

# EYALIRA JACOB OKAL

Ph.D. Candidate in Botany (Applied Mycology)

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## + SKILLS

Proposal Writing, Concept Development, Experimental Design, Trouble Shooting, Data Collection, Organizing, Analysis And Interpretation Of Scientific Findings

Technical Laboratory Skills: Preparation Of Microbial Cultures, Formulation Of Degradation Experiments, DNA & RNA Extraction, PCR, QPCR, Primer Designing, Enzyme Assays, Gel Electrophoresis, And Microscopy

Data Analysis And Handling Of Big Data Involving Genomics, Transcriptomic And Proteomic Sequences, Statistical Data Analysis And Interpretation, Spectrophotometry, Analysis And Interpretation Of SEM, FTIR, NMR And LC-MS Readings.

Interdisciplinary Knowledge Both In Biology And Chemistry, Analytical And Instrumentation Skills, Collaborative And Teamwork. Skills

## + INTERNSHIP

- Kenya Agricultural and Livestock Research Organization  
Kitale, Kenya.  
JAN 2012 - MAY 2012

Field sampling of soil, water, crop, blood and livestock materials. Laboratory experiments involving animal and plant pathology, microbiology, and parasitology.

## + REFERENCES

- **Prof. Jianchu Xu**  
Kunming Institute of Botany, Chinese Academy of Sciences  
**Phone Number:** 8613808708795  
**Email:** jxu@mail.kib.ac.cn
- **Prof. Peter E. mortimer**  
Kunming Institute of Botany, Chinese Academy of Sciences.  
**Email:** peter@mail.kib.ac.cn
- **Prof Heng Gui**  
Kunming Institute of Botany, Chinese Academy of Sciences  
**Phone Number:** 8618687333091  
**Email:** guiheng@mail.kib.ac.cn

## + CONFERENCE PAPER

- **Eyalira J. Okal., Heng, G., Magige, E.A., Khan, S., Wu, S., Ge, Z., Zhang, T., Mortimer, P.E., Xu, J.,** (2023). "Insights into the mechanisms involved in fungal degradation of plastics." The Third Mountain Futures Conference: Ecological remediation. Kunming, China. April 2023.
- **Eyalira J Okal.** (2024) "Degradation of Polyurethane and Polyethylene Terephthalate by a *Fusarium* Strain Enriched from Soil-Plant Systems." The 2024 China-Thailand Fungal Symposium: Fungi in different ecotypes and sustainable utilization. Kunming City, China. October 2024.

## + LANGUAGES

English

Swahili

## + HOBBIES

- Athletic sports, Swimming, and Reading

## + ABOUT ME

As a dedicated Environmental Microbiologist, I possess extensive experience in bioremediation research, focusing on microbial ecology and the degradation of synthetic pollutants i.e. hydrocarbons, hydrophobes, and plastics. Proficient in advanced molecular techniques, experimental design, and bioinformatics, I'm self driven, thrives in collaborative environments and can effectively communicate scientific findings. I am enthusiastic about joining a proactive team to drive innovative solutions for ecological and human health preservation.

## + WORK EXPERIENCE

- Kunming Institute of Botany, University of Chinese Academy of Sciences  
Kunming, China. SEP 2021 - PRESENT
- **PHD RESEARCH STUDENT (APPLIED MYCOLOGY)**
  - Spearheaded groundbreaking research in microbial ecology and Environmental Microbiology, focusing on innovative approaches to microbial hydrolysis of synthetic plastics and polymer waste.
  - Executed research on microbial ecology boosting environmental solutions.
  - Utilizing Multiomics exploration to unravel complex biological interactions and metabolic pathways in microbes.
  - Analyzing gene and enzyme expression to advance the understanding of microbial mechanisms and their applications in bioremediation.
- China national Engineering Research Centre of Juncao Technology, Fujian Agriculture and Forestry University  
Fuzhou, China. SEP 2018 - JUN 2021
- **MSC GRADUATE STUDENT (APPLIED MYCOLOGY)**
  - Undertook innovative mycological research for enhanced fungal solutions for food and ecological remediation.
  - Boosted mushroom yields through optimized biobased substrates.
  - Pioneered industrial applications of fungal enzymes for scalability.
  - Promoted sustainable, commercial mushroom practices for economic growth.
- Harley's Pharma Limited  
Nairobi, Kenya. JAN 2014 - AUG 2018
- **MEDICAL SALES REPRESENTATIVE**
  - Enhanced teamwork and problem-solving skills to boost company performance
  - Cultivated strong interpersonal relationships to drive project success
  - Demonstrated resilience and time management to meet critical deadlines
  - Effectively communicated complex biochem concepts to diverse audiences

## + EDUCATION

- Kunming Institute of Botany, University of Chinese Academy of Sciences  
Kunming, China  
**PH.D. IN BOTANY (APPLIED MYCOLOGY)**  
  
Thesis Title: "Molecular mechanisms and metabolic pathways of plastic degradation in fungi: Insights from multi-omic analyses of *Fusarium vanettenii* and *Lasiodiplodia species*."
- Fujian Agriculture and Forestry University  
Fuzhou, China 2021  
**MASTER OF SCIENCE IN BIOLOGY (APPLIED MYCOLOGY)**  
  
Thesis Project: "Lignocellulolytic enzyme profiles, growth, and production of *Pleurotus ostreatus* cultivated using supplemented *Arundo donax* substrate."
- Technical University of Mombasa  
Mombasa, Kenya 2013  
**BACHELOR OF SCIENCE INDUSTRIAL MICROBIOLOGY AND BIOTECHNOLOGY**  
  
Graduated with Second Class Honours (Upper Division)

## + RECENT ARTICLES

- **Eyalira Jacob Okal, Yanfei W, Zhaorui L, Yuwei H, Na W, Jingxian L, Dongmei Y, Bishal G, Dong L, Peter M, Shaoshan A, Jie Z, Shahid I, Jianchu X,\* Heng Gui,\* Baoshan X.** (2024). "*Degradation of polyurethane and polyethylene terephthalate by a Fusarium strain enriched from soil-plant systems.*" (Under review in the Journal of Hazardous Materials)
- **Eyalira Jacob Okal, Jie Zhou, Yanfei W, Yue T, Zhenyu S, Yuwei H, Jingxian L, Peter Mortimer, Jianchu X, Heng Gui** (2024). "*Unveiling Fungal Degradation Pathways for Polyurethane and Polyethylene through Enrichment Cultures and Metabolic Analysis.*" (Still under review, Environmental Research Journal).
- **Eyalira Jacob Okal, Heng Gui,\* Magige EA, Khan S, Wu S, Ge Z, Zhang T, Mortimer PE,\* Xu J.\*** (2023). "*Insights into the mechanisms involved in fungal degradation of plastics.*" Published in the Journal of Ecotoxicology and Environmental Safety, doi.org/10.1016/j.ecoenv.2023.115202.
- **Eyalira Jacob Okal, Aslam M. Mehtab, Karanja JK, Nyimbo WJ.** (2020). "*Mini review: Advances in understanding the regulation of cellulase enzyme in white-rot basidiomycetes.*" Microbial Pathogenesis. 147:104410. doi.org/10.1016/j.micpath.2020.104410.
- **Muhammad AM, Waseem M, Jakada BH, Eyalira J. Okal, Lei Z, Saqib HS, Yuan W, Xu W, Zhang Q.** (2022) "*Mechanisms of abscisic acid-mediated drought stress responses in plants.*" International journal of molecular sciences. doi.org/10.3390/ijms23031084.
- **Eyalira Jacob Okal.** (2024). "*Multi-omics analyses of Lasiodiplodia iraniensis and L. theobromae fungi highlight shared genetic mechanisms for polyurethane hydrolysis.*" (Drafted manuscript under revision)