KidneyGenAfrica: 1st Training Workshop

25th – 30th January 2026

University of the Witwatersrand, Johannesburg, South Africa

Objectives

Day 1 - Defining CKD in Africa

Objective 1: To understand clinical phenotypes of kidney disease and biomarkers of kidney function.

Objective 2: To understand the epidemiology of CKD in Africa, including prevalence, incidence, risk factors, chronic conditions, and multimorbidity.

Day 2 - Genetic epidemiology of CKD in African populations

Objective 3: To revise what is known about the genetic factors contributing to kidney disease in Africa.

Objective 4: To critically appraise the role of *APOL1* in kidney disease in African-ancestry populations.

Day 3 - Genetic association studies for kidney-related phenotypes

Objective 5: To develop an in-depth understanding of Genome-Wide Association Studies (GWAS) design, analysis, and interpretation in the context of kidney-related phenotypes.

Objective 6 To review genetic association studies for kidney-related phenotypes among European and African ancestry populations and identify current knowledge gaps.

Day 4 - Beyond GWAS for kidney-related phenotypes

Objective 7a: To understand how GWAS results, integrated with molecular phenotypes can illuminate both the biology and the clinical landscape of complex traits

Objective 7b: To understand the construction, validation, and limitations of PRS and explore how they can be applied to predict kidney disease risk in African populations and explore the value of integrated multiomic approaches to understanding kidney disease.

For the duration of the workshop

Objective 8: To understand the ethical and regulatory landscape related to the use of genomic data for research, and how it relates to community engagement, individual study participant consent processes, data sharing, adherence to the FAIR principles, and collaborating in large genomic consortia.

Objective 9: To develop skills to effectively present genetic epidemiology findings related to kidney disease, including data visualisation and oral presentation.

Trainers

List of confirmed trainers & support (in person)

- Anneli Cooper
- Annette MacLeod
- Cassianne Robinson-Cohen
- Cindy George
- Cristian Pattaro
- Jean Tristan Brandenburg
- June Fabian
- Lisa Campbell
- Michele Ramsay
- Michelle Bishop
- Oyekanmi Nash
- Oyesola Ojewunmi
- Rebecca Camenzuli
- Saabira Amod
- Segun Fatumo
- Shaun Aron
- Vaishnavi Vikas Gangadhar
- Walt Adamson
- Mia Crampin (for Annual Partnership Meeting)
- Nicola Mulder (for Annual Partnership Meeting)

TBC: Robert Kalyesubula

Online:

1. Andrew Morris (online talk)
2. Eleftheria Zeggini (pre-recorded talk)
3. Dorothea Nitsch (online talk)
4. Laurie Tomlinson (online talk)
5. Charles Rotimi (online plenary)

	Workshop Programme	Potential speakers
Day 0 (25th)	**Welcome day**	
15:00-16:00	**Registration**	Becky/June Saabira/Lisa
16:00-18:00	**Welcome and introductions** *Goal*: "break the ice", facilitate connections within the group and with coordinators, create a shared learning environment, and address expectations. **Engaging in active learning**: how to get the most out of this workshop **3-minute participant introductions**: use a standardized content slide **Q&A**	Michelle Bishop
	Intro to the workshop	June Fabian+Segun Fatumo
18h00-20h00	**Informal Dinner (at the venue)**	June/Lisa
Day 1 (26th)	**CKD Phenotypes & the Epidemiology of CKD in Africa** *Goal:* Examine the burden of CKD, disparities, and the unique context in Africa	
09:00-10:45	**Session 1: Overview of kidney function, kidney disease, and associated risks**	
	Introduction to kidney function & pathophysiology	Robert Kalyesubula (09h00-09h45) 10 minutes Q/A
	Kidney disease and associated risk: contextualizing mechanisms of injury and differences between global geographies	June Fabian (09h55-10h35) 10 minutes Q/A
10:45-11:15	**Morning Break**	
11:15-13:00	**Session 2: Measuring kidney function and understanding definitions of CKD**	
	The use of biomarkers to assess kidney function	June Fabian (11h15-11h40)
	Introducing the KDIGO CKD Guidelines 2024: Definitions of CKD and their relationship to morbidity and mortality, and risk prediction	Robert Kalyesubula (11h45-12h15)
	CKD Cohorts: Not every cohort is created equally Open discussion: AWI-Gen, UGR, ARK, MEIRU, H3Africa, KidneyGenAfrica, CKD-Africa, African diaspora cohorts (MVP/All of Us/UK Biobank), TrypanoGen.	Anette MacLeod, Cindy George, Segun Fatumo, Michele Ramsay, Interactive session: Facilitated by Robert Kalyesubula + June Fabian (12h20-12h55)
13:00-14:00	**Lunch Break**	

14:00-15:30	**Session 3** **The epidemiology of CKD** Large-scale epidemiological studies (Global Burden of Disease; ISN): contextualize findings, limitations, and how they apply to low-resource settings. **Recap of the day** Interactive session with the candidates, summary of key concepts. Introduction of core concepts for the case studies.	Cindy George 14h00-14h50 10 minutes Q&A Robert Kalyesubula, June Fabian 15h00 – 15h30
15:30-16:00	**Afternoon Break**	
16:00-17:30	**Practical:** Case studies using CKD phenotypes across African cohorts, with different questions for each group. **Introducing Genetic determinants of glomerular filtration.** Impact of African-Enriched GATM Regulatory Variants on Creatinine-Derived eGFR	Robert Kalyesubula June Fabian 16h00-17h00 Olivia Gray 17h00-17h30
Day 2 (27th)	**Genetic contributors to kidney disease in African populations** *Goal:* To review monogenic and polygenic contributors to kidney disease in African populations, and how these differ along the life course. We will focus specifically on ***APOL1*-associated kidney disease in Africa.** *Goal*: Understand the origin and distribution of *APOL1* variants in Africa, and differences between *APOL1* risk in continental vs diaspora African ancestry populations.	
09:00-10:45	**Session 1: *APOL1* background and evolutionary context** Protective role with trypanosomiasis, variants associated with CKD, and penetrance in the AWI-Gen Cohort. Human African Trypanosomiasis: Susceptibility and resistance of *APOL1* renal risk variants in African populations – perspectives from the TrypanoGEN Network.	Jean-Tristan Brandenberg 09h00-09h30 10 minutes Q/A Annette MacLeod + Anneli Cooper 09h45-10h35 10 minutes Q/A
10:45-11:15	**Morning Break**	
11:15-13:00	**Session 2** ***APOL1*-mediated kidney disease in African American diaspora populations** (including an update on precision-informed *APOL-1* drug development targets in the USA, implications for kidney transplantation, equitable access, ethics and policy considerations, and interpreting KDIGO guidance in the context of African realities). **All APOL1 variants are equal, but some are more equal than others** Impact of APOL1 variants on clinical CKD and non-CKD phenotypes	Cassianne Robinson-Cohen 11h15-12h05 10 minutes Q/A Walt Adamson 12h15-12h50 10 minutes Q/A
13:00-14:00	**Lunch Break**	

14:00-15:30	**Practical:** Convert provided genotype data *to APOL1* risk haplotypes, discuss the meaning of the results, and their interpretation in clinical and research cohorts.	Michele Ramsay, Walt Adamson, Anette MacLeod, Anneli Cooper
15:30-16:00	**Afternoon Break**	
16:00-17:30	**Keynote from Professor Charles Rotimi** **African genetic diversity – role in complex diseases: Online**	
Day 3 (28th)	**Genome-Wide Association Studies (GWAS) in CKD** *Goal:* Introduce GWAS concepts and methods, and provide participants with hands-on experience in designing, running, and interpreting GWAS for kidney phenotypes in African cohorts.	
09:00-10:45	**GWAS foundations** GWAS, general concepts. Hypothesis-free vs hypothesis-driven approaches. Complex traits and genetic models. Focus on CKD phenotypes. What can we learn from population and clinical contexts? **Data preparation and quality control** Genotyping arrays and imputation, the importance of reference panels for African data. Quality control: call rates, Hardy–Weinberg equilibrium, and MAF thresholds. Population stratification: principal component analysis, admixture.	Cristian Pattaro (45') Oyesola Ojewunmi (1h)
10:45-11:15	**Morning Break**	
11:15-13:00	**Running GWAS** Association testing using linear/logistic regression, covariate adjustment, output, and visualisation using Manhattan and QQ plots. GWAS meta-analyses. **African perspectives on GWAS for complex disorders and traits** Shorter LD blocks and higher diversity, limited reference panels for imputation, and smaller sample sizes. Incl. Illumina H3Africa array.	Cristian Pattaro (1h) Michele Ramsay (45')
13:00-14:00	**Lunch Break**	
14:00-15:30	**Practical: Mini-GWAS (R/PLINK lab)** Run QC and a regression-based GWAS using a dummy CKD dataset, generate outputs, and interpret results.	Jean Tristan Brandenburg, Oyesola Ojewunmi
15:30-16:00	**Afternoon Break**	
16:00-17:30	**Trans ancestry meta-analysis: Online**	Andrew Morris
Day 4 (29th)	**From GWAS to the biology of CKD and risk prediction** *Goal*: To understand how GWAS findings are translated into biological insight and risk prediction, through post-GWAS functional analysis, polygenic risk scores (PRS), and an introduction to multi-omics approaches.	
09:00-10:45	**Post-GWAS Functional Analysis:** Fine-mapping, Conditional analysis, functional annotation using various tools (FUMA, VEP, GTEx, kidney eQTLs), gene-set analysis, colocalization with expression (eQTL, pQTL) **Multi-omics approaches to link GWAS loci to functional pathways and therapeutics**: proteomics, transcriptomics, metabolomics,	Cassianne Robinson-Cohen (1h15) Cristian Pattaro (30')

	exposomics, and using omics to identify pathways that can be targeted for innovative drug development. Include relevant case examples, including the *GATM* locus (creatinine metabolism → functional annotation → proteomic signatures).	
10:45-11:15	**Morning Break**	
11:15-13:00	**Multi-omics approaches to link GWAS loci to functional pathways and therapeutics** (continued) **Practical 1: Using FUMA for GWAS interpretation**	Cristian Pattaro (30') Jean Tristan Brandenburg, Oyesola Ojewunmi (1h)
13:00-14:00	**Lunch Break**	
14:00-15:30	**Introduction to Polygenic Risk Scores** **Practical 2: Case interpretation (Breakaway groups)** Review relevant papers published by African CKD research groups. 1) https://pubmed.ncbi.nlm.nih.gov/35577564/ 2) https://www.researchsquare.com/article/rs-5555692/v1 3) https://www.nejm.org/doi/full/10.1056/NEJMoa2404211 4) https://pubmed.ncbi.nlm.nih.gov/33783510/	Cassianne Robinson-Cohen (30') Segun Fatumo, Michele Ramsay (1h)
15:30-16:00	**Afternoon Break**	
16:00-16:30	**Pre-recorded lecture:** The use of GWAS summary stats to expand knowledge on T2D biology and clinical epidemiology landscape	Eleftheria Zeggini
16:30-17:30	**The promises PRS for precision medicine in Africa – hope or hype for CKD**	Segun Fatumo
Day 5	**Integrating ethical considerations for using genomic data in Africa, KidneyGenAfrica research opportunities, and next steps** *Goal*: Consolidate learning from the week, reflect on ethical and policy issues in African genomics, and plan next steps in kidney genomics research for participants.	
09:00-10:45	**Ethics, Data & Community Engagement** WHO guidance on genomics and equity, genomic ethics in African contexts - addressing informed consent, broad consent, re-use of samples, and returning results, benefit sharing, and data justice; understanding the complexities of FAIR data principles (Findable, Accessible, Interoperable, Reusable) and challenges in African settings - connectivity, HPC/cloud access, costs, regulatory restrictions. Interactive questions – Menti Navigating access to international databases (EGA, dbGaP, GA4GH, AllofUs), and exploring local solutions: H3Africa Data Archive, H3ABioNet, institutional HPCs. (focus on ethical issues)	Michele Ramsay Michelle Bishop
10:45-11:15	**Morning Break**	

11:15-12:50	**Interactive Panel - Research Careers & Funding Pathways:** Publishing strategies (open access, consortia authorship) Fellowship and grant opportunities (H3Africa, Wellcome, GACD, NIH Fogarty, UKRI) Career-building in genomics: networks, mentorship, and grant-writing skills	Michele Ramsay, Nicola Mulder, Mia Crampin, David Twesigomwe , Oyekanmi Nash: Facilitator Michelle Bishop
12:50-13:00	**Wrap-up**	Segun and June
13:00-14:00	**Lunch Break**	
14:00-17:00	**Annual KidneyGenAfrica Partnership Meeting (faculty, SAB, SC)**	
14:00-17:00 17h00-21h00	**Breakaway groups (self-appointed):** Design a mini research proposal for presentation online after the meeting. Objective is to pitch ideas for seed funding proposals in collaboration with KidneyGenAfica partner groups. **Guided Tour of the Origins Centre (Wits) and sit-down dinner at the Origins Centre**	