Cloning EEHV capsid proteins for in vitro studies

Introduction

EEHV is a ubiquitous that can cause acute haemorrhagic disease in elephants that can be fatal. It can affect wild, captive and managed populations of both Asian and African elephants.

Currently, there are only thought to be 415,000 African elephants left, meaning that they are considered a vulnerable species, and only 40,000-50,000 Asian elephants left, classifying them as being endangered.

With EEHV having a mortality rate of approximately 69%, it is now considered to be a cause of high mortality within Asian elephants.

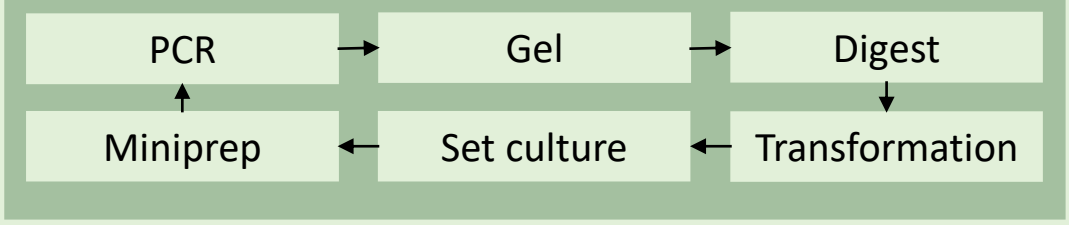
There is no virus-cell system at present that is replication competent to allow laboratory study in vitro.

Therefore, cloning must be used to produce the required proteins by inserting the DNA into the vector, meaning that a virus-cell system isn't required.

Aim

To produce a system that would express the capsid proteins of EEHV so that the capsid formation could be researched

Methodology



Results

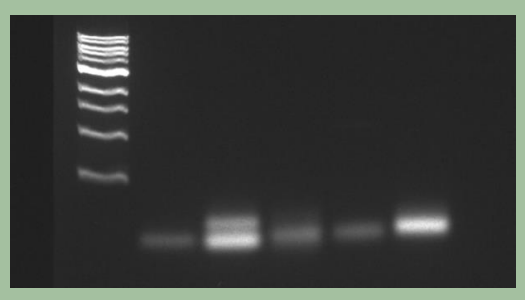


Figure 1: Initial gel showing U57,U56, U29, U53.5 and U53.5T. Had to be repeated

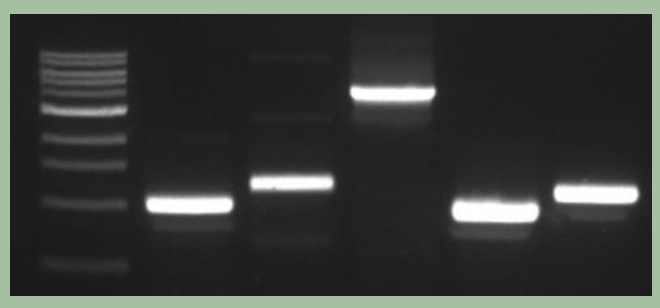


Figure 2: Repeat gel showing U29, U56, U57, U53.5 and U53.5T

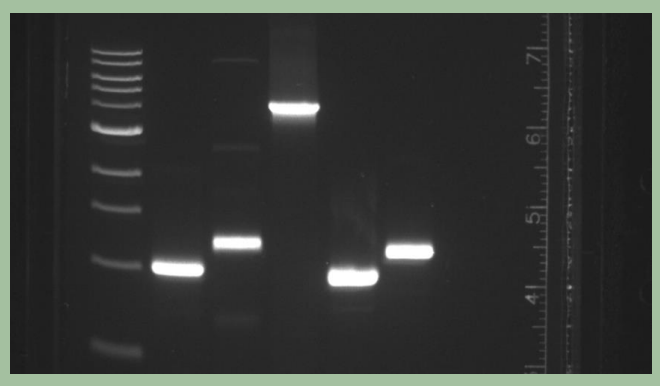


Figure 3: Same gel, with an extended run time. The extended run time spread the bands out

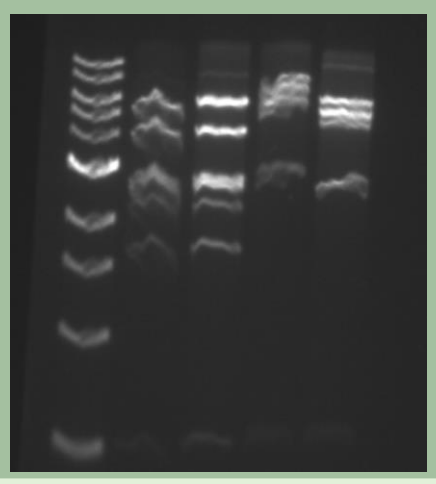


Figure 4: First insert of gene. U56 (column 2 and 3) and U57 (column 3 and 4) were inserted into bacterial cells. The gel was then run to ensure that the inserts were correct.

Conclusion

We were mostly successful in assembling the plasmid that should produce the EEHV capsid proteins for in vitro studies. The gel electrophoresis showed that many of the fragments were as expected.

To make sure that the DNA sequence of the plasmid was what we hoped for, the next step would be to send it away for sequencing.

Taking part in UROS gave me the rare opportunity to experience a research lab environment and work on my own lab skills, whilst also working alongside an academic.

I was able to fully piece together aspects of my lectures to create a clearer image of what I had studied in the previous year.

It has allowed me to become certain that research is a career path that I would like to go down and gain a clearer picture of my next steps, both with my career and in terms of further education.

I am extremely grateful for the support of my supervisor and the rest of the UROS team, and the opportunity that they provided me with.

Student Researcher: Jayne Morley

Supervisor: Dr Ashley Roberts

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