6th H3Africa Consortium Meeting
Impact of the H3Africa Initiative on Biomedical Research in Africa and Globally

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Chief, Genomic of Metabolic, Cardiovascular and Inflammatory Disease Branch
Director: Center for Research on Genomics and Global Health
Senior Investigator: National Human Genome Research Institute, NIH

Zambia – May 9, 2015
Mission Statement: To advance research into the role of culture, lifestyle, and genetics in disease etiology, differential susceptibility to disease, and variable drug response at the individual and population levels.
Members of my Research Lab at the NHGRI/NIH
Research Areas

A. Clustering of Metabolic Disorders
   1. Hypertension
   2. Diabetes
   3. Obesity (inflammation – cytokines/adipokines)
   4. Dyslipidemia
   5. Chronic Kidney Disease

B. Genetic Epidemiology of Neglected Tropical Diseases

C. Population Genetics

D. Statistical Methods Development/Improvement

E. Training of the Generation of Scientists

F. Genomics for the world – developing global genomic resources
MEETING REPORT

Health disparities in the genomic era: the case for diversifying ethnic representation

Charles N Rotimi*
Essentially, Africa has been left out of the genomic revolution to date.

2013 - 11 out of 1734 GWAS publications are from Africa.

NHGRI Catalog, accessed 11/06/2013 n=1734 GWAS publications
As we use genetics to understand human diseases and develop new treatments, We (scientists, funding agencies and communities) must ensure that human diversity is adequately represented.

We must all go to the tailor (participate in research) so that our genetic clothing (precision medicine) will fit properly.
H3Africa is Making a Difference

Examples
Research capacity. Enabling the genomic revolution in Africa.


Science. 2014 Jun 20;344(6190)
ACEGID and other Nigerian scientists discover two viruses

Research Programme

**Community Building And Tech Transfer: Bench to Bedside**

Prof. Christian Happi

Support by H3Africa and the World Bank
Hadejia kidney failure epidemic
Nigeria
Mauritius SANBio Node have received funding for bioinformatics training and research.

Ghana: University of Science and Technology Kumasi is planning a Masters in Bioinformatics program as a result of H3Africa. Program is funded by the university.

Tunisia: 1) New bioinformatics research lab funded by the government
2) New clinical investigation centers funded by the government are collaborating with the local H3ABioNet groups
3) The Pasteur Institute’s “international network of data analysis” is collaborating with H3ABioNet Tunis, Niger and Morocco nodes.

Nigeria: NATIONAL BIOTECHNOLOGY DEVELOPMENT AGENCY

South Africa:
2. Southern African Human Genome Program: collaboration with H3A has provided capacity for analysis.
3. A new Precision Medicine genomics programme is being promoted by the government and the Medical Research Council of South Africa.
4. The Centre of High Performance Computing & Department of Science and Technology have become more collaborative and support for other African countries.
5. The Department of Science and Technology has prioritized bioinformatics on the national agenda.
H3Africa Fellows Club

# of trainees over 250
Not all are members of H3Africa fellows club -yet

May 8, 2015
Cohorts, Big Data and Personalized Medicine: Challenges and Solutions
Montréal, Québec, Canada  April 16-17, 2015

The H3Africa Initiative represented in an International Big Data symposium
Challenges for H3Africa

Changing Research Culture on the Continent and Abroad
The Promise

2006 – Members of African Union endorsed a target for each nation to spend 1% of GDP on R&D

2007 – declared the year for scientific innovation

2010 survey – only three nations - Malawi, Uganda and South Africa topped the 1%

Most nations remain far from the mark even with the addition of funds from foreign donors
The 2015 Budget:
Science, Technology, and Innovation for Opportunity and Growth

Science, Technology, Innovation, and STEM Education in the 2015 Budget

“We know that the nation that goes all-in on innovation today will own the global economy tomorrow. This is an edge America cannot surrender. Federally funded research helped lead to the ideas and inventions behind Google and smartphones... There are entire industries to be built based on vaccines that stay ahead of drug-resistant bacteria, or paper-thin material that’s stronger than steel.”

- President Barack Obama
January 2014

To accomplish these goals, the President’s 2015 Budget proposes $135.4 billion for Federal R&D. The President’s 2016 Budget provides $146 billion for R&D overall, an $8 billion or 6 percent increase from 2015 enacted levels.
National R&D Intensity
Gross R&D investment as a percent of GDP

Source: OECD, Main Science and Technology Indicators 2015. © 2015 AAAS
Africa aims for research autonomy

Regional hub intends to manage international grants and develop science strategy.

African scientists look set to gain greater control over research in their own countries, if an ambitious plan for a regional hub to award grants and develop research capacity bears fruit.

“Science can and will transform Africa. But to get there, we must train critical numbers of excellent scientists in all corners of Africa. That is the mission of AESA,” says Tom Kariuki, a...
Africa aims for research autonomy

Regional hub intends to manage international grants and develop science strategy.

“It’s weird that for 40 years, the agenda-setting and the funding decisions for research in Africa has been done from London, Seattle, Geneva or wherever,” agrees Kevin Marsh, a clinical epidemiologist at the University of Oxford, UK, and a senior adviser on the AESA initiative.

Instead, AESA will invite funders both on and outside the continent to delegate the peer-review and grant management of their African programmes to the alliance. The idea is to shift the centre of gravity for African funding decisions to the continent, says Simon Kay, head of international operations at the Wellcome Trust. AESA wants to create more buy-in from African governments on the research being done, Kay adds.
Africa aims for research autonomy

Regional hub intends to manage international grants and develop science strategy.

The funding cannot come just from international donors, African scientists agree. “This is a great initiative. But it will be still-born unless African governments put money into it,” says Salim Abdool Karim, a clinical epidemiologist and director of the Durban-based Centre for the AIDS Programme of Research in South Africa. The hope is that AESA would be attractive because it offers governments a way of awarding merit-based science grants without having to train their own grant managers and set up research funders nationally.
Consortium – Advantages


The African Genome Variation Project shapes medical genetics in Africa

Deepi Gurdasani1,2,*, Tommy Carstensen1,2,*, Fasil Tekola-Ayalew3,*, Luca Pagani1,4,*, Ioanna Tachmazidou1,*, Konstantinos Hatziotis1, Savita Karthikeyan1,2, Louise Iles1,2,5, Martin O. Pollard1, Ananyo Choudhury6, Graham R. S. Ritchie1,7, Yali Xue1, Jennifer Asimit1, Rebecca N. Nsibuga8, Elizabeth H. Young1,2, Cristina Pomilla1,2, Katja Kivinen1, Kirk Rockett9, Anatoli Kamali8, Ayo P. Doumatey3, Gershim Asiki8, Janet Seeley8, Fatoumatta Sisay-Joof10, Muminatou Jallow10, Stephen Tollman1,2, Ephrem Mekonnen13, Rosemary Ekong14, Tamiru Oljira15, Neil Bradman16, Kalifa Bojang10, Michele Ramsay6,17,18, Adebowale Adeyemo1, Endashaw Bekele19, Ayesha Motala20, Shane A. Norris21, Fraser Pirie20, Pontiano Kaleebu8, Dominic Kwiatkowski3,9, Chris Tyler-Smith15, Charles Rotimi3,5, Eleftheria Zeggini15 & Manjinder S. Sandhu1,2

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The H3Africa policy framework: negotiating fairness in genomics

Jantina de Vries1, Paulina Tindana2, Katherine Littler2, Michèle Ramsay4, Charles Rotimi5, Akin Abayomi6, Nicola Mulder7, and Bongani M. Mayosi8

OPEN ACCESS Freely available online

Meta-Analysis of Genome-Wide Association Studies in African Americans Provides Insights into the Genetic Architecture of Type 2 Diabetes

Maggie C. Y. Ng1,2,9, Daniel Dririner3,9, Brian H. Chen4,5, Jiang Li2, Wei-Min Chen6,7, Xiuqing Guo8,
H3Africa Fellows Club

May 8, 2015