Does Race Exist?

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IN REVIEW

TESTING YOUR COMPREHENSION

1) According to the authors, which of these is a good way to define race?
   a. culture or geographic origin
   b. skin color
   c. geographic origin
   d. none of the above

2) Of the total genetic variability within the human species, approximately what percentage of variation can be found within a population?
   a. 90%
   b. 50%
   c. 20%
   d. 5%

3) How do geneticists determine the degree of relatedness among human groups?
   a. variation in the genes for skin color and hair texture
   b. DNA polymorphisms
   c. variation in the chemistry of the DNA bases
   d. none of the above

4) Geneticists study the history of populations and the effect of natural selection by ___.
   a. interviewing people about their ancestry and cultural origins
   b. analyzing historical records and burial sites for ancient cultures
   c. studying the distribution of polymorphisms across populations
   d. comparing the number of polymorphisms within a population

5) What is the function of Alu in the human genome?
   a. They are a binding site for replication proteins.
   b. They mark the location of the centromere.
   c. They mark important genes.
   d. They have no known function.

6) Using polymorphism analysis, researchers have estimated that the West African contribution to the genes of individual African-Americans averages about ___ percent.
   a. 100
   b. 80
   c. 50
   d. 30

7) Using polymorphism analysis, researchers have documented that about ___ percent of Americans who consider themselves "white" have less than 90 percent European ancestry.
   a. 100
   b. 80
   c. 50
   d. 30

8) DNA polymorphisms are thought to impart resistance and, in some cases, immunity for which of these infectious agents?
   a. HIV-1
   b. malaria
   c. cholera
   d. all of the above

9) At present, what factor is the major limiter of when doctors use genetic testing as a screening tool?
   a. concerns about privacy and consent
   b. validity of the information
   c. high cost of the screening
   d. all of the above

10) Using various polymorphisms, researchers discovered a pattern that allowed them to distinguish ___ group[s] of people according to their geographic origin.
    a. 1
    b. 5
    c. 10
    d. It is impossible to use genetics for this purpose.
BIOLOGY AND SOCIETY

1) The authors make the point that there are racial differences in susceptibility to diseases and to the effects of some therapies. Does this support or interfere with efforts to heal racial divides? A recent debate has ignited over an FDA recommendation that researchers collect information about a test patient's race and ethnic identity. Some argue that outward signs of race are not adequate for distinguishing a person's genetic characteristics. What is your position on this debate? What evidence and logic do you use to support your position? If there are differences in disease rates and susceptibilities between racial groups then one can assume that insurance rates may eventually differ for these groups. Describe an argument in support of and against this position. Don't insurance companies have the obligation to control their costs? Does their obligation negate their social responsibilities to help heal racial differences?

2) As we learn more about our genes and their influence on race and other human features, we're also learning about the genetics of disease susceptibility. If you could submit a sample of your DNA and get a report listing all of the diseases you are susceptible for, would you? Would you want your insurance company, your employer, or even your potential spouse to have this information? What rights should you have to protect the information stored in your genes? How do you protect your privacy when this information can be picked up from the hairs and skin cells you drop every day?

THINKING ABOUT SCIENCE

1) For any study that attempts to characterize a population, sampling bias should be a concern. In only very rare situations is it possible to sample every individual in a population. In most cases, members of a population are too abundant, too distributed, or too disagreeable to sample more than a fraction of their population. If you can only sample a fraction of the total, how do you know that your sample is representative of the population? How do you know that you haven't inadvertently neglected members with important characteristics? How do you know that your sample isn't overly biased toward a minor representative? You are researching variation in population for genetic characteristics that influence susceptibility to alcoholism. You have a limited budget to do your study. Describe how you would sample a large population for this study. Include a description of the protocol you would use to validate that your samples are representative of the population. Explain how you would identify and avoid potential sampling bias.

2) Opponents to the FDA recommendation to collect racial information in clinical trials contend that the differences between groups are insignificant and, therefore, the information is of no use in genetic and medical studies. Proponents of the FDA recommendation suggest that only by collecting this information will we understand how genetic and environmental differences among group contribute to disease. The authors contend that more research is needed to understand if race is a valid scientific variable. You are a scientist at the heart of this debate and you wish use the objective tools of science to understand the merit of each side. Develop a hypothesis, design a study, and describe what results you may gather and how those results might support either argument in the debate.

WRITING ABOUT SCIENCE

Put yourself in the perspective of a person whose mother was a mixture of Irish and African-American and whose father was Mexican and Asian; then describe how you would define your race and what racial identity means to you. In your essay, explore the cultural, social, political, and economic significance of your identity.