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Parentage Analyses on Foals Resulting from Transplantation of Fertilized Ova

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Foals resulting from experimental transplantation of fertilized ova were evaluated by appropriate parentage analyses using blood typing tests and electrophoretic tests.

Materials and Methods

The transplantation experiments were performed by N. OGURI & Y. TSUTSUMI (1973).

In all, 13 experimental horses were used: One stallion, 4 donor mares and 3 recipient mares were of the Hokkaido native pony breed. The remaining mare (#8 in Table 1) was a crossbred.

Blood typing tests were carried out in accordance to methods described in a previous report (1970). Albumin (Alb) & transferrin (Tf) types were determined according to the methods described by SCOTT (1970). Esterase (Es) types were determined according to SCOTT's method (1972) and stained according to GAHNE's method (1966).

Results

The complete test results on the 13 experimental animals are shown in Table 1.

In Set I the dam of foal 9 must possess blood factor A' and Alb-F. Recipient 5 lacks both A' and Alb-F and is thereby excluded as a possible dam. Donor 1 possesses A' and Alb-F and qualifies as a dam.

In Set II the dam of foal 10 must possess either Es-I or Es-S. The recipient 6 lacks both Es-I and Es-S and is thereby excluded as a possible dam. The donor 2 possesses both Es-I and Es-S and qualifies as a dam.

In Set III the only possible basis for solution is in the esterase system. However, the null allele (GAHNE, 1966) has been observed in one Hokkaido native pony and thus must be taken into account. A foal of type Es-I is not likely to be an offspring if recipient 7 whose type is Es-F, but an exclusion cannot be made because of the possibility of a null allele. Donor 3

TABLE 1 Results of the Blood Typing and Electrophoretic Tests

Set	Individual	Reactions With Blood Typing Agents																Electrophoresis		
		A ₁	A'	Z	Z ₂	C	Q	R	S	U ₁	U ₂	X	P ₁	T	J	K	H	Alb	Tf	Es
	Stallion	±	.	±	+	.	.	+	.	+	+	+	+	+	±	+	+	S	DF	IS
I	Foal 9	+	+	+	.	.	.	+	.	.	.	+	.	+	.	.	.	FS	DF	IS
	Donor 1	.	+	.	.	+	.	+	+	.	.	.	+	+	.	.	.	F	D	IS
	Recipient 5	.	.	.	.	.	.	.	+	.	.	.	+	+	.	.	+	S	DM	I
II	Foal 10	+	.	.	+	.	.	.	+	+	+	+	+	+	+	+	+	S	F	IS
	Donor 2	+	.	.	+	.	.	.	+	+	+	+	+	+	+	.	.	FS	F	IS
	Recipien 6	.	+	.	.	+	.	+	+	.	.	.	+	+	±	.	.	S	DF	F
III	Foal 11	+	.	.	+	+	.	.	.	.	.	.	+	+	.	+	.	S	F	I
	Donor 3	+	.	.	+	+	.	+	+	.	.	.	+	+	.	.	.	FS	F	I
	Recipient 7	.	±	.	+	+	.	+	±	+	±	±	+	+	+	+	+	S	DF	F
IV	Foal 12	.	.	.	.	+	.	.	.	+	+	+	+	+	.	+	+	S	F	I
	Donor 4	+	.	.	+	+	.	+	+	.	.	.	+	+	.	.	.	S	DF	I
	Recipient 8	+	.	.	+	.	.	.	.	.	.	.	.	.	+	.	.	FS	DF	I

whose type is Es-I qualifies as a dam.

In Set IV the dam of foal 12 must possess blood factor C. Recipient 8, lacking C, is excluded as a possible dam and donor 4 qualifies as a dam.

For each of the Sets I, II and IV the test results showed the recipient mare to be clearly excluded with the donor mare qualifying as the dam of the foal. For Set III the recipient mare could not be conclusively excluded, but, of course, the donor mare.

Summary

Blood typing and electrophoretic tests were used to verify the donor mares to be dams of foals resulting from the transplantation of fertilized ova.

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