ABSENCE OF PREGNANCY-BLOCK IN MICE WHEN STUD AND TEST MALES BELONG TO AN INBRED STRAIN

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The recently-mated female mouse can be removed from her stud partner within a few hours of coitus and returned to him 24 hr later without disturbance to the pregnancy. [Outbred albino females: Bruce (1959); inbred CBA females: Godowicz (1967).] It is only when she is exposed to another male at this time that pregnancy may be blocked. This presupposes at least partial recognition of the stud male as an individual, amounting to about 25% for outbred albino P males and about 30% for males of an outbred Dutch strain (Parkes & Bruce, 1961). In wild house mice pregnancy rate was reduced to 16% among recently-mated females exposed to strange males from 56% among control females similarly disturbed but without the intervention of a strange male (Chipman & Fox, 1966). This implies an even greater variation among wild house mice. Experiments have been undertaken to investigate the possibility that such individual differences are still retained between males belonging to inbred strains.

Vaginal smears were examined daily from young virgin females paired with fertile males. When the vaginal plug was found (Day 0), the female was separated from the stud male and housed alone. After 24 hr she was introduced into the box containing the test male, where she remained for 3 days. At the end of this time she was returned to the box which she had occupied after separation from the stud male. The female was killed and the uterus examined for implantations on Day 7. The return of oestrus within this period gave evidence of a blocked pregnancy. Females which had not returned to oestrus and were not pregnant were assumed to be pseudopregnant. Control females either remained with the stud male or were left in isolation after separation from him.

All the females belonged to an outbred albino strain (P), the males belonged either to this strain or to one of two inbred strains (CBA/H, AG/Cam). As far as possible the use of litter mates in the tests was avoided. The results are shown in Table 1.

Pregnancy block was not induced between males belonging to either of the inbred strains but it was manifest in about the same proportion as previously found, between males of the P strain. As expected, the proportion was even higher when the difference between individual males was enhanced by a strain difference.

It is, therefore, concluded that the olfactory identities of wild male mice and

of outbred laboratory mice which are detected by the recently-mated female and expressed as a blocked pregnancy, have been eliminated during the process of inbreeding. However, the possibility still remains that individual identity has only been reduced to below the level necessary to disturb pregnancy. The latter explanation is supported by the claim of Bowers & Alexander (1967) that mice are able to discriminate between male mice of the same inbred strain, in this case C57Bl. Their experiments were carried out under very different

TABLE 1
PROPORTION OF PREGNANCIES BLOCKED BY EXPOSURE TO A SECOND MALE

	Total no. of females	No. of females:			Proportion of blocked pregnancies (%)
		<i>pregnant</i>	<i>pseudopregnant</i>	<i>returned to oestrus</i>	
Control: no second male	41	37	3	1	<3
Between inbred males					
CBA/H	113	105	4	4	} <4
AG/Cam	31	28	2	1	
Between outbred males					
P	86	57	5	24	28
Between two strains					
P/CBA/H	86	37	8	41	} 50
P/AG/Cam	47	21	0	26	

conditions from those of the pregnancy-block tests. The subject mice were dehydrated by the withdrawal of water for 23 hr immediately before the test, and then given freedom of choice between two males. Reinforcement of olfactory discrimination by such a powerful drive as thirst might alter the threshold of response to reveal subtleties not detectable by less sensitive methods.

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