Letters to the Editor

RFLP LOCUS *DXS42* IS PROXIMAL TO THE LOCUS FOR HYPOXANTHINE PHOSPHORIBOSYLTRANSFERASE

To the Editor: Drayna and White [1] recently analyzed 20 DNA marker loci in 38 families in order to provide a genetic linkage map spanning the entire length of the X chromosome. Ordering of loci was obtained by analysis of data using the linkage analysis program LINKAGE [2]. In some areas of the chromosome, determination of gene order was difficult because of the small number of informative meioses or infrequent recombination between tightly linked markers. For example, tight linkage was found between hypoxanthine phosphoribosyltransferase (HPRT) [3] and the RFLP *DXS42* [4] detected with probe 43-15 with $\theta = .04 \pm .039$. In addition, a gene order placing *DXS42* distal to the *HPRT* locus was suggested but was only 1.8 times more likely than the next most likely order, which placed *DXS42* proximal to *HPRT*.

The probe 43-15 had initially been mapped to Xq24-qter using somatic cell hybrid mapping techniques. We have further localized 43-15 to Xq24-q26 with another hybrid panel with defined breakpoints in the region Xq24-qter. This panel included: (1) an intact human X [5], (2) Xq24-qter [6], and (3) Xq26-qter, which is known to contain human *HPRT* and *G6PD* [7] in rodent cell backgrounds.

Southern blot analysis was performed on duplicate samples of each cell line digested with either *Bgl*II or *Taq*I. Probe 43-15 was present in the hybrid containing the entire X and Xq24-qter but was absent from the hybrid containing Xq26-qter. The same filter was washed free of probe and rehybridized with probe 6A-1, which detects the RFLP *DXS10* at Xq26 [8]. Probe 6A-1 was present in all three hybrid cell DNAs. This places *DXS42* in the region Xq24-26, proximal to both *DXS10* and *HPRT*.

Determining gene order is an essential part of the creation of a complete genetic linkage map of the human genome. Linkage analysis and mapping with somatic cell hybrids or in situ hybridization are independent and complementary methods for localizing and ordering genetic loci. The linkage map of Drayna and White is an enormous contribution to that effort for many commonly used RFLPs on the X chromosome. Their map will be widely used and referred to by the scientific community, and therefore we felt it important to

clarify one area of the map in which their data was insufficient to define the order of these two loci accurately.

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SOME FALLACIOUS THINKING ABOUT THE PATERNITY INDEX: COMMENTS

To the Editor: The recent correspondence between Valentin [1] and Li and Chakravarti [2] may confuse the less statistically sophisticated of your readership. May I be allowed to put the three main disputed issues more clearly and succinctly for them?

(1) *The mean paternity index for true fathers is always higher than that of non-fathers.* That this is an algebraic identity [3] is not in dispute. Valentin points out that the paternity index is defined to be so, while Li and Chakravarti consider this definition a basic fallacy: "One cannot define something to be so and then use it as evidence to prove that it is so. In fact, Dr. Valentin has revealed the basic fallacy more lucidly than we did. He says that the father's mean index being higher than the non-father's *is* 'for algebraic reasons.' Then it is not due to paternity per se. It was defined to be so . . . Dr. Valentin has apparently confused definition with evidence." The fact is that a higher paternity index *is associated with* paternity, and a lower paternity index *is associated with nonpaternity,* in the population as a whole. This being so, the finding