Felix de la Cruz^a
Harvey Shifrin^a
Sherman Elias^b
Diana W. Bianchi^d
Laird Jackson^c
Mark I. Evans^f
Joe Leigh Simpson^c
Wolfgang Holzgreve^g
Katherine Klinger^h

Low False-Positive Rate of Aneuploidy Detection Using Fetal Cells Isolated from Maternal Blood

Dear Sir,

Since 1994, the National Institutes of Health have funded the National Institute of Child Health and Human Development Fetal Cell Isolation Study (NIFTY), which is a clinical evaluation having the overall goal of comparing the accuracy of cytogenetic prenatal diagnosis by analyzing fetal cells isolated from maternal blood with results obtained by chorionic villus sampling or amniocentesis [1]. Four programs, several of which are multi-institutional, have participated in the development of common protocols and data analysis were performed.

The NIFTY Study is still ongoing. It is therefore premature and inappropriate to offer detailed comments about sensitivity and specificity of fetal aneuploidy detection. However, we believe it would be of value to briefly report some preliminary data that were reviewed at the last NIFTY Study Group held in July 23–24, 1998. The overall experience of the contributing centers indicates an aneuploidy detection rate of approximately 50%. The current detection rate for Down syndrome of second-trimester maternal-serum triple marker screening is 50–60% and for nuchal translucency screening in the first trimester is 50–85%. However, in contrast to biochemical screening tests in the first or second trimester and nuchal translucency in the first trimester where the false-positive rate is usually held at 5%, preliminary data from the NIFTY Study indicate a far lower rate. Specifically, in the first 675

cases with normal fetal outcomes, the false-positive rates (defined as ≥ 1 aneuploid cell by fluorescent in situ hybridization) were as follows: chromosome 13 = 0 (n = 195); chromosome 18 = 1.1% (n = 279), and chromosome 21 = 1.5% (n = 201).

A positive screening test inevitably raises the anxiety level of the pregnant woman and her partner. Reducing the false-positive rate to values as low as possible is highly desirable. We fully agree with Haddow's [2] commentary that 'Antenatal screening research for Down's syndrome is likely to place more emphasis on lowering the false-positive rate'. In this regard we are most encouraged by our preliminary data that indicate a much lower false-positive rate for aneuploidy detection using fetal cells from maternal blood compared to other noninvasive methods for fetal aneuploidy screening.

References

- 1 de la Cruz F, Shifrin H, Elias S, et al: Prenatal diagnosis by use of fetal cells isolated from maternal blood. *Am J Obstet Gynecol* 1995; 173:1354–1355.
- 2 Haddow JE: Increased risk for Down's syndrome: Where are we and where next? *Lancet* 1998;352:346–347.