

The University of KwaZulu-Natal (UKZN) is committed to Employment Equity with the intention to promote representivity within the Institution. Preference will be given to applicants from designated groups in accordance with the Employment Equity Plan.

COLLEGE OF AGRICULTURE, ENGINEERING AND SCIENCE

**SCHOOL OF LIFE SCIENCES
POSTDOCTORAL FELLOWSHIP (4 POSTS)**

WESTVILLE AND PIETERMARITZBURG CAMPUS

The University of KwaZulu-Natal is one of the top Universities in South Africa and in the top 500 Universities globally. The School of Life Sciences has a long-standing tradition in research and teaching, with a vibrant postgraduate research programme. The School has openings for six multidisciplinary postdoctoral fellowship positions in different key research areas as detailed below:

1. Zebrafish Research Facility (ZRF) Postdoctoral fellow (Ref SLS_PDF2022/03)

Zebrafish represent a powerful research model for investigating vertebrate biology and human disease. The recently established UKZN Zebrafish Research Facility (ZRF) within the School of Life Sciences (SLS) on the Pietermaritzburg Campus seeks to appoint a dedicated ZRF postdoctoral fellow. The incumbent will work with a group of scientists from within the SLS as well as the School of Engineering to investigate the toxicity of biological compounds, their effect on the development of disease and their use as an approach to understanding fish and flow interactions in the environment.

The successful candidate must have previous zebrafish research experience, either during postgraduate PhD studies or postdoctoral research. The incumbent will not only assist in the planned research, but is also expected to be actively involved in the preparation of manuscripts for publication as well as mentoring of postgraduate students to: a) understand aspects related to toxicity of compounds that have both ecological and health applications; b) investigate diseases such as diabetes and neurodegenerative diseases, and c) investigate the role of fluid mechanics in ecological conservation and engineering design.

Minimum Requirements

- PhD in Biotechnology (or a closely related field) obtained within the past 5 years.
- Prior zebrafish husbandry and research experience.
- Practical expertise in cellular, molecular biology as well as experimental and data analytical techniques.
- At least two peer-reviewed publications in journals with an impact factor greater than 2 within the last 3 years.
- Experience in mentoring and/or supervising postgraduate students.

2. Ukulinga Grassland Fire Experiment (UGFE) - Grassland Ecology (Ref SLS_PDF2022/04)

The long-term grassland experiments conducted at Ukulinga Research Farm, University of KwaZulu-Natal just outside Pietermaritzburg, KwaZulu-Natal, are among the longest-running field experiments in Africa and in the world. The two longest running experiments on the plateau at Ukulinga Research Farm (MAP >700 mm, 770 m a.s.l.), the Ukulinga Grassland Fire Experiment (UGFE) and the Ukulinga Grassland Nutrient Experiment (UGNE), were initiated in 1950.

The original objectives of the two experiments were primarily agricultural. Treatments in the UGFE were designed to examine the influence of mowing Moist Tall Grassveld (Acocks 1953) at different times in summer and removing the residual biomass in winter by burning or mowing, on the yield and quality of hay. With more than 70 years of treatment application, various national and international collaborations have produced publications that examined different aspects of the impacts of the treatments on grassland. Despite this, there remain data to be explored and relevant ecological questions to be answered, including grassland management effects on carbon sequestration, bush encroachment and various other global change related research questions.

This project will focus on four broad objectives, the effect of (i) defoliation on soil properties, (ii) pyrodiversity on plant compositional and structural diversity, (iii) different defoliation mechanisms on species composition and structural diversity and (iv) fire frequency on plant functional traits.

Minimum requirements

- PhD in Grassland Science or Ecology obtained within the past 5 years
- Extensive experience in: analysis of long-term and large data sets; Data analysis using R
- At least two peer-reviewed publications in journals with an impact factor greater than 2 within the last 3 years
- Experience in mentoring and/or supervising postgraduate students.

3. Development of a multiplex assay for Identification of human body fluids by Microbiome and DNA methylation profiling of the diverse South African population (Ref SLS_PDF2022/05)

The current project focuses on microbiome and DNA methylation analysis in forensically relevant human body fluids. The aim of the project is to develop a multiplex NGS assay for identification of saliva, blood, semen, and vaginal fluid by microbial and DNA methylation profiling. The successful applicant will be required to conduct both bioinformatics/NGS data analysis and experimental/laboratory-based studies in these areas. The incumbent will be expected to be involved in the preparation of manuscripts for publication as well as mentorship of the postgraduate students in the research group.

Minimum Requirements:

- PhD in Genetics, Bioinformatics or closely related field obtained within the past five years.
- Research experience in computational epigenetics and NGS data analysis.
- At least two peer-reviewed publications in journals with an impact factor greater than 2 within the last three years.
- Experience in mentoring and/or supervising postgraduate students.

4. Genomics and Bioinformatics Application in infectious disease control (Ref SLS_PDF2022/06)

Mosquito borne tropical diseases are among vector borne infectious diseases common in poor communities in many third-world countries including South Africa and her border countries. Despite the different interventions, available vaccines do not confer completely effective protection for many of these diseases. Genetics studies and search for vaccine candidates are current research topics of interest. The Genomics and Bioinformatics group in the Discipline of Genetics, University of Kwazulu-Natal, Westville Campus is characterizing host-vector-parasite relationship and profiling gene-based interventions. We have profiled in-silico data for possible gene-based vaccine development and exploring genetic and biopharma approaches. The group seeks to appoint a dedicated Postdoctoral Fellow with a strong background in genomics and bioinformatics (with wet and dry lab experiences). The incumbent will work with a group of scientists within the School of Life Sciences (SLS) to facilitate Genetic interventions for combating infectious diseases, in a multidisciplinary group consisting of Biochemists, Microbiologists, Geneticists and Pharmaceuticals.

The successful candidate is expected to have previous postgraduate research experience in genomics, bioinformatics and the use of various approaches for analyzing next generation (NGS) sequence data, skilled in the use of high-performance computing (HPC), scripting for in-silico studies, be experienced in working with modeled experimental/laboratory animals, and proficient in scientific writing. The incumbent is also expected to play active role in manuscript preparation for publication, postgraduate student mentoring, field sampling, and grant writing.

Minimum Requirements

- PhD in Genetics/Genomics and Bioinformatics or a closely related field obtained within the past 5 years.
- Prior experience of working with laboratory animals.
- Experience in genome mining and genomic data analyses
- Experience in mentoring and/or supervising postgraduate students.
- At least two peer-reviewed publications in journals with an impact factor greater than 2 within the last three years.

GENERAL APPLICATION INFORMATION

All applicants must be under the age of 45 years, and must clearly indicate the reference number of the fellowship position being applied for. Interested candidates should submit their application to Miss Shereen Samuels (samuelss@ukzn.ac.za) on or before **17 February 2023** to include the following:

- A letter of motivation, including experience in the selected research area and summary of the current research interest
- An up-to-date CV
- Contact details of two academic referees
- Record of academic transcripts
- Copy of ID / permanent residency document (If applicable).

Enquiries and details regarding these posts may be directed to the School Academic Leader: Research and Postgraduate Studies, Professor Gueguim Kana, email: kanag@ukzn.ac.za.

Late applications will not be considered. Only successful individuals will be contacted for an interview.

Kindly note that the University of KwaZulu-Natal (“the University”) is required to process any Personal Information (as defined by the Protection of Personal Act, 2013 “POPIA”) submitted by candidates when applying for positions at the University. The provision of the Personal Information is a requirement in terms of the University’s recruitment and selection process. The retention of any personal information is as a Consequence of the University being bound by legislative requirements and / or good governance practices as well as record keeping for statistical purposes. The University will endeavour to ensure that the appropriate security measures are in place and implemented for both electronic and paper-based formats that are used for processing of the personal information recorded through this recruitment and selection process.