Chromosome Complement of Tenrecs, *Centetes** *ecaudatus* (Order Insectivora, Class Mammalia)

The family Tenrecidae is endemic to the island of Madagascar. More than any other family of the diverse order Insectivora, adaptive radiation occurred in many ecological zones. The relatively limited geographic distribution of the family on an island that is so rich in floral communities lends itself to phylogenetic studies of these primitive taxa.

The Tenrecidae include 10 genera and about 30 species (SIMPSON[1]). Adaptations to fossorial, aquatic and arboreal life have arisen. The characters that distinguish the Tenrecidae from other families of the Insectivora are based primarily on skeletal anatomy (MCDOWELL[2]). Comparative behavior and phylogeny have been discussed briefly by EISENBERG and GOULD[3].

Ecologically, *Centetes* is the most generalized member of the family judging from its omnivorous food habits and its distribution, which ranges from the eastern mountain belt of the rain forest to the arid regions of the southwest. It is, furthermore, the largest of all living insectivores. Litter sizes are up to 22 and embryo counts up to 32.

Cytological studies among the insectivores have been concerned with the families Talpidae, Soricidae, Macroscelidae and Erinaceidae (BOVEY[4], MATTHEY[5], SHARMAN[6], FORD and HAMERTON[7], MEYLAN[8]). In the last decade, improvement in the techniques for studying mammalian chromosomes has given great impetus to mammalian cytogenetics as is illustrated by the recent advances in human cytogenetics and work on other primates (BENDER and CHU[9]). We report here the first chromosome count for the family Tenrecidae.

* Skin fibroplast cells were cultured from *Centetes ecaudatus* (Animal No. 2). These cells gave a count of 38 chromosomes. Using the same techniques as above, whole blood cultures of the related tenrec, *Hemicentetes semispinosus* G. Cuvier, were counted. Preliminary studies indicate 38 chromosomes for this species.

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[7] C. E. FORD and J. L. HAMERTON, Nature *177*, 140 (1956).
[8] A. MEYLAN, Exper. *21*, 268 (1965).
[9] M. A. BENDER and E. H. Y. CHU, in *Evolutionary and Genetic Biology of the Primates* (Ed., J. BUETTNER-JANUSCH; Academic Press, New York 1963), vol. 1, p. 261.

Distribution of chromosome numbers in the metaphases analyzed in blood cells of tenrecs *Centetes ecaudatus*

Animal No.	Sex	Chromosome numbers							
		35	36	37 with Y	37 without Y	38	38 + f	39 + f	4n
1	Female				1	38			2
2	Female		3			24	2		2
3	Male		1	2		27			
4	Male			9	4	32			1
5	Male	1	1	4	3	24			
6	Male		1		4	26			1
7	Female				1	38	4	1	2

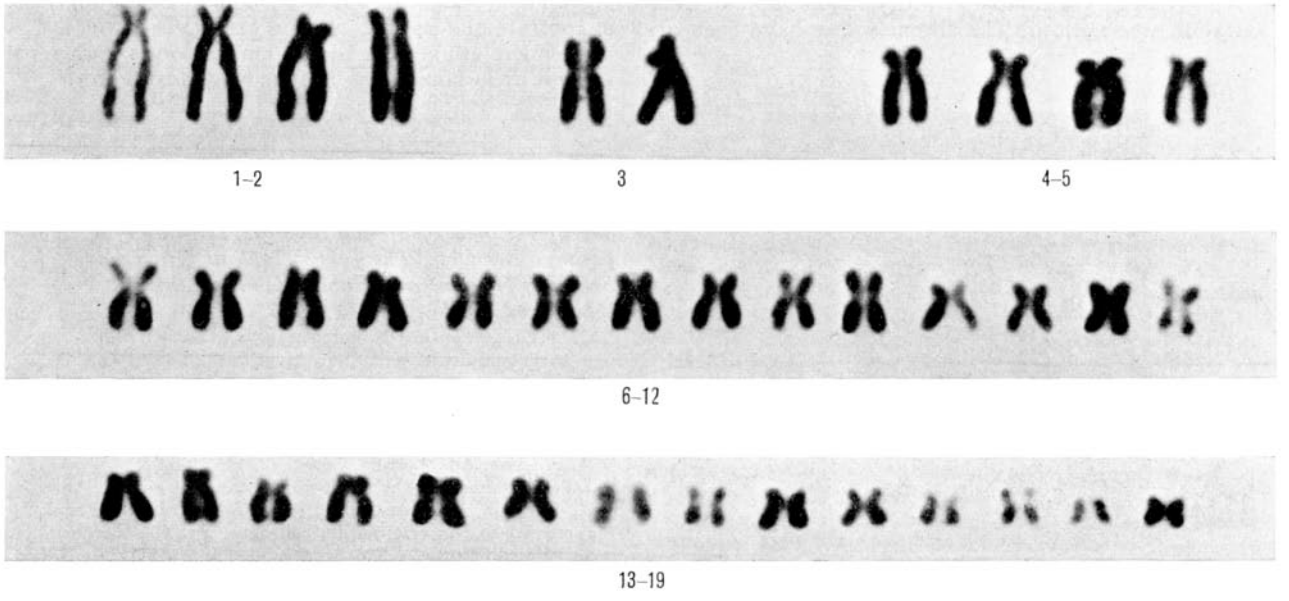

Fig. 1. Karyotype of a female Tenrec, *Centetes ecaudatus*, from a blood cell with a count of 38 chromosomes.

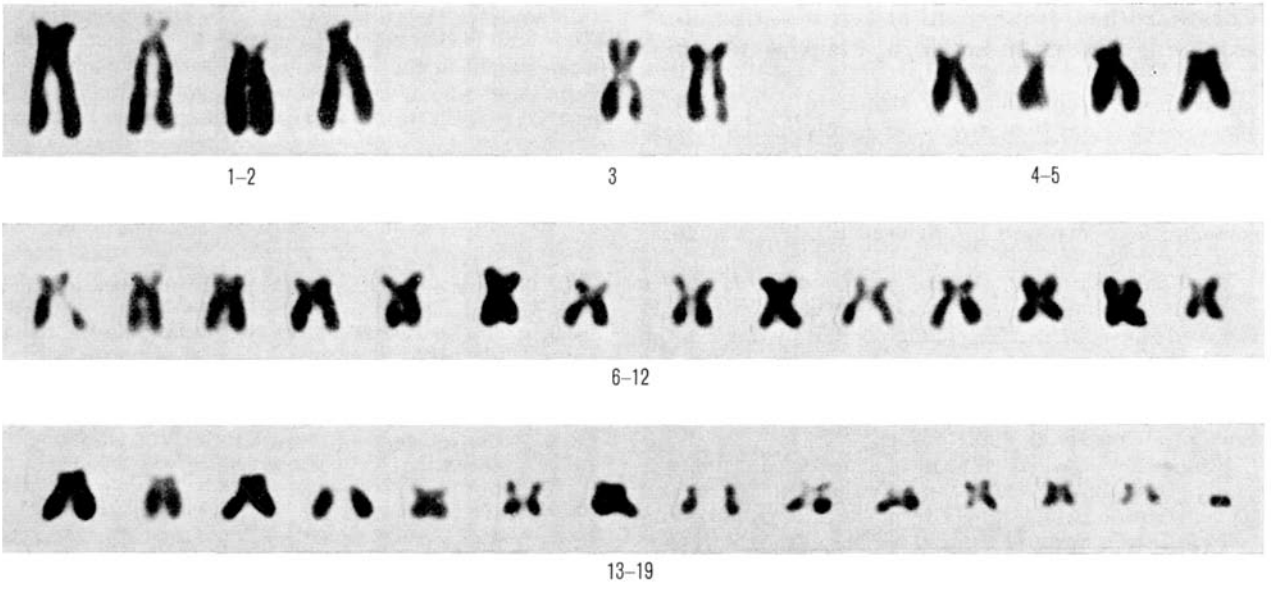

Fig. 2. Karyotype of a male Tenrec, *Centetes ecaudatus*, from a blood cell with a count of 38 chromosomes. The last chromosome is a very small acrocentric one and we believe it to be the Y chromosome.

3 female and 4 male tenrecs (*Centetes ecaudatus* Schreber) were available for cytological study. All animals were collected in the vicinity of Perinet, Madagascar (18° 54′ S, 48° 24′ E). From each of the six animals a few drops of whole blood were obtained by cutting off a toe and placing the blood in 1 oz bottles, containing 8 ml of Medium 199 (Microbiological Associates), 4 ml of inactivated fetal bovine serum, 0.3 ml Difco phytohemagglutinin and 0.2 ml of heparin. From one animal, blood was drawn into a heparinized syringe. The cultures were incubated for 55 to 72 h at 37.4°C and 0.025 ml of colchicine (40 mg/ml) was added 3 h prior to harvesting. Hypotonic treatment and other harvesting procedures were the same as for human chromosomes (MOORHEAD et al.[10]). Slides were stained with 2% aceto-orcein.

Chromosome counts and karyotypes are presented in the Table and Figures 1 and 2. The karyotypes of the seven animals were compared with one another and little variation was noticed. The chromosomes have been arranged according to length and arm ratio as has been done with the chromosomes of man and other mammalian species. The diploid chromosome number is 38 and the sex determining mechanism seems to be XX female and XY male. Sex chromatin body was observed in buccal mucosa cells of the females (Figure 3) and was not found in similar cells of the males. This finding suggests that the Lyonization phenomenon (LYON[11]) occurs in this mammal. However, sex chromosome trivalents have been observed in other insectivore species (BOVEY[4], SHARMAN[6]) and the sex determining mechanism may be different. BOVEY[4] and SHARMAN[6], independently, reported XX chromosomes for the female and XY_1Y_2 in the male common shrew (*Sorex araneus*)[12].

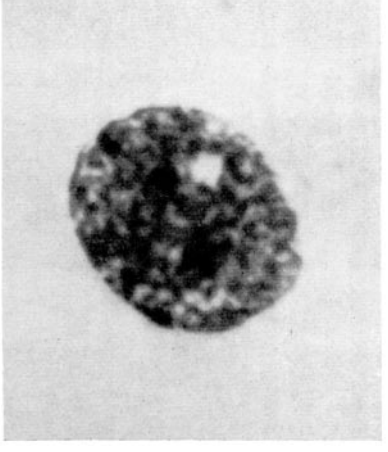

Fig. 3. Sex chromatin body in a buccal mucosa cell at 7 o'clock position of a female Tenrec, *Centetes ecaudatus*.

Résumé. Dans les leucocytes en culture de 7 Tenrecs *Centetes ecaudatus* (4 mâles et 3 femelles) provenant de la République Malgache, l'auteur a compté 38 chromosomes et constaté que les sexes ont un caryocyte distinct. C'est la première étude faite sur les chromosomes d'un représentant de la famille des Tenrecidae (Insectivores).

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