

June 2025

UCT Newsletter



UCT Pharmacometrics

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Mid-Year Reflections

As we reach the halfway mark of 2025, it's a fitting moment to reflect on a period of both growth and transition for the team. We've welcomed several new faces this year, including four new PhD students—two already settling in and two more expected soon—as well as two additional postdoctoral fellows. At the same time, a number of students have reached the end of their journeys, with several thesis submissions already in and more on the horizon.

There's no doubt that the past year has brought its share of challenges, particularly within the broader research landscape. Amid our own activity, we remain mindful of ongoing funding uncertainties—especially from agencies like the NIH. Nonetheless, the energy, collaboration, and resilience within our group continue to be a source of momentum and optimism for the coming year.



Click on underlined headings to follow the link.

The September graduates

In the final quarter of last year, we celebrated the graduation of two of our students (pictured above). Louvina van der Laan (middle right) and Jennie van Dyk (middle left) were amongst the Health Sciences graduates at the University of Cape Town Spring 2024 graduation.



Lufina Tsirizani stays on as a postdoctoral fellow

Lufina submitted her thesis in February 2025 and is continuing as a postdoctoral fellow in the group. As part of her postdoc, she is working on a project to revise WHO tuberculosis dosing guidelines in adults and children. Lufina is also scheduled to present work on the “*Population pharmacokinetics of first-line TB drugs in Haitian children under 5 years old, and accuracy of finger stick capillary sampling technique*” at the upcoming 33rd Population Approach Group Europe (PAGE) Meeting to be held in Thessaloniki, Greece from 4th to 6th June 2025.

Submission season!

We've seen a significant number of thesis submissions from our students this year, and we're holding thumbs for positive outcomes across the board with lots of graduation photos soon! For person-specific details, see the Student Updates page (p. 05).

HIGHLIGHTS

of the year



Awards and prizes

The International Society for the Study of Xenobiotics (ISSX)

5 – 7 March 2025

Our group made a couple of presentations at the first ever ISSX workshop hosted in Africa. The event took place in Johannesburg, South Africa, and brought together researchers from across the continent to advance and foster pharmacokinetics research in Africa. **Roeland Wasmann** joined in hosting the pharmacometrics pre-workshop session provided by PMX Africa.

Young Investigator Prize

Oral presentation: Jose Miguel Calderin Miranda

Poster Presentation : Jennie van Dyk

Population Approach Group Europe (PAGE)

26 – 28 June 2024

The much-anticipated annual PAGE conference once again delivered an enriching experience for our students. The pre-conference workshops not only strengthened existing NONMEM skills but also introduced tutorials on alternative software to broaden our students' pharmacometric toolkit. Last year was particularly memorable, with **Prof. Paolo Denti** delivering a phenomenal tutorial on approaches to handling within-subject and between-occasion variability.

The Next Generation Scientist (NGS) Internship

June – August 2024

The NGS internship takes place in Basel every year, after a rigorous selection process to select the top emerging scientists from developing countries. **Lufina** was amongst the selected.

For the three months, Lufina was trained on the process of drug development and participated in workshops to improve self awareness and leadership skills.

The Union World Conference on Lung Health

12 – 16 November 2024

Our team had the privilege of attending the Union World Conference on Lung Health 2024 in Bali, Indonesia. This event was a collaboration of global experts and researchers to discuss the latest advancements in lung health, with a strong focus on tuberculosis (TB). Several of our PhD candidates and postdoctoral fellows were honoured to deliver oral presentations showcasing their research in TB treatment.

The European Society of Clinical Microbiology and Infectious Diseases (ESCMID)

11 – 15 April 2025

ESCMID Global is a large, annual international congress bringing together experts in clinical infectious diseases to explore the latest innovations in the field. It is known for its comprehensive programme, of which **Jennie van Dyk** was invited to be a part of. Her submission was rated amongst the top submitted abstracts, and her poster recording will be featured on the ESCMID YouTube channel.





Research output and training

The past twelve months have been an excellent year for scientific output, with several peer-reviewed articles published by members of our group. Here are a few highlights.

December 2024

Bonginkosi Ndzamba published an article in *Antimicrobial Agents and Chemotherapy*, investigating ethambutol pharmacokinetics in HIV-positive individuals treated for drug-sensitive tuberculosis.

DOI: [10.1128/aac.01200-24](https://doi.org/10.1128/aac.01200-24)

March 2025

Marie van Wijk published a methodology paper in *CPT: Pharmacometrics & Systems Pharmacology*, proposing a pragmatic approach to handling censored data below the lower limit of quantification in pharmacokinetic modelling.

DOI: [10.1016/S2352-4642\(25\)00025-2](https://doi.org/10.1016/S2352-4642(25)00025-2)

April 2025

Noha Abdelgawad investigated the pharmacokinetics of rifampicin in cerebrospinal fluid and plasma, comparing standard versus high-dose rifampicin in adults with HIV-associated TBM. Her findings were published in *The Journal of Infectious Diseases*.

DOI: [10.1093/infdis/jiaf178](https://doi.org/10.1093/infdis/jiaf178)

April 2025

Hylke Waalewijn recently published an article in the *Lancet Child and Adolescent Health*, highlighting simplification of dosing for children by harmonizing weight bands across different therapeutic areas.

DOI: [10.1016/S2352-4642\(25\)00025-2](https://doi.org/10.1016/S2352-4642(25)00025-2)

April 2025

Sharon Sawe recently published an article in *Antimicrobial Agents and Chemotherapy*, exploring how pregnancy affects levofloxacin exposure. She found it significantly reduced drug levels in pregnant individuals with rifampicin-resistant tuberculosis during the third trimester, supporting the need to consider dose adjustments to ensure effective TB treatment during pregnancy.

DOI: doi.org/10.1128/aac.01626-24

Research internships and collaborations

Uppsala Pharmacometrics Summer School (UPSS)



UPPSALA
UNIVERSITET

The UPSS is a highly regarded program that students across the field look forward to each year. It offers a unique opportunity to advance skills in pharmacometric modeling and simulation through a combination of expert-led sessions and hands-on learning. **Sharon Sawe** and **Jose Calderin Miranda** were accepted into the UPSS last year. We are excited to announce that **Ruvarashe Madzime** and **Jennie van Dyk** have been accepted for the 2025 Summer program, and we look forward to their travels.

PhD Research Stay from Radboudumc

During the final quarter of 2024, our group welcomed Lisanne Bevers for a three-month internship. Lisanne is a PhD student at Radboudumc in Nijmegen, the Netherlands, and her research is primarily focused on optimizing antiviral therapy for children in Africa. During the internship, she worked on a pooled analysis of pharmacokinetics of dolutegravir co-administered with rifampicin in children living with HIV. She will be presenting this work at this year's PAGE meeting in Thessaloniki, Greece, as a poster.

Radboudumc



Updates from our Students and Post-docs

Noha Abdelgawad

Noha joined the group in October 2019. She submitted her PhD thesis and will graduate this year. Her work focuses on using pharmacometrics to address challenges in the treatment of tuberculosis and tuberculosis meningitis. Last November, she presented findings on the pharmacokinetics of various anti-tuberculosis drugs in CNS tissues from a rabbit model at the Tuberculosis Meningitis International Consortium meeting and The Union conference.



Avuyonke Balfour

Avuyonke has recently joined the Pharmacometrics group as a Postdoctoral Research Fellow in March 2025 after submitting his PhD thesis. His Masters and PhD work focused on HIV and TB immunology. His postdoctoral research project will be on using pharmacometrics methods to describe the impact of high-dose rifampicin in critically-ill patients with disseminated HIV-associated TB.



Jose Calderin Miranda

Jose Calderin is a third-year PhD student specializing in the modelling of preclinical and clinical data for drugs used in the treatment of tuberculous meningitis and pulmonary tuberculosis. He has presented his research at several international scientific meetings, including the 2023 and 2024 editions of The Union World Conference on Lung Health, the Population Approach Group in Europe (PAGE) meeting, and most recently, the ISSX Africa Workshop. This year, he will present his latest modelling work at the 33rd PAGE meeting in Thessaloniki, Greece, highlighting the joint modelling of the novel therapeutic candidate TBAJ-876 and its metabolite M3—a collaborative project with Uppsala University, Sweden and the Global Alliance for TB Drug Development.



Manna Semere Gebreyesus

Manna has submitted her PhD thesis and will graduate this year. Her research focused on applying population pharmacokinetic modelling for dose optimization in children and pregnant women.



Allan Kengo

Allan submitted his PhD thesis and will graduate this year. His work in our group focused on the population pharmacokinetic modelling of drug-drug interactions between TB and HIV medications.



Updates from our Students and Post-docs

Ruvarashe Madzime

Ruvarashe has been a PhD student in the group since 2024. She has been working on population modelling of antitubercular drugs in children and pregnant women. Her PhD work also includes modelling of placental biomarkers in women with recurrent pregnancy loss. She presented part of her work entitled “Population pharmacokinetics of high-dose isoniazid in children receiving 12 weeks of once-weekly rifapentine and isoniazid for TB prevention” early this year at the ISSX Africa workshop. She was also awarded a scholarship to attend the PAGE 2025 conference in Greece.



Bonginkosi Ndzamba

Bongi graduated this year March with a degree of master of philosophy in clinical pharmacology, with a distinction. His dissertation was titled: “Pharmacokinetics of ethambutol in South African participants with tuberculosis and HIV”. His article, “Pharmacokinetics of ethambutol and weight banded dosing in South African adults newly diagnosed with tuberculosis and HIV”, was also published early this year in the journal of Antimicrobial Agents and Chemotherapy.



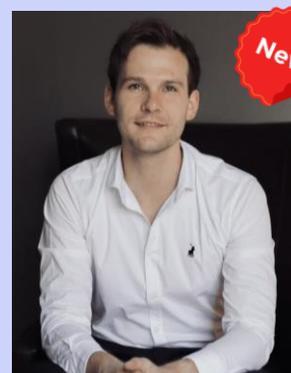
Ivan Nicholas Nkuhairwe

Ivan is in the second year of his PhD. He is currently finalizing his first project, which focuses on characterizing the pharmacokinetics of Amikacin and Ethambutol in patients with MDR-TB. Following this, he will work on the pharmacokinetics of Bedaquiline and Clofazimine in MDR-TB and then investigate the pharmacogenetics of anti-TB drugs in MDR-TB. Ivan will present his work on Amikacin at the upcoming PAGE conference in Greece in June 2025.



Jacques Rossouw

Jacques joined the Pharmacometrics group at UCT as a PhD student in April 2025. For his first project, he will be involved in the Prospective, Randomized, Open-Label Phase II Study of the Safety and Tolerability of Metformin in Combination with Standard Antimicrobial Treatment of Pulmonary Tuberculosis in People Co-infected with HIV (METHOD trial). His work focuses on the pharmacokinetic aspects of the trial, where he will employ population pharmacokinetic modelling to describe and characterize metformin exposure in patients receiving first-line anti-tuberculosis therapy. He is currently undergoing training in biostatistics, applied pharmacokinetics, and NONMEM modelling.



Updates from our Students and Post-docs

Sharon Sawe

Sharon is a third-year PhD student whose research focuses on population pharmacokinetic modelling of second-line tuberculosis and HIV therapies in understudied populations, including pregnant and lactating women, and the exposure of these drugs to their infants. She has presented her work at several scientific platforms, including PAGE, the International Workshop on Clinical Pharmacology of Tuberculosis Drugs, and most recently, the ISSX Africa Workshop. This year, she will present a poster at the 33rd PAGE meeting in Thessaloniki, Greece, titled *“Population pharmacokinetic modelling as a screening tool to expedite evidence for hard-to-study populations: a case study of atazanavir/ritonavir in people with HIV”*.



Ruben van de Venter

Ruben joined the Pharmacometrics group as a PhD student in April this year. His research focuses on characterising drug-drug interactions involving medications commonly co-administered in HIV/TB treatment. The primary aim of his current project is to inform optimal dosing strategies for dolutegravir when given alongside a shortened 4-month tuberculosis regimen that includes rifapentine, moxifloxacin, isoniazid, and pyrazinamide.



Jennie van Dyk

Jennie joined our team as a Master's student, and graduated last year September with distinction. While awaiting her graduation, Jennie began her PhD research, focusing on antimicrobial dose optimisation for paediatric infectious diseases. Now in her second year, she has contributed to several collaborations, including the World Health Organization's Paediatric Antimicrobial Dose Optimisation (PADO) initiative. Jennie has presented her research at both local and international conferences, and has been accepted for the Uppsala Pharmacometrics Summer School, taking place in Sweden in August.



Marie Wijk

In Marie's final year of her PhD studies, she published her analysis on the impact of physiological state and environmental stress on bacterial load estimation methodologies in Scientific Reports, as well as her investigation into ways of handling data below the quantification limit in pharmacokinetic analyses in CPT:PSP, which was also presented at PAGE 2024. She has since submitted her thesis, and is finalizing her last manuscript regarding the impact of rifampicin exposure and other factors on TB time-to-positivity, while awaiting graduation.

