# Executive Summary

Race has become a prominent focus for human biotechnology. Despite often good intentions, genetic technologies are being applied in a manner that may provide new justification for thinking about racial difference and racial disparities in biological terms—as if social categories of race reflect *natural* or *inherent* group differences.

The Human Genome Project (HGP) and subsequent research showed that there is less than 1% genetic variation among all humans. Patterns of mating and geographic isolation over thousands of years have conferred genetic signatures to certain populations. Yet scientists have found little evidence to support lay understandings that social categories of race reflect discrete groups of human difference. While HGP findings initially led many to conclude that race (as it is commonly conceived and used) is not genetically significant, the hope that science would promote racial healing has largely not materialized.

In fact, trends in life science research have shifted the other way. There are increasing efforts to demonstrate the genetic relevance of race by mapping this less than 1% of variation onto social categories of race to find genetic explanations for racial disparities and differences.

Many celebrate these developments as an opportunity to learn more about who we are and why certain groups are sicker than others. Yet some are struck by the extent to which these new conversations aimed at benefiting minority communities echo past discussions in which the science of biological difference was used to justify racial hierarchies.

Although this new research is rapidly evolving and is fraught with controversy, it is being used to develop several commercial and forensic applications that may give new credence to biological understandings of racial difference—often with more certainty than is supported by the available evidence. This unrestrained rush to market race-specific applications and to use DNA technologies in law enforcement can have significant implications for racial minorities:

- **Race-based medicines** have been promoted as a way to reduce inequities in healthcare and health outcomes. Yet the methodological assumptions behind them raise as many issues as the questionable market incentives leading to their development.
- **Genetic ancestry tests** rely on incomplete scientific methods that may lead to overstated claims. The companies that sell them often suggest that biotechnology can authoritatively tell us who we are and where we come from.
- **DNA forensics** have been used to exonerate those who have been wrongly convicted and can provide important tools for law enforcement. However, some forensic applications of genetic technologies might undermine civil rights—especially in minority communities.

While each of these applications has been examined individually, this report looks at them together to highlight a fundamental concern: that commercial incentives and other pressures may distort or oversimplify the complex and discordant relationship between race, population, and genes. Applications based on such distortions or oversimplifications may give undue legitimacy to the idea that social categories of race reflect discrete biological differences.

The concerns raised in this report should not be read as impugning all genetic research that implicates social categories of race. There is evidence that socially constructed notions of race may loosely reflect patterns of genetic variation created by evolutionary forces, and that knowledge about them may ultimately serve important social or medical goals. Yet, given our unfortunate history of linking biological understandings of racial difference to notions of racial superiority and inferiority, it would be unwise to ignore the possibility that 21st century technologies may be used to revive long discredited 19th century theories of race.

Advances in human biotechnology hold great promise. But if they are to benefit all of us, closer attention should be paid to the social risks they entail and their particular impacts on minority communities.