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Expertise: Microbial pathogenesis, antimicrobial drug development, maternal milk immunology and infectious disease epidemiology,

Education

1972 M.S. Microbiology. University of Minnesota, Minneapolis.
1975 Ph.D. Microbiology. University of Minnesota, Minneapolis.
1980 M.P.H. Epidemiology. Johns Hopkins School of Public Health, Baltimore.

Employment

2014 - 2024 **Chair**, Department of Microbiology, HU College of Medicine
2000 - Present **Professor** of Microbiology, HU College of Medicine,
1992 - Present **Director**, Microbiology Teaching Laboratory, HU College of Medicine
1986 - 2000 **Associate Professor** of Microbiology, HU College of Medicine
1980 - 1986 **Assistant Professor** of Microbiology, HU College of Medicine
1979 - 1980 **Research Fellow**: Division of Environmental Health, Johns Hopkins School of Public Health, Baltimore, MD
1978 - 1979 **Research Scientist**, National Institutes of Medical Research, Lagos, Nigeria
1975 - 1978 **Postdoctoral Fellow**, Laboratory of Parasitic Diseases, National Institutes of Health (NIAID), Bethesda, MD

Current Research Activities

- Characterization of immune dysregulation in sickle cell disease: identification of surface molecules on T cells as markers of cellular activation and anergy
- Roles of ICAM-1, VCAM-1, T_{h1} and T_{h2} cytokines in immune dysregulation of cerebral malaria and sickle cell disease

- Isolation, characterization and identification of anti-malaria and anti-bacterial hemolysin fractions from human breast milk
- Isolation and characterization of anti-malaria, breast and prostate cancer cell line fractions from the plant root extracts of *Fagara xanthzylloides* and *Pseudocedrela kotschyii*, commonly used as medicinal plants in West Africa
- Collaborative studies with Obafemi Awolowo University, Ile-Ife, Nigeria on: **i.** the impact of malaria on HIV/AIDS pathogenesis **ii.** role of nasopharyngeal bacterial carriage on pathogenesis of sickle cell disease

Current Teaching and Training Activities

- **Coordinator and instructor:** gives lectures on infectious disease pathogenesis, treatment and control in courses for medical, dental, nursing, public health and graduate students
- **Teaching Innovation:** Transformed microbiology laboratory sessions for 1st and 2nd year medical classes to a demonstration and virtual format with case studies
- **Instructor:** 1st year med course
 - Lectures on bacterial structure and metabolism; microbial pathogenic mechanisms and anti-microbial drugs in Molecules and Cells
- **Instructor:** 2nd year med courses.
 - Lectures on medical bacteriology, parasitology and epidemiology in General Principles (OS-1)
 - bacterial/parasitic diseases of Hematological/ Lymphoreticular System (OS-2)
 - bacterial/parasitic diseases of the GI system; antiparasitic drugs (OS-5)
 - bacterial/parasitic diseases of the eye and CNS (OS-6)
 - epidemiological principles of disease control in Medicine & Society 3
 - Lectures on global health in Medicine and Society 2
- **Coordinator/Instructor:** Organ System 5 (GI, Endocrine & Reproductive Units)
- **Coordinator/Instructor:** Global Health – an elective course for 4th year medical students. Course provides an in-depth examination of current global issues in communicable and non-communicable diseases, along with innovative strategies for prevention and control. Students also learn to design basic water/sanitation systems and approaches for vaccine development and distribution.
- **Director:** Microbiology Teaching Laboratory: responsible for planning, preparing, supervising and teaching laboratory exercises in microbiology courses for 1^s and 2nd year medical students
- **Dissertation Advisor:** supervised and mentored several graduate students on their PhD dissertations on malaria, trypanosomiasis, hiv/aids, toxoplasmosis, sickle cell disease, breast cancer and dental caries.
- **Visiting Professor & Dissertation (2000 -2017),** Dept of Microbiology, Obafemi Awolowo University, Ile-Ife, Nigeria

International Health Activities

- **HIV/AIDS in Pregnant Women (2011-Present):** On-going collaborative studies with University of Ife in Nigeria on the impact of HIV on malaria and UTI pathogenesis and vice versa.
- **Sickle Cell Disease Project (2012-Present):** On-going collaborative studies with University of Ife in Nigeria on the role of nasopharyngeal bacterial carriage on the pathogenesis of sickle cell disease.
- **Breastfeeding /Childhood Diseases:** Field and laboratory studies with University of Ife, Nigeria, on the role of breastfeeding in the reduction of childhood diseases as malaria, diarrhea and cough; identification of protective factors in breast milk
- **Schistosomiasis Control:** Creation of a dip-stick procedure that is suitable for field diagnosis of urinary schistosomiasis in Ghana and Nigeria.
- **Trachoma Control:** Provision of potable water and soap in the reduction of trachoma in the Gurage region of Ethiopia
- **Team Leader,** Howard University / University of Ife Student Summer Research Program on Sickle Cell Disease (summers, 2014-2018) at Ile-Ife, Nigeria (NIH grant)
- **Team Leader,** Howard University / Establishment of Ethiopia Summer Training Institute for Mathematics and Science Education, Mekelle, Ethiopia (2002-2003) with a grant from USAID..
- **Team Leader - BioVillage Initiative in Ethiopia:** Research on the Health of Mother and Child in Gurage Zone, Ethiopia (1998)
- **Teaching Faculty,** Howard University / Ethiopia Summer Training Institute for Allied Health Professionals (Physician Assistants, Medical Laboratory Technologists, Public Health /Environmental Technologists), Addis Ababa (1996-1998)
- **Team Member,** Establishment of Summer Training Programs in Tropical Diseases for Howard University Students at the University of Ghana, Legon, Ghana (1996); School of Medicine and Pharmacy, University of Bamako, Bamako, Mali; School of Public Health, National University of Camerouns, Yaounde, Camerouns; Aklilu Lemma Institute of Pathobiology, Addis Ababa University, Ethiopia (1996). Grant funded by the Fogarty Foundation, National Institutes of Health, Bethesda, MD. All programs are still in operation.

Honors and Awards

Kaiser-Permanente Award for Excellence in Teaching: Howard University College of Medicine, November, 2013, 1989.

Keynote Speaker, July 2016. Symposium on Markers of Microbial Infections in Sickle Cell Disease, Obafemi Awolowo University (OAU), Ile-Ife, Nigeria

Keynote Speaker, July 2014. Symposium on Isolation and Characterization of Biologically Active Compounds from Nigerian Medicinal Plants, Obafemi Awolowo University, Ile-Ife, Nigeria

Keynote Speaker, HU Sigma Xi Scientific Society Banquet (May, 20014): "Critical and Creative Thinking in Scientific Advancement".

Invited Symposium Speaker: Annual Meeting of the American Society of Microbiology, Boston (June 2008): "Antimalaria and Antitumor Activities of Nigerian Chewing Sticks"

Reviewer, Ethiopian Journal of Biomedical Sciences (2006- Present)

Reviewer, Indian Journal of Dental Research (2012 –Present)

Grants Reviewer, NIH. Study Section on Antimicrobial Vaccines (2005- 2009)

Recognition Award in 2006 as the Longest-Serving Mentor for the NIH/NIDDK/Drew/ National High School Student Summer Research Apprentice Program (1992-2006)

Recognition Award by the American Heart Association for Ten Years of Mentoring Students in Summer Research program (1992-2002)

Teacher of the Year Award, Howard University College of Medicine Student Council (April, 2003)

Teacher of the Year Award, Howard University College of Medicine Student Council (April, 2004)

Team Leader, Howard University / Ethiopia Summer Training Institute for Mathematics and Science Education, Mekelle, Ethiopia (2002).

Team Leader - Bio Village Initiative in Ethiopia: Health of Mother and Child in Gurage Zone (1998)

Graduate Dissertation Supervision and Committees (2004 -Present)

Victoria Brooks: PhD Microbiology, May 2023 (Academic adviser)

Title: Immunologically Profiling of Chronically Transfused Sickle Cell Patients

Yousef Alrajhi: Chair, Dissertation Committee: "The Role of HIV-1 Nef in Reduced Migration of Macrophages in the Lung of HIV-Transgenic Mice." (2020 - 2022).

Mustafa Qasim: Chair, Dissertation Committee: “Association of KISSI/KISSR Expression in Breast Cancer with $E\alpha$ Signaling” (2019-2022)

Lilian Obwolo: Chair, Dissertation Committee: The Functional Interaction of Zika Virus Non-Structural Protein 3 (NS3) With the Cellular Protein SPIN2 (2019 -2021)

Hatajai Lassiter: Chair, Dissertation Committee: Host p21 a Putative Target of HIV-1 Restriction in Sickle Cell Disease (2017 -2019)

Safaa Turkistani: Chair, Dissertation Committee: miRNA Signatures of Triple Negative Breast Cancer in African American Women (2017 -2019)

Maram Almohaywi: Chair, Dissertation Committee: Integrated Analysis of Copy Number Alterations and miRNA Profile of Triple Negative Breast Cancer in Latina Women (2017 -2019)

Israa Malli: PhD Microbiology, December 2017. Academic adviser & Chair, Dissertation Committee: Scaffold Protein RACK1 Potentially Regulates IRES-Mediated Virus Translation: A Target for HIV-1 Proliferation Inhibition.

Douglas Mansell: PhD Microbiology, December 2017.

Title: Regulation of Asthmatic Airway Regulation in Inner City Youth

Dwann Davenport: PhD Microbiology, May 2013

Title: Characterization of Immunity to *Leishmania donovani* Infection

Ibrahim Laniyan: PhD Microbiology, May 2011.

Title: Characterization of Mechanisms of Anti-tumor Growth Exerted by Eosinophilic Cell Lines on Breast Tumor Cell Lines.

Tiffany N. Johnson-Largent: PhD Nutritional Sciences, May 2011.

Title: Nutritional Impacts of the Supplemental Nutrition Assistance Program.

Sharla Peters: PhD Microbiology, May 2011.

Title: Identification and in vivo Characterization of Inflammatory Biomarkers in Swine.

Shantelle Lucas: PhD Microbiology, May 2012

Title: Link between I κ B kinase (IKK-Beta), Nuclear Factor kappa B (NF κ B) Signaling in Inflammation in Obese and Non-obese African Americans.

Hilaire Kenguele: PhD. Biology, May 2009

Title: Biological Evaluation of Selected Medicinal Plants for Their Trypanocidal Properties and Modes of Action.

Leisel A. Lashley: PhD Biology, May 2009.

Title: Microbial Community Structures of PCB Contaminated Soils and of Alfalfa Rhizopores Using High Throughput 16s rDNA T-RFLP Technology.

Kristie D. Magee: PhD Biology, May 2009.

Title: Reductive PCB Dechlorination by Induction of Nitrate Reductase and Related Gene expression in *Medicago sativa*.

Altreisha N-S Foster: PhD Microbiology, December 2009.

Title: The Role of Ferroportin on HIV-1 Transcription and Replication **Alvin L.**

Smith: PhD Microbiology, May 2007

Title: The Role of Leukocyte-specific Protein 1 in DC-SIGN Mediated HIV-1 Entry and Trafficking in Dendritic Cell

Michael A. Smith: PhD Microbiology, May 2007

Title: Oncogene Expression in Proliferative Zones of Multicellular Prostate Tumor Spheroids in Response to Eosinophil Major Basic Protein

Deborah W. Ward: PhD Genetics, May 2007.

Title: Functional Genomic Analysis of Malaria Infection in Rhesus Monkeys.

Nicholas N. Epie: PhD Microbiology, May 2006

Title: "Role of Lissencephaly Protein 1(LISI) in HIV-1 Transcription"

Karl M. Thompson: PhD Microbiology, May 2006

Title: "A novel 6^E regulated small RNA in *Escherichia coli*"

Ava P. Morrow: PhD Biology, May 2004

Title: Comparative Effects of Cationic Surfactants and Chewing Stick Extracts on the Cell Growth and Activities of Glucosyltransferase and Fructosyltransferase Enzymes of Oral Streptococci.

Michelle P. Law: PhD Microbiology, December 2004

Title: Characterization and Effects of An Eosinophilic Granular Protein and Selected Cytokines (IL 4, IL 10, 11 12, and TNF-a) on Breast Cancer Cell Growth

Lynette Y. Berkeley: PhD Microbiology, May 2004

Title: Phenotypic, Biochemical and Phylogenetic Characterization of HU-Biol-1: An Antifungal Producing Bacterium

External Grants Funded:

Project Title: Health Disparities Research and Training through International Collaboration

Agency: National Institutes of Health, Bethesda, MD

Role: Co-PI. (PI: Winston Anderson, PhD). Project Period: 4/1/2014 -3-31-2019

Amount: \$1,280,046 **NIH Grant #:** IT37MD008639-01

Collaborating Institutions in Ghana, Nigeria, Mali and Ethiopia

Project Title: Iron Chelators: Role in Sickle Cell Malaria

Agency: NIH Grant 2 S0 GM08016-37: Project Period: 7/1/2006- 6/30/2008

Role: Co-PI. (PI: Azikiya Walcourt, PhD.)

Project Title: Establishment of a Summer Research Institute for Basic and Health Sciences in Ethiopia **Agency:** US Agency for International Development (USAID); **Role:** PI. Project Period: 2/1/03 -1/9/05:

Project Title: Identification and Characterization of Protective Factors in Breast Milk that Inhibit the Growth of Falciparum Malaria Parasite.

Agency: US Agency for International Development (USAID).

Project Period: 7/1/1990 - 6/30/1993 **Role:** Principal Investigator

Project Title: Immunosuppression to Bacterial Vaccines in Schistosomiasis

Agency: US Agency for International Development (USAID).

Project Period: 7/1/1996 - 6/30/1999 **Role:** Principal Investigator

Project Title: Biochemical Properties of Lysosomal Hydrolases in Biomphalaria glabrata and Helisoma ducreyi.

Agency: World Health Organization (WHO), Geneva.

Project Period: 7/1/1990 - 6/30/1993 **Role:** Principal Investigator

Internal Grants Funded

Project Title: Workshop and Seminars on Antimicrobial Vaccines **Agency:** Howard University Fund for Academic Excellence Program **Role:** PI
Project Period: 9/1/05 - 6-30-06

Project Title: Symposium on Emerging Infectious Diseases and Antibiotic Resistance
Agency: Howard University Fund for Academic Excellence Program **Role:** PI **Project Period:** 9/01/02 -5/31/03

Project Title: Development of a Computer-based Learning of Clinical Case Studies **Agency:** Howard University Fund for Academic Excellence Program
Role: PI **Project Period:** 9/01/01 -5/31/02

External Grants Submitted & Not Funded

Project Title: Ghana Biodiversity Project
Agency: National Science Foundation (NSF) **Role:** Co-PI
Project Period: 7/1/2012 – 6/30/2015 **Amount:** \$2.5 million
Collaborating Institution: University of Ghana, Accra, Ghana

Project Title: Effect of highly active anti-retroviral therapy on the outcomes of different antimalarial treatments and the immune capability of HIV-infected patients **Agency:** REACH Grants Program **Amount:** \$99,000 **Role:** Co-PI (May 2008) **Collaborating Institution:** Department of Pharmacology, University of Nigeria, Nsukka.

Project Title: Inhibition of Prostate Cancer Cells by Milk Peptides
Agency: National Institutes of Health (November 2006) **Role:** PI
Amount: \$300,000 (Not funded)

Project Title: Inhibition of Breast Cancer Cells by Milk Peptides
Agency: Department of Defense (April 2006)
Role: PI; **Amount:** \$250,000 (Not funded)

Service on Committees

College of Medicine

- **Member**, Executive Committee (2003 -2006)
- **Member**, College -Wide APT Committee, 2001- 2007; 2010- 2014.
- **Chair**, College -Wide APT Committee (2005-2007)
- **Chair**, APT Task Force: (March - September 2008) Appointed by the Dean of the College to review and make recommendations on the organization, policies and procedures of CW-APT committee with regard to appointments, reappointments and promotion to all the three academic tracks in the college.
- **Member**, Admission Committee, HU College of Medicine (1986 - 2002)
- **Chief Proctor**, National Board of Medical Examiners (NBME) for the College of Medicine (2004 –Present)

Graduate School

Chair: APT Committee (2000 -2005) **Member:**
Committee on Committees (1996-2002)

Department of Microbiology

1. Executive committee (1990 –Present)
2. APT committee (Chair, 1990- 2015)
3. Graduate education committee 4.
Curriculum committee

Administrative Appointments

Chairman, Department of Microbiology (January 2015 –Present)

Vice-Chair, Department of Microbiology (1989 - 2005)

Director of Graduate Studies, Department of Microbiology (2000 - 2008)