



# Alexzine Sandra Burinyuy Banlanjo

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## ABOUT ME

Experienced Microbiologist with a strong foundation in microbial culture, molecular diagnostics, antimicrobial resistance, and clinical microbiology. Proven research experience in academic and hospital laboratory settings, with technical proficiency in PCR, protein expression, biochemical assays, and statistical analysis using Python and R. Led and co-investigated projects in natural drug discovery, host-pathogen interactions, and immunological resistance mechanisms. Passionate about integrating microbiology and bioinformatics to drive innovation in infectious disease research. Aspiring PhD candidate committed to advancing global health through interdisciplinary research and scientific capacity building

## EDUCATION AND TRAINING

### Masters Degree in Microbiology

**University of Buea** [ 10/10/2022 – 19/07/2024 ]

City: Buea | Country: Cameroon | Website: <https://www.ubuea.cm/> | Final grade: 3.8/4.0

### Bachelors Degree in Microbiology with Medical Laboratory Science as Minor

**University of Bamenda** [ 06/10/2017 – 20/09/2020 ]

City: Bamenda | Country: Cameroon | Website: <https://uniba.cm/> | Final grade: 2.88/4.0

## WORK EXPERIENCE

### Molecular Parasitology Laboratory – Buea , Cameroon

#### University research assistant

[ 01/08/2024 – Current ]

- Designed and optimized protocols for bacterial culture, biochemical identification, and antibiotic susceptibility testing
- Standardized antimicrobial testing methods for oil-based candidates to ensure reproducibility and accuracy
- Performed nucleic acid extraction, PCR, and sequencing for microbial strain identification
- Conducted 16S rRNA gene sequencing to confirm microbial taxonomy and phylogeny
- Applied bioinformatics tools for sequence analysis and microbial data interpretation
- Expressed and purified Taq polymerase from genetically modified *E. coli* (XLI-blue) for PCR diagnostics
- Utilized protein purification techniques (e.g., SDS-PAGE) for protein isolation and analysis
- Investigated bioactive compounds targeting bacterial enzymes for potential therapeutic applications
- Drafted and submitted research manuscripts to international microbiology journals
- Contributed to scientific literature on natural antimicrobial agents
- Maintained laboratory equipment and computers; managed reagent inventory and documentation
- Supervised Master's theses and trained new lab members in equipment use and reagent handling

### Régional Hospital Buea – Buea , Cameroon

#### Hospital Intern

[ 01/08/2023 – 30/11/2023 ]

#### Performed clinical diagnosis of infectious diseases through culture-based methods, microscopy and biochemical tests

- Processed patient samples (blood, urine, wound swabs, sputum) for microbial culture and antibiotic susceptibility testing.
- Performed Gram staining and acid-fast staining for bacterial and mycobacterial identification.
- Handled diagnosis of respiratory tract infections, urinary tract infections and bloodstream infections.
- Took part in mycological diagnostics, culturing fungi from patient samples.

## **Conducted antimicrobial susceptibility testing for multidrug-resistant bacteria, contributing to infection control measures**

- Aided in monitoring nosocomial infections, analyzing carbapenem-resistant Enterobacteriaceae (CRE).
- Reported findings to hospital infection control teams, aiding in the development of antibiotic stewardship programs.

### **BioPractify – Uttar Pradesh, India**

#### **Bioinformatics and Structure Based Drug discovery Intern**

[ 23/08/2025 – 23/09/2025 ]

- Role of Bioinformatics, Data Science & AI in Biology and healthcare
- Discovery to Diagnosis : Biomarker Identification & Pathway Mapping
- Statistical Data Analysis in Biology & Healthcare using excel, python and python related tools
- Data Visualization (matplotlib, seaborn, excel, ggplot2)
- ML Based Model : Training, Testing and Prediction
- Discovery to Diagnosis : Biomarker Identification & Pathway Mapping
- Molecular docking (Concepts of Protein - Ligand Interactions).
- Molecular Dynamics Simulations

### **Bamenda Regional Hospital – Bamenda , Cameroon**

#### **Hospital Intern**

[ 01/08/2018 – 09/10/2018 ]

##### **Immunology and Serology Laboratory (2 weeks)**

- Conducted immunoassays including ELISA, latex agglutination, and immunochromatographic rapid tests for detection of viral and bacterial antigens/antibodies
- Performed rheumatoid factor, CRP, and ASO titers using nephelometry and turbidimetry
- Processed serum and plasma samples for serological screening of infectious diseases (HIV, HBV, HCV, Syphilis)
- Applied biosafety level 2 protocols during handling of potentially infectious specimens

##### **Parasitology Laboratory (2 weeks)**

- Identified intestinal and blood parasites via direct wet mount, concentration techniques, and permanent staining (Giemsa)
- Performed microscopic examination of stool, urine, and blood samples for protozoa and helminths
- Prepared and analyzed thick and thin blood smears for malaria diagnosis and parasite quantification
- Applied serological and molecular techniques for detection of parasitic infections in clinical samples

##### **Biochemistry Laboratory ( 2 weeks)**

- Performed hemoglobin electrophoresis to differentiate normal and abnormal hemoglobin variants (HbA, HbS, HbC, HbE, HbF) for diagnosis of hemoglobinopathies ( sickle cell anemia)
- Analyzed blood and serum samples for glucose, cholesterol, and enzyme levels

##### **Blood Bank (2 weeks)**

- Performed ABO and RhD blood grouping using tube and gel card methods
- Conducted antibody screening and identification using indirect antiglobulin tests
- Executed compatibility testing (crossmatching) prior to transfusion
- Monitored storage conditions of blood components in accordance with AABB standards
- Screened donor blood for transfusion-transmissible infections using serological assays

### **University of Bamenda – Bamenda , Cameroon**

#### **Research Assistant**

[ 21/11/2020 – 10/08/2022 ]

Worked on isolation and identification of *Neisseria gonorrhoeae* from clinical samples, contributing to understanding of sexually transmitted infections.

- Collected and processed urogenital swabs from female patients, ensuring proper biosafety measures.
- Conducted oxidase and carbohydrate fermentation tests to confirm bacterial species.
- Performed DNA extraction, biochemical characterization and utilized nested PCR to enhance detection sensitivity of low-abundance pathogens.
- Implemented DNA purification and sequencing to analyze microbial diversity and antibiotic resistance genes.
- Contributed to a multi-institutional research collaboration on microbial ecology and infection control.

## **SKILLS**

### **Molecular Techniques**

Nucleic Acid extraction ( DNA, RNA, Proteins ) / DNA Recombinant Technology / Sequencing / Protein expression / Antimicrobial Resistant Screening / PCR / Antimicrobial Susceptibility Testing / Western Blotting / ELISA / Microbial cloning / Gel Electrophoresis

## Data Analysis and Bioinformatics Skills

Statistical Data Analysis / Data Visualization / Programming in Python and R / Cloud Computing / Machine Learning / Microsoft Excel / Molecular docking / AI and Machine Learning

## Laboratory Skills

Equipment Maintenance and Calibration / Aseptic Technique / Spectrophotometry / Antibiotic Testing / Microscopy / Microbial Culture / Sample Collection, Preparation and Storage / Biochemical Testing and Microbial Identification / Excellent writing and verbal communication skills / Team-work oriented / Problem-solving / In vivo experimentation-

## Statistics and Bioinformatics Tools

NCBI / BLAST / Jupyter notebook / Drug bank / Pubchem / RSCB / Uniprot / Google lab / Phytochemical and ethnobotanical database / Clustal omega / Python (Pandas, Matplotlib, Seaborn) / Excel / GraphPad Prism

## PROJECTS

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[ 28/02/2025 – Current ]

**Investigating the Association Between the Probiotic Rich Diet of the Fulani and the Activation of the Host Aryl Hydrocarbon Receptor : A Putative Mechanism of Immune Protection Against Cryptosporidium Infection** Stool samples from both fulani and non-fulani ethnic groups were collected and tested for indole and indole derivative compounds. Quantification of Indole and derivatives in stool samples was done using Kovac's test and activation of aryl hydrocarbon receptor in THP-1 human macrophage cell lines was determined using Luciferase reporter system.

[ 09/04/2024 – 01/07/2024 ]

**Assessing the Antimicrobial Activity of Neem oil from Seeds from Azadirachta indica against Cutibacterium acnes** Acne exudates were collected and cultured to isolate *Cutibacterium acnes* and then exposed to Neem oil to observe for antimicrobial activity. The resistance profile was tested using 4 conventional antibiotics and the synergistic effect between antibiotics and neem oil was investigated.

## PUBLICATIONS

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Banlanjo ASB, et al. "Antimicrobial activity of neem oil against *Cutibacterium acnes*." [Manuscript in preparation]

[2024]

**Poster: "Dietary resistance to cryptosporidiosis among Fulani populations."** Presented at Buea Research Symposium, 2024

## HONOURS AND AWARDS

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[ 09/01/2025 ] University of Buea

**Best Graduating Masters Student in Microbiology.** Award for Best overall student in the department of Microbiology in the University of Buea with GPA of 3.80

## CERTIFICATIONS

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[ Stanford School of Medicine , 23/06/2025 ]

**Fundamentals of Data Science in Precision Medicine and Cloud Computing** Core skills: statistical modeling, machine learning, R/Python workflows, cloud-based biomedical data analysis

[ Coursera: ongoing ]

**CRISPR Cas System: Applications in Gene Editing and Beyond (self placed)** Core skills: CRISPR-Cas9 mechanisms, gene editing workflows, molecular biology applications, ethical considerations

[ African Population and Health Research Center, 08/12/2025 ]

**Research Grant Writing Training for Early and Mid-Career Researchers in Africa** Core skills: proposal development, persuasive academic writing, funding strategies, research capacity building

## VOLUNTEERING

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[ 01/12/2024 – Current ] Cameroon: Fund Raising To support the Battle Against Cancer

**Makon's Care Foundation Volunteer**

[ 01/10/2022 – 01/12/2025 ] Buea: Health and fitness coach

**Health and Fitness Coach**

[ 01/07/2018 – 31/07/2018 ] Bamenda: Free Hepatitis screening, education of the public and vaccination.

**Hepatitis Campaign Volunteer**

## NETWORKS AND MEMBERSHIPS

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[ 01/04/2024 – Current ] University of Buea

**Bioscience Journal Club** Bioscience research journal discussions and scientific contributions to past, ongoing and future research areas

## LANGUAGE SKILLS

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**Mother tongue(s):** English

**Other language(s):**

French

**LISTENING** B2 **READING** C1 **WRITING** B1

**SPOKEN PRODUCTION** B2 **SPOKEN INTERACTION** B2

*Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user*

## REFERENCES

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**Prof. Dr Kamena Faustin**

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