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The Responses of Normal and Castrate Female Sparrows to Injections of Pregnant Mare Serum

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stock (S) was only 8 per cent as compared with a mortality of approximately 98 per cent in the highly susceptible Silver (Sil) and Bagg albino (Ba) strains.

To determine something about the genetic nature of resistance and susceptibility to mouse typhoid, crosses were made between the three strains, and F_1 survivors from the S x Sil cross were backcrossed to the Sil and Ba strains. All progenies were injected with the 2×10^5 dose.

The F_1 generations from S x Sil and S x Ba crosses gave mortalities of about 17 per cent, indicating that resistance is partially dominant over susceptibility. The mortality in the F_1 progenies from the Sil x Ba cross was nearly 20 per cent less than that in their parent strains, these results suggesting that the two strains carried complementary factors for resistance. Segregation of genes for resistance and susceptibility could be definitely established by the striking increase in the mortality exhibited by the progenies from the backcrosses of F_1 animals to the Sil and Ba strains, their death rates being 53 and 48 per cent respectively. The data suggest that resistance is governed by multiple genetic factors. There was no indication that resistance and susceptibility are sex-linked. Neither did the data suggest the presence of linkage between any major factors for resistance and the color genes for albinism (c), non-silver (S) or agouti (A).

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THE RESPONSES OF NORMAL AND CASTRATE FEMALE SPARROWS TO INJECTIONS OF PREGNANT MARE SERUM

RICHARD AVERY MILLER

During the winter months ovaries and oviducts of the sparrows are greatly reduced. Injection of pregnant mare serum during this resting period stimulates the ovary to an activity which simulates that of the breeding season. Oviducts respond to the increased amounts of female hormone released by the ovary.

If the left ovary is removed the vestigal right gonad, under the stimulus of the bird's pituitary, may hypertrophy. This natural enlargement can be augmented by the injection of pregnant mare serum. In the cases thus far studied, the hypertrophied right gonad

had developed into an ovary. Oviducts were enlarged and convoluted. In one instance the left ovary, not completely removed, had become testicular.

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FACTORS CONTROLLING THE DIURNAL SPERMATOGENIC CYCLE OF THE MALE SPARROW (PASSER DOMESTICUS)

GARDNER M. RILEY (introduced by E. Witschi)

In the normal development of the sparrow testis, a daily period of active spermatogenesis is found between the hours of 2:00 A.M. and 4:00 A.M. This restriction to the hours of darkness appears all the more significant since an inversion of the light period results in the occurrence of mitotic figures during the afternoon hours.

A marked lowering of the body temperature of the sparrow during the night suggests a relationship between temperature and spermatogenesis. An average difference of more than 6 degrees exists between the temperature of the bird during the light period (109.8° F) and dark period (103.1° F). When the body temperature is lowered during the light period by clipping the feathers and exposing the bird to a low external temperature, some mitotic figures are found within 2 hours. On the other hand, if the bird is kept active during the night so that it maintains a temperature approximating that of the day, spermatogenesis is almost completely checked.

Testicular development during the inactive period was induced through injections of pregnant mare serum. A determination of the interval elapsing between the time of injection and the appearance of mitotic figures showed spermatogenesis occurring within five hours of the injection, whether it was made during the light or dark period. These observations indicate that the diurnal spermatogenic cycle is controlled by a sequence of environmental and internal factors. The dark period causes reduction of the body temperature which, in turn, appears necessary for the release of the gonadotropic hormone.

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