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Karyotype of the East European hedgehog, *Erinaceus concolor*, from Jordan

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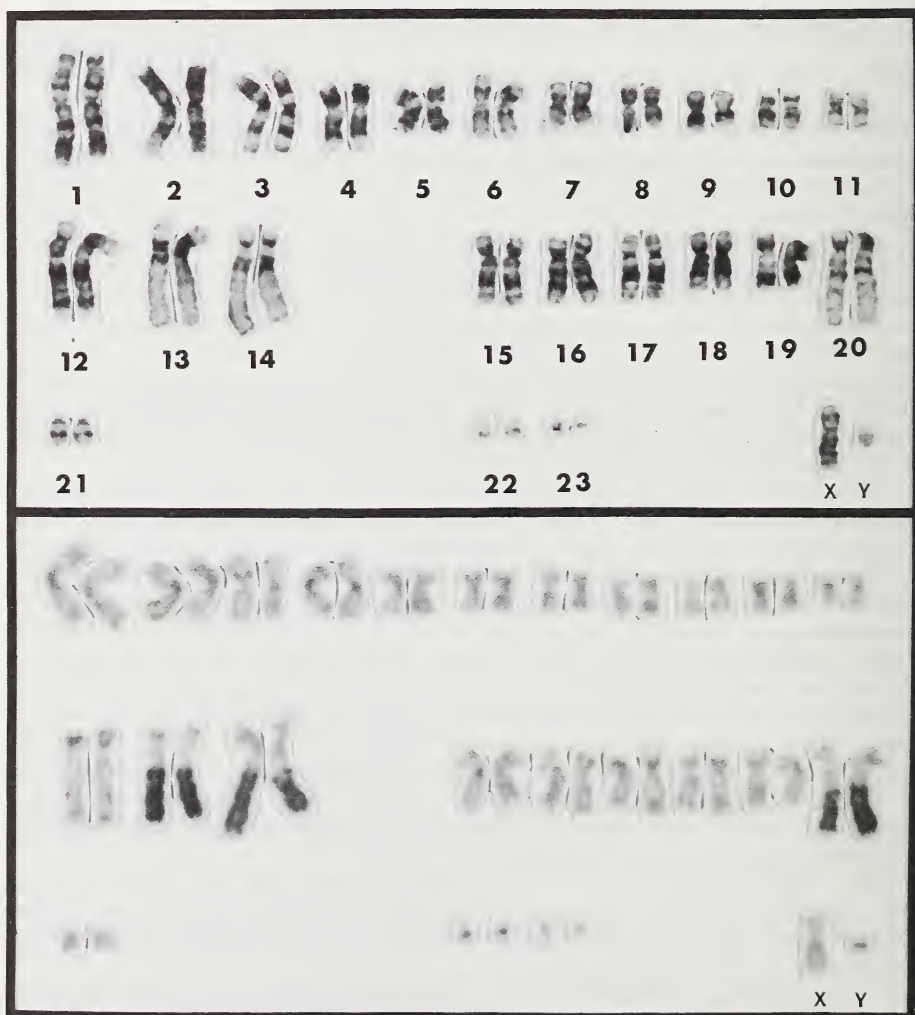
The European hedgehog, *Erinaceus europaeus*, was recognized as a single, highly polymorphic species with several subspecies (ELLERMAN and MORRISON-SCOTT 1951). Introduction of new karyological techniques revealed differences between these populations in heterochromatin distribution (GROPP 1969; GROPP et al. 1969) that were otherwise unnoticed by conventional techniques (KRAL 1967). After the introduction of the simplified C-banding technique, MANDAHL (1978) demonstrated species-specific differences between the Eastern and Western European forms of the hedgehog. Multivariate analyses also document differences in skull morphology with few intermediate backcross hybrids seen in Poland and the former Silesia (HOLZ 1978). However, as pointed out by the latter author, the earliest available names for these two species are: 1. *Erinaceus europaeus* described by Linnaeus (1758, Syst. Nat., 10th ed., p. 52) from Wamlingbo, South Gothland Island, Sweden, and 2. *Erinaceus concolor* Martin (1918, Proc. Zool. Soc. Lond., p. 103) described from near Trebizond, Turkey.

The European hedgehog (*Erinaceus*) is represented by a single species in the Near East. It can be distinguished from the other hedgehogs by its large size (head and body length ranges from 200–260 mm in adults with skull length over 55 mm), relatively short ears, and lack of a dorsal bare patch on the nape (HARRISON 1964). THOMAS (1918) reported a specimen from “near Jerusalem” which he described as a separate subspecies: *E. roumanicus sacer*. Based on geographical and morphological considerations HARRISON (1964) and ATALLAH (1977) allocated the Eastern Mediterranean forms to the synonymy of *E. europaeus concolor*. As pointed out by HOLZ (1978), although the differences between *E. europaeus* and *E. concolor* are significant in populations studied from Europe, there is potentially a third form (perhaps *E. roumanicus*) found in Romania and Bulgaria. I report on the G- and C-banded karyotypes of *Erinaceus* from Jordan and comment on the status of this group in the Near East. This study is intended to demonstrate that the Jordanian *Erinaceus* is indeed *E. concolor* and to compare the karyotype of the Jordanian hedgehog with that of the East European hedgehog.

Ear and lung biopsies were taken in the field from a male captured in Jbeihah, Jordan. The establishment of cell culture, harvest, slide preparation and banding techniques follow those of BAKER and QUMSIYEH (1988). Five G-banded and five C-banded metaphases were photographed and karyotypes prepared.

G-banded and C-banded karyotypes of *Erinaceus* from Jordan arranged and numbered as suggested by MANDAHL (1978) show complete homology for all chromosomes when comparing the G-band pattern to those specimens karyotyped from eastern Europe. The large blocks of heterochromatin in my specimen are also situated on chromosome numbers

13, 14 and 20 as can be seen from comparison of the G- and C-banded karyotypes (Fig.). Other chromosomes do not show any heterochromatic blocks. In all these karyotypic characteristics, the Jordanian specimen clearly resembles *Erinaceus concolor* (the Eastern European hedgehog) rather than *E. europaeus* of western Europe. It is indeed remarkable that no significant difference could be detected between the karyotypes of the specimen from Jordan and some karyotypes of *E. concolor* described from such distant countries as Greece (GIAGIA and ONDRIAS 1980) and Poland (MANDAHL 1978). A recent study by GRAFODATSKI et al. (1986) on *E. concolor* reveals that these C-band positive heterochromatic regions consist of highly repetitive DNA. It is tempting to speculate that there is a functional significance to the karyotypic uniformity of heterochromatin distribution in *Erinaceus concolor* or that heterochromatic additions played a role in speciation in European hedgehogs (GROPP et al. 1969).



G-banded (upper) and C-banded (lower) karyotypes of *Erinaceus concolor* from Jordan arranged and numbered as suggested by MANDAHL (1978)

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References

- ATALLAH, S. I. (1977): The mammals of the Eastern Mediterranean region: their ecology, systematics and zoogeographical relationships. Part 1. Säugetierkdl. Mitt. 25, 241–320.
- BAKER, R. J.; QUMSIYEH, M. B. (1988): Methods in chiropteran mitotic chromosomal studies. In: Ecological and behavioral methods for the study of bats. Ed. by T. H. KUNZ. Washington DC: Smithsonian Inst. Press. 425–435.
- ELLERMAN, J. R.; MORRISON-SCOTT, T. C. S. (1951): Checklist of Palearctic and Indian Mammals, 1758 to 1946. London: The British Museum.
- GIAGIA, E. B.; ONDRIAS, J. C. (1980): Karyological analysis of eastern European hedgehog, *Erinaceus concolor* (Mammalia, Insectivora) in Greece. Mammalia 41, 59–72.
- GRAFODATSKII, A. S.; LUSHNIKOVA, T. P.; ROMASHCHENKO, A. G.; RADZHABLI, S. I. (1981): Cytological localization of repetitive DNA sequences in the chromosomes of 3 mammalian species. Genetika 17, 1983–1987.
- GROPP, A. (1969): Cytologic mechanisms of karyotype evolution in Insectivores. In: Comparative Mammalian Cytogenetics. Ed. by K. BENIRSCHKE. New York: Springer-Verlag. Vol 1, 247–266.
- GROPP, A.; CITOLER, P.; GEISLER, M. (1969): Karyotypvariation und Heterochromatinmuster bei Ingeln (*Erinaceus* und *Hemiechinus*). Chromosoma 27, 288–307.
- HARRISON, D. L. (1964): The mammals of Arabia, Vol. I: Introduction, Chiroptera, Insectivora, Primates. London: Ernest Benn Ltd.
- HOLZ, H. (1978): Studies on European hedgehogs. Z. Zool. Syst. Evolut.-forsch. 16, 148–165.
- KRAL, B. (1978): Karyological analysis of two European species of the genus *Erinaceus*. Zool. Listy 16, 239–252.
- MANDAHL, N. (1978): Variation in C-stained chromosome regions in European hedgehogs (Insectivora, Mammalia). Hereditas 89, 107–128.
- THOMAS, O. (1918): The hedgehogs of Palestine and Asia Minor. Ann. Mag. Nat. Hist. (IX)2, 211–213.

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