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KARYOTYPE ANALYSIS OF *VULPES VULPES* (COMMON FOX) OF IRAN*

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There is but little data in the literature, concerning fox karyotype, and chromosome structure of various species of this animal living in different spots of the world.

According to scattered studies so far made, it so appears that almost every investigator has come out with a new finding, so that with respect to the diploid number, figures as low as 34 (Andres 1938) are reported, along with the high number of 2n = 72 as reported by Hsu and Arrighi in 1969.

The most recent work by Konstatinova and Kasabov (1972) from Bulgaria presents a peculiar finding in the karyotype of a 6-month-old female fox (species not reported), as studied by these authors. They have come across a rather unusual aneuploidy, which accounts for variable diploid numbers of 35, 37, 38, 39, 70, 72, 75, and 166, which according to their interpretation, may explain for the errors of the previous workers in the field.

The present communication however concerns itself with the chromosomes of common fox, *Vulpes vulpes* of Iran. A total of seven individuals-three males and four females-were examined, all of which have led to the same findings, as demonstrated in the accompanying karyotype.

The animals were kindly identified by Dr.E.Etemad, professor of zoology at the Veterinary School of the University of Tehran. Two ml blood drawn from each individual, were transferred into a heparinized tube under sterile conditions. O.5 ml of the whole blood were then added into sterile screw capped 10 ml flask, containing 4.5 ml Basal Madium Eagle (GIBCO), and 0.2 ml Phytoheamagglutinine.

Douplicate culture vials were then treated with colchicine (final concentration 10 ug/ml), after 48 and 72 hours of incubation, to arrest divisions at mitosis.

* Authorized reproduction of the karyotype from: An Atlas of Mammalian Chromosomes, Vol. 8, Folio 380, 1974.

Kidney cell culture was also made in most cases to verify the results obtained by blood lymphocyte culture. The two different culture systems lead invariably to identical findings with respect to the rumber and structure of the chrtomosomes studied

The method employed for chromosome preparation was essentially that of Hungerford, except that the slides were air dried according to the procedure outlined by Harnden and Brunton.

As demonstrated in the accompanying karyotype, the diploid number of *Vulpes vulpes* is 2n=36 that are tabulated and identified asfollows:

AUTOSOMES: 32 Metacentrics and sumbetacentrics, and
2 Small acrocentrics.

SEX CHROMOSOMES: X Submetacentic,
Y Acrocentric.

The X chromosome is identifiable because it is the largest chromosome with highly unequal arm ratios. The identification of the Y is subjective, because of the fact that the two "microchromosomes -like autosomes are of similar size. It is also questionable whether the Y is biarmed. The arrangement of the karyotoype is based merely on size as well as centromeric index of the chromosomes.

By chromosome morphology alone, it is difficult to establish homology between the karyotype of *Vulpes fulva* (T.C.Hsu, 1973), and *Vulpes vulpes* although they appear similar. Perhaps in the future G-banding can be used to compare the chromosomes of these species.

There has been only one case (female) with 38 chromosomes, including two additional microchromosomes. This individuals was also identified as *Vulpes vulpes* and bacause of the limited number of animal analyzed it is difficult to comment on this (sub) species, at the moment. The animals reported herewith, were captured in the vicinity of the Razi State Instiute, Hessarak, Karadj, IRAN.

REFERENCES

Andres, A.H.: On the chromosome complex in several canidae. Cytologia **9**, 35 (1938).

Hungerford, D.A.: Leukocytes cultured from small inocula of whole blood and the preparation of metaphase chromosomes by treatment with hypotonic KCl; Stain Tech., **40**,333 (1965).

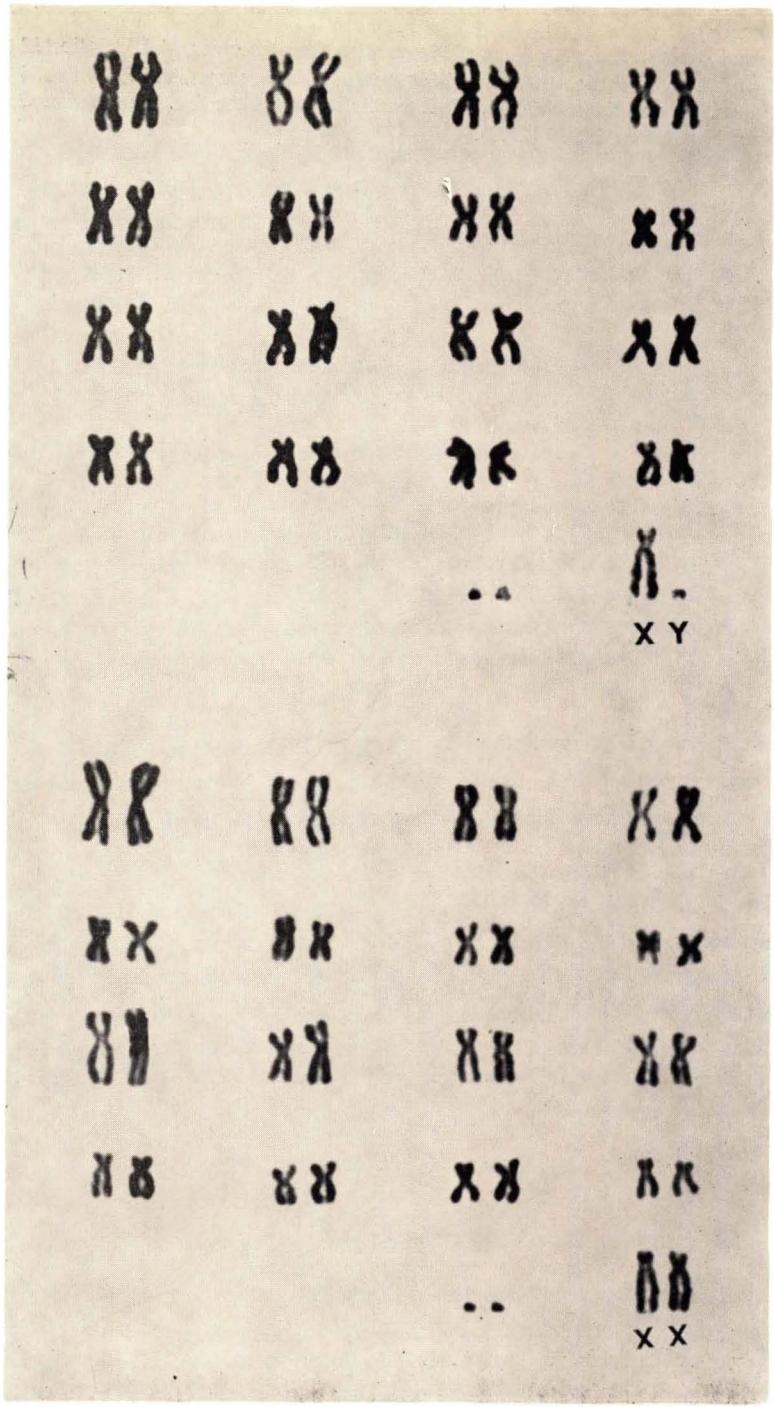
Harnden, D.G. and Brunton, S.: The skin culture technique. In:

Yunis, J.J., Ed. Human Methodology, PP.57–73. Academic Press Inc. New York and London.

Hsu,T.C., and Arrighi, F.E.: An At as of Mammalian Chromosomes, Vol.3, Folio 122 (1969).

Hsu,T.C., and Arrighi, F.E.: An At as of Mammalian Chromosomes, Vol.7, Folio 334 (1973).

Konstantinova, B., and Kasabov, L.L.: Cytogenetic studies in the fox. Mammalian Chromosomes Newsletter, **13,** 78 (1972).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