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Breed Specific Susceptibility to Parvovirus Disease

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BREED SPECIFIC SUSCEPTIBILITY TO PARVOVIRUS DISEASE

PARVOVIRUS DISEASE swept through the canine population beginning in 1978. After vaccines had been developed, the number of cases decreased drastically. Then reports were received of vaccinated dogs which contracted the disease and a seemingly higher incidence of parvovirus enteritis in certain breeds, namely Doberman pinschers and Rottweilers.

To investigate these impressions the section of epidemiology at the University of Pennsylvania's School of Veterinary Medicine designed an epidemiologic study based on data in the medical records at the VHUP. The study was supported by funds donated by a number of breed clubs.

Dr. Lawrence T. Glickman and his associate, Linda Domanski, with the aid of veterinary students Gary Patronek and Ferdinand Visintainer, examined the records of dogs seen at VHUP from July 1, 1981, through August 31, 1982. Clinical and laboratory criteria were established as to which cases could be considered definite, probable and unlikely parvovirus enteritis. The researchers identified 96 dogs with a definite diagnosis. Then they selected a control group of dogs without parvovirus enteritis and matched these by breed, age and sex with the parvovirus patients. All in all, 900 hospital records were examined in depth.

The study yielded some interesting results. Dr. Glickman and Ms. Domanski found that there is a significantly higher risk of parvovirus

disease in certain breeds. There were more cases than expected in Doberman pinschers and Rottweilers when compared to other purebred dogs and to mixed breeds. They also found that the increased risk was primarily confined to male Doberman pinschers and male Rottweilers under six months of age.

"It appears there is a sex-linked genetic susceptibility to this disease in Rottweilers and Doberman pinschers," Dr. Glickman explained. "We have searched the literature to see whether there have been reports of genetic susceptibility to other viral diseases in dogs, but there are no documented reports of this."

Researchers elsewhere, working with inbred strains of mice, found that some of the strains were susceptible to a specific virus while others were highly resistant. These mice can be bred selectively and the trait for either susceptibility or resistance passed on to offspring. In laboratory experiments it was discovered that when cells from a mouse with susceptibility to a specific virus were infected with that virus, the virus replicated rapidly. When a specific virus against which the animal had shown resistance was introduced into cells from that mouse, the virus replicated slowly. It was concluded that the ability to resist a specific virus is genetically determined and that the gene for resistance or susceptibility operates at the cellular level to limit viral multiplication and transmission.

Further studies are needed to determine whether this is also the case for the two dog breeds and susceptibility to parvovirus. "It is a small portion of the two breed populations that have this increased susceptibility," said Dr.

Glickman. "We should do pedigree analyses in an attempt to identify the particular bloodlines." Once such lines are identified, a breeding program could be set up and cellular studies conducted. "We will be working with Dr. Donald Patterson, of the Section on Medical Genetics, on this problem," he said. "In order to determine what is at work here, we need the cooperation of breeders and owners to identify dogs that are at higher risk. Once the lines are identified and the mode of inheritance is known, steps can be taken to breed away from the susceptible group."

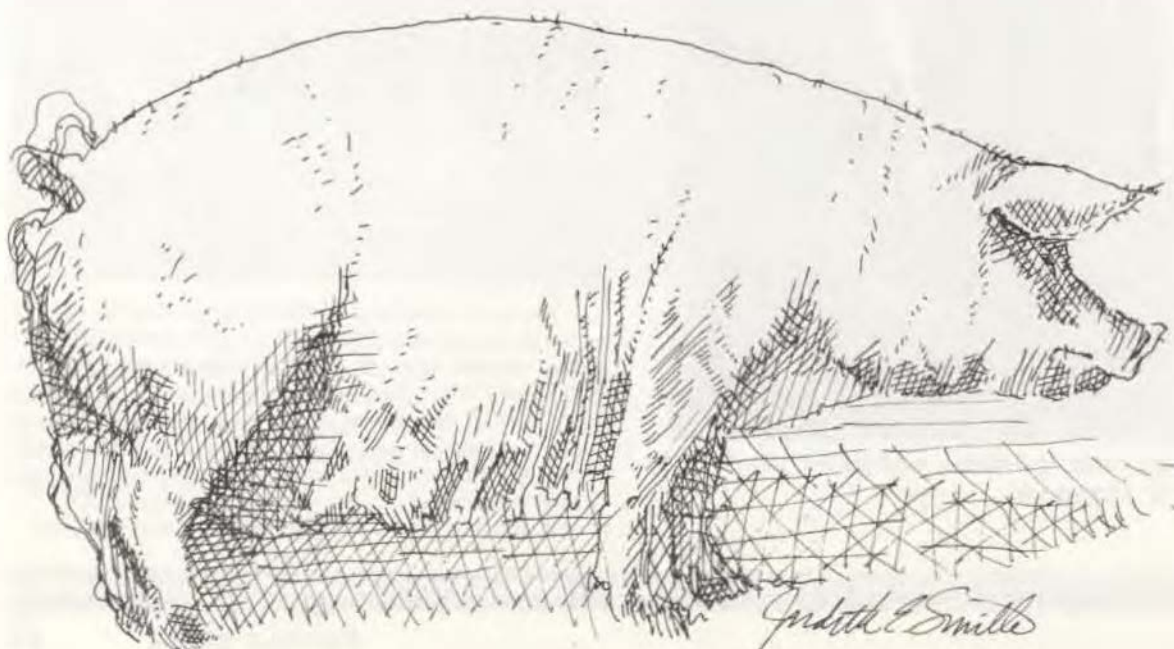
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