

# Zac Oluwatayo Alabi

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Citizenship: Nigeria

## Education

Jan 2021 – Present

**PhD student (Biology and Biochemistry)**, *University of Houston, TX, USA.*

Relevant coursework: *Protein Structure and Function, Advanced Nucleic Acids, Membrane/Signal Transduction, Electron Cryo-microscopy, Cancer Biochemistry, Genomic Data Analysis.*

Jan 2018 - Dec 2019

**Master of Science (Chemistry)**, *Universidade Federal de Sao Carlos, Sao Paulo, Brazil.*

Relevant coursework: *Advanced Organic Chemistry, Advances in Spectroscopy for identification of Chemical Compounds, Methods Development for Liquid Chromatography, Analysis of Proteins, Peptides and Metabolites by Liquid Chromatography - Mass Spectrometry, Ethics in Science Research.*

Jan 2010 – Dec. 2015

**Bachelor of Tech (Hons) in Biochemistry**, *Ladoke Akintola University of Technology, Nigeria.*

## Research Experience

Nov 2021 – Present: **Graduate Student**, *Mehmet Sen (PhD) laboratory, Department of Biology and Biochemistry, University of Houston, TX, USA.*

- + Plasmid extraction and purification as well as transformation of competent E. coli.
- + Express protein in different expression systems and purify with size exclusion chromatography
- + Computation analysis of the dynamics of the amino acid residues on the MIDAS site of alpha-I domain of alpha D integrin using Gaussian tools and basis sets.
- + Mentor undergraduate students

June - August 2021: **Rotation Student**, *Weiyi Peng (MD, PhD) laboratory, Center for Nuclear Receptor and Signaling (CNRS), Department of Biology and Biochemistry, University of Houston, TX.*

- + Determination of level of expression of Pi3k expression in melanoma cancer cells.
- + Culture of BP and MC7 cancer cells
- + Polyacrylamide gel electrophoresis and western blotting.

April - May 2021: **Rotation Student**, *Tesneem Bawa (PhD) laboratory, Center for Nuclear Receptor and Signaling (CNRS), Department of Biology and Biochemistry, University of Houston, TX.*

- + Work on the understanding the role of endosomes in metastasis of breast cancer.
- + Culture MC7 cancer cells

## Other Research Experience

Jan. 2018 - Dec. 2019: **Master's Student/Research Assistant**, *Department of Chemistry, Universidade Federal de Sao Carlos, Sao Carlos, SP, Brazil.*

Project Title: Synthesis and Biotransformation of Diarylpentadienone using *Penicillium brasilianum*.

Supervisor: Edson Rodriguez-Filho (PhD), Department of Chemistry, Universidade Federal De Sao Carlos, Brazil

Description: *The work explored the Baeyer-Villiger monooxygenase (BVO) activities in the enzymes of P. brasilianum to biotransformed some novel class of enones - diarylpentadienone - to their lactone equivalents. The first part of the work involved the synthesis and purification of enones of interest using chromatographic and spectroscopic techniques. The second part involved the biotransformation of the pure enones using the growing and resting cells of P. brasilianum. The biotransformed products were isolated from the fungi metabolites through flash chromatography and later identified using both 1D and 2D NMR and Liquid Chromatography - Mass Spectrometry techniques. The resting cells reduced some of the enones.*

Mar 2015- Dec. 2015: **Undergraduate student**, *Department of Biochemistry, Ladoke Akintola University of Technology, Nigeria.*

Project Title: Assessment of antioxidant indices in cadmium intoxicated rats administered with ethanolic leaf extract of *Senna occidentalis*.

Description: *The work quantified the activities of antioxidant enzymes and biomarkers of oxidative stress in white rats exposed to cadmium using biochemical and spectrophotometric techniques. The antioxidant potentials of S. occidentalis on the rats were also assessed. Our findings corroborated the literature reports that cadmium exerts its carcinogenic effect through the initiation of oxidative stress and that the extract of S. occidentalis can ameliorate oxidative stress.*

Dec. 2014 - Mar. 2015: **Intern**, *National Agency for Food and Drug Administration and Control, Nigeria.*

- + Carried out assays on food and drug products using automated, semi-automated, and manual technology
- + Carried out quality control and assurance procedures to ensure accurate reporting of test results.
- + Maintained laboratory equipments and carried out operational support functions to facilitate workflow

## Teaching Experience

**Teaching Assistantship**, *Department of Biology and Biochemistry, University of Houston, TX, USA*

June - July, 2022 taught BIOL 1106: Biology for Science Majors Lab I

Jan - May, 2022, taught BCHS 3201: Biochemistry 1 Lab

Aug - Dec, 2021, taught BCHS 3201: Biochemistry 1 Lab

June - July, 2021, taught BIOL 2101: Anatomy & Physiology Lab I

Mar - May, 2021, taught BIOL 1162: Introduction to Biological Science Laboratory 2

## Other Teaching Experience

Jan. - Nov. 2017

Teaching Assistant and Corps Member, *Federal Polytechnic, Kaura Namoda, Nigeria.*

- + Assisted with teaching biochemistry courses for Higher National Diploma (HND) 1 students
- + Provided the students with resources needed in class
- + Held office hours to answer students' questions
- + Organized and conducted practical classes for the HND 1 students
- + Held study sessions for exam preparations
- + Administered, invigilated students, graded and recorded class quizzes and final exams

May - Nov. 2016

Tutor, *Successlink College of Advanced Level Studies, Nigeria.*

- + Taught biology and chemistry courses to advanced-level students ages 15-24
- + Held office hours to answer students' questions
- + Graded class quizzes and assignments
- + Held study sessions for exam preparations
- + Coordinated the biology/chemistry unit of the college

2012 – 2015

Volunteer Tutor, *Nigerian Society of Biochemistry Student, Ladoke Akintola University of Technology Chapter, Nigeria.*

- + Taught courses like Structure and Chemistry of Biomolecules; Metabolism, Biochemistry of Carbohydrates, Proteins, Lipids and Nucleic acids; Statistics for Biological Science.
- + Organized and coordinated small studying groups at various years of undergraduate program.

## Honors and Awards

Jan. 2018- Dec. 2019: Brazilian Federal Agency for Support and Evaluation of Graduate Education (CAPES) master's degree scholarship, Brazil.

Mar. 2013: Silver Medalist in Nigerian Society for Biochemistry Students (NSBS) South-west Zonal Convention quiz competition, Nigeria.

Feb. 2012: Financial award for academic excellence by Ladoke Akintola University of Technology Governing Council, Nigeria.

## Professional Qualifications and Certifications

Mar. 2019- Present, Member, Nigerian Bioinformatics and Genomics Network

May 2019 Python Data Structures by University of Michigan on Coursera. Certificate earned May 7, 2019. <https://www.coursera.org/account/accomplishments/certificate/X5XR3ZFD34E9>

Feb. 2019 Programming for Everybody (Getting Started with Python) by University of Michigan on Coursera. Certificate earned February 10, 2019. <https://www.coursera.org/account/accomplishments/certificate/84J9JLRLNSB9>

## Technical skills

Size Exclusion Chromatography including AKTA system, Polyacrylamide Gel Electrophoresis, Western Blotting, Protein Expression, Mammalian, Fungi and Bacteria cell culture, X-Ray Crystallography, Silica-based column Chromatography, Thin-Layer Chromatography, NMR spectroscopy, UV-vis spectroscopy, organic synthesis etc.

## Computer/Computational skills

Python, Linux, Pymol, Phenix, MestReNova NMR software, LATEX.

## Publications

OT Olaoba, FC Ligali, **ZO Alabi**, AO Akinyemi, KS Ayinde. Of immune checkpoint maladies and remedies: The throwing of jabs in the oncogenic ring of PDAC. *Biochimica et Biophysica Acta (BBA)-Reviews on Cancer* 1875 (1), 188483.

**Zaccheaus Oluwatayo Alabi**, Olamide Tosin Olaoba, Kehinde Sulaimon Ayinde, Amos Olalekan Akinyemi and Temitope Isaac Adelusi. The Role of BFI-1 in Cancer Unravels Inhibition Mechanism. *Cancer Biology* 2019;9(3):92-100.

Temitope, Adedosu Olaniyi, Jacob Adikwu Gowon, and **Alabi Zaccheaus Oluwatayo**. Protective Effect of Ethanol Extract of *Senna occidentalis* Leaf Against Cadmium-Induced Hepatotoxicity in Rats. *Tropical Journal of Natural Product Research* 2017; 1(1):17-21.

## **Community Service**

Mar. 2019 -Dec. 2019

Sanca Social Volunteer, University of Sao Paulo, Sao Carlos campus, Brazil.

- + Serve on the committee that organizes games and other events for kids ages 6-12.
- + Educate kids on the need to help the less-privilege in society.

Jan. 2017 - Nov. 2017

General Secretary, Charity Club, National Youth Service Corps (NYSC), Kaura Namoda, Nigeria.

- + Served on various committees towards realizing the objectives of the club.
- + Sourced for the procurement of foods and other relief materials for the sick, orphans and the less privileged in Kaura Namoda.
- + Organized seminars and sensitization programs on health and environmental issues.

2012 - 2015

Volunteer Tutor, Nigerian Society of Biochemistry Student, Ladoke Akintola University of Technology Chapter, Nigeria.

- + Taught biochemistry courses to the freshman and sophomore students

## **Languages**

English (fluent), Portuguese (fluent), Yoruba (fluent), Spanish (beginner)