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A STUDY OF ORF VIRUS ISOLATES
FROM SHEEP IN NEW ZEALAND

A THESIS PRESENTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF PHILOSOPHY IN
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STATEMENT

The gradients depicted in Figure 1 and the gel depicted in Figure 3 were done in collaboration with Dr. A.J. Robinson. The rest of the work was my own.

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ABSTRACT

A preliminary study of varicous orf virus isolates in New Zealand is presented. A method of isolating and purifying the virus from scab material is described. Thirteen orf virus isolates were compared by DNA restriction endonuclease analysis. There was extensive heterogeneity in the EcoR₁ restriction patterns, however, two of the isolates were similar.

Propagation of the virus *in vitro* was also attempted. Five of the isolates were successfully adapted to growth in lamb testis cells and two of these were plaque-purified twice. The characteristic cytopathic effect of cell-adapted virus is early rounding and clumping together of infected cells. This cell rounding could be seen as early as two hours post-infection and could be inhibited by cyclohexamide. There were two types of plaques exhibited by the isolates in lamb testis cell monolayers, the "open" and "closed" types. Inclusion bodies were also seen in stained infected monolayers.

³²P-labelling of a plaque-purified isolate was successfully performed. Low passage (23 passages) in cell culture of plaque-purified isolate No. 2 did not alter the EcoR₁, Bam H-I or Hind III patterns of the DNA when compared with the original viral DNA from scab material.

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INTRODUCTION

Orf is common among sheep in New Zealand and the incidence in man appears to be increasing. There is a vaccine available for sheep. Although the vaccine protects lambs from the disease it perpetuates the virus in the environment. There is a need for alternative vaccination methods.

It is the aim of this project to develop methods of isolating, propagating and purifying orf virus in cell culture and identifying isolates by restriction endonuclease analysis in preparation for vaccine studies.