

Eyes of Africa: The Genetics of Blindness



The Goal: To understand the genetics of glaucoma in Africans and to use this knowledge to develop and inform Africans of novel treatment strategies.

The Problem

While the effects of glaucoma can be felt globally, glaucoma disproportionately affects people of African ancestry compared to those with European or Asian ancestry. Primary open angle glaucoma (POAG) is the most common single cause of permanent blindness in Africa. Progressive vision loss associated with POAG can go unnoticed by the patient until it reaches advanced stages, and treatment strategies are not robust or widely available. Furthermore, POAG is more clinically aggressive and occurs at an earlier age in African populations compared to other populations. Finally, glaucoma and blindness are highly stigmatized within local communities, placing a social burden on those affected and their families.

Project Strategy

1. Collect DNA samples from 8,000 healthy and affected individuals (and their families) from six recruitment sites across the continent.
2. Analyze and compare these samples to determine how one's genes affect their risk of being affected by glaucoma to inform novel treatment strategies.
3. Engage communities to educate Africans on how glaucoma affects one's vision and when to visit an eye doctor, encouraging affected individuals to begin treatment sooner to mitigate the impact of the disease.

Outcomes to Date

After preliminary analysis of 4,000 DNA samples, the group identified a new genetic risk factor for glaucoma that is found only in individuals of African ancestry. This risk factor is also involved in Alzheimer's disease, raising the possibility of new treatments that could help patients with both diseases. This finding further reinforces the need for genomics research in Africa.

Project Leads

Dr. Adeyinka Ashaye
University of Ibadan
adeyinkaashaye@yahoo.com

Dr. Chimdi Chuka-Okosa
University of Nigeria
chimdi.chuka-okosa@unn.edu.ng

Dr. Naa Naamuah M. Tagoe
University of Ghana Medical School
naanaamuahtagoe@gmail.com

Dr. Joseph Matiya Msosa
Lions Sight-First Eye Hospital
msosaj@gmail.com

Dr. Chinedu Anthony Okeke
Nigerian Navy Reference Hospital
macteeatlarge@yahoo.com

Dr. Stephen Cook
The Eye Center
steve@eyecentre.co.za

Dr. Michael Hauser
Duke University
mike.hauser@duke.edu

Project Sites



A: Nigeria
University of Ibadan, University of Nigeria, Nigerian Navy Reference Hospital

B: Ghana
Lions International Eye Centre, Korle-Bu Teaching Hospital

C: South Africa
The Eye Centre

D: Malawi
Lions Sight-First Eye Hospital

Non-African Collaborators:
USA: Duke University



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