



American Society of Human Genetics

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Aravinda Chakravarti, PhD, Co-Chair
Charmaine DM Royal, PhD, Co-Chair
Committee on Race, Ethnicity and Ancestry
as Population Descriptors in Genomics Research
National Academies of Science, Engineering and Medicine
500 Fifth Street, NW
Washington, DC 20001

Dear Dr. Chakravarti and Dr. Royal,

On behalf of the American Society of Human Genetics (ASHG), we write to applaud and encourage the important work of the National Academies Ad Hoc Committee on Race, Ethnicity and Ancestry as Population Descriptors in Genomics Research (“the Committee”). We thank you both and the committee members for your service as well as the National Institutes of Health and its many institutes, centers and programs that have sponsored the Committee, with leadership of the National Human Genome Research Institute. The breadth of support and consensus of need highlights the ubiquitous role of human genetics and genomics in biomedical discovery, and its transformative potential to improve health and to save lives for those living with myriad rare and common disorders and diseases. ASHG especially appreciates the Academies’ leadership on these and other key issues – both through this Committee and the standing Roundtable on Genomics and Precision Health. Both forums create unique space for convening and uniting the wide range of voices and leaders in science, medicine, government, industry, and philanthropy.

ASHG has been outspoken about its vision that human genetics and genomics research should benefit people everywhere. Yet that vision remains just that – a vision. As is well documented in the scientific and medical literature, genomic research and outcomes are not yet fully engaging nor fully serving all people equitably. Greater diversity, equity and inclusion in our research is therefore a scientific and societal imperative. ASHG’s objectives to advance this broad goal include commitments to help build a more diverse and inclusive research workforce; to support respectful and meaningful population engagement and diverse research participation; to foster skill- and knowledge-building within the research community; and to encourage an expanded breadth of scientific questions researchers ask and answer to be more inclusive of broader priorities. ASHG uses our many venues and programs to advance these objectives, including the ASHG Annual Meeting, journals, advocacy, and public engagement, and we commit to this work for the long term and in partnership with the entire community.

Although ASHG was founded nearly 75 years ago to pursue the transformative potential in understanding the biology and consequences of human genetics and apply this knowledge to serve humanity, it has also recognized from its founding that genetic concepts have been used wrongly to feed divisions and attempt to legitimize societal beliefs using biology, whether subtly or overtly. We also recognize that the research enterprise itself is a creature of society and thus in turn, many societal structures, beliefs, and definitions have been deployed *within* genetics and genomics research, biasing and limiting research agendas. Indeed, in recognition of all these factors,

ASHG itself has a complementary project underway to acknowledge and reckon with its own history linked to race and scientific racism, as well as documenting any paradigm shifts toward equity and justice.

Given collective agreement on the importance of diversity, equity and inclusion in genetics and genomics *and* the damage caused by the blurring of biological and societal constructs, the Committee's work is vital to improve genomics research and future applications for all. We hope its work will 1) generate a stronger shared and biologically meaningful scientific foundation for rigorous human genetics and genomics investigation and application and 2) clarify topics and terminology where genetics is *not* relevant and thus help sever false connections. ASHG hopes this unique forum will identify and incorporate transdisciplinary perspectives; wrestle with diverse views; and decide on a course that will provide – for the foreseeable future – recommendations regarding common terminology and frameworks for its application in the research community. This process will be important because the ongoing outstanding questions, diversity of views, and lack of broad consensus have remained a major challenge and thwarted more coordinated action to improve and speed knowledge about genetic differences -- or, as often, lack of differences – between and within populations.

ASHG is especially pleased that the Committee's composition includes so many individuals who have led and are leading dialogue on these issues and who also call ASHG their professional home. Among the Committee members are many premier scientists, ethicists, sociologists, and community leaders who participate actively in ASHG's scientific and organizational life. Given their inclusion on the Committee, we are confident that the views of the research community will be well-represented and engaged through the Committee's deliberations and will look forward to the study's outcomes and recommendations.

ASHG wishes to relay the following basic points regarding what biology tells us about human genetics and populations. These will be appreciated by the Committee but require regular articulation and affirmation in public forums on these topics:

- **Genetics affirms the singularity of the one *human* race** -- each individual human shares about 99.9% of our DNA in common with others, drawing a profound and unassailable physiological oneness. This biological reality affirms that all human populations share, *as a single species*, so much in common: the same capacity for suffering from diseases and disorders; the same capacities for intellectual rigor and to experience emotional aspirations and fears; and the same hopes for the advancement of unique human cultures and communities.
- **The remaining ~.1% genetic difference is driven by adaptive and spontaneous variation at the population and individual levels. While the differences are comparatively few, they are profoundly important to understand, making individual- and population-level analysis vital.** These unique changes have enabled humans to survive and adapt in every corner of the planet, overcoming environmental risks and developing resiliencies that comprise a legacy for subsequent human generations over tens of thousands of years. Yet they are also a primary source of unique increased risk or resilience for disease and far too often, a source of debilitating incapacity or even profound suffering.
- **While human genetics and genomics research seeks to understand our important genetic commonalities and differences and apply them to serve humanity, differences in individual human welfare and life outcomes may be related only partially to genetic heritage—and in many cases only marginally so or not at all.** Often, life outcomes are far more impacted by social determinants of health, such as adequate and equitable access to education, wealth, nutrition, and health care. On their own and in combination with epigenomic effects, these basic needs inform human trajectories profoundly.

Regarding specific terminology in genetics and genomics research, ASHG states:

1. **The concept of “race” has no biological basis.** It is a subjective, dynamic, and complex social construct, generally employed to group individuals based on observed (or ascribed) biological or phenotypic traits,

where these characteristics have acquired socially significant meaning. A recent AJHG article documents the reduced use of this term in our research field. ASHG believes the use of race categories should be eliminated as a population descriptor such as when used for describing different groups of people with presumed genomic differences and replaced by biologically meaningful terms. On occasion, it may be appropriate to include racial categories in research, such as when studying the effects of systemic racism on access to genomic medicine or researching differences in cultural attitudes to human genetics.

2. **Likewise, the term “ethnicity” is a highly fluid social construct.** While in some contexts it may be used in relation to genetic ancestry (see next), it is also poorly defined and open to shifting public interpretation. From a genetics standpoint, it should not be used.
3. **“Genetic ancestry” describes one of several essential components for understanding the origins of genetic similarity and difference and the resulting impact on human function.** Genetic ancestry refers to inferences about ancestral origin and an individual’s lineage of descent, or geographic history of ancestors based on DNA signatures. It can provide vital information regarding individual risks and resiliencies, and a population’s collective ones. We believe this is an important and valid population descriptor.
4. **Even appreciating its importance, genetic ancestry represents thousands of years of human migration and admixture. Thus, human genetic diversity forms a continuum, not a set of neat categories.** Given the spectrum of diversity, “genetic ancestry” is still constrained as a tool because of overbroad and inconsistent definitions. For instance, many population differences may have geographic origins, but broad geographic categories (“African,” “Latin,” “European”) are, by definition, imprecise and limited at both the individual and population levels. It may be helpful to identify a common population architecture that can accommodate an ever more specific set of more refined populations. For example, as the Committee knows, there is greater genetic diversity between African populations than between African and non-African populations, and therefore defining an individual’s ancestry as “African” holds only partial utility, and regional or smaller ethnographic affiliations could improve reliability and utility. We encourage the Committee to consider development of cascading definitions with increasing specificity, while recognizing that initial categories may need to start at a less-specific level.
5. **At this time, reluctantly and due to lack of clear alternatives and the ubiquitous use of the categories established through other societal research structures, “race” and “ethnicity” remain in use by researchers as a highly imperfect proxy.** *Until a new framework is established and broadly applied,* some researchers feel that “race” or “ethnicity,” although deeply flawed, can be the only present option. Researchers also raise the need to make comparisons to, and use data from, other existing data sources that use such categories. This reluctant research use often comes with acknowledged limitation and even opposition, as well as calls for better solutions, which we hope the Committee will provide, and we are grateful that the Committee incorporates many respected social science leaders who can contribute their expertise to address these uses. Further, we urge the Committee to consider whether the National Academies should foster a subsequent effort to identify new approaches to and harmonization of societal categories used in demographic work across academic, public, and private sector data.
6. **Long-term resolution demands broad access to testing as this will provide an exclusively biological, profoundly helpful basis for research. It will also provide individuals with greater knowledge of their personal genetic ancestry and an appreciation of our genetic commonalities and differences.** Dramatically expanded access to genetic testing would enable individual biology to drive research or clinical decision-making. Along with the scourge of imprecise terminology, substantial evidence highlights that both clinical participant observation and participant self-reporting introduce bias and incomplete knowledge of family history. Individual whole genome testing will ultimately solve this question and, in turn, cycle data back to improve research and applications.

After release of the Committee’s recommendations, ASHG is especially enthusiastic to help the National Academies build awareness about them within the research community and the public. As the largest human genetics and genomics research society, our members deeply need and want the consensus the Committee will seek to generate. Given the historic nature of the Committee’s inclusive composition and support—and the

urgency with which we must move forward with a united framework—we hope and expect the Academies outcomes may be seen as authoritative ones these topics for the foreseeable future. While the community will take time to understand and integrate findings, we agree there is great need for consensus on data definitions and harmonization. Our annual meeting, journals, advocacy, and professional learning resources can be important venues to communicate the outcomes and engage the research community and we look forward to engaging this way.

ASHG anticipates that commonly agreed language for describing groups will have long term impact and benefit for the conduct of human genetics and genomics research and serve as a catalytic force to realize the benefits of our research for people everywhere. Thank you for the opportunity to comment on the Committee’s work and we look forward to its outcomes.

Sincerely,

Charles Rotimi

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