## CYTOLOGY

### New Sex Determining Mechanism in a Mammal

One female and two males of the small Indian mongoose (*Herpestes auropunctatus* Hodgson, Viverridae, Carnivora) were investigated. The chromosomes were examined in acetic orcein squash preparations from bone marrow and testis. The chromosome number was found to be 36 in the female and 35 in the two males (Table 1). The female has two *X*-chromosomes and the male one (Fig. 1). No visible *Y*-chromosome is present in the male.

At male meiosis 16 bivalents and a unique type of trivalent are formed. The trivalent consists of the

Table 1. Chromosome Number and Number of Scored Cells of the Three Specimens of *Herpestes auropunctatus* investigated

| Animal, code No. and sex | Chromosome No. 34 | 35 | 36 | Total No. of scored cells |
|---|---|---|---|---|
| *H.a.* 13–64 ♀ | — | — | 60 | 60 |
| *H.a.* 15–64 ♂ | 2 | 38 | — | 40 |
| *H.a.* 18–64 ♂ | 1 | 49 | — | 50 |

*X*-chromosome associated end-to-end to one chromosome arm of an autosomal bivalent (Fig. 2). To explain the formation of the trivalent it is assumed that a part of the original *Y*-chromosome has become translocated on to an autosome. This hypothesis is visualized in Fig. 3.

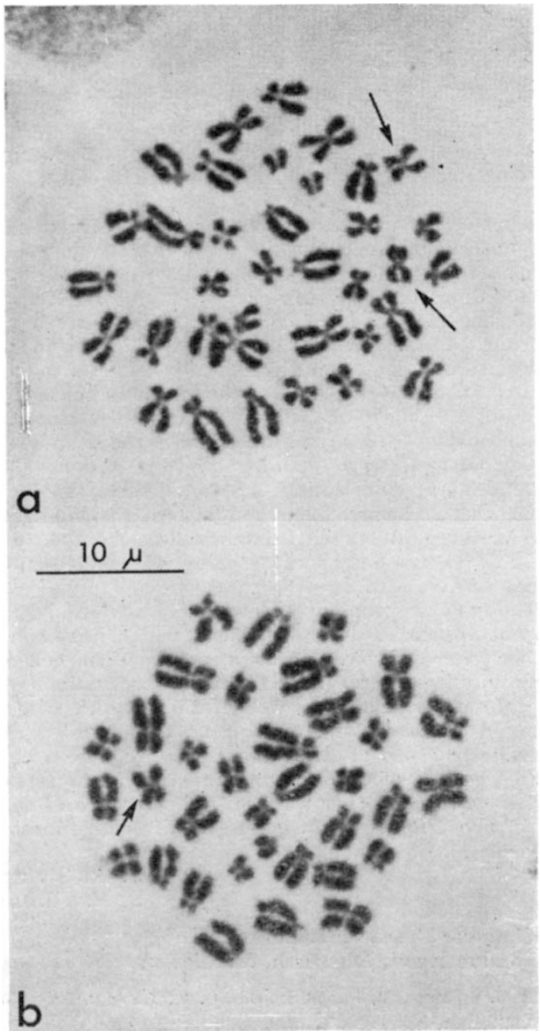


Fig. 1. Metaphase chromosomes from bone marrow of *Herpestes auropunctatus*. *a*, Cell from a female showing 36 chromosomes; *b*, cell from a male showing 35 chromosomes. *X*-chromosomes marked by arrow. Acetic orcein squashes

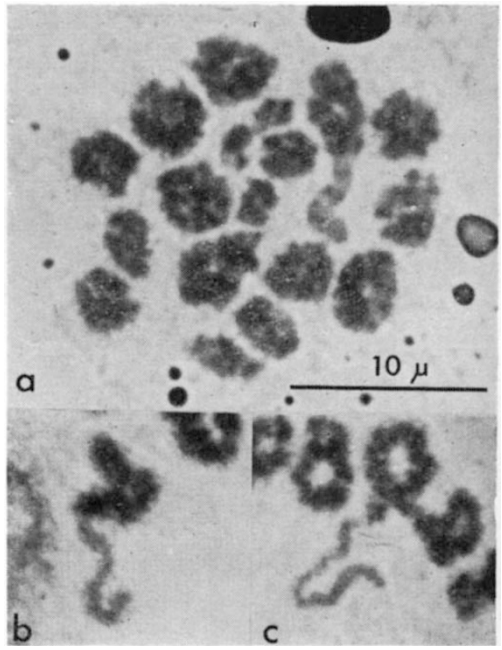


Fig. 2. Meiotic chromosomes in preparations from testis of *Herpestes auropunctatus*. *a*, metaphase I showing 16 bivalents and one trivalent; *b* and *c*, two examples of the trivalent at diakinesis. The odd *X*-chromosome is associated end-to-end to one chromosome arm of an autosomal bivalent. Acetic orcein squashes

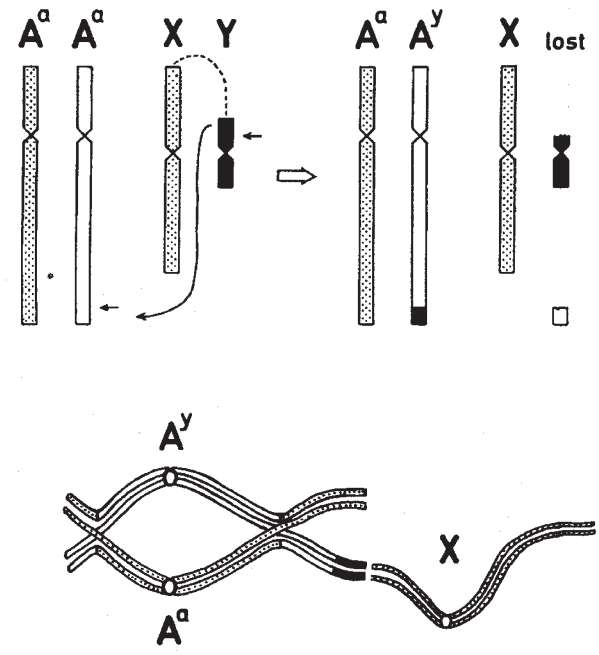


Fig. 3. Schematic illustration of the hypothetical origin of the trivalent. A part of the original *Y* has become translocated on to an autosome

A full account of the cytological findings as well as a discussion of other hypotheses of the origin of the trivalent and possible mechanisms for sex determination will be published in a forthcoming issue of *Hereditas*.

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