

Guy Oldrieve, PhD

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Summary

Over the past six years, I have applied my passion for bioinformatics to projects focused on Hosts, Pathogens and Global Health. I specialise in developing user-friendly and efficient pipelines to analyse and manage large-scale multi-omic projects.

Skills

Python

R

bash

Nextflow

nf-test

GitHub+Actions

AWS/HPC

ML

EXPERIENCE

Bioinformatician — Animal and Plant Health Agency

2025 - Present

- Developed (btb-forestry) and improved (btb-seq) nf-test CI capacity for ISO-17025 certified Nextflow pipelines used to process sequencing data and perform phylogenetic analysis of bovine TB isolates
- Created btb-sub, a nextflow pipeline which automates the submission of routine TB sequencing data to ENA

Postdoctoral Research Associate — The University of Edinburgh

2023 - 2025

- Created vsgseq2, an efficient Nextflow pipeline that processes cDNA amplicon data to analyse the expression of complex gene families used for antigenic variation (GitHub: vsgseq2)
 - o vsgseq2 utilises nf-test based unit/integration testing and Docker to ease distribution
 - o Utilised vsgseq2 to analyse hundreds of longitudinal in vivo infection samples.
 - o Generated high-quality genome assemblies from PacBio, ONT and Hi-C sequencing to understand the genomic background of expression analysis
- Developed a real-time diagnostic tool to detect outbreaks of *T. brucei* in the field using minION-based amplicon sequencing
 - o Created an app which allows submission of data via a GUI
 - o Performed the wet lab based amplicon generation and sequencing
 - o Simultaneously supervised two students in wet lab and bioinformatics
- Delivered team training in HPC use and managed HPC environments, ensuring secure data handling and streamlined analysis workflows
- Co-authored the first profile of the *Trypanosoma brucei* cell cycle with single-cell RNAseq
- Council member for the British Society for Parasitology, promoting the adoption of emerging technologies through web interface tutorials
- Reviewed articles for journals such as Trends in Parasitology, PLOS NTD, Frontiers in Cellular and Infection Microbiology and Parasitology Research

PhD in Hosts, Pathogens, and Global Health — The University of Edinburgh

2018 - 2023

- Developed a Snakemake pipeline to investigate the phylogenetic association and mechanisms behind life cycle simplification in *Trypanosoma brucei*. Identified specific mutations which limit a cell's ability to receive oligopeptide-based quorum sensing signals
- Confirmed my in silico predictions through genetic manipulations with CRISPR/Cas9
- Sequenced and assembled the genome of a neglected parasite remotely using a MinION, emphasising independent research and problem-solving during pandemic-enforced absence from the lab

- Presented findings to scientific and general audiences at international conferences
- Supervised and mentored a student researcher, teaching them the required skills to assemble a genome and perform large-scale comparative genomics, leading to a co-authored publication

MSc in Hosts, Pathogens and Global Health — The University of Edinburgh 2018 - 2019

- Identified the relationship between 100's of bacterial isolates with machine learning and data visualisation in R.
- Created an R-based data mining approach to compare 1,000s of unstructured datasets to identify biomarkers of severe malaria.

Research Assistant — Cardiff University 2013 - 2018

- Utilised machine learning tools (scikit-learn) to classify phylogenetic relationships of transcriptome data.

EDUCATION

- PhD in Hosts, Pathogens, and Global Health at University of Edinburgh (**Ker Memorial Prize**) 2018 - 2023
- MSc in Hosts, Pathogens and Global Health at University of Edinburgh (**Merit**) 2018 - 2019
- Integrated Master's in Biology (MBiol) at Cardiff University (**First-class**) 2013 - 2018

PUBLICATIONS

- **Oldrieve G.**, et al. (2025). vsgseq2: an updated pipeline for analysis of the diversity and abundance of population-wide Trypanosoma brucei VSG expression. In Prep.: Wellcome Open Research.
- Vancaester E., **Oldrieve G.**, et al. (2025) Ghosts of symbionts past: The hidden history of the dynamic association between filarial nematodes and their Wolbachia endosymbionts. Accepted: G3.
- **Oldrieve G.**, et al. (2024) Mechanisms of life cycle simplification in African trypanosomes. Nature Communications.
- Briggs E., Marques C., **Oldrieve G.**, et al. (2023). Profiling the Trypanosoma brucei cell cycle using single-cell transcriptomics. eLife.
- **Oldrieve G.**, et al. (2022). The genomic basis of host and vector specificity in non-pathogenic trypanosomatids. Biology Open.
- **Oldrieve G.**, et al. (2021). Monomorphic Trypanozoon: towards reconciling phylogeny and pathologies. Microbial Genomics.

AWARDS

- **Ker Memorial Prize** for the most outstanding PhD thesis in infectious diseases from across the University of Edinburgh (2024)
- **Best poster** at the Edinburgh Infectious Diseases symposium (2020)
- **Best performance** Integrated master's in biology (2018)

INTERESTS

- Endurance Events: Ljubljana, Loch Ness and Edinburgh marathon (2023-Present)
- Captain of Lismore RFC: Led a diverse group of over 50 players (2020-2023)