard and provides support and guidance to research teams.
Amount and kind of supervision received	Weekly in-person meetings with team leadership, ad hoc communication via email, Teams and other channels.
Amount and kind of supervision exercised	Provides day-to-day oversight of project data and analytical activities, holds weekly meetings with team members to review progress, troubleshoot issues and align priorities.

Decisions which can be made	Decisions that pertain to technical aspects of assay design, data processing, statistical analyses and computational workflows, including troubleshooting and optimization within project parameters.
Decisions which must be referred	Decisions pertaining to key strategic, operational, financial or scientific matters typically falling within the remit of the project PI, Laboratory Director or institutional leadership.