A Chromosome Study of the Wild Pig (*Pecari angulatus*)
and the Domestic Pig (*Sus scrofa*)

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Received October 25, 1955

This study was done to determine the feasibility of an attempted cross between the wild pig indigenous of this country and the domestic pig. This cross was suggested as a possible method of introducing new blood into our domestic breeds of pigs.

PART I

The chromosome complex of the

*Pecari angulatus*

The *Pecari angulatus*, more commonly known as the peccary or javelina, is a common inhabitant of Southwest Texas, Southeast New Mexico, and Southern Arizona. The *Pecari tayusea* is closely related to the *Pecari angulatus*, but its range is from Central America to Paraguay. The only study on the chromosome number of the peccary was reported by Krallinger (1936) on the *Pecari tayacu*¹. He observed the diploid chromosome number of this species to be 30, and did not find heterosomes of the X-Y type of sex chromosomes usually observed in mammals.

Materials and methods

Material for the present study was obtained from the testes of three sexually mature peccary boars of unknown age. The animals were obtained on the King Ranch, in Texas, with the permission of Mr. R. M. Kleberg, Jr., and the cooperation of the Texas Game, Fish and Oyster Commission. The animals were shot and testicular material was removed and fixed immediately in acetic alcohol (1:3). After fixation, small pieces of the testis were placed in aceto-carmine, individual seminiferous tubules were teased out and a smear preparation was made after the method of Painter (1938).

Observations

Metaphase chromosomes were counted and observations of all fields observed gave 30 as the number of chromosomes in the diploid complex. The small number of chromosomes aided materially in obtaining preparations of spermatogonial cells whose component parts were clearly visible in one focal

¹ Same species as the *Pecari angulatus*.
plane. Since the chromosomes could be well separated within the cell by the method used, their morphology as well as the number could be readily established.

Figs. 1-6. Aceto-carmine preparation of the spermatogonial metaphase of the Pecari angulatus showing 30 chromosomes in the diploid complex. Note two large pairs, one V-shaped and one rod-shaped (2000 ×). 2. Camera lucida drawing of Figure 1. 3. Pecari angulatus chromosomes from a spermatogonial cell photograph arranged in pairs according to size. (2000 ×). 4. Aceto-carmine preparation of the spermatogonial metaphase of Sus scrofa. (1650 ×). 5. Camera lucida drawing of Figure 4. 6. Sus scrofa chromosomes from a spermatogonial cell photograph arranged in morphological pairs (1650 ×).
The chromosomes pairs fall into four general groups. Two large pairs were observed, one of these was a metacentric V-shaped pair and the other one was a long subtelocentric pair. Six pairs of metacentric U-shaped chromosomes and seven pairs of small dot-like chromosomes made up the remainder of the complex. No heteromorphic pair of the X-Y type was observed, but this may be due to the fact that there is very little size difference in the smaller chromosome group. This absence of a heteromorphic pair was also reported by Krallinger (1936).

The presence of only two pairs of large chromosomes which are easily identified and the small number of chromosomes in the diploid chromosome complex make this mammal well adapted for cytological studies on normal as well as experimentally treated animals.

**Summary and conclusions**

Testicular material from the *Pecari angulatus* was fixed in acetic-alcohol (1:3), and studied after the method described by Painter (1938).

The chromosome number in the diploid complex was found to be 30 (figures 1, 2, and 3). One large pair of V-shaped chromosomes and one large pair of rod-shaped chromosomes were easily distinguished in all observable fields. The rest of the complex was much smaller, and in general diminished in size in a uniform manner.

No heteromorphic chromosome pair was observed which could be identified as the X-Y sex pair.

**Bibliography**


**PART II**

The chromosome complex of the domestic pig

*Sus scrofa*

The chromosome number of the domestic pig has been reported by several investigators (Bryden 1933, Hance 1917, Krallinger 1931, Makino 1944 and Wodsedalek 1913). The observations of these workers are not in complete agreement and the chromosome numbers reported vary from 18 to 40 in the diploid complex. This study was done to establish the number of chromosomes in the diploid complex of the germ cell of the male pig (*Sus scrofa*), and to compare the number and morphology with that of the wild pig (*Pecari angulatus*).
Materials and methods

Testicular material for this study was obtained from Chester White, Poland China, Duroc Jersey, and Hampshire boars. Small pieces of testicular material were fixed in acetic-alcohol (1:3), stained in aceto-carmine, and studied as whole mount smears as described by Painter (1938).

Observations

The diploid number of chromosomes in the germ cell preparations was found to be 40. Several observations of germ cells with all of the chromosomes in the same focal plane were made, and this number was constant. These findings are in agreement with Hance (1917), and Makino (1944).

When the chromosomes of the diploid complex were paired, 38 were found to be quite easily paired, but the remaining 2 chromosomes were heteromorphic (figure 6). The heteromorphic pair is assumed to be the X-Y sex complement of the chromosome complex.

The morphology of the chromosomes falls into four groups; telocentric, subtelocentric, metacentric, and spherical or dot-like. The latter may actually belong to one of the other groups, but they were so short and darkly stained that they appeared as a separate morphological type.

Summary and conclusions

The chromosomes of the domestic pig (Sus scrofa) were studied into aceticarmine as whole mounts.

The diploid chromosome number of the male germ cell was observed to be 40.

The diploid complex of Sus scrofa was found to be 10 more than that of Pecari angulatus, and the morphology of the chromosomes of the two animals differed greatly.

The possibility of a successful cross between Sus scrofa and Pecari angulatus based on the chromosome picture is extremely doubtful.

Bibliography