SPECIAL ARTICLES

STRAINS OF THE DOG HOOKWORM, ANCYLOSTOMA CANINUM, SPECIFIC TO THE DOG AND TO THE CAT

IN another paper[1] experiments are described which demonstrated two strains of the dog hookworm morphologically identical but differing in their host specificity. One, originally recovered from a Baltimore dog, was highly specific to that species of host in that an average of 50 per cent. of the larvae matured in puppies while less than 1 per cent. matured in kittens. On the other hand a strain from a cat from Long Island was specific to the cat in that an average of 45 per cent. developed in kittens while less than 5 per cent. matured in puppies. On the basis of these findings and certain facts of distribution it was suggested that in a locality where this hookworm is common in cats a special strain specific to cats probably existed. It is now possible to present more definite evidence to substantiate this postulate.

A number of stray dogs from the streets of Baltimore which have come into the laboratory harbored the dog hookworm, *Ancylostoma caninum* Erc. 1859. Cultures were made from the stools of these dogs by stirring them into granulated charcoal, and the freshly isolated larvae used for infection experiments. The larvae were administered by mouth in double gelatin capsules following the technique described previously.[2] With the aid of Dr. N. R. Stoll similar cultures were obtained from the feces of cats in the vicinity of Princeton, N. J. Larvae from these were used for similar experiments as shown in the accompanying table.

All of the experimental animals used were young enough to be highly susceptible to the standard strains mentioned above. The average condition as shown in the table comes surprisingly close to the values for the standard strains when the length of the series and the variation is considered. It is evident that the strains harbored by these dogs in Baltimore are adapted to the dog and not to the cat. On the other hand the strains received from Princeton cats seem to be adapted to cats but not to dogs. Dr. Stoll has found eight of thirteen cats examined to be infected with these hookworms. As mentioned in a previous paper (*loc. cit.*) cats in Baltimore have never been found to harbor this species, but it was found in about 20 per cent. of more than a hundred stray dogs received.

Larvae from	Given to	Days infection to autopsy	Number larvae given	Number adults recovered	Per cent. developed
Dog 337	Dog 338	14	228	53	23.0
	Cat 349	20	316	3	1.0
Dog 340	Dog 357	24	700	314	45.0
	Cat 354	25	234	0	0.0
	Cat 357	28	880	0	0.0
Dog 341	Dog 345	23	460	199	43.0
	Cat 356	28	1,170	16	1.0
Dog 354	Dog 355	11	3,000	1,458	49.0
	Cat 375	14	600	0	0.0
Cat P1	Cat 323	40	287	215	75.0
Cat P2	Dog 350	21	724	2	0.3
	Cat 360	21	703	208	30.0
Cat P3	Dog 358	13	1,200	0	0.0
Average dog strains in puppies				40.0	per cent.
" " " " kittens				0.4	per cent.
Average cat strains in puppies				0.15	per cent.
" " " " kittens				52.0	per cent.

The following conclusions arise from experiments to determine the infectivity of larvae of various strains of the dog hookworm, *Ancylostoma caninum*. The dogs in Baltimore streets appear to carry strains to which puppies are susceptible but kittens are not, as indicated by infection experiments. Cats from the vicinity of Princeton, N. J., appear to carry strains to which kittens are susceptible but puppies are not.

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HETERO-FERTILIZATION IN MAIZE

THERE is abundant evidence that the endosperm and the embryo of the maize kernel regularly are genetically identical. Were they not, there would be no reason for selecting on the basis of endosperm characters among the individual kernels in genetic or breeding experiments. In connection with the writer's investigations on the inheritance of scutellum color, however, considerable data have been obtained which show that this usual condition is not universal.[1]

"Colored Scutellum" already has been described as a heritable character of maize (Sprague).[2] The development of scutellum color is dependent upon several factors, the interaction of which will be described later. Before purple or red color can

[1] J. A. Scott, 1929, "Experimental Demonstration of a Strain of the Dog Hookworm, *Ancylostoma caninum*, Especially Adapted to the Cat," *Jour. Par.*, in press.

[2] J. A. Scott, 1928, "An Experimental Study of the Development of *Ancylostoma caninum* in Normal and Abnormal Hosts," *Amer. Jour. Hyg.*, 8: 158.

[1] These investigations were conducted in the department of plant breeding, Cornell University, and at the North Platte Substation, North Platte, Neb.

[2] G. F. Sprague, *Jour. of Heredity*, 18: 41–44, 1927.