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Nucleic Acids of Measles and Vesicular Stomatitis Viruses. (28446)

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Measles virus is classified as a myxovirus on the basis of its structure and cytopathic effect in tissue cultures(1,2,3), and therefore was tentatively assumed to be an RNA virus although the nature of its nucleic acid had not been established. Because 5-fluorodeoxyuridine (FUDR) inhibits the synthesis of DNA viruses(4,5,6), it can be used to differentiate RNA and DNA viruses. This report on the effect of FUDR on production of virus by an established line of cercopithecus monkey kidney cells (BS-C-1)(7), provides indirect evidence that measles actually is an RNA virus, and incidentally that vesicular stomatitis virus (VSV) is also an RNA virus.

A culture of the Edmonston strain of measles virus adapted to HeLa cells was used to inoculate 6 tubes containing monolayers of BS-C-1 cells. As assayed in the same cell line, the virus concentration of the inoculum was $10^{4.5}ID_{50}$ per tube. At time of inoculation the cell count was approximately 2×10^5 per monolayer. The medium used for virus growth and maintenance was Hanks' balanced salt solution containing 0.1% lactalbumin hydrolysate, 0.16% $NaHCO_3$, and 2% horse serum. In 3 of the 6 tubes the medium also contained 0.5 γ of FUDR per ml (2×10^{-6} M).

Each experiment included control cultures infected with (a) adenovirus type 3, as a known DNA virus; (b) the Leon strain of type 3 poliovirus, as a known RNA virus; and, because poliovirus is ether resistant while measles virus is ether sensitive, (c) VSV as an ether sensitive virus which we assumed to be an RNA virus until a survey of the literature revealed no proof of this. The adenovirus concentration, as assayed by BS-C-1 cells, was 10^2ID_{50} per tube. The poliovirus concentration, as assayed in primary monkey kidney cells, was $10^{7.5}$ plaque-forming units per tube. The VSV concentration, as assayed in BS-C-1 cells, was $10^{6.5}ID_{50}$ per tube.

The infected cultures were harvested for virus by one cycle of freezing and thawing at the time that all the cells were involved, which was 4 to 5 days for measles, 6 days for adenovirus, 3 days for poliovirus, and 24 hours for VSV. Yields of virus were assayed in tubes of BS-C-1 cells by the dilution end point technique.

The results of 3 experiments are given in Table I. As expected, the FUDR suppressed

TABLE I. Effect of 5-Fluorodeoxyuridine (FUDR) on Measles and Vesicular Stomatitis Virus (VSV) Yields.

Exp No.	Virus	Yield (ID_{50}/ml) No FUDR	Yield (ID_{50}/ml) FUDR (.5 γ/ml)
1	Measles	10^6	$\geq 10^{6.5}$
	VSV	10^7	$\geq 10^{6.5}$
	Controls:		
	Poliovirus (RNA)	$10^{7.5}$	$10^{7.5}$
	Adenovirus (DNA)	$10^{3.5}$	$10^{1.5}$
2	Measles	$10^{5.0}$	$10^{4.5}$
	VSV	$10^{8.0}$	$10^{9.2}$
	Controls:		
	Poliovirus	$10^{8.0}$	$10^{7.5}$
	Adenovirus	$10^{5.0}$	$10^{3.0}$
3	Measles	$10^{4.5}$	$10^{5.5}$
	VSV	$10^{8.0}$	$10^{7.5}$
	Controls:		
	Poliovirus	$10^{7.5}$	$10^{7.5}$
	Adenovirus	$10^{4.0}$	$10^{2.0}$

production of adenovirus and did not suppress production of poliovirus. The fact that it also did not suppress production of either VSV or measles virus suggests that these are both RNA viruses.

Addendum. Since this manuscript was submitted for publication, two other reports on the failure of halogenated deoxyuridines to inhibit measles virus have come to our attention: Lam, K. S. K. and Atherton, J. C., *Nature,* 1963, v197, 820; Sultanian, J. V. and Gordon, I., *Bact. Proc.,* 1963, 158.

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Role of Relaxin in Pregnancy Maintenance and Termination in Mice.* (28447)

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It has been shown that relaxin inhibits uterine motility in rats, mice and guinea pigs *in vitro*(1,2,3,4,5) and *in vivo*(2,6). Quiescence of the uterus and symphysial relaxation would facilitate maintenance of pregnancy and parturition. Relaxin has been shown to stimulate uterine growth or hypertrophy(7,8, 9,10,11) and cervical dilation(3,12,13,14,15).

Hall(16,17) reported on an extensive study in mice ovariectomized on day 14 of pregnancy. Progesterone, estradiol, and relaxin separately and in combination were administered. Smithberg and Runner(18,19) have also studied the problem of the role of relaxin during pregnancy. A study of the effect of relaxin on the placentomata reaction in mice has been reported(20). Kroc *et al.*(3) suggested that relaxin may exert an effect on placental detachment.

In the study to be reported, the mice were ovariectomized either on day 7 or 13, then various combinations of progesterone, estradiol benzoate and relaxin were administered to day 18. In addition, the effect of relaxin on placental detachment in mice pregnant 12 days was studied.

Methods and Materials. Mice kept in individual cages and fed Purina Lab. Chow and water *ad libitum,* were ovariectomized on day 7 or 13 of their first pregnancy. Various levels of progesterone, estradiol benzoate, and relaxin alone or in combination were injected daily following operation to day 18 of gestation unless otherwise stated (Table I).

The relaxin used was in preparation 1164A-66‡, assayed 150 GPU/mg, and was administered in 0.05 ml of beeswax carrier or 0.1 ml of normal saline. The steroids were injected in 0.05 ml of olive oil. Animals were autopsied after abortion or parturition or on days 22 to 24 when parturition had not taken

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