

CURRICULUM VITAE

John Geoffrey Woodland

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EDUCATION AND RESEARCH EXPERIENCE

RESEARCH OFFICER (August 2023 to present)

with Professor Kelly Chibale and Dr Susan Winks, Holistic Drug Discovery and Development (H3D) Centre, University of Cape Town

This is a continuation of my previous role at the H3D Centre: (1) Contributing to chemical biology and medicinal chemistry aspects of drug discovery projects and supervising postgraduate students, and (2) assisting in capacity-building initiatives to train/mentor scientists and increase the scope, visibility and coherence of drug discovery activities across the continent.

JUNIOR RESEARCH FELLOW: CHEMICAL BIOLOGY (February 2021 to July 2023)

with Professor Kelly Chibale, Holistic Drug Discovery and Development (H3D) Centre, University of Cape Town

I conducted research on chemical biology and medicinal chemistry aspects of malaria drug discovery; specifically, mode-of-action studies and target deconvolution of hit compounds active against the human malaria parasite (*Plasmodium falciparum*), the medicinal chemistry optimisation of noncovalent and covalent inhibitors of *Plasmodium* kinases, and the integration of machine learning into workflows at the H3D Centre to reduce compound attrition rates. I co-supervised postgraduate students, mentored postdoctoral fellows and delivered lectures on medicinal chemistry and drug discovery.

POSTDOCTORAL MEDICINAL CHEMIST (January 2019 to January 2021)

with Professor Kelly Chibale, Holistic Drug Discovery and Development (H3D) Centre, University of Cape Town

For two years, I designed and synthesised potential drug leads for malaria through an integrated medicinal chemistry approach, as part of a project that was jointly funded by the Strategic Health Innovation Partnerships (SHIP) of the South African Medical Research Council (SAMRC) and the Medicines for Malaria Venture (MMV).

POSTDOCTORAL RESEARCH FELLOWSHIP (October 2016 to October 2018)

with Professor Janet Hapgood, Department of Molecular and Cell Biology, University of Cape Town

As part of a project entitled "Combination treatment for protection against HIV-1 and pregnancy", my work contributed towards elucidating the role of hormonal contraceptives in HIV acquisition and their mechanisms of cell signalling via steroid receptors. I developed expertise in mammalian tissue culture in BSLII and BSLII+ facilities, metabolite profiling via LC-MS, *in silico* molecular docking and immunofluorescence. Other responsibilities included chairing a weekly seminar series for postgraduate students.

UNIVERSITY

2012-2016: PhD, Department of Chemistry, University of Cape Town, supervised by Professors Timothy Egan and Roger Hunter
Title: **Insights into the mechanism of action of quinoline antimalarials against *Plasmodium falciparum* revealed by novel fluorescent analogues and chemical proteomics** (see bit.ly/3hQ8M0J)

2011: BSc(Hons), Department of Chemistry, University of Cape Town (*First Class*)

2007-2010: BSc specialising in Chemistry and Biochemistry, University of Cape Town (*Dean's Merit List 2009-2010*)

SCHOOL

2006: A-Levels in Chemistry, Mathematics and English Literature as Claude Brown Organ Scholar at Bishops

1993-2005: Grade 0 to Grade 12 at Diocesan College (Bishops) in Cape Town. In my final year, I was elected a College Prefect and Head of the Chapel Choir. Other relevant high school awards included First Place in the Mintek Science Quiz (2005) and Gold Awards at the Young Scientists' Expo (2002) and the UCT Mathematics Competition (2001)

CONFERENCE PRESENTATIONS, AWARDS AND COMPETITIONS

- 2020: Poster Prize** at the symposium "Imaging Africa", University of Cape Town
- 2019: Oral Presentation** at the international symposium "Malaria Research: Crossing Boundaries", Stellenbosch University
- 2018: Royal Society of Chemistry Inspirational Member Award** "for his positive impact through his plays promoting the chemical sciences, and ensuring that the performances were accessible to children from all parts of the local community" (see bit.ly/2Mozg8r for an article describing the award and rsc.li/2OaXt3Z for the official citation)
- 2017:** Identified as a "Healer" in **Mzansi's 100 of 2017: Top 100 Inspiring and Aspiring Leaders** (see bit.ly/2wappAs)
- 2015: National Winner** at the **Young Spectroscopists' Symposium** held at Stellenbosch University
- 2014: First Prize** in the flash talk category at the **SACI-ACS Binational Organic Chemistry Conference** in Stellenbosch
- 2013: First Place** in the **Falling Walls Lab 2013** in Johannesburg followed by **Third Place** in the **Falling Walls Young Innovator of the Year 2013** competition in Berlin, Germany, which resulted in an invitation to deliver an oral presentation at the **Falling Walls Conference** in Berlin, billed as "The International Conference on Future Breakthroughs in Science and Society"
- 2013: Second Place** in the inaugural **FameLab South Africa** ("Pop idols for scientists") in Grahamstown, South Africa
- Best Poster Prize** at the **SACI Young Chemists' Symposium** in **2013** (Stellenbosch) and **2011** (University of the Western Cape)

OTHER INTERNATIONAL CONFERENCE PRESENTATIONS

- 2015:** Poster presentation at the **EMBL Symposium "Seeing is Believing: Imaging the Processes of Life"**, Heidelberg, Germany
- 2015:** Poster and flash talk at the **Single-Molecule Spectroscopy and Microscopy: Faraday Discussion**, London, UK
- 2013:** Poster presentation at the **International Conference on Bioinorganic Chemistry**, Grenoble, France

SCIENTIFIC PUBLICATIONS ([Google Scholar](#) / [ORCID](#))

- 1 Gemma Turon, Jason Hlozek, [John G. Woodland](#), Kelly Chibale and Miquel Duran-Frigola, **First fully-automated AI/ML virtual screening cascade implemented at a drug discovery centre in Africa**, *Nature Communications*, 2023, **14**, 5736. DOI: [doi.org/10.1038/s41467-023-41512-2](#)
- 2 [John G. Woodland](#), Gregory S. Basarab, Koketso Mogwera, Susan Winks and Kelly Chibale, **The 2022 H3D Symposium: Celebrating over a Decade of African-Led Infectious Disease Drug Discovery to Enhance Global Health**, *ACS Infectious Diseases*, 2023, **9**, 389–393. DOI: [doi.org/10.1021/acsinfectdis.3c00041](#)
- 3 Susan Winks, [John G. Woodland](#), Goonaseelan 'Colin' Pillay and Kelly Chibale, **Fostering drug discovery and development in Africa**, *Nature Medicine*, 2022, **28**, 1523–1526. DOI: [doi.org/10.1038/s41591-022-01885-1](#)
- 4 Godfrey Mayoka*, [John G. Woodland](#)* and Kelly Chibale, **Thwarting protein synthesis leads to malaria parasite paralysis**, *Trends in Parasitology*, 2022, **38**, 719–721. DOI: [doi.org/10.1016/j.pt.2022.07.001](#) (* These authors contributed equally to this work)
- 5 [John G. Woodland](#) and Kelly Chibale, **Quinine fever**, *Nature Chemistry*, 2022, **14**, 112. DOI: [doi.org/10.1038/s41557-021-00872-2](#)
- 6 [John G. Woodland](#) and Kelly Chibale, **Plasmodium Kinase Inhibitors as Potential Multistage Active Antimalarials**, Chapter 12 in *2021 Medicinal Chemistry Reviews (Volume 56)*, American Chemical Society, 2021. DOI: [doi.org/10.29200/acsmedchemrev-v56.ch12](#)
- 7 Kelly Chibale, Kathryn J. Wicht and [John G. Woodland](#), **Editorial (Virtual Issue): Medicinal Chemistry Out of Africa**, *Journal of Medicinal Chemistry*, 2021, **64**, 10513–10516. DOI: [doi.org/10.1021/acs.jmedchem.1c01183](#)
- 8 Claire Le Manach, Jean Dam, [John G. Woodland](#), [...] James Duffy and Kelly Chibale, **Identification and profiling of a novel diazaspiro[3.4]octane chemical series active against multiple stages of the human malaria parasite *Plasmodium falciparum* and optimization efforts**, *Journal of Medicinal Chemistry*, 2021, **64**, 2291–2309. DOI: [doi.org/10.1021/acs.jmedchem.1c00034](#)
- 9 Salndave B. Skosana, [John G. Woodland](#), [...] Donita Africander, Karl-Heinz Storbeck and Janet P. Hapgood, **Differential metabolism of clinically-relevant progestogens in cell lines and tissue: Implications for biological mechanisms**, *Journal of Steroid Biochemistry and Molecular Biology*, 2019, **189**, 145–153. DOI: [doi.org/10.1016/j.jsmb.2019.02.010](#)
- 10 [John G. Woodland](#), Roger Hunter, Peter J. Smith and Timothy J. Egan, **Chemical proteomics and super-resolution imaging reveal that chloroquine interacts with *Plasmodium falciparum* multidrug resistance-associated protein and lipids**, *ACS Chemical Biology*, 2018, **13**, 2939–2948. DOI: [doi.org/10.1021/acscchembio.8b00583](#)
- 11 Michelle F. Maritz, Roslyn M. Ray, Alexis J. Bick, Michele Tomasicchio, [John G. Woodland](#), Yashini Govender, Chanel Avenant and Janet P. Hapgood, **Medroxyprogesterone acetate, unlike norethisterone, increases HIV-1 replication in human peripheral blood mononuclear cells and an indicator cell line via mechanisms involving the glucocorticoid receptor, increased CD4/CD8 ratios and CCR5 levels**, *PLOS ONE*, 2018, **13**(4), e0196043. DOI: [doi.org/10.1371/journal.pone.0196043](#)
- 12 [John G. Woodland](#), Roger Hunter, Peter J. Smith and Timothy J. Egan, **Shining new light on ancient drugs: Preparation and subcellular localisation of novel fluorescent analogues of *Cinchona* alkaloids in intraerythrocytic *Plasmodium falciparum***, *Organic & Biomolecular Chemistry*, 2017, **15**, 589–597. DOI: [doi.org/10.1039/C6OB02110G](#)
★ This article was featured on the cover of *Organic & Biomolecular Chemistry* and was identified as a “2016 Hot Article”
- 13 **Provisional Patent Application SA 2013/05171**. T. J. Egan, R. Hunter and [J. G. Woodland](#), “Fluorescent Sensors for Haem”

SCIENCE ENGAGEMENT

I am passionate about bridging the gap between science and the South African public. As a postgraduate student, I was enthusiastically involved with the UCT Department of Chemistry's outreach programme (see below). I frequently deliver public talks (such as for the global “Pint of Science” initiative, see [bit.ly/2muMKbP](#)) and my articles for a general audience have been published in *Chemistry World*, the *Mail & Guardian*, *Daily Maverick* and on the *Medium* online platform.

PROFESSIONAL MEMBERSHIPS

- 1 **Member of the Royal Society of Chemistry (MRSC)** since 2018 (Membership Number 469857)
★ I joined the Royal Society of Chemistry in 2013 and have served on the committee of the South Africa (South) Local Section since 2014
- 2 **Member of the South African Chemical Institute** since 2012 (Membership Number 10574)

MUSICAL QUALIFICATIONS AND RECREATIONAL ACTIVITIES

- 1 Winner of the **South African Radio Award in the Best Community Music Show** category (2022)
- 2 Awards for the University of Cape Town Choir under my leadership: **Best University Choir** in the National Finals of the ATKV-Animato Choir Competition (2012) and **Most Outstanding Senior Choir** in the Cape Town Eisteddfod (2012)
- 3 **Licentiate of Trinity College London (LTCL) in Organ Performance** with Distinction (2007)
- 4 Qualifications from the Associated Board of the Royal Schools of Music (ABRSM): **Theory of Music Grade 8** with Distinction (2006), **Organ Grade 8** with Distinction (2005) and **Piano Grade 8** with Distinction (2004)
- 5 Completion of four **Cape Town Cycle Tours** (109 km: 2008-2010, 2014), three **Two Oceans Half-Marathons** (21.1 km: 2010, 2011, 2013), two **Gun Run Half-Marathons** (21.1 km: 2013, 2017) and two **Two Oceans Long Trail Runs** (24 km: 2016, 2018)

COMMUNITY ENGAGEMENT AND PROFESSIONAL DEVELOPMENT

- 1 **Fine Music Radio 101.3 FM – Broadcaster (May 2006 to present)**
I am a volunteer broadcaster at Fine Music Radio, a community radio station, for which I produce classical music programmes approximately monthly. These include the broadcasts of the Cape Town Philharmonic Orchestra's performances from the Cape Town City Hall and for which I also share the pre-concert talks.
- 2 **VOX Cape Town – Founder and Director (July 2015 to present)**
In 2015 I founded VOX Cape Town, an innovative choral collective comprising approximately 30 singers that aims to create intimate, immersive experiences to enrich the musical life of Cape Town. With over 100 performances to date, the group is also registered as a non-profit organisation (197-784 NPO) to ensure its sustainability.
- 3 **UCT Department of Chemistry – Tutor and Demonstrator (January 2011 to June 2016)**
During my postgraduate career, I was a tutor and demonstrator for all the major undergraduate chemistry courses at UCT. I assisted with numerous open days and co-wrote and co-directed three plays about chemistry for schoolchildren with titles such as *Harry Potter and the Molecule of Doom*. In 2014 I was the chief co-organiser of the SACI/RSC Western Cape Young Chemists' Symposium, an event for local postgraduates in the chemical sciences.
- 4 **UCT Choir – Musical Director (January 2010 to December 2012)**
For three years I trained and conducted the UCT Choir, the most diverse ensemble on campus. During that time, the UCT Choir recorded four CDs and entrenched itself in the musical life of the university. Notable performances included singing for Sir David Attenborough and the Prince of Wales. In 2012, the UCT Choir embarked on a national tour to the Eastern Cape. Outreach initiatives included weekly choral tutoring at Sinethemba Secondary School in Crossroads.