

Do Races Differ? Not Really, Genes Show

By NATALIE ANGIER
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In these glossy, lightweight days of an election year, it seems, they can't build metaphorical tents big or fast enough for every politician who wants to pitch one up and invite the multicultural folds to "Come on under!" The feel-good message that both parties seek to convey is: regardless of race or creed, we really ARE all kin beneath the skin.

Yet whatever the calculated quality of this new politics of inclusion, its sentiment accords firmly with scientists' growing knowledge of the profound genetic fraternity that binds together human beings of the most seemingly disparate origins.

Scientists have long suspected that the racial categories recognized by society are not reflected on the genetic level. But the more closely that researchers examine the human genome -- the complement of genetic material encased in the heart of almost every cell of the body -- the more most of them are convinced that the standard labels used to distinguish people by "race" have little or no biological meaning.

They say that while it may seem easy to tell at a glance whether a person is Caucasian, African or Asian, the ease dissolves when one probes beneath surface characteristics and scans the genome for DNA hallmarks of "race."









As it turns out, scientists say, the human species is so evolutionarily young, and its migratory patterns so wide, restless and rococo, that it has simply not had a chance to divide itself into separate biological groups or "races" in any but the most superficial ways.

"Race is a social concept, not a scientific one," said Dr. J. Craig Venter, head of the Celera Genomics Corporation in Rockville, Md. "We all evolved in the last 100,000 years from the same small number of tribes that migrated out of Africa and colonized the world."

Dr. Venter and scientists at the National Institutes of Health recently announced that they had put together a draft of the entire sequence of the human genome, and the researchers had unanimously declared, there is only one race -- the human race.

Dr. Venter and other researchers say that those traits most commonly used to distinguish one race from another, like skin and eye color, or the width of the nose, are traits controlled by a relatively few number of genes, and thus have been able to change rapidly in response to extreme environmental pressures during the short course of Homo sapiens history.

And so equatorial populations evolved dark skin, presumably to protect against ultraviolet radiation, while people in northern latitudes evolved pale skin, the better to produce vitamin D from pale sunlight.

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"If you ask what percentage of your genes is reflected in your external appearance, the basis by which we talk about race, the answer seems to be in the range of .01 percent," said Dr. Harold P. Freeman, the chief executive, president and director of surgery at North General Hospital in Manhattan, who has studied the issue of biology and race. "This is a very, very minimal reflection of your genetic makeup."

Unfortunately for social harmony, the human brain is exquisitely attuned to differences in packaging details, prompting people to exaggerate the significance of what has come to be called race, said Dr. Douglas C. Wallace, a professor of molecular genetics at Emory University School of Medicine in Atlanta.

"The criteria that people use for race are based entirely on external features that we are programmed to recognize," he said. "And the reason we're programmed to recognize them is that it's vitally important to our species that each of us be able to distinguish one individual from the next. Our whole social structure is based on visual cues, and we've been programmed to recognize them, and to recognize individuals."

By contrast with the tiny number of genes that make some people dark-skinned and doe-eyed, and others as pale as napkins, scientists say that traits like intelligence, artistic talent and social skills are likely to be shaped by thousands, if not tens of thousands, of the 80,000 or so genes in the human genome, all working in complex combinatorial fashion.

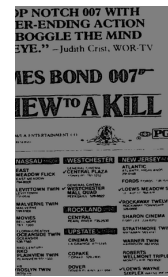
The possibility of such gene networks shifting their interrelationships wholesale in the course of humanity's brief foray across the globe, and being skewed in significant ways according to "race" is "a bogus idea," said Dr. Aravinda Chakravarti, a geneticist at Case Western University in Cleveland. "The differences that we see in skin color do not translate into widespread biological differences that are unique to groups."

Dr. Jurgen K. Naggert, a geneticist at the Jackson Laboratory in Bar Harbor, Me., said: "These big groups that we characterize as races are too heterogeneous to lump together in a scientific way. If you're doing a DNA study to look for markers for a particular disease, you can't use 'Caucasians' as a group. They're too diverse. No journal would accept it."

Yet not every researcher sees race as a meaningless or antediluvian notion. "I think racial classifications have been useful to us," said Dr. Alan Rogers, a population geneticist and professor of anthropology at the University of Utah in Salt Lake City. "We may believe that most differences between races are superficial, but the differences are there, and they are informative about the origins and migrations of our species. To do my work, I have to get genetic data from different parts of the world, and look at differences within groups and between groups, so it helps to have labels for groups."

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The Screen: In 'Future,' Boy Returns to the Past

By JANET MASLIN

THE people in Robert Zemeckis' film have the great fun of living out their craziest daydreams. And the crazier the better. Mr. Zemeckis, together with his screenwriting partner, Bob Gale, has progressed from teenage kamikazes willing to risk anything to meet the Beatles ("I Wanna Hold Your Hand," 3) to saloonmen ready to peddle any form of figurative snake oil ("Used Cars"), to a timid pulp novelist who travels to the tropics ("Romancing the Stone," with a screenplay by Diane Thomas) and becomes her own most adventurous heroine.



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