Bibliography: -

Dr Fikru B. Bedada is an assistant professor at the department of clinical laboratory sciences (CLS), college of nursing and allied health sciences, Howard university. His primary responsibilities include teaching didactic and laboratory aspects of core disciplines offered at the CLS department such as

1. Clinical Biochemistry and Instrumentation CLLS 309,
2. Clinical Chemistry II CLLS 410
3. Clinical Chemistry Practicum CLLS 408 and
4. Molecular Diagnostics CLLS 400

In this endeavor, he advises and mentors his students to foster retention, progression and professional competencies. Dr Bedada is certified MLS (ASCPi) by the American Society for Clinical Pathology (ASCP) Board of Certification (BOC).

Dr Bedada research intersect is centered on basic research and translational research.

In his strive towards basic research, Dr Bedada has extensive collaborative interdisciplinary research experience in the areas of embryonic stem cells (ESCs), human induced pluripotent stem cells (hiPSCs), adult stem cells and their differentiation into mesoderm such as striated and cardiac muscle cells. He has acquired and developed such skills and knowledge through graduate and postdoctoral research training under the mentorship of Dr. Thomas Braun, Max Planck Institute and with Dr. Joseph Metzger, university of Minnesota. Dr Bedada has worked on normal and patient-derived human iPSCs which can be modeled as "Patient in Dish" and play critical role in personalized medicine. Dr Bedada has worked in a project that addresses an increasingly apparent disconnect in understanding the concept of cardiac maturation in human. He advanced the field by investigating the molecular signature defining cardiac myocyte maturation.

Dr Bedada has also gained experience in therapeutic gene delivery using adenoviral and recombinant adeno associated virus (rAAV) gene delivery systems into the adult heart. He has over 15 years of molecular and cellular biology experience. Dr. Bedada has collaborated with leading experts in the NIH directed Progenitor Cell Biology Consortium (PCBC). He has published a total of 15 high profile papers, notably a high impact paper published in *Cell Stem Cell*.

Dr. Bedada has made several exciting progresses in the field of cardiovascular system by investigating the maturation process of human cardiac myocytes that is vital for in vitro drug testing, disease modeling, future cell-based therapy and personalized medicine. He has embarked in the state-of-the-art genetic engineering techniques such as Transcription activator-like (TAL) effectors nuclease (TALEN), Zink finger nuclease (ZFN) and Clustered regularly interspaced short palindromic repeats (CRISPR-Cas9) and CRISPR-dCas9 interference technologies. He has additional experience with genome editing in human induced pluripotent stem cells using new tools including TALEN, ZFN, and CRISPR/Cas9 based genome editing. He has engineered multiple novel human iPSC cell lines, including novel drug-titratable gene expression systems.

In his endeavor towards translational research, Dr Bedada's overall goal is to provide evidence that can be used to predict disease progression and response to exercise intervention in elderly AAs with MCI.

In this regard, Dr Bedada's research interest is also focused on identifying and characterizing biomarkers of myopathy, cardiomyopathy, cellular clearance, inflammation and their link with aging and age-related diseases such as neurodegeneration and how exercise intervention impacts gene expression profile to provide beneficial outcome in elderly African Americans (AA)s with Mild Cognitive Impairment (MCI). He is particularly interested in component of ubiquitin proteasome system (UPS) such as *FBXO32, TRIM63,* and transcription factors, *FOXOs*.

Dr Bedada is also investigating the effect of fitness adaptation on H_2S, SIRT1 and Insulin/IGF-1 signaling (IIS) pathways. He tests the hypothesis that exercise induced expression of homocysteine metabolizing enzymes such as cystathionine-β-synthase (CBS) and cystathionine-γ-lyase (CTH) and the splice factors which are linked to delay pace of cellular senescence can be beneficial during aging and neurodegeneration. CBS and CTH are precursor enzymes for the biosynthesis of H_2S, a potent cellular protector. Dr Bedada's goal is to provide evidence that exercise induced CBS, CTH and splice factors expression can be beneficial and enhance declining metabolic competencies manifested during aging and age-related diseases by way of H_2S, SIRT1 and Insulin/IGF-1 signaling (IIS) pathways.