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Attempts to Transmit Poliomyelitis Virus to Rodents.*

JOHN F. KESSEL AND FRED D. STIMPert.

From the Department of Bacteriology, School of Medicine, University of Southern California, and the Los Angeles County Hospital, Los Angeles.

Although a variety of animals have in the past been injected with the virus of poliomyelitis with the intent to infect them, only a few species of primates have without question been successfully infected. Most experimental work reported has been done either with *Macacus mulatta*, (*rhesus*), *M. irus* (*cynomolgus*) or chimpanzees. These animals are expensive and as a consequence much important experimental work has been neglected because of the prohibitive cost.

Recently, renewed search for a cheaper, suitable, experimental animal was undertaken by several investigators, among them, Armstrong¹ of the National Institute of Health and ourselves. For the most part rodents have been used in these experiments and our results with 25 strains of virus have been negative with all species tested with the exception of the Antelope ground squirrel which occasionally developed questionable neurologic symptoms but which

TABLE I.
Small Rodent Infection Experiment.

Californian strains		Genera injected	Armstrong virus % positive
No. strains injected	Negative animals		
25*	250	<i>Sigmodon hispidus eremicus</i> (Calif. cotton rat)	94
6	25	<i>Sigmodon hispidus hispidus</i> (So. Car. cotton rat)	96
5	25	<i>Microtus</i> (Meadow mouse)	96
6	15	<i>Neotoma</i> (wood rat)	41
5	35	<i>Peromyscus</i> (deer mouse)	25
2	9	<i>Perognathus</i> (pocket mouse)	20
5	20	<i>Dipodymus</i> (kangaroo rat)	0
*Viruses injected.			
Monkey passage virus from human cord			9
Human cord virus			
known to be positive in monkeys			9
Monkey passage virus from human stools			5
" " " " " tonsils			1
" " " " " adenoids			1
Total			25

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¹ Armstrong, Charles, *Pub. Health Rep.*, 1939, 54, 1719.

we cannot state definitely were caused by poliomyelitis virus. Armstrong,¹ on the other hand, reports successful infection of the cotton rat, *Sigmodon hispidus hispidus*, with a strain of virus from Lansing, Michigan.

Table I gives a summary of recent attempts on our part to infect *Sigmodons* as well as several other species of rodents, both with Los Angeles strains of poliomyelitis virus and with the Armstrong virus.

It will be seen from the table that: (1) Rodents of the genera listed have been refractory to inoculation with a number of strains of poliomyelitis virus collected in Los Angeles. (2) These same animals are subsequently susceptible to inoculation with the Armstrong virus.

It is known that rodents occasionally harbor natural infectious neurotropic viruses, *e.g.*, lymphocytic choriomeningitis has been isolated from white mice, and Theiler^{2, 3} and Olitsky^{4, 5} report natural infections in mice of an encephalomyelitis virus, which produces typical paralytic symptoms.

Toomey and Takacs⁶ and Jungeblut and Sanders⁷ report attempts to infect the cotton rat with strains of poliomyelitis virus. Both record negative results with a number of poliomyelitis strains. Jungeblut and Sanders, however, observed neurotropic symptoms in rodents inoculated with one strain of poliomyelitis virus but this may be interpreted as being due to a virus native to the rodent rather than to a human poliomyelitis virus transmitted to mice.

In the light of such current findings one may raise the question whether the Armstrong (Lansing) virus is a poliomyelitis virus that has become adapted to the rodent or whether it is a rodent virus that has become adapted to the monkey.

At least insofar as practical application to poliomyelitis research is concerned, it appears that adaptation of a poliomyelitis virus to the rodent is so rare that such animals cannot be utilized for routine experimental work in the isolation and comparison of strains of virus.

² Theiler, M., *Science*, 1934, **80**, 122.

³ Theiler, M., *J. Exp. Med.*, 1937, **65**, 705.

⁴ Olitsky, P. K., *PROC. SOC. EXP. BIOL. AND MED.*, 1939, **41**, 434.

⁵ Olitsky, P. K., *PROC. SOC. EXP. BIOL. AND MED.*, 1940, **43**, 296.

⁶ Toomey, John A., and Takacs, Wm. S., *PROC. SOC. EXP. BIOL. AND MED.*, 1940, **43**, 536.

⁷ Jungeblut, Claus W., and Sanders, Murray, *PROC. SOC. EXP. BIOL. AND MED.*, 1940, **44**, 375.