= 28), 3.794 ± 3.214; and reindeer Chukchi (n = 10), 5.244 ± 1.798. Torroni et al. (1993) corroborate this inverse relationship between mtDNA diversity and latitude with RFLP data on some of the same Siberian aboriginal groups. Their data describe 11 RFLPs that define four mtDNA haplotypes. Diversity (simple h; Nei and Tajima 1981) calculated from table 1 of Torroni et al. (1993) ranges as follows: Eskimo (n = 50), .338 ± .077; reindeer Chukchi (n = 24), .796 ± .046; and Koryak (n = 46), .819 ± .026. Differences between these diversity values were not determined, because of the small sample sizes involved, but the geographical trend toward higher nDNA diversity and lower mtDNA diversity in more northerly Siberian groups appears to be real and consistent.

The basis for this discordance between mtDNA diversity and blood-protein gene heterozygosity remains unclear. Solovenchuk (1989) proposed that blood-protein gene heterozygosity increases in proportion to climatic severity. As Jorde et al. (1995) note, mtDNA polymorphisms might not be selectively neutral, and it is possible that the loss of mtDNA diversity in northern populations reflects a greater degree of selection for optimal mtDNA haplotypes under more extreme conditions. Other models may be proposed. In any case, the problem of discordance between mtDNA and nDNA diversities will require further study.

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FRAXE Testing

To the Editor:

With great interest we read the recent article and accompanying editorial on the routine testing of mentally retarded individuals for the FRAXE mutation (Brown 1996; Knight et al. 1996). In that article a very low FRAXE prevalence (overall <4% of FRAXA, or ~1/50,000 males) was noted when several study populations were combined. We wish to add our data on FRAXE and FRAXA testing in Germany.

Our two DNA-service laboratories, at the Universities in Munich and Ulm, receive the majority of requests for fragile X testing in southern Germany. In the period from July 1993 to May 1996, a total of 737 consecutive index patients, whose cytogenetic status was not recorded, were tested for both FRAXA and FRAXE mutations by standard PCR methods and Southern blotting (Oostra et al. 1992; Knight et al. 1993). Of these, 451 were mentally retarded males, and 276 were females either themselves retarded or first-degree relatives of retarded males. None of the 737 samples tested was positive for the FRAXE mutation. Of the 451 retarded males, 31 showed a full mutation for FRAXA and 2 showed a premutation for FRAXA. In the females, we found 8 full mutations and 17 premutations in FRAXA. The prevalence of FRAXA full mutations in the mentally retarded male population tested was 31/451 (6.7%). This prevalence of 6.7% for FRAXA mutations may be overestimated, since many referring physicians tended to submit samples from patients for whom the clinical diagnosis already pointed to Martin-Bell syndrome.

Given the low prevalence of FRAXE in both the literature and our experience, we concur with Brown's (1996) recommendation against routine testing for FRAXE, with follow-up testing only in selected FRAXA-negative subjects. We are therefore discontinuing routine FRAXE testing in our laboratories.

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Anonymous Genetic Testing: Reply to Mehlman et al.

To the Editor:

Citing concerns about confidentiality and discrimination, Mehlman et al. (1996) recently proposed that anonymous genetic testing be made available, particularly for tests that detect mutations that predispose individuals to develop untreatable, late-onset diseases. Their proposal, however, is flawed in numerous ways. A central problem lies in the authors' attempt to rely on recent experience with anonymous testing for HIV to support a similar approach to genetic testing. Although genetic testing may raise "some of the same issues as HIV testing with regard to the rights of others 'at risk' to gain access to test information" (Mehlman e al. 1996, p. 395), the differences between the implications of the two types of testing are far more pertinent. The most important public-health justification for anonymous testing for HIV—namely, the chance that those who found themselves to be infected would alter their behavior to avoid infecting others who are not yet infected—does not apply to anonymous testing for genetic disorders. Finding a mutation in one person may mean that his or her relatives are more likely than those in the general population to have the mutation as well, but their risk of being a carrier is preexisting by family relationship.

The decision by public-health officials to offer anonymous testing for HIV was premised on the notion that counseling provided at the time of testing, combined with other sources of information, would suffice. Mehlman et al., by contrast, are not entirely comfortable with this model. They propose that a mechanism be developed to permit long-term follow-up by genetic counselors, demonstrating that even they are squeamish at the prospect of truly anonymous genetic testing in which consumers/patients decide for themselves exactly the care and information that they will pursue, once they receive their test results.

Differences also exist in the degree of consensus regarding the appropriateness of preventing the appearance of disease in others. Virtually everyone agrees that it is desirable to prevent the transmission of HIV, whether by parallel or vertical means, to uninfected people. By contrast, there is widespread debate about whether it is appropriate to use prenatal diagnosis and selective abortion to avert the birth of children with untreatable disorders that would become symptomatic only in adulthood.

Given these different implications, there is no reason to think that public or private funding will or should be made available to support anonymous testing for mutations that predispose individuals to develop late-onset disorders. As a result, these tests would be available only to the relatively few who could afford to pay themselves for these often extremely expensive tests, counseling, and follow-up. In any event, anonymous testing still would not alleviate the possibility that sharing results with health-care providers could adversely affect insurability. Obtaining such testing anonymously and later seeking insurance could be seen as fraud.

Finally, if the cost of testing were to decrease dramatically and so were to become available to more people, the proposal would be doomed to failure as a strategy to prevent invasion of privacy and discrimination. If a substantial number of at-risk individuals began undergoing anonymous testing, insurance companies, in an effort to prevent adverse selection, would begin testing all applicants for late-onset disorders. This development would actually be worse than the current situation, because even individuals who do not want to know their genetic risks would be required to undergo testing as a condition of insurability.

In short, it is unrealistic to believe that anonymous genetic testing holds much promise as a strategy to protect patient rights. Moreover, the limited potential benefits of anonymous genetic testing cannot justify the far-