three recurrent mutations: 185delAG, 4184del4, and 5382insC, residing in exons 2, 11, and 20, respectively (Couch et al., in press). The 185delAG mutation has been demonstrated to be particularly prevalent in individuals of Ashkenazi Jewish origin (Simard et al. 1994; Struewing et al. 1995). The carrier frequency has been calculated to be 0.9%, and the mutation has been estimated to account for 16% and 39%, repectively, of the breast and ovarian cancer diagnosed before the age of 50 years in this ethnic subgroup (Struewing et al. 1995).

In an ongoing study of 25 Norwegian patients meeting our criteria for hereditary breast and/or ovarian cancer (Møller 1993), we have identified three unrelated individuals (12%) carrying an 1136insA mutation in exon 11. All three were ovarian cancer patients from breast and ovarian cancer kindereds, and their families were not known to be related. The examination of five microsatellite loci mapping to the *BRCA1* region (D17S250, *THRA1*, D17S800, D17S855, and D17S579) revealed the presence of shared alleles, suggesting the presence of a common haplotype and a common Norwegian ancestor. The 1136insA mutation has previously been detected in three families from the United Kingdom, Canada, and the United States (Couch et al., in press).

The present observations suggest a significant proportion of the Norwegian hereditary breast and/or ovarian cancer families to be attributable to the *BRCA1* 1136insA mutation. The carrier frequencies in patient and control populations should be further examined to elucidate to what extent this possible founder effect may enhance the efforts to provide DNA-based predictive testing in the Norwegian population.

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The Bell Curve: Statement by the NIH-DOE Joint Working Group on the Ethical, Legal, and Social Implications of Human Genome Research

To the Editor:

In 1994, a highly publicized book, Richard Herrnstein and Charles Murray's *The Bell Curve,* claimed that IQ is largely genetically determined and that the differences in IQ between ethnic groups are substantially explained by genetic factors. We are especially concerned about the impact of *The Bell Curve,* and books developing similar themes, because we believe that the legitimate successes of the Human Genome Project in identifying genes associated with human diseases should not be used to foster an environment in which mistaken claims for genetic determination of other human traits gain undeserved credibility.

Herrnstein and Murray suggest that IQ explains social problems such as crime, welfare dependence, and single parenting. They state that sociocultural barriers to personal advancement have largely been removed, and, consequently, social success and high IQ are highly correlated. They assert that, to the extent that IQ is genetically determined, programs to eliminate inequalities are thus doomed to failure. Herrnstein and Murray are especially concerned that high birth rates among the poor and the "dysgenic" behavior of women with high IQs, who are not bearing enough children, are threatening the population with genetic decline. According to them, these trends are "exerting downward pressure on the distribution of cognitive ability in the United States" (p. 341).

The authors follow this analysis with policy recommendations. They propose eliminating welfare, which they believe subsidizes birth among poor women, thus lowering the average intelligence of the population. They suggest ending remedial education programs be-

cause the results are not worth the cost, in light of the claimed significant genetic determination of IQ differences. They urge the development of programs of social support that would encourage women from the higher socioeconomic classes to have more children.

Neither Herrnstein nor Murray are geneticists nor have they carried out studies themselves on the genetic basis of behavior. Their lack of training and experience in genetics does not disqualify them from evaluating genetic research nor from drawing their own conclusions. However, as geneticists and ethicists associated with the Human Genome Project, we deplore *The Bell Curve*'s misrepresentation of the state of genetic knowledge in this area and the misuse of genetics to inform social policy.

We urge consideration of the following three points:

First, Herrnstein and Murray invoke the authority of genetics to argue that "it is beyond significant technical dispute that cognitive ability is substantially heritable" (pp. 22–23). Research in this field is still evolving, studies cited by Herrnstein and Murray face significant methodological difficulties, and the validity of results quoted are disputed. Many geneticists have pointed out the enormous scientific and methodological problems in attempting to separate genetic components from environmental contributors, particularly in light of the intricate interplay between genes and the environment that may affect such a complex human trait as intelligence.

Second, even if there were consensus on the heritability of cognitive ability, lessons from genetics are misrepresented. The authors argue that, because cognitive ability is substantially heritable, it is not possible to change it and that remedial education is not worth the effort or cost. This is neither an accurate message from genetics nor a necessary lesson from efforts at remedial education. Heritability estimates are relevant only for the specific environment in which they are measured. Change the environment and the heritability of traits can also change. Saying a trait has high heritability has never implied that the trait is fated to be. Height is both genetically determined and dependent on nutrition. Common conditions in which genetics play a role, such as diabetes or heart disease, can be corrected with insulin or cholesterol-lowering drugs and diet. The disabilities associated with single-gene conditions, such as phenylketonuria or Wilson disease, can also be prevented or significantly ameliorated by medical or nutritional therapy.

Third, the more scientists learn about human genes, the more complexity is revealed. This complexity has become apparent as more genes correlated with human genetic diseases are discovered. We are only beginning to explore the intricate relationships between genes and environment and between individual genes and the rest of the human genome. If anything, the lack of predictability from genetic information has become the rule rather than the exception. Simplistic claims about the inheritance of such a complex trait as cognitive ability are unjustifiable; moreover, as the history of eugenics shows, they are dangerous.

Genetic arguments cannot and should not be used to determine or inform social policy in the areas cited by Herrnstein and Murray. Since the lessons of genetics are not deterministic, they do not provide useful information on deciding whether to pursue various programs to enhance the capabilities of different members of society. Those decisions are moral, social, and political ones.

This statement was developed by the NIH-DOE Joint Working Group on the Ethical, Legal, and Social Implications of Human Genome Research (ELSI Working Group). This statement is endorsed by the National Society of Genetic Counselors.

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