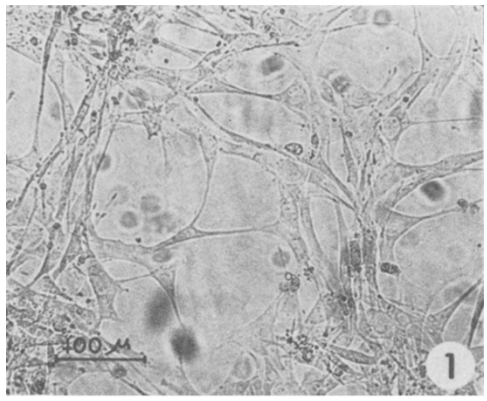
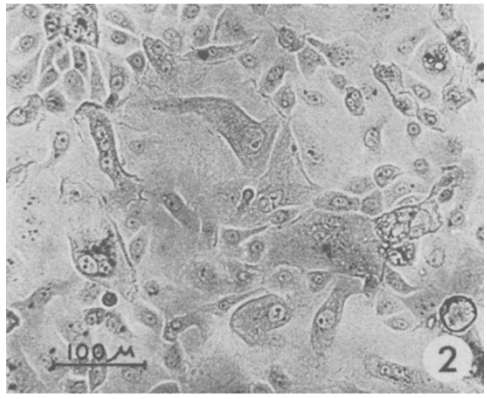
CYTOLOGY

Chromosomes in a Marsupial (*Potorous tridactylis*) Tissue Culture

The chromosome constitution of marsupial, *Potorous tridactylis*, was described by Sharman and Barber[1]. The males have five pairs of autosomes and three sex chromosomes. The low number of chromosomes plus the fact that the same investigators reported somatic pairing made this species desirable for genetic studies in tissue cultures.





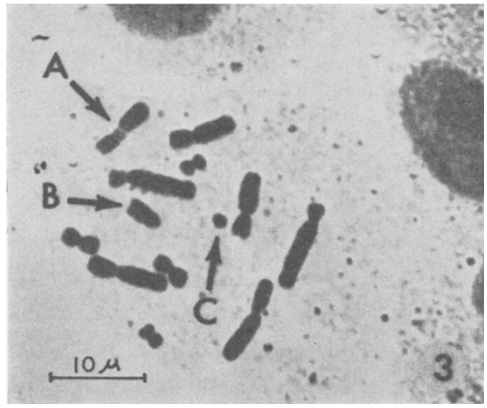


Fig. 1. Fibroblast-like testis cells of *Potorous tridactylis* in tissue culture

Fig. 2. Epithelial-like kidney cells of the same animal in tissue culture

Fig. 3. Somatic chromosome complement of a tissue culture cell of the male *Potorous tridactylis*. *A*, the *X*, *B*, the Y_1 and *C*, the Y_2 chromosomes

The animals were obtained through the courtesy of the Animals and Bird Protection Board. (We thank Dr. E. R. Guiler for help in obtaining these animals.) One male was killed and cultures were prepared from tissues of the brain, eye, lung, liver, kidney and testis with mammalian tissue culture methods[2]. Only the kidney and testis cells multiplied reasonably well; cultures of these have been actively growing through transfers for six months. The most satisfactory culture medium consisted of 90 per cent LEY (2 per cent lactalbumin enzymatic hydrolysate, 2 per cent yeast hydrolysate in Earle's salt solution) and 10 per cent fœtal calf serum. The cells adhered easily to the glass and eventually covered the surface of the culture bottle. Figs. 1 and 2 show the characteristic fibroblast-like testis cells and the epithelial-like kidney cells.

Chromosome examination of both types of cells was carried out on slides prepared in accordance with the technique reported by Ruddle *et al.*[3]. For the observation of somatic pairing pre-treatment with colchicine was not done.

In the kidney and the testis cultures both diploid and polyploid division figures were abundant. The chromosome complements were essentially similar to those reported by Sharman and Barber[1] for spermatogonial divisions. All five pairs of autosomes and the three sex chromosomes (X, Y_1, Y_2) were identifiable (Fig. 3). The X did not show the heteropycnosis described for spermatogonial divisions, but its characteristic centromeric structure was evident. Complete somatic pairing, as described for some spermatogonial metaphases, was quite rare in the tissue culture preparations; but some homologous chromosomes were frequently found close together at both prophase and metaphase. The low number of chromosomes as well as their clarity and individuality indicate that the *Potorous* material should prove suitable for cytogenetic studies with tissue cultures.

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[1] Sharman, G. B., and Barber, H. N., *Heredity*, **6**, 345 (1951).
[2] Madin, S. H., Andries, P. C., and Darby, N. B., *Amer. J. Vet. Res.*, **18**, 931 (1957).
[3] Ruddle, F. H., Berman, L., and Stulberg, C. S., *Cancer Res.*, **18**, 1048 (1958).

Repression of Growth of Mammalian Cells under Agar

When disaggregated mouse embryo cells are first cultivated *in vitro*, the cells grow into a confluent layer of fibroblasts on the bottom of the Petri dish, and then begin to grow additional layers on top of the first. If the cells are transferred, subsequent subcultures will show less tendency to form multiple layers. This effect is accompanied by a diminution in growth-rate of the cells and may be described as a progressive decrease in their growth potential. This behaviour is to be contrasted with that of *L* cells, an established cell line derived from mouse fibroblasts, which show no diminution in their growth potential upon transfer, and retain their ability to grow out of the monolayer.