

# Favour O. Igwezeke

favour.igwezeke.249461@unn.edu.ng | favourigwezeke.github.io | LinkedIn | GitHub | Google Scholar | ORCID

## Education

University of Nigeria, Nsukka

Doctor of Pharmacy (PharmD)

Nsukka, Nigeria

Expected Feb. 2027

CGPA: 4.21/5.0 (Yr 1–5) · 4.58/5.0 (Yr 2–5)

**Thesis:** “Deep Learning–Based Behavioral and Anxiolytic Effects of the Methanol Stem Bark Extract of *Indigofera bracteolata* (DC.) in Wistar Rats”

**Advisor:** Assoc. Prof. Collins A. Onyeto, Dept. of Pharmacology & Toxicology, UNN

## Research Interests

Biologically grounded representation learning; mechanistic and context-aware biomedical AI; uncertainty-aware reasoning and distribution shift in clinical and computational biology models; drug response prediction; perturbation modeling and transferability of biological representations.

## Research Experience

**SPARK (MICCAI-Endorsed Academy for African Medical Imaging Translation)**

Remote

ML Research Fellow — Medical Imaging AI

Feb. 2026 – Present

- **MORPHA** — Proposed a morphology-constrained regularization framework testing whether biological priors improve uncertainty calibration in malaria microscopy AI; thin-smear priors failed to generalize to thick-smear African settings (F1 collapsed to 0.35). *Manuscript in preparation for MIRASOL Workshop @ MICCAI 2026.*

**CaresAI Research Group**

Remote

Medical AI Researcher

Jan. 2026 – Present

PI: Mary Adewunmi, PhD

- **CURE (ongoing)** — Developing an uncertainty-aware GraphRAG system for evidence-grounded clinical reasoning under evolving medical evidence; examining whether clinical representations remain reliable as the evidence base shifts. *Manuscript in preparation.*
- **CT-DEB’26** — Developed an ensemble ML framework integrating four domain-specific BERT embeddings to predict medication dosing errors across 29,000+ ClinicalTrials.gov protocols. *Paper accepted at CL4Health @ LREC 2026.* [Code]

**Dept. of Pharmacology & Toxicology, University of Nigeria, Nsukka**

Nsukka, Nigeria

Undergraduate Researcher — Computational Toxicology & Neuropharmacology

Nov. 2024 – Present

Supervisor: Assoc. Prof. Collins A. Onyeto

- **TrajRisk** — Developing a multi-scale GNN for trajectory-informed toxicity risk propagation in single-cell transcriptomics; learns pseudotemporal cell–cell transitions validated against spatial transcriptomics zonation. *Manuscript in preparation.*
- Investigated anxiolytic effects of *Indigofera bracteolata* using DeepLabCut-based pose estimation (>94% accuracy); quantified dose-dependent effects (Cohen’s  $d=0.8–1.3$  at 600 mg/kg) across three behavioral paradigms; automated pipeline reduced analysis time 6×. *Paper under review at Journal of Pharmacological and Toxicological Methods.*
- Examined structure–toxicity relationships in 30 NSAIDs via unsupervised chemoinformatics; found non-hepatotoxic NSAIDs cluster within hepatotoxic chemical neighborhoods, implicating mechanistic over structural determinants of DILI. [Code]

**African Society for Bioinformatics & Computational Biology / NIH ODSS**

Remote

Bioinformatics Researcher

Dec. 2025 – Present

- **absuite** — Developed an R/Bioconductor package (10 modules) for antibody repertoire profiling; validated on 187,342 sequences across three COVID-19 cohorts, identifying 57 public clonotypes and 447 clonal communities. *Accepted for presentation at EuroBIOC 2026 (poster), ISMB 2026 (oral), and BioC 2026 (oral).* Package in preparation for Bioconductor submission. [Code]

**Dept. of Pharmaceutical & Medicinal Chemistry, University of Nigeria, Nsukka**

Nsukka, Nigeria

Undergraduate Researcher — Computational Drug Discovery

Sept. 2025 – Present

Supervisor: Prof. Charles O. Nnadi

- **CASPID** — Designed a context-aware neural conditioning framework across 23,248 EGFR/BRAF inhibitor–cell line pairs; learns context-dependent structural feature importance from cellular transcriptomic state, revealing interpretable MET-mediated bypass resistance patterns. *Manuscript in preparation for BMC Bioinformatics.* [Code]
- **TransQSAR-pf** — Developed a biology-informed QSAR framework integrating *P. falciparum* transcriptomic signatures with 125 compounds; 71.2% of predictive performance attributed to conserved stress-response genes over chemical descriptors alone. *Published in MDPI Engineering Proceedings.* [Paper] [Code] [Poster]

## HackBio

Bioinformatics Research Intern — Next Generation Sequencing

Supervisor: Dr. Adewale Ogunleye, PhD

Remote

Sept.–Nov. 2025

- Performed guilt-by-association co-expression analysis to annotate 3,645 lncRNAs; identified 50 high-confidence candidates enriched in PD-1/PD-L1 and JAK-STAT pathways as predictive immunotherapy biomarkers in hepatocellular carcinoma. *Manuscript in preparation for Wiley Liver International*. [Code]

## Genomac Institute Inc.

Cancer Genomics Research Intern

Remote

Jul.–Oct. 2025

- Performed multi-omics analysis of 123 meningioma samples (TCGA, cBioPortal), integrating somatic mutation and CNA data to validate TMB and CNA as candidate biomarkers for WHO-grade stratification. *Poster presented at ISPOR-HEOR UNN 2025 and CoGSAYR 2026*. [Code] [Poster] [Poster]

## Person-Centered HIV Research Team (PeCHIVReT), University of Nigeria, Nsukka

Undergraduate Researcher — Clinical Epidemiology

Supervisor: Dr. AbdulMuminu Isah, PharmD, PhD

Nsukka, Nigeria

Sept. 2024 – Present

- Extracted and synthesized safety data from 113 HIV vaccine trials (1991–2024) for a systematic review; contributed to statistical analysis, evidence mapping, and manuscript preparation. *Paper under review at BMC Infectious Diseases*.

## HackBio

Bioinformatics Intern — Cancer Genomics

Remote

Sept.–Nov. 2024

- Analyzed TCGA-BRCA and GBM RNA-Seq cohorts (1,200+ samples); identified three biomarkers (*CST5*, *CGA*, *MYL9*) with RF classification; GO/KEGG enrichment revealed biosynthetic dysregulation in gliomas. [Portfolio]

## Publications

---

### Peer-Reviewed & Conference Publications

- [1] Abubakar, J. I., Jarne, J., **Igwezeke, F.**, & Adewunmi, M. (2026). CaresAI at SMM4H-HeaRD 2026: Predicting TNM Staging. In *Proceedings of the 11th Workshop on Social Media Mining for Health (SMM4H-HeaRD) @ ACL 2026*. (To appear.)
- [2] Hamnett, L., **Igwezeke, F.**, Abubakar, J. I., & Adewunmi, M. A. (2026). CaresAI at CT-DEB'26: Detecting Dosing Errors in Clinical Trials Using Domain-Specific Transformer Embeddings and Classification Models. In *Proceedings of the Third Workshop on Patient-Oriented Language Processing (CL4Health 2026) @ LREC 2026*.
- [3] **Igwezeke, F. O.** & Nnadi, C. O. (2026). TransQSAR-pf: A Bio-Informed QSAR Framework Using Plasmodium falciparum Stress Signatures for Enhanced Antiplasmodial Activity Prediction. *Engineering Proceedings*, 124(1), 37.

### Under Review

- [4] Onyeto, C. A., **Igwezeke, F. O.**, Uwakwe, C. C., et al. (2026). Deep Learning-Based Behavioural Analysis of Anxiolytic-Like Activity of *Indigofera bracteolata* Methanol Stem Extract in Wistar Rats. *Journal of Pharmacological and Toxicological Methods*.
- [5] Ayeni, V. A., Azumara, S. I., Agbo, C. E., **Igwezeke, F. O.**, et al. (2025). Safety Profile of HIV Vaccine Candidates Across Clinical Trial Phases: A Scoping Review. *BMC Infectious Diseases*.

## Software

---

### absuite — R/Bioconductor package for antibody repertoire profiling and clonotype analysis

10 analytical modules; validated on 187,342 sequences across three COVID-19 cohorts; in preparation for Bioconductor submission. [GitHub]

## Selected Presentations

---

### Oral Presentations

- [1] Anxiolytic Effects of *Indigofera bracteolata* Using Deep Learning-Based Automated Behavioral Analysis. *1st Int. Conference on Pharmaceutical, Herbal & Cosmetic Products*, UNN, Feb. 2026. [Slides]
- [2] Ensemble ML with Uncertainty Quantification for Pharmacogenetic-Guided Warfarin Dosing Across Diverse Populations. *CoGSAYR Africa Summit 2026*, Lagos, Jan. 2026.
- [3] Ensemble ML with Uncertainty Quantification for Pharmacogenetic-Guided Warfarin Dosing Across Diverse Populations. *ISPOR-HEOR UNN Conference*, Nov. 2025. 🏆 **2nd Place, Best Oral Presentation**. [Web App]
- [4] Unsupervised ML Framework for IDH Status Prediction in Low-Grade Gliomas. *5th Annual National Conference on Bioscience & Biotechnology*, UNN, Jul. 2025.
- [5] Exploratory Transcriptomic Analysis Reveals Preferential Downregulation of RNA Polymerase II in Recurrent Glioblastoma. *ISPOR-HEOR UNN Conference*, Feb. 2025. 🏆 **1st Place, Best Oral Presentation**. [Paper]

## Poster Presentations

- [6] Comparative Analysis of TMB and CNA in WHO-Graded Meningiomas. *CoGSAYR Africa Summit 2026*, Lagos, Jan. 2026. [\[Poster\]](#)
- [7] TransQSAR-pf: A Bio-Informed QSAR Framework Using *P. falciparum* Stress Signatures. *6th Int. Electronic Conference on Applied Sciences (ASEC 2025)*, p. 24, Dec. 2025. [\[Poster\]](#)
- [8] Transcriptomic Subtype Stratification of Low-Grade Gliomas by IDH Status. *NABIS 2025*, Ogbomoso, Oct. 2025. *NABIS 2025 Proceedings*, pp. 24–25.
- [9] Safety Profile of Candidate HIV Vaccines Across Clinical Trial Phases. *13th IAS Conference on HIV Science*, Kigali, Rwanda, Jul. 2025. *IAS 2025 Book of Abstracts*, p. 328.

## Awards, Honours & Fellowships

---

- Jun. 2026 **ISMB 2026 Conference Fellowship**, International Society for Computational Biology (ISCB) — Competitive conference fellowship award (\$1,500 USD)
- Jun. 2026 **BioC 2026 Travel Scholarship**, Bioconductor Conference — \$550 USD travel award + complimentary registration
- Mar. 2026 **Okwuchukwu Fund Research Award**, UNN — NGN 120,000 competitive grant for undergraduate thesis research (1 of 3 recipients)
- Dec. 2025 **ABI Travel Fellowship**, African Bioinformatics Institute — Full support, CoGSAYR Africa Summit, Lagos
- Nov. 2025 **🏆 Gabriel Ezenri Award for Excellence in Research 2.0 — 2nd Place** (NGN 110,000), ISPOR-HEOR UNN
- Feb. 2025 **🏆 Gabriel Ezenri Award for Excellence in Research — 1st Place** (NGN 100,000), ISPOR-HEOR UNN
- Feb. 2025 **1st Runner-up**, ISPOR-HEOR UNN Clinical Skills Evaluation Competition
- Nov. 2024 **Research Fellow**, Toufik's World Medical Association Research Fellowship in Neurology
- Nov. 2024 **Udacity × Bertelsmann Next Generation Tech Booster Scholarship** — Top 500 worldwide (\$1,200 USD)
- Sept. 2024 **HackBio Precision Medicine Premium Scholarship** — Selected 5 of 200+ applicants
- Oct. 2023 **YandyTech × DataCamp Donates Data Science Scholarship** (\$399 USD)

## Technical Skills

---

<b>Programming</b>	Python (PyTorch, TensorFlow, scikit-learn, RDKit), R (DESeq2, limma, Bioconductor), SQL, PySpark
<b>Bioinformatics</b>	TCGA/cBioPortal, GSEA, AlphaFold, PubChem API, TCGAbiolinks, AIRR/IMGIT/OAS formats
<b>ML/AI Methods</b>	Transformers, GNNs, QSAR, Dimensionality Reduction (PCA, t-SNE), Clustering, Boruta
<b>Cloud &amp; DevOps</b>	AWS, Docker, Git, HPC (Compute Ontario)

## Professional Development

---

- Jul. 2025 **Cohere Labs ML Summer School** — Transformers, diffusion models, self-supervised learning; faculty from Google DeepMind, Meta AI (FAIR), Adobe, INRIA, MIT. [\[Certificate\]](#)
- Jun. 2025 **Compute Ontario Summer School** — HPC, bioinformatics pipelines (RNA-Seq), cloud computing, Docker/Git. [\[Certificate\]](#)