

Chromosomes in Four Species of Rodents of the Genus *Ctenomys* (Rodentia, Octodontidae) from Argentina

As has already been reported^{1,2}, the fossorial rodents of the genus *Ctenomys* show a remarkable diversity in chromosome number and structure. Further investigations on the species of this genus provided a description of the karyotype of *C. tucumanus*, *C. latro*, *C. occultus* and *C. tuconax*, from the province of Tucumán, Argentina.

Chromosomes have been studied from individuals collected by the authors at typical localities for each species, as recorded by THOMAS³⁻⁶. Specimens used for chromosome preparation have been incorporated into the collection of Mammals of the Faculty of Sciences of the University of Buenos Aires (FCM). An adequate number of metaphases from each species was obtained from bone marrow, using the technique described by NADLER and BLOCK⁷. Karyotypes were constructed on the basis of enlarged photographs of metaphase plates, taken with a Leitz Orthoplan microscope. Idiograms of 3 of the species (Figure 1) were made measuring individual chromosomes in more than 10 karyotypes from each species, and giving the length of each autosome and of the sex chromosomes

as a % of the female haploid set. Mean values of the ratio long arm/short arm (r) are given in the idiograms.

C. tucumanus (2 males and 1 female individual: FCM-3319, FCM-3320 and FCM-3317) (Figures 1-3) has a diploid set of 28 chromosomes, as proved by the counting of 163 cells, from which 35 karyotypes were constructed. All the chromosomes are atelomycytic; 5 pairs of autosomes and the X are of the type *m* (following the nomenclature of LEVAN et al.⁸), the other chromosomes being of

¹ N. CACHEIRO, P. KIBLISKY and J. I. VALENCIA, Mamm. Chrom. News 14, 67 (1964).

² P. KIBLISKY and O. A. REIG, Nature 212, 436 (1966).

³ O. THOMAS, Ann. Mag. nat. Hist. 7, 294 (1900).

⁴ O. THOMAS, Ann. Mag. nat. Hist. 9, 1, 38 (1918).

⁵ O. THOMAS, Ann. Mag. nat. Hist. 9, 6, 243 (1920).

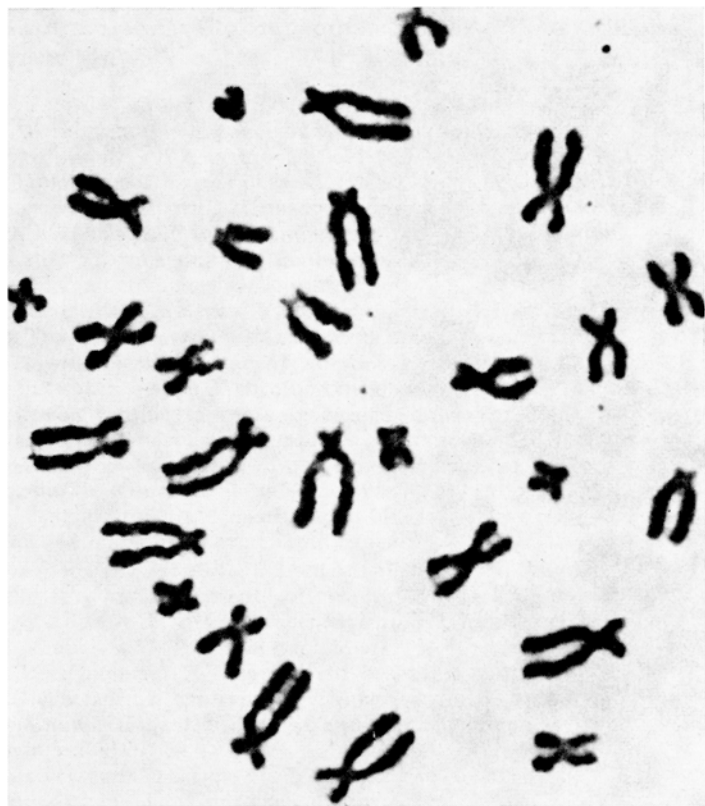
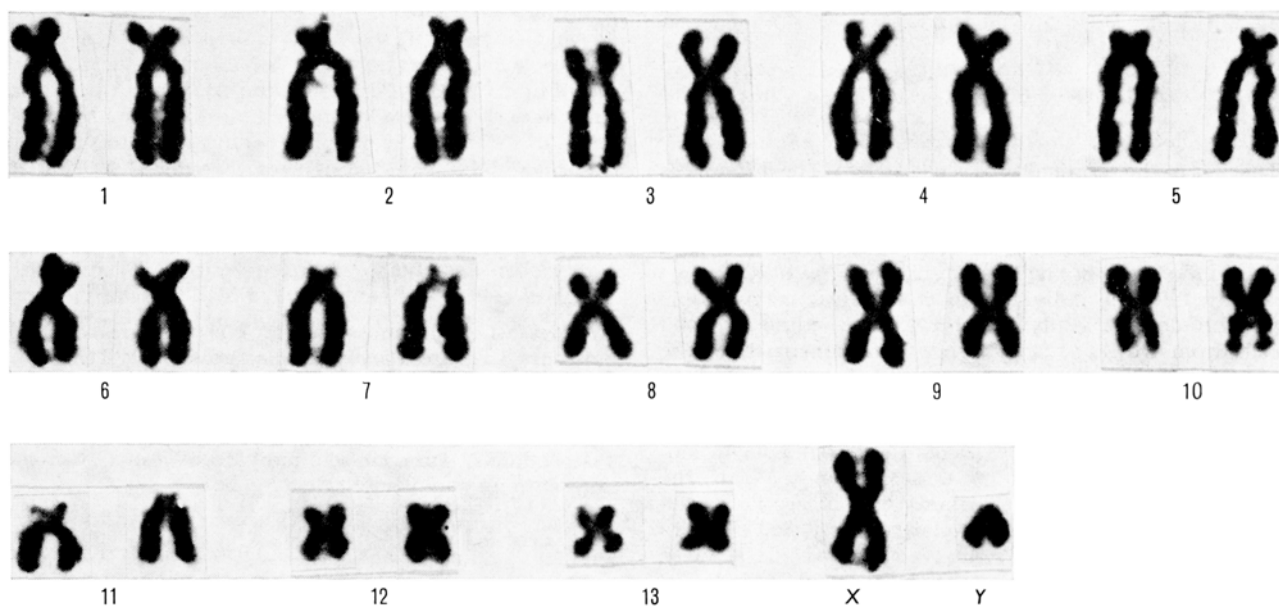
⁶ O. THOMAS, Ann. Mag. nat. Hist. 9, 15, 582 (1925).

⁷ C. F. NADLER and M. H. BLOCK, Chromosoma 13, 1 (1960).

⁸ A. LEVAN, K. FREGDA and A. A. SANDBERG, Hereditas 52, 201 (1964).



Fig. 1. Idiograms of *C. latro*, *C. tucumanus* and *C. occultus*.

Fig. 2. Mitotic metaphase of *C. tucumanus* ♂.Fig. 3. Karyotype of *C. tucumanus* ♂.

the type *sm* or *st*. The *X* is remarkable for its length, amounting to 7% of the length of the haploid female set. A secondary constriction is shown at the long arm of the tenth autosome.

In the case of *C. latro* (2 males: FCM-3332 and FCM-3338, and 2 females: FCM-3316 and FCM-3326) 111 cells have been counted and 14 karyotypes have been built.

The chromosome set of this species is clearly distinct from that of *C. tucumanus*, showing a diploid number of 42 chromosomes, most of them acrocentric. Twelve pairs of autosomes are *t*-type, 5 pairs are *st* and 1 pair is *T* with a secondary constriction. Only 2 pairs of autosomes are metacentric (*m*), and the *X*, amounting to 6% of the length of the haploid complement, is also of the *m*-type.

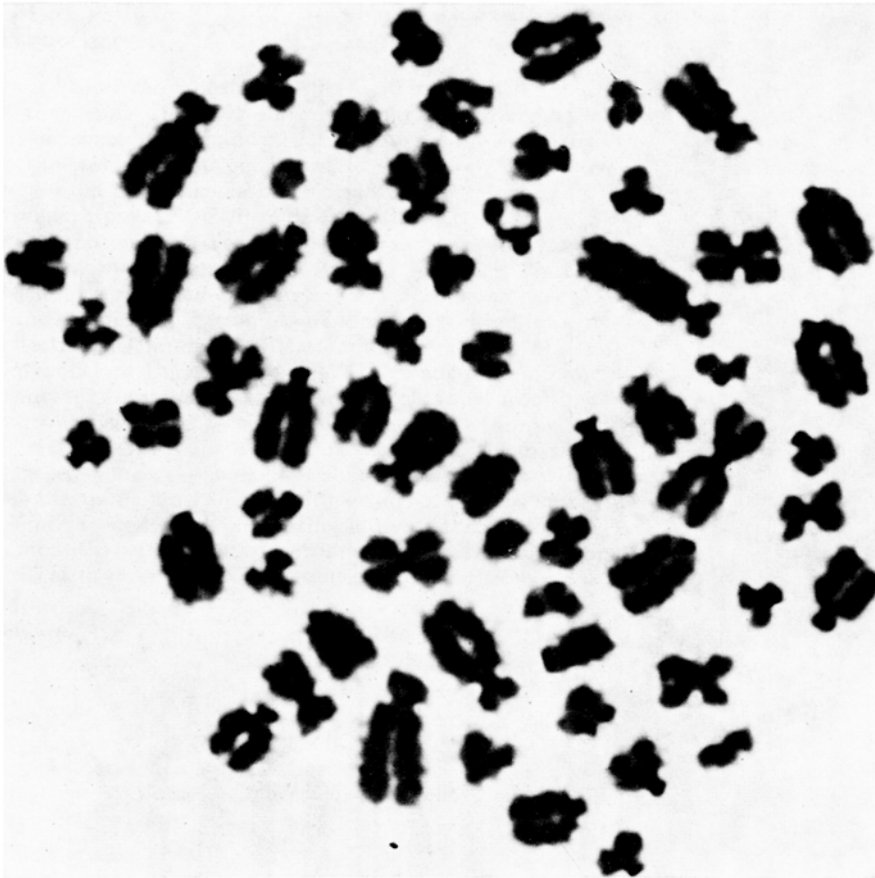


Fig. 4. Mitotic metaphase of *C. tuconax* ♂.

The Y is of the terminal type sensu stricto. The differences in chromosome number and structure between *C. latro* and *C. tucumanus* are conclusive to validate the taxonomic difference of both species, wrongly synonymized by CABRERA⁹, as a single subspecies of *C. mendocinus*.

Only 1 female individual of *C. occultus* was available for chromosome study (FCM-3345), providing 44 good cells from which 11 karyotypes were constructed. The provisional idiogram of this species is here advanced, in view of the extreme interest of its low chromosome number. It has $2N = 22$, an exceptionally low number for an eutherian mammal¹⁰. From the 11 pairs of chromosomes, 7 are metacentric (*m*) and 3 *sm*, only 1 pair, the fifth, being of *st*-type. We assume that the sexual pair is the seventh because of its similarity in relative size and centromeric position with the X of *C. latro*. It is to be noted that the differences in the chromosome set between *C. occultus* and *C. latro* are not as great as appears at first glance. One karyotype could be derived from the other through simple robertsonian mechanisms.

We also have data from one individual of *C. tuconax*, in this case a male (FCM-3343), affording 24 good metaphases (Figure 4) from which 4 karyotypes have been constructed. Here we have the odd situation of a consistently uneven number of $2N = 61$ in all the observed cells. Homologies are clear-cut among 30 pairs of chromosomes, most of them of the *t*- or *st*-type, with the exception of 6 pairs of the *m* or *sm* type. The only chromosome lacking a partner in all the observed cells is a large metacentric, very similar to the X of the other known species.

This suggests a sexual system of the type ♂ *XO*/♀ *XX*, but it is also likely that we are dealing with an individual anomaly. The problem will remain open until other specimens from both sexes can be studied.

Résumé. Les chromosomes de 4 espèces de rongeurs fouisseurs du genre *Ctenomys* de la Province de Tucumán, Argentine, ont été étudiés dans des cellules somatiques de la moelle osseuse. Le nombre diploïde est de 22 chromosomes dans *C. occultus*, de 28 dans *C. tucumanus* et de 42 dans *C. latro*. Un seul individu mâle de *C. tuconax* a présenté un complément de $2N = 61$.

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18 September 1967.*

⁹ A. CABRERA, Rev. Mus. argent. Cienc. nat. Bernardino Rivadavia, Inst. nac. Invest. Cienc. zool. 4, 309 (1961).

¹⁰ R. MATTHEY, Mamm. Chrom. News 14 (1964).