

染色体数40のセイロン島産クマネズミ

誌名	The Japanese journal of genetics
ISSN	0021504X
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巻/号	47巻6号
掲載ページ	p. 451-454
発行年月	1972年12月

SHORT COMMUNICATION

CEYLON POPULATION OF BLACK RATS WITH 40 DIPLOID CHROMOSOMES¹⁾²⁾

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Received November 30, 1972

It has already been reported by us that the black rat (*Rattus rattus*) collected in East and Southeast Asia had $2n=42$ (Asian type), while those collected in Oceania (Australia, New Zealand and New Guinea) showed $2n=38$ (Oceanian type) (Yosida *et al.* 1965, 1969, 1971a). The latter type has also been observed in South America (Bianchi *et al.* 1969), North America (Davis and Baker 1972), Europe (Capanna *et al.* 1970) and Africa (Badr and Badr 1970). On the relation between the karyotype of Asian and Oceanian type black rats we (Yosida *et al.* 1969, 1971b, 1972) suggested that the Oceanian type black rats should have developed through Robertsonian fusion of four pairs of acrocentric chromosomes in the Asian type, and the former occurred during the migration of the rat from Southeast Asia to Europe. Moreover, Yosida *et al.* (1971b) predicted that the black rat with 40 chromosomes among which only one large metacentric pair has developed by Robertsonian fusion of two acrocentric pairs in the Asian type might be found in somewhere in the world as a transient type in the evolution from Asian to Oceanian type black rats.

The animals with 40 chromosomes involving one large metacentric pair were actually observed in Ceylon island. The present paper deals with the preliminary note on the chromosome survey of the Ceylon population in the black rats.

MATERIALS AND METHODS

Ten black rats, *Rattus rattus*, were collected in the houses of Kandy, Sri Lanka (Ceylon) in October, 1972. The chromosomes of bone marrow cells in femur were observed by the routine technique already described (Yosida *et al.* 1971a, 1972).

RESULTS

All 10 black rats collected in Kandy, Ceylon, showed uniformly 40 chromosomes.

1) Contribution No. 804 from the National Institute of Genetics, Japan.

2) Supported by a grant-in-aid from the Ministry of Education of Japan (Scientific Expedition in 1972: No. 744002 and No. 730822).



Fig. 1. Metaphase chromosomes of the black rat, *Rattus rattus*, collected in Ceylon island. Arrows indicate large metacentric chromosomes. $2n=40$.

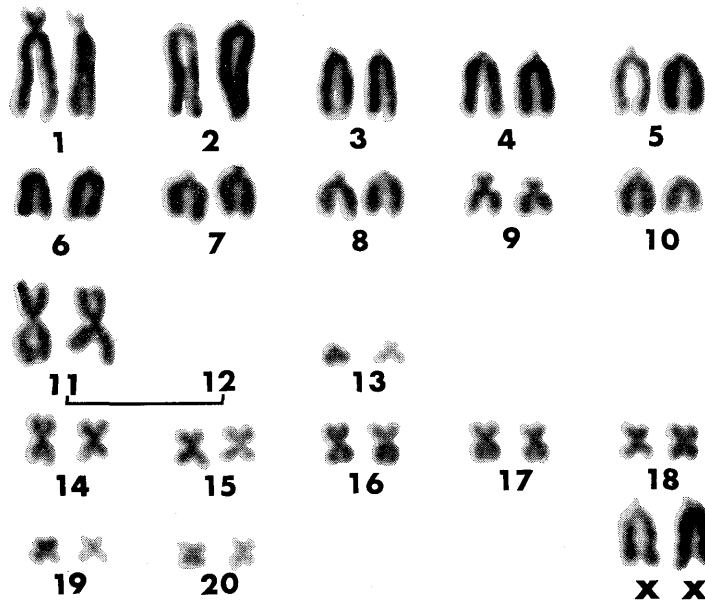


Fig. 2. Idiogram analysis from the metaphase cell shown in Fig. 1. Large metacentric chromosome pair seems to be developed by Robertsonian fusion of acrocentric pairs No. 11 and 12 in the Asian type black rat.

Among them one large metacentric chromosome pair was always observed. Based on the karyotype analysis the metacentric pair seems to have arisen through Robertsonian fusion of pairs No. 11 and 12. This pair is very similar to the M_2 pair (Yosida *et al.* 1971b) in the Oceanian type black rats in terms of its size and arm ratio. The larger metacentric pair (M_1) seen in Oceanian type black rats, which developed by fusion of pairs No. 4 and 7, was never observed in these rats.

Pairs No. 1 and No. 9 in the Ceylon rats were usually submetacentrics and the pair No. 13 was acrocentric as similar to the Oceanian type black rats. Seven small auto-some pairs were metacentric and X and Y were acrocentric as similar to the other black rats.

REMARKS

F_1 hybrids between Asian and Oceanian black rats had 40 chromosomes in diploid number, but the karyotype was usually a composite consisting of two genomes of Asian and Oceanian black rats. F_2 rats obtained from F_1 hybrids in the laboratory and in natural population in Eniwetok island had $2n=39$. The chromosome number of all Ceylon black rats was 40 and the karyotype was well balanced consisting of all homozygous pairs. The karyotype of the Ceylon black rats with one large metacentric pair developed by Robertsonian fusion of pairs No. 11 and 12 should be a transient type from Asian to Oceanian black rats and by the following Robertsonian fusion of pairs No. 4 and 7 the Oceanian type black rat with $2n=38$ could occur somewhere in the Southwest Asia, and then they migrated to Europe as we already suggested (Yosida *et al.* 1972).

ACKNOWLEDGMENT

The authors wish to express their sincere thanks to Dr. H. E. Fernando, Central Agricultural Research Institute, Peradina, Sri Lanka (Ceylon), for his kind help to collection of the animals.

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