History of the Research Enterprise at Meharry

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Established in 1876, Meharry Medical College is a global health sciences center of learning and research that serves as a steadfast beacon of hope to the underserved community. It is the largest private, historically Black institution in the United States that is dedicated exclusively to educating healthcare professionals and biomedical scientists. Meharry's School of Graduate Studies and Research was founded in 1938. Since then, the school has offered courses in the basic sciences, clinical sciences, and public health. It received accreditation to grant Ph.D. degrees in 1972. In the same year, Meharry received the then newly announced Minority Biomedical Research Support (MBRS) program award from the Division of Research Resources at the National Institutes of Health (NIH).

For nearly 150 years, Meharry has stood for health equity. The College is home to a diverse body of students, faculty, and staff with respect to gender, race, and geographical origin. People of racial and ethnic minorities, predominantly African American, work together with those from Hispanic, Native American, Caucasian, and Asian populations for the singular mission of eliminating health disparities in underserved communities.

The period of the late 1960s to early 1970s marked the College's "Renaissance Period" under the leadership of President Lloyd C. Elam. During this period, the College witnessed an enhancement of research programs initiated by the formation of the Division of Genetics and Molecular Medicine, an initiative much ahead of most medical schools at the time. The recruitment of notable faculty in cutting-edge research areas such as biochemistry, biophysics, molecular biology, neuroscience, medical genetics, and immunobiology enhanced Meharry's research progress. Well-known appointees were Joseph Galley and Thomas Shockley - trained respectively in the laboratories of Nobel laureates Gerald Edelman and Edward Tatum. Other notable recruits were James and Shirley Russell and E. Wesley McNair. These geneticists launched an interdisciplinary research program to elucidate the molecular basis of keloid formation, which is common in people of African descent. Other faculty members hired during this time were illustrious biochemists Joel Trupin, Donella Wilson, Joel Blatt, Henry Moses, Lynn Stewart, Salil Das, and Ifeanyi Arinze. In 1972, Salil Das became the first faculty member at Meharry to receive an NIH R01 award. Meharry faculty Dolores Shockley, the first Black woman to receive a Ph.D. in Pharmacology in 1955, became the first Black woman to chair a Pharmacology department in the United States in 1988. She received funding from the National Institute on Drug Abuse to pursue a major drug addiction research program, first of its kind at Historically Black Colleges and Universities (HBCU). Meharry also broadened its existing strength in biochemistry and pharmacology by recruiting biophysicists Donald Mickuleky and Alan Zelman, molecular biologist Eddie Moore (from the laboratory of Nobel laureate Howard Temin), microbiologist Henry Patthey, and neuroscientist James Townsel. These exceptional scientists came to Meharry because they believed in and wanted to contribute to Meharry's mission. President Elam further promoted a culture of academic exchange by establishing the Nashville University Center to foster academic collaborations among faculty from Meharry, Fisk University, Peabody College, Scarritt College (now the campus of the Scarritt Bennett Center), and Vanderbilt University.

In July 1971, Meharry expanded into the international arena with the establishment of the Maternal and Child Health/Family Planning Training and Research Center with funding from the Agency for International Development of the US Department of State. The center developed exchange programs with 11 African countries including Kenya, Zaire, Nigeria, Sierra Leone, Ghana, Liberia, and Ethiopia. The center was recognized as one of seven WHO Collaborating Centers around the world committed to community-based training of biomedical professionals. In 1972, the Sickle Cell Center was launched in the School of Graduate Studies and Research through funds appropriated by the Tennessee legislature. Core investigators from different disciplines like JK Haynes, Alan Zelman, Katherine Shaffer, Salil Das, and PK Adikary joined forces to offer sickle-cell education, screening, counseling, and research.

President Elam's call for increased accountability, decentralization, and competitiveness led to the appointment of Charles W. Johnson Sr., a long-serving Meharry alumnus, as the first Vice President for Research in 1978 to grow the research enterprise at Meharry. VP Johnson conceived the development of thematic Centers of Excellence to acquire research competence in new areas. His successor Fred Jones, an accomplished researcher in microbiology, continued this impetus when he took over in 1982. Meharry received the Research Centers in Minority Institutions (RCMI) program grant in 1985 from the National Center for Research Resources and has continued to benefit from its support. This award triggered the establishment of Meharry's Office of Research Support Services, which played a pivotal role in the development, coordination, and growth of the College's research enterprise. It allowed expansion of the molecular parasitology programs led by George C. Hill and the neuroscience programs led by James G. Townsel. This expansion led to the recruitment of Manuel Valenzuela, Fernando Villalta, Gautam Chaudhuri, Raju Ramasamy, Clive Charlton, Sukhbir Mokha, and Sanika Chirwa, among others. This new group of faculty members was tasked with developing research in molecular biology, immunobiology, neurobiology, and the biology of tropical diseases as well as molecular and behavioral neurosciences. During this time, President David Satcher also initiated the use of Meharry's Hubbard Hospital by the city of Nashville, and, subsequently, the relocation of the Metropolitan Nashville General Hospital to Meharry's campus. This endeavor facilitated the establishment of the Clinical Research Center at Meharry in 1987 with the support of research funds awarded to Salil Das from the NIH and the Department of Defense to study the effects of physical stress on individuals afflicted by the sickle-cell trait.

In 1999, Meharry forged a partnership with Vanderbilt University through a supplement to the Vanderbilt-Ingram Cancer Center (VICC) Support Grant from the National Cancer Institute (NCI). Under the leadership of Meharry faculty Samuel Adunyah and then-VICC Director Harold Moses, this partnership led to the receipt of one of only two U54 NCI Comprehensive Cancer Center Partnership grants in the country in 2001. The objective of this grant was to strengthen the capabilities of minority-serving institutions to engage in effective research collaborations with their neighboring NCI-designated comprehensive cancer centers, with the goal of reducing cancer incidence and death rates among minorities. This partnership grant continues to this day. In 2011, Tennessee State University (TSU) joined this partnership as a full member under the leadership of Baqar Husaini to house the Cancer Outreach component.

In 2009, the NIH National Center for Research Resources awarded the Translational Research Center (MeTRC) grant to Ayman Al-Hendy and James EK Hildreth to establish a national model

for clinical and translational research at Meharry that focuses on health disparities in infectious diseases, including HIV/AIDS, and women's health.

In 2015, President of the United States Barrack Obama declared precision medicine as a national priority. This initiative requires expertise both in big data research and analysis of individualized data. To heed the call of this initiative and to advance Meharry's research capabilities, President Hildreth began leading Meharry's transformation to align itself with the 21st century institution. To complement existing expertise in basic and health sciences as well as public health, Meharry researchers strive to equip themselves with knowledge and skills in cutting-edge techniques in fields like high throughput genomics, proteomics, molecular imaging and bioinformatics. They are digging into large databases encompassing genetics, epigenetics, lifestyle and environmental factors to determine connections between the biological and social determinants of health. Such efforts allow Meharry researchers to generate algorithms from single-cell high throughput data and identify molecular networks into the domain of systems biology. Such an approach will transform symptom-based intuitive medicine to highly specific, personalized evidence-based medicine.

Additionally, Meharry launched the Data Sciences Institute in September 2018. Computer science expert Fortune Mhlanga, former Dean of the College of Computing and Technology at Lipscomb University, currently leads the Institute. Then, in June 2019, the College launched the Meharry Center for the Study of Social Determinants of Health. The goal of this Center is to improve public health by examining factors that influence the health and well-being of people of all ages, including smoking, substance abuse, nutrition, and food insecurity. Bryan Heckman, an expert in digital healthcare and behaviors, leads the Center.

While Meharry has uniquely positioned itself to tackle the modern-day challenges in scientific research, there is an urgent need for the College to realign its scientific efforts for the populations it serves. In this regard, President 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, community and public health, and policy initiatives toward health equity. Highly collaborative, transdisciplinary research programs bolstered by 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". This impetus is currently the focus of the research and innovation enterprise at Meharry moving forward.

Meharry Medical College Vice Presidents for Research:

- Charles W. Johnson Sr., M.D. (1978 –1982)
- Fred Jones, Ph.D. (1982 –1998)
- George C. Hill, Ph.D. (1998 – 2002)
- Maria F. Lima, Ph.D. (Interim) (2002 – 2005)
- Lee E. Limbird, Ph.D. (2005 – 2007)
- James G. Townsel, Ph.D. (Interim) (2008 – 2009)
- Russell E. Poland, Ph.D. (2009 – 2015)
- Maria F. Lima, Ph.D. (2017 – 2019)
- James E.K. Hildreth, Ph.D., M.D. (Interim) (2019 – 2020)
- Anil Shanker, Ph.D. (Interim) (2020 – present)

References

The Spirit of a Place Called Meharry: The Strength of Its Past to Shape the Future. Charles W Johnson Sr. M.D., Hillsboro Press, Franklin, TN, 2000. ISBN: 1-57736-194-6

https://en.wikipedia.org/wiki/Meharry_Medical_College