Ongoing news about MEHARRY RESEARCH
ADVANCING RESEARCH AND INNOVATION

From the Meharry Medical College Office for Research and Innovation

ANNOUNCEMENTS

Research Resources:

- Learn about the Office for Research & Innovation at meharryresearch.org. Visit the website for information about our structure, regulatory committees, grant submission requirements, core facilities, and more.
- Have a research administration question? Wondering if Meharry has internal funds for pilot research projects? Lost the link to extend your VUNet ID? Check for Quick Answers and more on ResearchPoint. Log in with your Meharry credentials.
- Grant development "Chalk-talk" sessions available to junior investigators to help develop their specific aims. Request your session at VP-Research@mmc.edu
- Cutting edge imaging systems at CRISALIS:
  - Beckman Coulter CytoFLESH Flow Cytometer
  - Luminex Amnis CellStream Flow Cytometry System
  - Thermo Fisher EVOS fluorescence microscope
  - Keyence BZ-X700 microscope
- Visit the CRISALIS website for details, other equipment, and services.
- Development Opportunities:
  - Edge for Scholars’ Mock NIH Grant Reviews While registration for the June grant pacing workshops has passed, Edge for Scholars has ongoing grant improvement opportunities, including an NIH-style, mock grant review for upcoming K and R submission. Find this and more here. Open to Meharry researchers at no cost.

THE VP’S COLUMN

Dear Meharrians:

As 2021 concluded through another year of the pandemic, we continued to move forward with the utmost safety, pragmatic optimism and unrelenting drive. We enhanced the research experience and learning environment of our students and made contributions for the benefit of communities we serve.

We initiated the first “Annual Recognition Awards” to recognize the exceptional success of five outstanding researchers. Highlighted in this issue, their dedication, ingenuity, and continued hard work contributed remarkably to the growth of Meharry. The leadership of these five faculty members and their teams, with the support of their department Chairs and Dean, continued to extend the frontiers of knowledge while educating and training the next generation of scholars.

Also in this issue, Dr. Virginia Brennan, Editor of Meharry’s Journal of Health Care for the Poor and Underserved, gives us a peek into the journal’s manuscript acceptance rate for 2021, its continuing impact nationally, and a summary of an article from the February 2022 issue. The JHCPU continues to be an exemplar of Meharry’s efforts in scholarship and research for improving the health of those that need it most.

I am grateful to our researchers and Meharry community for all your hard work, resilience and dedication to advancing science and the learning experience. We have much to look forward to tap the potential of unparalleled technology and scientific opportunities, with globally networked and diverse leaders. I invite you to lead with us in our mission to create knowledge by catalyzing the full force of collective action and team work in the year ahead.

With kind regards,

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

SPOTLIGHT

Office for Research & Innovation Annual Recognition Awards

At the end of 2021, the Office for Research & Innovation reflected on another year full of challenges faced and overcome by Meharry researchers and recognized the exceptional success of five outstanding faculty. Their dedication, ingenuity, and continued hard work contributed remarkably to the growth of Meharry last year. 2021’s Recognition Awards were for competitive, extramural funding for research as lead PI and notable peer review accomplishments during the past 12 months. These faculty persistently continued to extend the frontiers of knowledge while educating and training the next generation of scholars.

- Community Science Researcher of 2021:
  Patricia A. Matthews-Juarez, MSW, PhD
  SVP, Office of Strategic Initiatives and Innovation
  Professor, Department of Family & Community Medicine
  Dr. Matthews-Juarez’s funding results from her collaborative transdisciplinary and translational science team-work in the epigenetics and social determinants of chronic disease, health equity, and disparity. She works passionately to bring social change and equity to vulnerable populations across the globe, emphasizing primary care education, community engagement, maternal health, patient-family centered care for chronic disease & pediatric HIV, STEM capacity building with HBCUs, and healthcare delivery across the lifespan in the US and Africa.
  - Total 2021 extramural funding: $8,296,541

FUNDED INVESTIGATORS

Congratulations to all Meharry investigators who have received extramural funding!

- Biochemistry, Cancer Biology, Neuroscience and Pharmacology
  - Adunyah, Samuel E.
  - Sapp, Nicklas
  - Shanker, Anil
  - Son, Daek-Soo
  - Stewart, Lani O. M.
  - Balausbaramian, Muthukumar

Center for AIDS Health Disparities Research
- Dash, Chandravanan
- Dong, Xinhong
- Liu, Bindong
- Popik, Waldemar
- Pandhare, Ali

Center for Molecular & Behavioral Neuroscience
- Charlton, Clive G.

Central Administration
- Samuels, Adrian D.

Dental Dean’s Office
- Farmer-Dixon, Cherise

Family & Community Medicine
- Collins, Millard
- Cooper, Robert L.
- Juarez, Paul D.
- Mathiak-Juarez, Patricia
- Morelli, Vincent
- Sanderson, Maureen

Graduate Dean’s Office
- Motley, Evangeline D.
- Woods, Letha

Graduate Studies
- Actkins, Ky/Era
- Fennic, Siddharth
- Raiyford, Kyla
- Sake, Amos M.

Internal Medicine
- Berthaud, Vladimir
- Erves, Jennifer C.
- Fremont, Richard
- Singh, Rajbir
- Smoot, Duane

Medical Dean’s Office
- Forbes, Digna S.

Microbiology, Immunology, and Physiology
- Borza, Dorin Bogdan
- Chapar, Minu
- Liu, Bindong
- Nde, Pius N.
- Villafita, Fernando

(continued...)
The AIM-AHEAD Coordinating Center Southeast Hub, led by Meharry Medical College, invites you to participate in an interactive “Community Building Brown Bay Webinar” on March 31, 2022 (12 pm – 1 pm CST). This virtual, interactive webinar will host an open dialogue with the community for advancing health equity through artificial intelligence and machine learning (AI/ML). The event will highlight AIM-AHEAD program aims, Southeast Hub activities and discuss opportunities for your involvement in this national effort. The AIM-AHEAD consortium was established by the NIH with a vision to build a national consensus on advancing health equity and diversity in the AI/ML workforce.

Registration and attendance for the webinar is completely free.

Applications for a unique Robert Wood Johnson Foundation leadership program—designed for teams of community leaders and researchers— are open until May 4. The AIM-AHEAD Research Leaders focused on dismantling structural racism and health inequity will embark on a transformational journey using an action-oriented, community-engaged research to help build a Culture of Health, one that enables everyone in America to live longer, healthier lives.

**Behavioral Science Researcher of 2021:**

(Robert) Lyte Cooper, PhD, MSSW
Associate Professor, Department of Family & Community Medicine

Dr. Cooper’s awards focus on drug-use harm reduction, HIV/AIDS prevention & treatment, and training for providers of those services. Funded by SAMHSA, CDC, NIH, and HRSA, and through consistent partnership with the TN Departments of Health and Mental Health and Substance Abuse Services, Dr. Cooper focuses on treating underserved, uninsured, unhoused, LGBTQ+, and rural populations. Recent funding through the NIAID and CDC supports HIV prevention implementation studies (PREP, test & treat) in Nashville, Memphis, and several rural east Tennessee counties and will guide the TDH’s PREP linkage efforts across the state.

- Total 2021 extramural funding: $3,465,544

**Basic Science Researcher of 2021:**

Chandranavanu Dash, PhD, MSc
Professor, Center for AIDS Health Disparities Research & Department of Biochemistry, Cancer Biology, Neuroscience and Pharmacology

The Dash lab studies HIV-1 replication and pathogenesis. Through multiple R01s, his group is dissecting the mechanisms HIV-1 integration, exploring how drugs of abuse contribute to HIV-1 infection, and studying the inhibitory role of cellular miRNAs on HIV. He is PI of the Enhancing Virology Training summer program (ENVIT) and Co-PI of the microbial pathogenesis training grant. Dr. Dash’s success has supported renovating the BSL2 and BSL3 laboratories in the CAHDR and West Basic Science Bldg.

- Total 2021 extramural funding: $1,740,963

**Researcher with the highest impact factor publication in 2021:**

Dorin B Borza, PhD
Assistant Professor, Department of Microbiology, Immunology and Physiology

Laminin-521 is a Novel Target of Autoantibodies Associated with Lung Hemorrhage in Anti-GBM Disease. Journal of the American Society of Nephrology, 2021; 32:1887-1897. Antiglomerular basement membrane (anti-GBM) disease is a rapidly progressive kidney and lung disease. Dr. Borza and nephrologists from Beijing University detected autoantibodies to laminin-521, a ubiquitous scaffolding protein, identifying a major human autoantigen in anti-GBM disease. These autoantibodies were significantly associated with lung hemorrhage, hemoptysis, and smoking, and may be a crucial target for anti-GBM disease therapy.

- JASN Impact factor: 10.121

**Researcher with most publications in 2021 (first or last author):**

Jennifer Cunningham-Erves, PhD, MPH, MAEd, MS, CHES
Associate Professor, Department of Internal Medicine

Dr. Jennifer Cunningham-Erves is a behavioral scientist who seeks to increase HPV vaccination among adolescents, cancer clinical trial participation among African Americans and Latinos, and COVID-19 vaccination among African Americans and Latinos. She works to identify strategies to engage the community in research across the translational continuum.

- Five first author publications:
  - Human Vaccines & Immunotherapeutics
  - Journal of Community Health
  - Cancer Causes & Control
  - Translational Behavioral Medicine
  - American Journal of Health Education

Scientific endeavors cannot be accomplished alone. The Office for Research & Innovation acknowledges the contributions of the teams of researchers, clinical staff, administrators and students working with the faculty listed above.

**SPOTLIGHT**

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Want your publications featured in the Publication Highlights? Please complete this REDCap survey to share the information with us!

From the Annual Recognition Awards:

Dorin Borza:


Jennifer Cunningham-Erves:


Recent Meharry Research Publications (first or last author):


Other recent publications from Meharry researchers are available in the REDCap database. Contact Jennifer Cunningham-Erves, jenifer.cunningham-erves@meharry.edu to learn more about the research and how you can get involved.
Lightest accessibility to primary care physicians in the U.S.

Figure 3. Family physicians and general practitioners were dominant in rural areas of the U.S. and the Southern metropolitan areas (see Figure 3). On the other hand, primary care providers for children in large metropolitan areas, especially in the Northeastern United States, were more dependent than the rest of the nation on IMGs from the seven countries for access to health care (see Figure 2). Areas in Midwestern states and parts of the South were more dependent on Black surgeons. Areas in the South with a higher proportion of Black residents correspond to areas of higher dependency on Black surgeons (see Figure 2). These areas seem to mirror the proportion of people in the Black population, with areas of a higher proportion of Black residents corresponding to areas of higher dependency on Black surgeons.

Question 1: “The spatial analysis results suggest that areas in the South with a higher percentage of Black residents, urban areas on the East coast, and Midwestern states are more dependent than the rest of the nation on Black surgical specialists for spatial accessibility to surgical care (see Figure 1). These areas seem to mirror the proportion of people in the Black population, with areas of a higher proportion of Black residents corresponding to areas of higher dependency on Black surgeons.”

Figure 1. Area dependency on Black surgical specialists for population spatial accessibility to surgical specialists in the U.S.

Lightest – Darkest: 0.0% - 1.0%, 1.1% - 2.5%, 2.6% - 5.0%, 5.1% - 15.0%, 15.1% - 100.0%

Question 2: “In this case study, we used data from the AMA Masterfile to determine the number of direct patient care physicians who graduated from medical schools from the seven countries and map the dependency of U.S. local populations on their presence for access to physician services. … Results show that many areas of the U.S. depend on IMGs from the seven travel ban countries for access to health care (see Figure 2). Areas in Midwestern states were more dependent than the rest of the nation on IMGs from the seven countries for physician services.”

Figure 2. Area dependency on International Medical Graduates from seven travel ban countries for population spatial accessibility to physicians in the U.S.

Lightest – Darkest: 0.0% - 1.0%, 1.1% - 2.0%, 2.1% - 3.0%, 3.1% - 5.0%, 5.1% - 50.0%

Question 3: “Results show there were 97,392 family physicians, 8,369 general practitioners, and 53,228 pediatricians in direct patient care at the end of 2014. There were an estimated 92.9 million people in the pediatric population who were 21 or younger in the U.S. and Puerto Rico, according to the 2015 ACS data. The findings suggest that pediatricians were the dominant primary care providers for children in large metropolitan areas, especially in the Northeastern metropolitan areas and the Southern metropolitan areas (see Figure 3). On the other hand, family physicians and general practitioners were dominant in rural areas of the U.S.”

Figure 3. Dominance of general pediatricians for pediatric population spatial accessibility to primary care physicians in the U.S.

Lightest – Darkest: 0.0% - 10.0%, 10.1% - 20.0%, 20.1% - 30.0%, 30.1% - 50.0%, 50.1% - 100.0%

To provide a taste of what is in this quarter’s issue of the journal, below we offer the outlines of a significant new article by Imam Xierali and Mark Nivet from the University of Texas Southwestern Medical Center. The title: Application of Decomposition Analysis of Spatial Accessibility (DASA) in Health Services Research.

Withdrawal mapping is a technique for illustrating the impact of providers in particular areas; as Xierali and Nivet put it, “it hypothetically removes the group of health care providers from certain areas and examines the local population’s dependency on their availability, thus highlighting the importance of these providers to the local population.” In this paper, the authors provide grounding in the theoretical foundation of spatial accessibility research for withdrawal mapping and use the new technique to investigate three policy-relevant questions: 1) Where and to what extent in the U.S. do people depend on the availability of Black surgeons? 2) In what areas of the U.S. does the population rely on international medical graduates from the seven countries on the Trump Administration’s travel ban list? 3) In this era of changing scope for general practitioners, to what extent are pediatric populations cared for by general pediatricians and to what extent by family physicians? The answers to these questions are apparent in the three figures shown here and the accompanying excerpt from the article (excerpted from Xierali and Nivet, JHCPU/33.1). The authors conclude that the technique they propose is useful in understanding subgroup contributions in spatial accessibility analyses, particularly for workforce planning for underserved populations.

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Figure 3. Dominance of general pediatricians for pediatric population spatial accessibility to primary care physicians in the U.S.

Lightest – Darkest: 0.0% - 10.0%, 10.1% - 20.0%, 20.1% - 30.0%, 30.1% - 50.0%, 50.1% - 100.0%
As highlighted in the March 25, 2022 issue of The Digest, Meharry Medical College, Morehouse School of Medicine and ASHLIN Management Group (ASHLIN) have announced the creation of HealthWorks, a nearly $9.7 million grant from the U.S. Department of Health and Human Services Health Resources and Services Administration (HRSA) as part of its Community-Based Workforce for COVID-19 Vaccine Program, to increase COVID-19 vaccine confidence in Georgia and Tennessee through targeted, culturally competent and outreach education with a focus on communities of color. Dr. Paul Juarez, Department of Family & Community Medicine, serves as the Meharry principle investigator.

In December of 2021, SOGSR student Kayla Rayford (mentor: Dr. Pius Nde, Department of Microbiology, Immunology & Physiology) received an F31 fellowship grant for her project titled "Molecular mechanisms of Trypanosoma cruzi induced colon pathogenesis". Trypanosoma cruzi causes debilitating and incurable Chagasic megacolon. This life threatening illness affects several million individuals causing severe morbidity, mortality, and economic burden. Ms Rayford’s project will elucidate the molecular mechanisms exploited by the parasite to induce colon pathogenesis, identifying specific molecular interventions and biomarkers to combat T. cruzi induced gastrointestinal pathology.

Initiated by the Office for Research & Innovation in coordination with the Department of Professional and Medical Education, Meharry recently announced an agreement with EON Reality, a global leader in augmented and virtual reality-based knowledge and skills transfer. This agreement will bring hands-on training to Meharry students by Meharry educators without the need to be present in the classroom. The immersive experiences and content will combine with Meharry’s existing medical courses giving our students and faculty a distinct advantage in remote learning. Dr. Regina Offodile, Intern-Chair of the Department of Professional and Medical Education, is leading the initiative. More information available in the Feb. 21 issue of The Digest.

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.

See you next quarter!