



UNIVERSITY OF ZIMBABWE

Faculty of Medicine and Health Sciences – ENRICH Program  
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## **Training opportunities for Post-doctoral Fellowships (Cohort 1)**

Enhancing Non-Communicable Disease Research and Innovation Capacity in Harare (ENRICH) is a program funded by the National Institutes of Health (NIH) at the University of Zimbabwe Faculty of Medicine and Health Sciences (UZFMHS) to address the burden of NCDs in Zimbabwe, as an emerging major cause of morbidity and mortality in sub-Saharan Africa. In Zimbabwe, there is a critical lack of competent and independent researchers to monitor the epidemiological changes in NCD risk factor pattern and morbidity. Monitoring these changes is critical for health service planners and requires well trained researchers to provide robust and credible data and statistics on trends for health care planning and policy making. The **ENRICH** program intends to address this challenge by implementing a research training programme whose major objectives are:

- 1) To mitigate the critical shortage of researchers in NCDs to address this emerging national priority health area in Zimbabwe.
- 2) As part of the training and capacity building, to conduct NCD mentored research projects.

The ENRICH program will be implemented by UZFMHS faculty in collaboration with faculty from local, regional and international partners such as African Institute of Biomedical Science and Technology (AiBST), University of the Witwatersrand, University of KwaZulu-Natal and University of Colorado Denver. The programme is inviting interested applicants to submit applications towards Masters, PhD and Post-doctoral fellowships. The fellowships which are FULL TIME, 2 years Post-Doctoral starting in April 2022. Potential candidates must focus on the following specific **NCD areas**:

### **1. Genomic Post-Doc training**

The ENRICH program recognizes the emerging importance of genomics in the understanding of disease mechanisms, discovery of drugs, development of diagnostic tools and the implementation of precision medicines. Through AiBST Genetic Laboratory, there is capacity to train clinicians and laboratory scientists to conduct research on genomic aspects of NCDs (neurodegenerative disease parkinsonism, dementia, dilated cardiomyopathy etc.)

**Concept/Objective:** To train a post doc in genomic research related to NCDs. The training will involve application of next generation sequencing (**NGS**), whole exome sequencing (**WE/GS**), single cell sequencing (**SCS**) and genome wide association (**GWAS**) studies. The training will include bioinformatics and sequence analysis pipelines to understand the role of genomics in disease risk and /or drug response.

Scientific Mentor: **Prof C Masimirembwa**

**Level of fellowship: Post-Doctoral**

### **2. Clopidogrel pharmacogenetics in an African stroke population in Zimbabwe.**

Clopidogrel is a prodrug used as a platelet P2Y12 receptor inhibitor. It is indicated for preventing major strokes in patients who have had TIA or minor CVA. Studies in Asians and Caucasians have shown marked polymorphism and variability in the hepatic enzyme, CYP2C19, in the metabolism of clopidogrel. The variability in hepatic handling of clopidogrel may lead to marked variability in effectiveness and potential side effects like bleeding. Patient CYP2C19 genetic status based clinical guidelines have been subsequently developed to assist clinicians in drug and dosage choice. Although in Zimbabwe we now use clopidogrel

as first line treatment in the stroke unit, the hepatic handling of this prodrug has not been assessed amongst black stroke patients.

**Concept/Objective:** To assess CYP2C19 genotype in +200 black TIA and stroke patients in the stroke unit being treated with clopidogrel. The study will evaluate the association between CYP2C19 genotype with exposure levels of active metabolite of clopidogrel and extent of P2Y12 receptor inhibition.

Scientific Mentor: **Dr G Ngwende**  
**Prof C Masimirembwa**

**Level of Fellowship: Post-Doctoral**

### **3. Demographic Health Survey**

#### **Demographic and NCD Health Survey**

Zimbabwe like other low-income countries has been overburdened by communicable diseases and mother-child morbidity and mortality. With an HIV prevalence of 12.6% of adults and TB incidence of 603/100000, the focus of health planners and policy makers in the last two decades has been on the HIV pandemic and its complications. The Zimbabwe Demographic and Health Survey carried out periodically by the Ministry of Health and Child Care has tracked demographic and health indicators since 1988. The health indicators focused on HIV, clean water supply and sanitation, fertility and family planning and mother and child mortality while sociodemographic issues compared rural and urban populations.

Recent reports by GBD and WHO have highlighted the emergence of NCDs as major cause of morbidity and mortality in LMIC caused by changing lifestyles and increasing life expectancy. Life expectancy has risen from 47 in 1971 to 61.7 in 2021. Zimbabwe may be going through a significant epidemiological transition. The next census is April 2022. There are no current or contemporary data on NCD indicators or prevalence rates although the MOHCC has declared NCD as a priority area. The lack of current NCD prevalence data is partly due to lack of trained NCD researchers in the country.

**Concept/Objective:** To carry out a DHS focusing on NCD in clearly defined “rural” and “urban” population.

Scientific Mentor: **Prof S Rusakaniko**  
**Prof JA Matenga**

**Level of Fellowship: Post-Doctoral**

#### **Eligibility Criteria**

*Post-doctoral Applicants must:*

- Have a Master’s degree in a relevant discipline in health and social sciences, and a PhD.
- Have research or programmatic experience in NCDs or other related conditions.
- Have high academic merit and intellectual capacity to study successfully at the doctoral level.
- Show strong personal motivation to complete the programme within the stipulated fellowship timeframe.
- Have identified a research project from the priority NCD focus areas highlighted above with clear aims and achievable objectives.

*Post-doctoral Applicants for Genomics training must:*

- Have the following competencies:
  1. Laboratory expertise in PCR, RT-PCR and Sanger sequencing
  2. Working knowledge of bioinformatics with respect to sequence data formats, genetic/genomic databases, sequence data analysis pipelines

3. Knowledge and awareness of Next Generation Sequencing (NGS)
- Have the following qualifications:
    1. PhD in genetic/genomic research that involved laboratory work with PCR, RT-PCR and Sanger sequencing.
    2. At least five years of relevant research experience since receipt of their most recent doctoral degree(s).
    3. Show evidence of strong scholarly performance and commitment to publishing, with an established publication record ( $\geq$  three manuscripts), in refereed or peer-reviewed journals.
  - The following skills and attributes will have a significant advantage
    1. Laboratory experience with next generation sequencing
    2. Knowledge and application of Linux, R, Python, and other bioinformatic programming and data analysis tools
    3. Experience in the design and conduct of genomic studies aimed at discovering or validating biomarkers for disease risk or drug response.
    4. BSc and MSc degrees that were in the biomedical field with strong focus on molecular biology, thus have a strong grounding in the subject.
  - Show evidence of commitment to continue practising, teaching, and researching in Zimbabwe during training
  - Have communicated with the given mentor for the area of training.

### **Fellowship package**

The ENRICH fellowship will cover the following:

- Tuition fees
- Support for research project and supervision
- Monthly stipend for protected research time
- Travel costs for agreed conferences and training workshops
- Other expenses essential for the proposed research project (e.g., materials, equipment, publication) will be considered

### **Additional information**

- Candidates are required to work with indicated mentor to develop their concepts.
- Candidates are expected to register for their studies with the University of Zimbabwe for Masters and PhD.
- Candidates must complete the fellowship within the stipulated time frame.
- As a condition of the award, ENRICH stipulates that the candidate attend relevant specific workshops and/or short courses such as research methods provided by the program.
- *Involvement in an existing research program /project will be essential but not a requirement.* Please note that ENRICH may require additional information, over and above information supplied in the application, to reach a decision about the suitability of any candidate for the award of the fellowship.
- Female candidates are especially encouraged to apply.

### **Application requirements**

1. A fully completed application form
2. A comprehensive maximum 5 page CV including relevant research and work experience
3. Certified transcripts and copies of post high school qualifications submitted as ONE pdf file.
4. Certified Copy of National ID or Passport
5. Two references ( from the mentor and another academic) emailed directly to: Mr Antony Matsika on [antony.matsika@gmail.com](mailto:antony.matsika@gmail.com) not later than one week following the application deadline below.

Requests for application forms and/or more information as well as contractual issues should be addressed to [antony.matsika@gmail.com](mailto:antony.matsika@gmail.com)

**Submit completed application to: Mr Antony Matsika on [antony.matsika@gmail.com](mailto:antony.matsika@gmail.com)**

**Deadline for submission: 7 March 2022**