

GW Institute for Biomedical Engineering

Colloquium

***In Vivo* Model Systems to Evaluate Multifunctional Nanoparticles and New Agents for Pancreatic and Brain Tumors**

By

Milan T. Makale, Ph.D.
UCSD Moores Cancer Center

A key limitation of many front-line cancer chemotherapy drugs is dose-limiting host tissue toxicity. Nanoparticles may be able to effectively bypass this limitation by preferentially concentrating a drug payload at tumors. Despite impressive advances in nanoparticle fabrication, several critical factors concerning nanoparticle behavior and efficacy *in vivo* must be addressed; (1) the contribution of passive leakage versus targeting has to be characterized, (2) the relative importance of targeting tumor vessels versus tumor cells, (3) the dynamics of particle - drug penetration into the tumor, and the significance of local blood flow, and (4) so-called ‘Theranostic Nanoparticles’ are needed, i.e., particles that can be tracked to the tumor by conventional imaging modalities and yet retain high drug loading efficiencies. These studies need to be conducted *in vivo* using appropriate model systems, and this talk will present our efforts to target, treat and image pancreatic and brain tumors in specialized models that we have developed. An overview of our translational research in pancreatic and brain cancer, and the biological underpinnings of our approaches will be described.

Bio:

Dr. Makale earned his Ph.D. in Radiation Physiology at The University of Alberta, and then a MS in Medical Imaging in Biomedical Engineering at GWU. He was a U.S. National Research Council Fellow in Radiation Studies, and he then joined the National Institutes of Health in Bethesda, MD conducting brain imaging studies. Dr. Makale is presently a staff scientist at the University of California San Diego Moores Cancer Center where he focuses on intravital imaging, brain and pancreatic tumor models, and tumor drug development. Dr. Makale is a member of the Whittaker Institute for Bioengineering, and a consultant for the U.S. NHSTA CIREN vehicle crash program.

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Pizza and refreshments will be served

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