



From the Meharry Medical College Office for Research and Innovation

ANNOUNCEMENTS

Upcoming/ongoing events:

- **Dec 3, 2020 (Thurs) at 2:00 p.m. CST:** Immigration law seminar by immigration attorney Terry Olsen. Title: **Current & Future Immigration—Work & Travel—Policies: What to Expect for 2021?** Click [here](#) to register.

- The Eshelman Institute for Innovation (EII) of UNC Eshelman School of Pharmacy invites Meharry faculty to apply for their **2021 Faculty award**.

Questionnaire
deadline: **Dec 4, 2020**

Pre-proposal form
deadline: **Jan 8, 2021**.

If interested, please meet with the EII team by **Jan 8, 2021** to discuss proposal idea.

Visit the [EII website](#) or contact the [EII team](#) for more information.

- The **RHDR@MMC Investigator Development Core** pilot awards program seeks new applications.

Dec 18, 2020: LOI due. Click [here](#) to submit.

Jan 13, 2021: Last day to complete studio scheduling

Feb 26, 2021: Full application due

For more information, please contact [Dr. Fernando Villalta](#) or [Ms. Denise Holland](#).

- OfRI is soliciting new members for IRB, IACUC, IBC, and Radiation Safety Committee. If interested, please complete this [form](#) and upload it to this [survey](#).

(continued...)

THE VP'S CORNER



Dear Meharrrians:

I began my tenure as the Interim Vice President for Research and Innovation during the COVID-19 pandemic. Despite these unprecedented times, our researchers have shown significant progress in scholarly activities as measured by publications, patent filings, and receipt of extramural research funding from various sources. These achievements reflect the strong culture of research and innovation at Meharry that began in the early 1970s during the College's "**Renaissance Period**" under the leadership of President Lloyd C. Elam.

After 50 years, we are once again on the verge of evolution and transformation. In 2015, President Barack Obama declared precision medicine as a national priority. This initiative is now possible thanks to scientific advances such as high throughput genomics, proteomics, and imaging technologies. Extremely large databases encompassing genetics, epigenetics, lifestyle, and environmental factors are available to generate algorithms that identify molecular networks as well as highly specific and personalized treatments for individual patients. New single-cell high-throughput technologies are bound to transform symptom-based intuitive medicine to evidence-based personalized medicine. This advancement will depend on the recognition of molecular networks guided by precision data science and bioinformatics.

To address unique challenges of the College, President James Hildreth called for a campus-wide introspection of our core values and processes. This led to the development of the Meharry 2026 Sesquicentennial Strategic Plan, which necessitates an alignment of all research in pedagogy, biomedical sciences, clinical sciences, and community health as well as policy initiatives toward health equity. Highly collaborative, transdisciplinary research programs guided by a strong foundation in basic sciences are now more important than ever. Dr. Hildreth describes the plan as a way for "the college to adapt to change and take a proactive posture rather than being trapped in a reactive mode where creativity and innovation are stifled".

We at the Office for Research and Innovation aim to guide our researchers and students to opportunities that match their talents and expertise, and to support all Meharrrians in their pursuit of new knowledge, skills, and potential. My first and foremost agenda is to propel Meharry to the 21st century with regards to research and innovation in our efforts to accomplish the vision of Meharry 2026. There is a long road ahead of us, but with our energy, passion, and creativity, I am confident that we can accomplish this mission together.

Here, I am pleased to present the first issue of *The Research Digest*. Going forward, we will highlight Meharry's achievements in this newsletter. Therefore, I encourage all of you to share your updates with us by completing this [REDCap survey](#). We look forward to celebrating your accomplishments.

Let us strive for a safe, engaging learning environment for success!

Sincerely,

Anil Shanker, M.S., Ph. D.
Interim Vice President for Research and Innovation
Professor of Biochemistry, Cancer Biology,
Neuroscience and Pharmacology

- “Chalk-talk” sessions for grant development available for junior investigators to help develop their specific aims. Send your request to: VP-Research@mmc.edu

- [COVID-19 lab safety guidelines](#)

Past events:

- **Oct 16, 2020:** “Protecting and commercializing inventions at Meharry”. Seminar by Phillip Walker and Timothy Capria, attorneys at Bradley. Listen to the recording [here](#).
- **Oct 22, 2020:** Writing workshop by Dr. Virginia Brennan, editor of Meharry’s *Journal of Health Care for the Poor and Underserved*. Listen to the recording [here](#).
- **Nov 13, 2020:** Research town hall. Click [here](#) for the PowerPoint presentation by Dr. Anil Shanker.

MORE INFORMATION?

You can find it here:

[OfRI Services and Support Unit](#)

[ResearchPoint](#)

[Yammer](#)

SPOTLIGHT

Two Meharrrians participated as expert panelists in **The Gene Educator Series** by Nashville Public Television.

Dr. Tanu Rana, Assistant Professor, Department of Professional and Medical Education

Ky’Era Actkins, Ph.D. student in biomedical sciences

The series explores **The Gene: An Intimate History**, a documentary in the PBS Media Learning Collection. The presentation is available online from **Nov 10, 2020 to Jun 30, 2021**.

PUBLICATION HIGHLIGHTS

Congratulations to our faculty on the following publications!

From the Gangula group:

Porphyromonas gingivalis infection alters Nrf2-Phase II enzymes and nitric oxide in primary human aortic endothelial cells. Chethan Sampath, Emmanuel U Okoro, Michael J Gipson, Sasanka S Chukkapalli, Cherae M Farmer-Dixon, Pandu R Gangula. *Journal of Periodontology*. 2020 Oct 30.

Porphyromonas gingivalis is an oral pathogen that causes periodontal disease (PD). Due to the known association between PD and cardiovascular disease, the authors sought to determine the effect of *P. gingivalis* infection on human aortic endothelial cells in culture. These cells line the aorta and regulate exchanges between the bloodstream and surrounding tissues. Disruption of their function leads to endothelial dysfunction that results in blood vessel constriction. This study showed that ***P. gingivalis* infection impaired the survival of aortic endothelial cells by affecting components of Nrf2 signaling. These findings may contribute to the development of new therapeutics for PD-associated vascular diseases.**

Inhibition of GSK-3 β restores delayed gastric emptying in obesity-induced diabetic female mice. Chethan Sampath, Shanthi Srinivasan, Michael L Freeman, Pandu R Gangula. *American Journal of Physiology-Gastrointestinal and Liver Physiology*. 2020 Oct 1.

Diabetic gastroparesis is the disruption in stomach contraction caused by diabetes that results in delayed gastric emptying. It can interfere with normal digestion. The authors discovered that **glycogen synthase kinase 3 β (GSK3 β), which inhibits Nrf2 function, is responsible for this disruption. Therefore, inhibiting GSK3 β activity could be important in restoring gastric emptying.**

From the Chaudhuri group:

Novel IM-associated protein Tim54 plays a role in the mitochondrial import of internal signal-containing proteins in *Trypanosoma brucei*. Ujjal K Singha, Anuj Tripathi, Joseph T Smith Jr, Linda Quinones, Aparajita Saha, Tanusree Singha, Minu Chaudhuri. *Biology of the Cell*. 2020 Oct 20.

Trypanosoma brucei is a pathogen that causes sleeping sickness in humans. This study uncovers a role for Tim54, a novel protein in the mitochondria of *T. brucei*.

(continued...)



Photo by [Chad Madden](#) on [Unsplash](#)

Happy Holidays!

The Office for Research and Innovation wishes all Meharrians and their families a safe and happy holiday season.

See you next year!

Mitochondria are organelles that generate energy within eukaryotic cells. Each *T. brucei* cell contains a single mitochondrion that imports almost all its proteins from the cytoplasm. The authors showed **that Tim54 is crucial to mitochondrial protein import and protein complex assembly, two processes critical to the survival of *T. brucei*.**

From the Ochieng group:

The rapid endocytic uptake of fetuin-A by adherent tumor cells is mediated by Toll-like receptor 4 (TLR4). Portia L Thomas, Gladys Nangami, Tanu Rana, Adam Evans, Stephen D Williams, Dylan Crowell, Anil Shanker, Amos M Sakwe, Josiah Ochieng. *FEBS Open Bio*. 2020 Oct 18.

Fetuin-A, known for its role in preventing unwanted deposition of calcium, has emerged as a critical component in cancer progression. This study used cultured cancer cells to show that **Toll-like receptor 4, which is commonly expressed on immune cells, facilitates fetuin-A uptake by tumor cells. Consequently, fetuin-A promotes the adhesion and spreading of these cancer cells *in vitro*.**

From the Alcendor group:

Dysregulation of endothelin-1: Implications for health disparities in Alzheimer's disease. Donald J Alcendor. *Journal of Personalized Medicine*. 2020 Oct 28.

Endothelin-1 is a protein that causes blood vessels to contract and narrow. Extensive and prolonged constriction of blood vessels in the brain may lead to neuronal injury. This review describes **how the disproportionate dysregulation of endothelin-1 function in African American and Hispanic/Latino populations contributes to increased risk of Alzheimer's disease.**

GRANT HIGHLIGHTS

In October 2020, **Dr. Dexter Samuels** received the following award from the Office of Justice Programs (OJP), U.S. Department of Justice (DOJ):

OJJDP FY 20 Reducing Risk for Girls in the Juvenile Justice System

This grant will fund the project entitled "Youth Achieving Success (YAS) Mentoring Program for Juvenile Girls".

Congratulations!

Want to share your research news, highlights, and announcements with us? Want your stories featured in the Research Digest? Please submit this [REDCap survey](#) to share your updates with us. We look forward to celebrating your achievements!