Correspondence

Journal of Medical Genetics, 1980, **17**, 72–76

Simultaneous G- and C- banding for human chromosomes

SIR,

Recently, an article by de la Maza and Sanchez[1] on simultaneous G- and C-banding came to our attention. We wish to provide some relevant information regarding G-C-banding which they have called W-banding. They presented a metaphase where a 'mixture' of G and C bands can be seen. It is well known that incubation for a brief period in 2XSSC produces G bands during the treatment of slides for C-banding.[2 3] At a certain stage, which is presumably transitional for the disappearance of G bands, both G- and C-banding can be seen. The exact mechanism of C-banding is poorly understood, but it is well known that in order to get excellent bands, G and C bands should not appear together. If, however, this does happen, the quality of C bands is usually poor and slides require further incubation in 2XSSC (fig 1).

Generally, the C-banding technique is used to identify the heteromorphisms of the secondary constriction region (h) of chromosomes 1, 9, and 16.

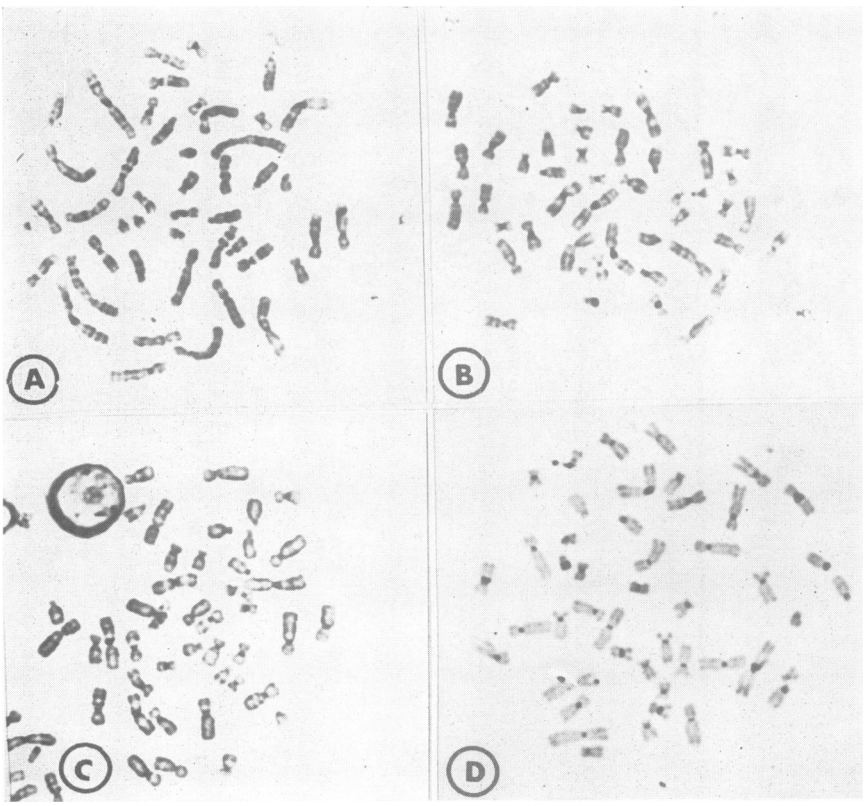

FIG 1 *Normal metaphases (46,XY) showing varying degree of G and C bands. (A) Prominent G bands but few poor C bands (1 hr incubation in 2XSSC at 60°C); (B) mixture of G and C bands (1½ hr incubation in 2XSSC at 60°C); (C) fairly developed C bands with G bands (2 hr incubation in 2XSSC at 60°C); (D) prominent C bands without G bands (2½ hr incubation in 2XSSC at 60°C). The incubation time in 2XSSC and appearance of G and C bands is variable from person to person and even within the same person but in different slides.*[4]

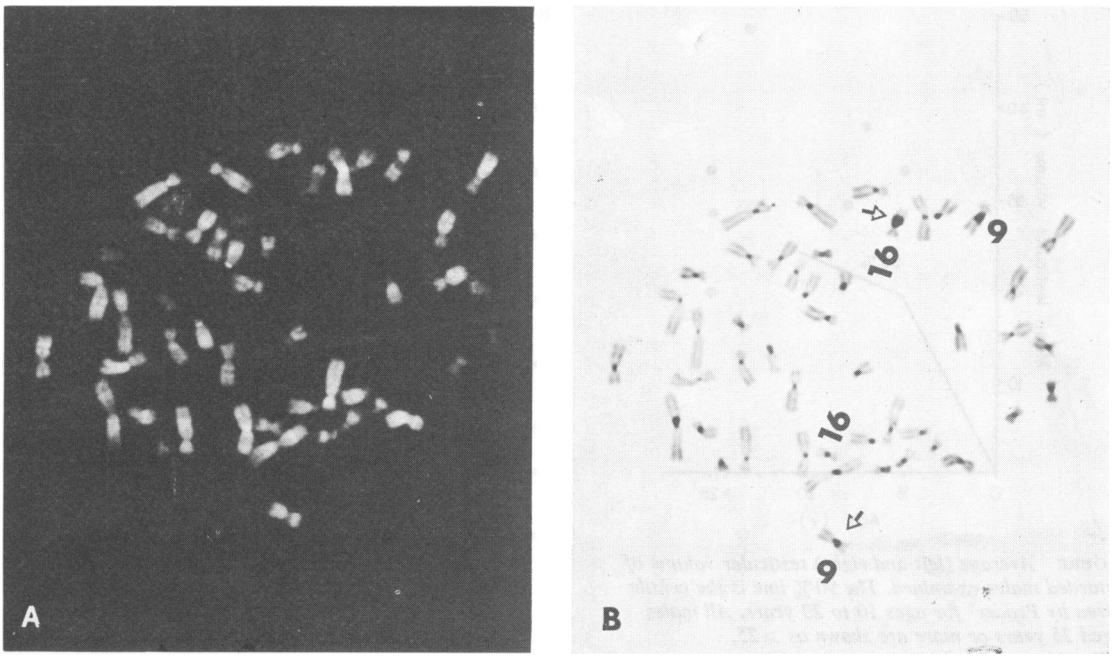

FIG 2 *Sequential Q- and C-banded metaphase showing enlarged secondary constriction (h) region of one chromosome 16 and complete inversion of one chromosome 9.*

The variability of the h regions can not be determined precisely when G bands are present. Consequently, this defeats the object of the exercise.

In our experience, the Q-C sequence is the most satisfactory and highly reliable (fig 2).

RAM S VERMA AND HARVEY DOSIK

Division of Hematology and Cytogenetics, The Jewish Hospital and Medical Center, Brooklyn, NY 11238; and Department of Medicine, State University of New York, Downstate Medical Center, Brooklyn, NY 11203, USA

References

1 de la Maza M, Sanchez O. Simultaneous G and C banding of human chromosomes. *J Med Genet* 1976;**13**:235–6.

2 Coming DE, Avelino E, Okada TA, Wyandt HE. Mechanism of G and C banding of chromosomes. *Exp Cell Res* 1973;**77**:469–93.

3 Lubs HA, McKenzie WH, Patil SR, Merrick S. New staining methods for chromosomes. In: Prescott D, ed. *Method in cell biology*. vol 6. New York: Academic Press, 1973;345–80.

4 Rubenstein CT, Verma RS, Dosik H. Centromeric banding (C) of sequentially Q- and R-banded human chromosomes. *Hum Genet* 1978;**40**:279–83.

Familial X-linked mental retardation with an X chromosome abnormality and macro-orchidism

SIR,

Two forms of X-linked mental retardation have been described, one associated with an X chromosome which has a fragile site at Xq27 or 28,[1 2] and the other associated with macro-orchidism.[3 4 5] As a result of measuring the external genitals and calculating testicular volumes of retarded males with the fragile site at Xq27 or 28, Sutherland and Ashforth[6] have suggested that these two forms of mental retardation are the same entity.

We have recently measured the genitals and calculated testicular volumes of some of the retarded males with fragile sites at Xq27 or 28 who were originally described by Harvey *et al.*[1] Of the seven males examined (figure, table), six had testicular volumes greater than the 90th centile of Prader.[7]

Turner *et al*[8] have independently re-examined the chromosomes, under conditions appropriate for demonstration of fragile sites,[9] of the males originally described with mental retardation and macro-orchidism. They found that these males do have the fragile site at Xq27 or 28. That finding, in conjunction with the report of Sutherland and Ashforth[6] and the data presented here, confirm that the two forms of X-linked mental retardation recorded in published