

Sylvester Leads Massive Effort to Study Black Genomes

A Chan Zuckerberg-funded project will sequence people from the U.S., Africa and the Caribbean to better understand genetic vulnerabilities for breast, ovarian and prostate cancers

Researchers at Sylvester Comprehensive Cancer Center at the University of Miami Miller School of Medicine have received \$1.65 million from the Chan Zuckerberg Foundation to lead an international effort to decode Black genomes and investigate the genetic drivers behind breast, ovarian and prostate cancer. The African-Caribbean scNetwork will provide new insights into why Black people are at higher risk for aggressive cancers and often develop them at younger ages.



Sophia George, Ph.D.

“I study early events in breast and ovarian cancers, particularly what happens to cells before a woman develops cancer,” said Sophia George, Ph.D., an associate professor in the Department of Obstetrics, Gynecology and Reproductive

Sciences, who is the lead investigator on the project. “I also have a strong interest in the African diaspora and why we are more vulnerable to highly aggressive cancers. This grant will help our team combine these interests and dissect the genetic and cellular underpinnings that can lead to poor cancer outcomes.”

The network unites a dream team of researchers from the U.S., the Caribbean and Africa. Bala Audu, M.D., professor of obstetrics and gynecology at the University of Maiduguri, Nigeria, co-founded the Transatlantic Gynecologic Cancer Research Consortium. Raleigh Butler, M.D., is a gynecologic oncologist in the Bahamas and a member of the African Caribbean Cancer Consortium (AC3). Camille Ragin, Ph.D., M.P.H., a professor in Fox Chase Cancer Center’s Cancer Prevention and Control Program, founded AC3. Charles Waihenya, M.D., is a urologist and AC3 member in Nairobi, Kenya.

Understanding Early Events

“This funding is pivotal to using technology to understand the early events in breast and ovarian cancer pathogenesis by studying the architecture of the normal cell in women disproportionately affected by these diseases,” Dr. Audu said. “It will foster increasing transatlantic collaboration that will increase our knowledge of the genetic and environmental roles in cancer pathogenesis.”

Cancer often manifests differently in the Black community, leading to thousands of early deaths. Unfortunately, cancer among Blacks has been woefully understudied, a flaw the African-Caribbean scNetwork team hopes to correct.

“We want to understand why black men are at greater risk to both develop aggressive prostate cancer and face it at a much younger age than other groups,” Dr. George said. “Why do black women develop triple negative breast cancer more than anybody else, and again when they are younger? We feel this work will provide many of these answers.”

The network will build a single-cell atlas of healthy breast, fallopian tube (where most ovarian cancers originate) and prostate cells from people in Kenya, Nigeria, the Bahamas, Haiti, Jamaica and the U.S. They will combine single cell and genotyping data to better understand what constitutes “normal” tissue in men and women of all ages and decipher how cells become cancerous.

Leveraging Broad Expertise

In addition, the team will leverage their expertise in behavioral science, community health science and advocacy to engage with these communities to extoll the values of biomedical research and encourage people to participate in these studies.

From this data, the researchers hope to identify cells that are more prone to disease. They also want to find biomarkers to predict precancerous lesions, which could be removed before they become more aggressive. In addition to increasing diversity in molecular and cell biology studies, the team hopes their data will lead to better care for all people.

“We are investigating how genes contribute to different cell types, and the distribution of cells,” Dr. George said. “We will be mapping stem cells, differentiated cells, immune cells

and other types. We want to understand the full spectrum of us.”

Other team members include: Simone Badal, Ph.D., a cell biologist, studying cell-based prostate and breast cancer models and an AC3 member at the University of the West Indies in Jamaica; Althea Bailey, Ph.D., a behavioral scientist at the University of the West Indies and director of the AC3 Community Outreach Core in Jamaica; Vincent DeGennaro, M.D., an AC3 member in Haiti and director of the Innovating Health International Cancer Center; Rob Kulathinal, Ph.D., an associate professor at the Center for Computational Genetics and Genomics at Temple University; and Jasmine Plummer, Ph.D., an associate director at The Center for Bioinformatics and Functional Genomics at Cedars Sinai Cancer Center.

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