

The Cardiovascular Research Institute (CVRI) is committed to employing novel basic and population science tools and strategies to produce discoveries that lead to health equity and the elimination of cardiovascular health disparities, as well as interventions based on precision medicine.

The optimal approach to CVRI's goal of promoting health and reducing risk of cardiovascular disease demands an intimate knowledge of the environment, behavior, phenotype, and genotype of affected as well as potentially vulnerable individuals. Developing this degree of granularity in *exposomics* requires multiple disciplines, varied experimental approaches, and a willing population of participants available for study. The CVRI is dedicated to pursuing its goal by joining forces with committed individuals representing several areas of expertise who share CVRI's vision.

Advancing Knowledge of Environment and Behavior The behavioral scientists on the team seek to elucidate and identify innovative methods for addressing social, cultural, and environmental determinants of health that have Blacks at higher risk for chronic disease. Additionally, our research seeks to intervene in the lives of at-risk families by utilizing behavior change strategies that prevent and reduce disease risk factors among adults and children.

Clinical and molecular phenotype and genetics. Building upon our detailed clinical and genetic study of individuals with cardiovascular disease in the META-HEALTH, MH-GRID and Jackson Heart studies, we are further developing data and biospecimen repositories and mobile health data platforms that support inter-disciplinary research investigations. Our basic and translational scientists study novel candidate genes in animal systems and human samples to identify those with important roles in cardiovascular disease. Our ultimate goal is to link basic science findings to clinical populations in order to identify and validate biomarkers and mediators of cardiovascular disease, particularly those that may explain ethnic differences in health risk and outcomes.

Community Engagement. MSM has deep and longstanding ties to the community. MSM's activist posture in protecting the health of the community is the ideal setting for the conduct of research that hopes to establish new standards of health and health equity for all people.

Resilience and Heterogeneity in the African American Population. Investigations into morbidity and mortality among Blacks often focus entirely on high risk and poor outcomes. However, many Blacks experience excellent health and impressive longevity. In addition to better understanding the factors that contribute to excess risk, we are launching a new focus in the area of *resilience*: understanding the factors that produce good health in the face of adverse environmental and individual circumstances. Systematic study of individuals

experiencing high levels of cardiovascular health and longevity may yield important insights about effective approaches in the context of high risk.

Collaborations. Our internal and cross-institutional collaborations offer opportunities for multidisciplinary novelty in science and medicine. Novel approaches for discovery and implementation/dissemination are being explored at CVRI. For example, acquisition of granular, real-time data is increasingly an option via mobile sensors and applications: CVRI is piloting the development of a platform for an “electronic cohort” that could offer both new levels of observational data for discovery while also being a powerful, equitable channel for dissemination of health interventions. Leveraging close relationships with long-running, population-based epidemiological studies, CVRI is involved in novel ancillary studies; embedding clinical trials within longitudinal cohort studies may subsequently offer the opportunity to build new science (“dynamic phenotyping”) on the platform of established, deeply-phenotyped cohorts.

We will not only look at risk factors but also resilience factors that affect health to assess how resilience in the face of adversity may offer new pathways and targets for improved quality of life and longevity.

Finally and critically, our dedication to scientific inquiry is matched only by our passion for producing the next generation of scientists and healthcare providers, with a specific focus on expanding the workforce of historically under-represented individuals. Undergraduate, graduate, medical, and postdoctoral trainees are an energizing and indispensable part of our enterprise.

The CVRI, in concert with its internal and external partners, is working to enhance the precision of our approaches to cardiovascular health for all. Our discoveries will support the advancement of health equity and CVRI’s goal of promoting health and reducing risk of cardiovascular disease.