heritage

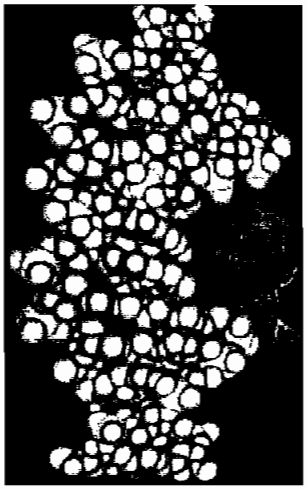

Photo: A scientist surveys a computer-generated model of a DNA molecule. Corbis Images

Race and the Human Genome

Last November, Nobel Laureate James Watson, the man who discovered the double helix structure of DNA in the 1950s and started the international Human Genome Project in 1990, sparked outrage when he suggested that there could be biochemical links between skin color and sex drive. Speaking at a seminar at the University of California Berkeley, "the father of DNA" argued that exposure to sunlight can increase a person's sexual appetite.

"That's why you have Latin lovers," Watson said. "You never hear of English lovers, only English patients." Watson referred to an experiment in which male subjects (rats and humans) were injected with melanin and immediately developed erections. Although the esteemed scientist claimed that his findings were the product of documented research, many in the scientific community and beyond were appalled by Watson's remarks.

Theories of genetic differences betweenraces have a long and troubling history and are unsettling to many today. And the political implications of such ideas are, of course, incendiary.

In his State of the Union address in January 2000, President Clinton attempted to allay people's fears about the dangerous and unethical potential of recent advances in genetic science. "We are all, regardless of

race, 99.9 percent the same," he declared.

Mindful of the ways in which research on human genetics has historically been abused, Clinton was trying to reassure a public alarmed by the tremendous strides made by scientists who announced that they had completely sequenced the human genome last year. The potential for misuse of this exploding field of research is clear: colonialism, slavery, apartheid and the Holocaust, for example, were all justified by pseudo-scientific evidence that certain groups are genetically inferior to those who were said to be genetically destined to dominate.

More recently, this perspective informed the work of Charles Murray and Richard Herrnstein, whose notorious *The Bell Curve*, which examined 80 years of data on human intelligence, concluded that although every American ethnic group showed the same distribution in IQ, their averages were different, with African Americans possessing an IQ average 15 points lower than whites. Murray and Herrnstein stated that this difference could not be explained by environment alone, that African Americans' genetic constitution also played a role.

But while conservatives and liberals alike have argued against the very idea of genetically-dictated racial differences, some scholars feel that the "politically correct" emphasis on the genetic similarities between people of different ethnic groups has stifled potentially useful research into actual distinctions that do exist between and within genetic populations.

"In effect, he [President Clinton] was implying that there are no meaningful differences between populations. That belief is wrong and dangerously so," wrote Jon Entine in the *San Francisco Examiner*. "We share 98.4 percent of our genes with chimpanzees, 95 percent with dogs, and 74 percent with microscopic roundworms. Only one chromosome determines if one is born male or female. There is no discernible difference in the DNA of a wolf and a Labrador retriever, yet their inbred behavioral differences are immense. Clearly, what's meaningful is which genes differ and how they are patterned, not the percent of genes. A tiny number of genes can translate into huge functional differences."

According to an editorial in the British paper *The Independent*, a fear of offending members of historically stigmatized racial groups has prevented us from confronting the evidence that tiny genetic variations do actually account for real physical and behavioral differences. "We have gone from one kind of ignorance and prejudice to another without walking the road of good sense," wrote the anonymous commentator. "There are important biological differences that distinguish groups and individuals within groups. Vastly more African American men have prostate cancer than do white men. British Asians have significantly higher rates of heart disease...If gene research is only allowed among white groups, important breakthroughs will only be available to them, too."

Not to explore genetic differences and genes responsible for certain diseases that afflict different ethnic grips, is, as *London Times* journalist Anjana Ahuja writes, "to leave ethnic groups in the grip of disease for the sake of political correctness."

Entine, author of *Taboo: Why Black Athletes Dominate Sports and Why We Are Afraid to Talk About It*, makes a similar point. "Although we share a common humanity, we are different in critical ways such as our genetic susceptibility to diseases," he says. "For instance, blacks are genetically predisposed to contracting colo-rectal cancer; Eurasian whites are

genetically prone to multiple sclerosis -- and Asians are by and large victims of neither. The problem with Clinton's pandering to political correctness is that it threatens confidence in the life-saving aspects of the genetic revolution."

While genetic research may reveal more variation within the human family than many may wish to acknowledge, it can also demonstrate specific genetic advantages that certain populations may have, possibly yielding discoveries that could benefit humankind as a whole. Yet, scholars argue, many people seem more comfortable with the notion of genetically-determined diseases than they are with the idea that particular groups may also possess specific genetic gifts.

"Why do we readily accept that evolution has turned out blacks with a genetic proclivity to contract sickle cell, Jews of European heritage who are one hundred times more likely than other groups to fall victim to the degenerative mental disease Tay-Sachs, and whites who are most vulnerable to cystic fibrosis, yet find it racist to acknowledge that blacks of West African ancestry have evolved into the world's best sprinters and jumpers and East Asians the best divers?" Entine asks rhetorically.

Along similar lines, Professor Clive Harper of the University of Sydney, Australia claims to have found that among Aborigines, the area of the brain responsible for visual processing is 25 percent larger than average. Harper's as yet unpublished studies indicate that Aboriginal children have photographic memories, an evolutionary gift from their ancestors, who "had to master the vast landscape to survive."

While examining genetic advantages in key populations can teach lessons about evolution, scientists argue that studying genetic illnesses and their development can also lead us to potential treatments.

"I believe that we need to look at the causes of differences in diseases between the various races," writes Claude Bouchard, a geneticist at the Pennington Biomedical Research Center at Louisiana State University who studies obesity and athletic performance, in the *American Journal of Human Biology*. "In human biology...it is important to understand if age, gender, and race, and other population characteristics contribute to phenotype variation. Only by confronting these enormous issues head-on, and not by circumventing them in the guise of political correctness, do we stand a chance to evaluate the discriminating agendas and devise appropriate interventions."

The alarm of those who are disturbed by Western science's rush to decode the human genetic cipher is perhaps well-founded. In addition to the eugenics experiments of 20th century scientists intent on demonstrating African genetic inferiority, reports of even more sinister applications of the new genetic research abound. In apartheid-era South Africa, for example, government scientists are said to have conceived and experimented with weapons designed to genetically target blacks, leaving whites unharmed. Most scientists, however, feel that such unethical activities are unlikely.

"We're not in the business of designing smart bombs to wipe out races," Spencer Wells, a population geneticist at Oxford University who studies the genes of different ethnic groups, told the *London Times*. "People talk about the history of eugenics, and a lot of early research in this country was pretty serious, but we are not doing this to develop people along racial lines. Our species has a single, shared history, and we ought to learn what it is."

The Human Genome Project thus far has revealed that roughly 99.9 percent of the DNA of every person on the planet is identical. Human variation, in height, skin color, and so forth, is actually determined by a tiny fraction of the genome. And genetic variations within ethnic groups are wider than those between different groups. Wells, who has studied 200 different genetic markers on the Y chromosome in samples from different areas of the world, argues that most people have multiple markers reflecting extensive migration and intermarriage, though ultimately, we all carry in our genes the traces of African ancestry. As Professor Chris Stringer of London's Natural History Museum says, "We are all African under the skin."

Geneticists, says Wells, do not subscribe to the concept of a biology of race. "You can find more genetic differences between two Africans than between an African and commoner from the Outer Hebrides," says Wells. "To me, race is a cultural construct. I put it another way: there is genetic variation among geographical groups." Wells speculates that the characteristics generally associated with race, such as skin color, account for no more than a tenth of the variation between humans, which is 0.01% of our genetic make-up.

Experts argue that differences in skin color — the most obvious difference between population groups -- developed as people migrated from Africa to colder environments, with paler skins developing in colder regions to "allow more efficient production of vitamin D from sparse sunlight," while people near the equator developed dark skin to protect them from the sun's harmful effects.

While recent genetic research has appeared to undermine the notion of "race" as a biologically-defined category, concern that scientific inquiry will be used to justify racism has proven an obstacle to popular acceptance of the study of the human genome. "If we do not welcome the impending genetic revolution with open minds, if we are scared to ask and to answer difficult questions, if we lose faith in science, then there is no winner; we all lose," says Jon Entine. "The question is no longer whether genetic research will continue but to what end."

In fact, recent research has actually debunked theories of a genetic racial hierarchy. In one study, James Flynn of the University of Otago in New Zealand forcefully exposed *The Bell Curve's* shoddy reasoning, arguing that the IQ scores of today are significantly higher than those of previous generations and that IQ test scores are influenced by environment as much as any genetic factor. "An environmental explanation of the racial IQ gap need only posit this: that the average environment for blacks in 1995 matched the quality of the average environment for whites in 1945. I don't find that implausible," Flynn says. According to his findings, when other measures of intelligence are taken into consideration, results are spread out more evenly across ethnic groups, suggesting that there is a cultural bias in IQ tests that works against certain ethnic groups.

Murray, *The Bell Curve's* co-author, is unswayed and is adamant that genetic research will validate his thesis. "Within the next twenty or thirty years, we're going to know the whole genetic story about IQ," Murray told the *London Times.* "It can't be held back. What we need to start saying now is that we can look at these facts squarely in the face and not run screaming from the room."

While advances in genetic research and the mapping of the human genome could be used to promote various theories of race, many scholars

argue that only by continuing to unravel the mysteries of genetic difference and evolution can we truly understand the similarities and variations that exist within the human family. What's more, warns Walter E. Williams of George Mason University, "If decent people don't discuss human biodiversity, we concede the turf to black and white racists."

Email Letter to the Editor