“Even when you account for income and levels of insurance, you still see problems in the African American, Latino, and Native American communities in terms of quality of health care and outcomes. Part of what we should be doing is to think about … are there ways that we can close these gaps?”

— President Barack Obama

“It is time to refocus, reinforce, and repeat the message that health disparities exist and that health equity benefits everyone.”

— Kathleen G. Sebelius, Secretary, Health & Human Services
Health Disparities in the U.S.

- **1985**: U.S. Department of Health and Human Services releases *Report of the Secretary’s Task Force on Black and Minority Health*
  - Health disparities are “an affront both to our ideals and to the ongoing genius of American medicine”
  - Report to generate “force for an accelerated national assault on … persistent health disparities”
- **2003**: Institute of Medicine issues *Unequal Treatment: Confronting Racial and Ethnic Disparities in Healthcare*
- **April 8, 2011** …
HHS Action Plan to Reduce Racial and Ethnic Health Disparities

A NATION FREE OF DISPARITIES IN HEALTH AND HEALTH CARE

National Stakeholder Strategy for Achieving Health Equity

- Transform health care
- Strengthen the nation’s Health and Human Services infrastructure and workforce
- Advance the health, safety, and well-being of the American people
- Advance scientific knowledge and innovation
- Increase the efficiency, transparency, and accountability of HHS programs
NIH National Institute on Minority Health and Health Disparities

- **1990**: Office of Research on Minority Health (ORMH) established by NIH Director
  - 1993: ORMH established formally by Congress (P.L. 103-43)
- **2000**: The National Center on Minority Health and Health Disparities (NCMHD) established (P.L. 106-525)
  - 2001: Dr. John Ruffin sworn in as first director
- **2003**: First NIH Strategic Research Plan and Budget to Reduce and Ultimately Eliminate Health Disparities issued
- **2010**: NCMHD elevated to National Institute on Minority Health and Health Disparities – enabled by the Affordable Care Act (P.L. 111-148)

**Mission**: to promote minority health and to lead, coordinate, support, and assess the NIH effort to reduce and ultimately eliminate health disparities.

- Transform health care
- Strengthen the nation’s Health and Human Services infrastructure and workforce
- Advance the health, safety, and well-being of the American people
- Advance scientific knowledge and innovation
- Increase the efficiency, transparency, and accountability of HHS programs
Desperate Need for More Diversity in Science and Medicine in the U.S.

African Americans, Hispanics, and Native Americans:

- Represent 31% of U.S. college age population but only account for 14% of undergraduates in life sciences
- And even fewer in later stages
NIH Commitment to Historically Black Colleges & Universities

- Long history of supporting HBCUs to:
  - Conduct critical biomedical research
  - Help train the next generation of researchers
- Fostering partnerships with HBCUs
- Supporting HBCU faculty and students with research grants, training grants, fellowships, career awards and dozens of other programs
  - 2010: $155M, including $21M in American Recovery and Reinvestment Act funding
NIH’s Research Centers in Minority Institutions (RCMI) Program

- Improves research capacity and infrastructure at minority colleges, universities that offer doctorates in health sciences
- Brings more minority scientists into research
- Enhances studies of minority health
- Supports clinical and translational research through special infrastructure and research network grants
- Program is proposed to move from NCRR to NIMHD in October 2011
NIMHD Loan Repayment Program

- **Goal:** Increase the pool of extramural researchers who conduct health disparities research
  - Health Disparities Research (HDR-LRP)
    - Supports health professionals that engage in basic, clinical, behavioral, social sciences or health services research addressing health disparities.
  - Extramural Clinical Research (ECR-LRP)
    - Supports health professionals from financially disadvantaged backgrounds that engage in clinical research.

- **Awards:**
  - Up to $35,000 annually
  - Have supported over 1200 doctoral level trainees

- Transform health care
- Strengthen the nation’s Health and Human Services infrastructure and workforce
- Advance the health, safety, and well-being of the American people
- **Advance scientific knowledge and innovation**
- Increase the efficiency, transparency, and accountability of HHS programs
RCMI Funding: MH-GRID at the Morehouse School of Medicine

MH-GRID: The Minority Health Genomics and Translational Research Bio-Repository Database

- Database of genetic, other information about minority health
  - Initial research question: why do minority patients suffer from more virulent clinical course of hypertension, stroke?
  - Subsequent research will
    • Expand to more diseases and help personalize treatment
    • Provide insight into genetic, social, economic factors connected to disease

- $13.3M from NIH to create, maintain database
  - Multi-institutional collaboration led by Morehouse
  - Will build on RCMI-funded infrastructure
A Genome-Wide Association Study of Hypertension and Blood Pressure in African Americans

Adebowale Adeyemo¹*, Norman Gerry², Guanjie Chen¹, Alan Herbert³, Ayo Doumatey¹, Hanxia Huang¹, Jie Zhou¹, Kerrie Lashley⁴, Yuanxiu Chen⁴, Michael Christman², Charles Rotimi¹*

1 Center for Research on Genomics and Global Health, National Human Genome Research Institute, National Institutes of Health, Bethesda, Maryland, United States of America, 2 The Coriell Institute for Biomedical Research, Camden, New Jersey, United States of America, 3 Department of Genetics and Genomics, Boston University, Boston, Massachusetts, United States of America, 4 National Human Genome Center, Howard University, Washington, D.C., United States of America

Abstract

The evidence for the existence of genetic susceptibility variants for the common form of hypertension (‘essential hypertension’) remains weak and inconsistent. We sought genetic variants underlying blood pressure (BP) by conducting a genome-wide association study (GWAS) among African Americans, a population group in the United States that is disproportionately affected by hypertension and associated complications, including stroke and kidney diseases. Using a dense panel of over 800,000 SNPs in a discovery sample of 1,017 African Americans from the Washington, D.C., metropolitan region, we identified multiple SNPs reaching genome-wide significance for systolic BP in or near the genes: PMS1, SLC24A4, YWHA7, IPO7, and CACNA1H. Two of these genes, SLC24A4 (a sodium/potassium/calcium exchanger) and CACNA1H (a voltage-dependent calcium channel), are potential candidate genes for BP regulation and the latter is a drug target for a class of calcium channel blockers. No variant reached genome-wide significance for association with diastolic BP (top scoring SNP rs1867226, $p = 5.8 \times 10^{-7}$) or with hypertension as a binary trait (top scoring SNP rs9791170, $p = 5.1 \times 10^{-7}$). We replicated some of the significant SNPs in a sample of West Africans. Pathway analysis revealed that genes harboring top-scoring variants cluster in pathways and networks of biologic relevance to hypertension and BP regulation. This is the first GWAS for hypertension and BP in an African American population. The findings suggest that, in addition to or in lieu of relying solely on replicated variants of moderate-to-large effect reaching genome-wide significance, pathway and network approaches may be useful in identifying and prioritizing candidate genes/loci for further experiments.
A Surprising Connection: Sleeping Sickness and Kidney Disease

- **Observation:** African Americans 4-5x more likely to suffer from kidney disease (focal glomerulosclerosis) than those of European ancestry.

- **Explanation:** gene variants (G1 and G2) in *APOL1* gene
  - Protect against sleeping sickness
  - Increase likelihood of kidney disease
Sickle Cell Anemia: Landmark Genetic Disease

James B. Herrick

Archives of Internal Medicine (1910) vol. 5

PECULIAR ELONGATED AND SICKLE-SHAPED RED BLOOD CORPUSCLES IN A CASE OF SEVERE ANEMIA

JAMES B. HERRICK, M.D.
NIH’s Therapeutics for Rare and Neglected Diseases (TRND) Program: Pilot Project on Sickle Cell Anemia

- Compound originally identified at VCU
- Structure: 5-hydroxymethyl-2-furfural (Aes-103)
  - Binds to sickle hemoglobin and increases its oxygen affinity
- Stage of project: late preclinical
NIH and AesRx partnership: next stage

- Will take Aes-103 beyond pre-clinical development and into initial clinical trials
- Trials (2) to be conducted in NIH Clinical Center
- Supported by NIH through TRND; Clinical Center; National Heart, Lung, and Blood Institute
HHS Disparities Action Plan: Secretarial Priorities for Implementation

- Assess and heighten the impact of all HHS policies, programs, processes, and resource decisions to reduce health disparities
- Increase the availability, quality, and use of data to improve the health of minority populations
- Measure and provide incentives for better healthcare quality for minority populations
- Monitor and evaluate the Department’s success in implementing the HHS Disparities Action Plan
NIH

Turning discovery into health