Researchers discover kidney disease gene affects more populations than previously thought

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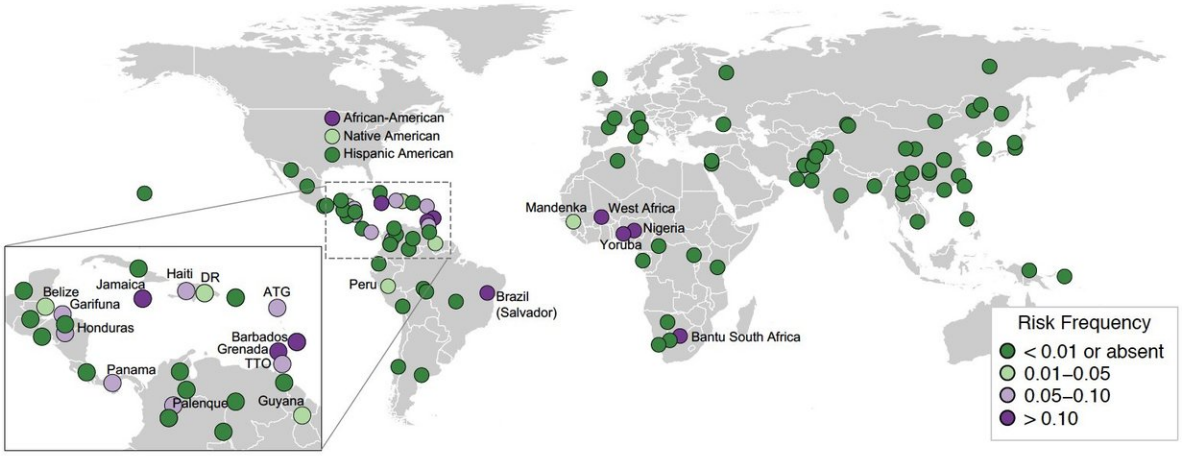

APOL1 G1 and G2 Risk Alleles in 111 Global Reference Populations. Credit: *The New England Journal of Medicine*

In the largest population genomics investigation to date, a team of researchers at the Icahn School of Medicine at Mount Sinai, Stanford University, and the University of Colorado have discovered that kidney disease risk variants of the gene APOL1, previously known to affect

African and African American populations, are also found at appreciable frequencies in Caribbean and Latin American populations. Because these populations are historically under-studied and under-tested in connection with APOL1, the gene's impact on these populations is currently unknown. The findings were described in a publication released today in *The New England Journal of Medicine*.

Risk variants in the APOL1 gene were first discovered in African Americans. Consequently, much of the research studies and clinical trials that followed have been heavily focused on self-reported African or African American populations. Knowing this, researchers in the study decided to link genetic and demographic data spanning more than 110 populations, leading to the discovery of APOL1 risk variants in other populations who share ancestry from Africa, such as those who are Hispanic or Latino.

"This finding is crucial in early detection of at-risk individuals who may not be indicated for genetic screening due to self-reporting of ethnic origins, but may still be at high risk due to the presence of APOL1 risk variants," said Girish Nadkarni, MD, Assistant Professor of Medicine (Nephrology) at the Icahn School of Medicine and first author of the study. "It is important to more fully understand the global distribution of these variants based on country of origin and genetic ancestry rather than self-reported race/ethnic group."

Knowing that the APOL1 risk is present in these populations could help physicians tailor treatment more closely to their needs, an example of the approach known as precision medicine. The team's data also provides a centralized resource to help the medical community better understand at-risk kidney disease populations worldwide.

"APOL1 is the poster child for precision medicine, as the risk variants have a large impact on lifetime risk for not only kidney disease, but also

early onset hypertension and cardiovascular disease," said Eimear Kenny, Ph.D., Associate Professor of Genetics and Genomic Sciences at the Icahn School of Medicine at Mount Sinai, Director of the Center for Genomic Health, and senior author of the publication. "Here at Mount Sinai, we are leading national efforts to learn about the impact of APOL1 risk variants in routine clinical settings, and the gene is currently under intense scrutiny as a therapeutic target and across diverse populations."

More information: Girish N. Nadkarni et al, Worldwide Frequencies of APOL1 Renal Risk Variants, *New England Journal of Medicine* (2018). DOI: 10.1056/NEJMc1800748

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