

SHORT PAPERS

Interspecific reciprocal hybrids between *Mesocricetus auratus* and *M. newtoni*

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Our previous research (Raicu & Bratosin, 1966; Raicu, Hamar, Bratosin & Borsan, 1967) has shown that the Romanian hamster (*Mesocricetus newtoni*, $2n = 38$) is a well-established species, differing considerably from the Syrian hamster and from other hamster species. The species is spreading in the south of Romania, especially in Dobrudja, and in Bulgaria. Its spreading area is completely isolated from the spreading area of all other species of *Mesocricetus*. The preferred biotops are uncultivated fields, dry steppes and fields cultivated with fodder plants. The Romanian hamster reveals important differences in the number and structure of the autosomes and in the degree of homology and presence of chiasmata in the heterosomes.

It has also been proved that the Romanian hamster is phylogenetically closer to the Syrian hamster than to other related hamster species (*Cricetus cricetus* and *Cricetulus griseus*). These discoveries have permitted us to obtain interspecific hybrids *M. auratus* × *M. newtoni*, which was previously unsuccessful (Marches, 1964).

For this purpose we performed reciprocal crosses between *M. auratus*, agouti type, and *M. newtoni*, but never obtained descendants. In subsequent experiments we used a partial albinotic mutant ($c^d c^d$) from the Syrian hamster (Robinson, 1957) as one of the parents. By this method we obtained positive results. Four females have given birth to twelve hybrid animals:

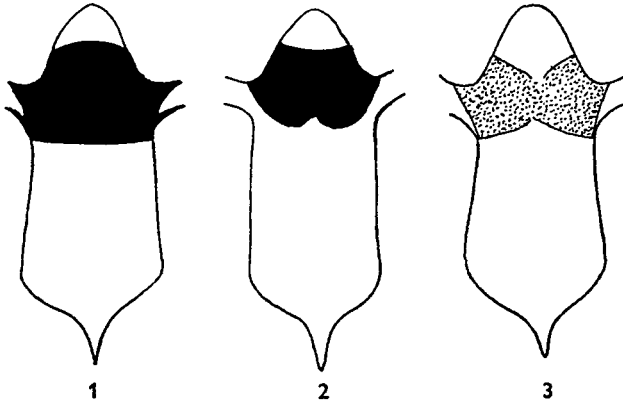
Hybrids	No. of animals per litter	
	Males	Females
<i>M. newtoni</i> ♀ × <i>M. auratus</i> ♂	1	1
$2n = 38$ $2n = 44$	2	—
<i>M. auratus</i> ♀ × <i>M. newtoni</i> ♂	3	1
$2n = 44$ $2n = 38$	4	—

Although mating is easily and repeatedly realized, fecundation takes place rarely, only after several months of cohabitation. A marked decrease in the number of descendants per litter was also noticed (from 6–10 in the parent species, to 2–4 in hybrids). The fur of hybrid animals is very much like that of the agouti type in the Syrian hamster, with the only difference that the fur of the young hybrid animals is less reddish than in the Syrian hamster. While the fur of the sternal strip in the Syrian hamster (agouti) is ash-grey, in hybrids it is blackish as in *M. newtoni* but narrower (Text-fig. 1).

Temperamentally the hybrids are closer to the Syrian hamster, lacking the liveliness and nervousness of the Romanian hamster.

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The study of karyotype performed on bone marrow in three hybrid animals (two females and one male) *M. newtoni* ♀ × *M. auratus* ♂, according to the method of Ford & Hamerton (1956) modified by us, shows that the hybrids have an intermediary modal number of chromosomes ($2n = 41$). Taking into account the karyotype differences between the two parent species, we have obtained a karyogramme of the hybrid (Plate 1, figs. 1, 2).



Text-fig. 1. Sternal strips in Romanian hamster (1), Syrian hamster (3) and interspecific hybrid (2).

Due to the fact that the two parent species are morphologically and genetically well differentiated, the hybrids are completely sterile. The study of reductional division in a male has shown that a few cells reached metaphase I. These were observed to contain forty-one univalents (Plate 2). No spermatids were seen. No attempt was made to find and study earlier meiotic stages.

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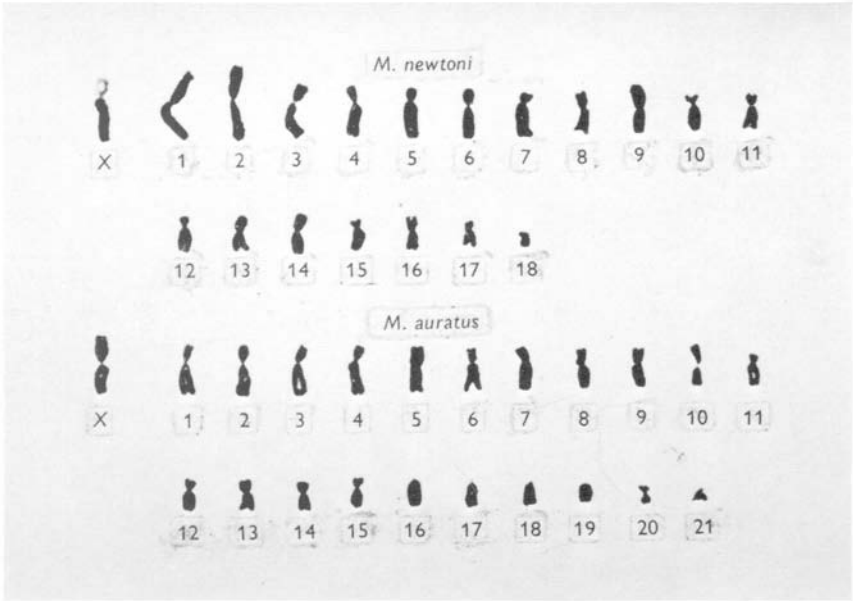


Fig. 1. Female karyotype in *Mesocricetus newtoni* ♀ × *M. auratus* ♂ hybrid.

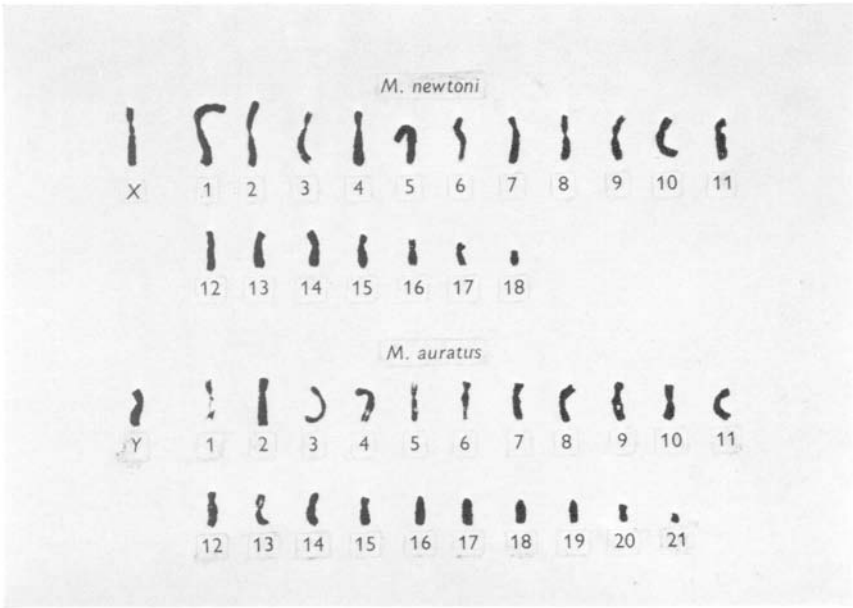
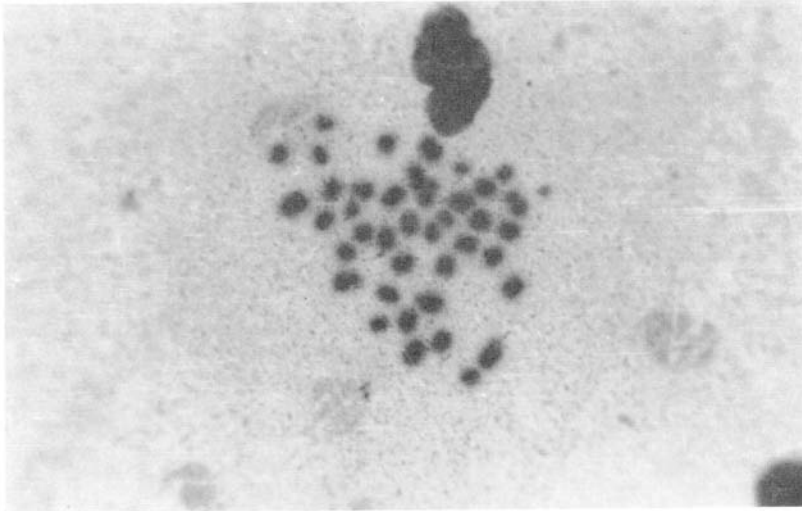


Fig. 2. Male karyotype in *M. newtoni* ♀ × *M. auratus* ♂ hybrid.



Reductional division in a hybrid male with forty-one univalents in metaphase I.

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