

## CASE STUDY

# Characterising a novel vaccine platform

Chikungunya is a viral disease transmitted to humans via infected mosquitos and has been classed as a category B priority pathogen.

Although many cases are mild, the virus can cause chronic disease and long-term debilitating joint pain in patients.

Since 2004, chikungunya has spread rapidly and has been identified in over 60 countries throughout Asia, Africa, Europe and the Americas. There is currently no vaccine or specific drug against the virus.



## The Challenge

Active Virosomes (AV), a proprietary vaccine delivery technology, have the potential to perform as an effective vaccine against chikungunya (and other diseases). In order to proceed to pre-clinical studies, manufacturing needs to be scaled up and maintaining quality control is of paramount importance.

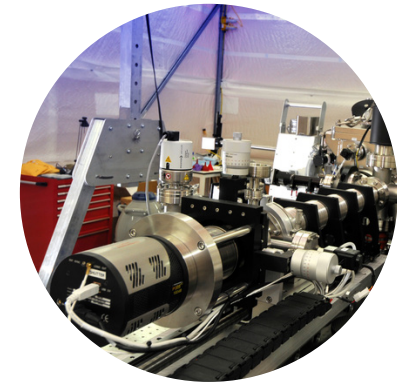
Indirect animal studies are typically used to assess manufacturing quality and variations in size and loading. A direct method of assessing variations between AV batches was needed to improve efficiency and reduce the reliance on animal studies.



## The Solution

The Activirosomes team worked with scientists at Diamond as part of the **Bridging for Innovators** programme. Using a combination of super high-resolution microscopy and soft X-ray tomography, the team characterised AV populations including vesicle size distribution and variations in antigen loading.

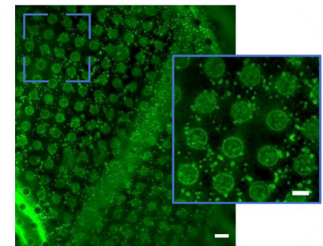
Manufactured batches were compared to assess the extent and nature of batch-to-batch variations. The interactions of AVs with cells were also investigated.



## The Benefits

The experiments were sensitive to differences in antigen loading and vesicle size and a robust and direct analytical method was established to characterise AV populations which can be used to assess any manufacturing changes required for scale up.

This method is both more efficient and sensitive than existing methods and reduces the reliance on animal studies. Preliminary results verify antigen expression on the surface of host cells.



“Diamond’s highly experienced scientists, and the investigation they devised and delivered for us, not only solved our problem in providing us with a direct method of assessing variations between AV batches but also gave us new insights about the efficiency of the AVs in entering cells. Both findings are extremely valuable to us as we develop and refine our product and the direct measurement and visualisation that Diamond developed for us make them even more so. Observations led to preliminary findings which are tantalising as well as exceeding our expectations; we hope to work together to investigate them further.”

*Amanda McMurray, CEO, Activirosomes Ltd*



## For further information

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