

## Genetic Discrimination and Racism

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Discrimination seems to be an intrinsic trait inherent in our very being. We, as people, seem to be disposed to discriminate either for or against those who, for one reason or another, are unlike us. This dissimilarity may be recognized in speech, dress, comportment, age, or a host of other differences. Thus, there is discrimination against people speaking different languages (as between French and English speakers in Canada), wear different clothes (e.g., different clothing items dictated by religious customs), physical capabilities (e.g., obvious physical, mental, or vocal disabilities), or ageism (e.g., the elderly complaining about today's youth or the young treating the old with disdain). Skin color, even among different shades, is a divisive attribute, as is social rank. Each of these is a recognition of unrelatedness and a cause for discrimination. It is likely that there is a biological explanation for at least a part of this bias, and it goes back to the very basics: genes, competition, and evolution.

Biology is often looked at as a confusing collection of many unrelated facts, when, instead, many of these facts fall into line to form principles that are easily understood and very powerful in their abilities to explain present actions and predict future outcomes. Such is the case with genes and discrimination.

Let's look at the facts: we know that genes are chemicals that are uniquely driven to reproduce exactly and indiscriminately. Genes at the most fundamental level compete with each other for dominance, by which we mean the ability to use all the resources available and to reproduce as much as possible. This competition exists even within the individual genome (Dawkins, 1989; Ganetsky, 2000). There are cheating genes, jumping genes and assassination genes, which place themselves in more favorable positions to reproduce compared to their neighbor genes (Johnson, 2011). They seem to tolerate the presence of other genes as long as those other genes are necessary for their survival and reproduction. In fact, the genomes of living individuals are collections of mutually supportive genes that do their best to survive together as a group. Each additional gene had better improve the likelihood of group survivability or there would be no justification to expend the resources necessary to maintain that additional gene. A gene that does not improve chances of survival and reproduction would be expected to be lost over time (see also, Johnson, 2014).

Individuals carrying these genomes act in ways expected to give their genes the best chances for survival and reproduction. Living things almost always go to great lengths to avoid death (e.g., the stories about trapped animals chewing off their limbs to escape and live, albeit with a handicap, are true). The drive to reproduce is at least as strong as the will to survive because failure to reproduce greatly increases the chance of the gene eventually dying out.

We also know that favoritism among individuals is strongest for those that are most closely related and most likely to share the same genes. Parents and children, for instance, share one-half of their genes. Siblings also have one-half of their genes in common. Grandparents share one-quarter of their genes with their grandchildren. More distant relatives share smaller and smaller proportions of the same genes. The willingness of an individual to share limited

resources with other individuals appears generally in accordance with the likely proportion of shared genes. This is called Hamilton's Rule (Hamilton, 1964 A&B).

People, it seems, generally act in the same way. For example, when it comes to choosing their mates, they seem to maximize the likelihood that they will share as much genetic material as possible with their prospective partners. Many men and women choose partners who have similar facial features (Johnson, 2011), as if these features reveal similar genomes (perhaps this is because similar features remind them of their parents and the high proportion of genes they share). Indeed, to find a match, the dating service Three Day Rule examines facial shape, jaw structure, and eye and nose coordinates, among other candidate attributes. A recent study of married couples in the U.S. show that paired couples share a higher share of genetic material than would randomized pairings (Domingue et al., 2014). Vertebrate and invertebrate matings of adults of both sexes also prefer certain mating partners over other candidates (Ackerman, 2006; Purdy, 2005). When these adults were allowed to mate with their preferred partners, the survivability of the offspring exceeded those from partners chosen at random. This can be taken as evidence that genetic favoritism operates over a broad range of hierarchical levels.

The ability to recognize similar or dissimilar genes in other people is deeply ingrained in our fundamental selves. The closer our relationships, the more we favor those individuals; the farther apart we are, the more we recognize the differences. We treat diversities as excuses to direct our positive attitudes elsewhere, especially if we consider dissimilar individuals as competing for limited financial, physical, or emotional resources.

One troubling form of discrimination is racism. Racism exists in many forms and many places; it is especially noted whenever different races come in close contact with each other. Fortunately, I have observed over the course of my lifetime that racism in the U.S. has diminished somewhat, although no one dare says that racism is even close to being eradicated in our country. Having lived through the time of the civil rights marches fifty years ago, listened to and taken to heart the words of Martin Luther King Jr., and admired the courage and resolution of Rosa Parks, I am very happy with this trend. And, it seems that the acceptance of other races is being led by the young, who seem to be much more tolerant than their parents.

Discrimination may be a natural consequence of our genomes, but discrimination does not have to turn into racism. In order to keep that from happening, we should become more familiar with the other people so that the differences become less important compared to the similarities we discover. If we no longer consider relationships as competitive, then we can act in a more generous and tolerant way. Engineering success, which should be based on merit and cooperation, can become a model of the way that we wish society in general should behave. In this case, we can exercise another deeply-ingrained biological attribute, that of fairness and altruism, also embedded in our genomes (Brosnan and DeWaal, 2003; Range et al., 2009). That should make it easier to move beyond the extremes of discrimination originating with our genes.

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