



ROYAL VETERINARY COLLEGE

13th December 1949

Dear Professor Fisher,

Thanks for your letter. I feel that an important function of the non-vaccinated controls is to provide convincing evidence that the test dose used on each occasion does infect all of a group of susceptible animals no matter what their origin may be. Cattle from Superity Farm can fulfill this function. As to the Scottish calves, it seems necessary to prove that they are also susceptible to the test dose and this could perhaps be done by using say 32 animals taken before vaccination in equal number from each of the four vaccinated groups, either by special selection or as a random sample, whichever is preferable.

This would permit a plan on the following lines:-

	<u>Pregnancies.</u>						<u>Spare.</u>	<u>Total</u>
	<u>1.</u>	<u>2.</u>	<u>3.</u>	<u>4.</u>	<u>5.</u>	<u>6.</u>		
6 months	10	10	15	20	20	20	22	117
18 months	10	10	15	20	20	20	22	117
6 & 12 months.			10	20	20	20	22	92
6, 12 & 18 months.			10	20	20	20	22	92
	20	20	50	80	80	80	88	<u>418</u>
<u>Controls:</u>								
Scottish calves	4	4	4	4	4	4	8	32
Superity cattle	<u>6</u>	<u>6</u>	<u>11</u>	<u>16</u>	<u>16</u>	<u>16</u>	<u>40</u>	<u>111</u>
	10	10	15	20	20	20	48	<u>143</u>

The numbers in the groups from the 3rd pregnancy onwards are probably not realistic because as you suggest we may wish to throw in larger numbers quickly to prove conclusively that immunity has waned. Once that has been



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established however, the animals left in the group, if any, could be revaccinated because, in practice revaccination would be done at this stage and this might provide an opportunity to prove that it works.

One point I may not have made clear previously is the level of protection to be expected at the 1st pregnancy. From past experience we may expect two out of ten animals vaccinated once at 18 months to become infected when tested at the 1st pregnancy. Those vaccinated at 6 months are likely to be the same but could be a little less immune. On the other hand the doubly or triply vaccinated groups might be nearer 100% immune at the first pregnancy and if we test none from these two groups at the 1st and 2nd pregnancies we will never know whether or not their immunity at that time was better than the once vaccinated groups. However, one has to remember that the important point to be established is duration of immunity and if we are prodigal with the numbers used at the start we may not have sufficient to throw in at the critical period when immunity drops markedly below the useful level of 80%. I would be glad to have your view on the possibilities of covering this point with the animals available.

I agree that it would be valuable to work out rules for one's guidance according to the results. We hope, with luck, to produce the results, but I fear we will have to look to you to provide the rules.

We hope to vaccinate the animals in mid-January, but I would like to have the plan settled during the next fortnight so that the final preparations don't require to be rushed.

Professor R.A. Fisher,  
Sc.D., F.R.S.,  
University of Cambridge.

Yours sincerely,

*W. S. Gordon.*