Acta vet. scand. 1970, *11*, 136—137.

Brief communication

LINKAGE BETWEEN THE H AND 6-PGD LOCI IN PIGS*)

The designation H stands for a blood group system and its corresponding chromosomal locus in pigs. The system includes multiple alleles, but merely two of these, H^a and H^c, were involved in the present investigation. The two alleles are co-dominant and form a closed system in the Duroc breed (*Andresen* 1963, 1964). The results of the present study using pigs of the Danish landrace breed and particularly the Duroc breed have shown that electrophoretic variants of the enzyme 6-phosphogluconate dehydrogenase (6-PGD) in the erythrocytes likewise are determined by two alternative alleles, *A* and *B*, in pigs of both breeds. Thus, in agreement with observations by *Saison* (1968), who studied various other breeds and their crosses, three electrophoretic patterns were observed among the pigs studied. The three patterns or types appear as bands in the starch-gel after the addition of substrate. They are designated as A, AB and B. They correspond to the genotypes *AA*, *AB* and *BB*.

The genetic linkage was established by examining all double backcross matings recorded. A double backcross mating is one in which one parent is doubly heterozygous, e.g. H^aH^c, *AB*, and the other is doubly homozygous at the same loci, e.g. H^cH^c, *BB*. A total of nine double backcross matings with 59 offspring were observed when the H and 6-PGD systems were considered jointly. The nine litters were delivered by nine different sows and sired by six different boars; one boar had sired three litters. The phenotypes of the offspring gave strong evidence of close linkage between the H and 6-PGD loci. The 59 offspring comprised two ostensible recombinants and 57 non-recombinants. Since the single factor segregations were in agreement with the 1:1 a priori expectation, the odds for the detection of linkage are extremely high. Thus, linkage has been established and the estimate of the recombination frequency is 2/59 or 3.4 %. This linkage represents the fourth case of close autosomal linkage discovered in pigs (*Andresen* 1968).

*) Supported by a grant from Statens jordbrugs- og veterinærvidenskabelige Forskningsråd.

I thank Mrs. Inger Hvidtfeldt Christensen and Miss Anna-Lise Poulsen for excellent assistance.

Erik Andresen
The Department of Animal Genetics,
Royal Veterinary and Agricultural University,
Copenhagen, Denmark.

REFERENCES

Andresen, E.: A Study of Blood Groups of the Pig. Thesis. Munksgaard, Copenhagen 1963.

Andresen, E.: Further studies on the H blood group system in pigs with special reference to a new red cell antigen H_c. Acta genet. (Basel) 1964, *14*, 319—326.

Andresen, E.: Sequential analysis of genetic linkage in pigs. Kgl. Vet.- og Landbohøjsk. Årsskr., Copenhagen 1968, 1—11.

Saison, R.: Serum and red cell enzyme systems in pigs. XI Conf. Europ. Soc. Blood Group Res., Warsaw 1968.

(Received February 24, 1970).