Letters to the Editor

Am. J. Hum. Genet. 50:1137, 1992

Nondisjunction versus Nonconjunction

To the Editor:

Sherman et al. (1991) demonstrate that most (94%) trisomy 21 is the consequence of an error during maternal meiosis, and they observe that in such cases it is common for there to have been, apparently, no recombination between the two maternal chromosomes 21. This failure to recombine may have been, they suggest, "simply a by-product of an earlier occurring abnormal process." Of the three possibilities they note which might comprise this abnormal process, they list first a straightforward "failure of synapsis," and this is intuitively the most attractive.

Chromosomes which never joined cannot disjoin; and so the word "nondisjunction" is, if taken literally, unfitting. This is not a new proposition. Sturtevant and Beadle (1962), in their text *An Introduction to Genetics,* published in 1939 and reprinted in 1962, discuss the problem of nondisjunction as follows:

> At the time this term [nondisjunction] was first used, the cytological basis of such irregularities in meiosis was not well understood, and it has turned out that the term is misleading. Actually, the irregular distribution is almost always the result of failure of metaphase pairing rather than failure of disjunction of a normally associated pair of homologs. . . . The two unpaired homologs—*univalents*—are distributed to the two poles more or less at random with respect to each other. They may go to opposite poles or to the same pole. The term *non-conjunction* has been proposed for this failure of pairing and subsequent irregular distribution, but the term non-disjunction is so widely used in the literature that we shall continue to use it with the understanding that its meaning is extended to include non-conjunction [p. 228]

In view of the light cast by the work of Sherman et al., perhaps it is worth restating that our continuing usage of the word "nondisjunction" should have this same proviso implicit.

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References

Sherman SL, Takaesu N, Freeman SB, Grantham M, Phillips C, Blackston RD, Jacobs PA, et al (1991) Trisomy 21: association between reduced recombination and nondisjunction. Am J Hum Genet 49:608–620

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Correction of the Evaluation of Recombination in Meiosis I and II Nondisjunction in Trisomy 21

To the Editor:

To assess the association between recombination and nondisjunction of chromosome 21, we analyzed DNA