

# Why the insect cell system is a boost for vaccine development

To combat emerging diseases, it's crucial that vaccines and diagnostic assays can be made available quickly and cost-effectively. One protein expression platform does just that.

**T**he World Health Organization (WHO) has a list of emerging diseases," says Linda King, Professor of Virology at Oxford Brookes University and founder of Oxford Expression Technologies, which provides products, services and consultancy to the global pharma and biotech industries.

"Most people won't have heard of the diseases on this list — at least not until one of them spreads and sparks a crisis like Covid-19. Then they realise there isn't a vaccine for it."

## Leading research and development technology to enable faster results

That worryingly familiar scenario is why one area of interest for King's company is vaccine and companion diagnostic development.

It's currently lead partner in a consortium to develop a vaccine and companion diagnostic for an emerging disease called Crimean-Congo Haemorrhagic Fever (CCHF), which spreads to humans by tick bites or through contact with the contaminated blood of an infected, slaughtered animal.

The World Health Organization notes that CCHF is difficult to prevent and treat, and that it has a high case fatality ratio (10%-40%).

To develop vaccines, researchers are using a Baculovirus-based protein expression platform. This enables high through-put production of multiple candidate vaccines or proteins (antigens) for use in diagnostic assays, and works using insect cells, rather than conventional mammalian cells. The expression platform can also be used to make proteins for other areas of health-related R&D, such as basic science and drug discovery.

"The insect cell system for vaccine development has become a popular platform," says Professor King. "Mammalian cells require very specific laboratory conditions, which insect cells do not. Insect cells are also much cheaper to culture than mammalian cells, and they are deemed to be very safe. Plus, insect cells can be scaled up quickly and effectively."

Using this technology, OET scientists have started work to produce the Covid-19 spike glycoprotein in insect cells as part of its contribution to urgent global efforts to develop a vaccine.

## Vital that vaccines are quickly available in any outbreak

In an outbreak situation, the Baculovirus-platform ensures that an approved-for-use diagnostic test to screen people, and a cost-effective vaccine to protect them, can be made quickly."

King recognises that big pharma companies aren't often interested in getting involved in vaccine development for the relatively small emerging diseases market.

"But I think the lack of a vaccine during the last Ebola outbreak, and in the current Covid-19 pandemic, has made governments realise that this is an important area to invest in," she says. "When an outbreak does occur, it's absolutely vital that vaccines and diagnostics can be made available quickly and cost-effectively."



**Linda King**  
Professor of Virology,  
Oxford Brookes  
University and  
Founder, Oxford  
Expression  
Technologies

Written by:  
**Tony Greenway**

This article is  
sponsored by  
**British Society  
for Immunology.**



Read more at  
[oettd.com](http://oettd.com)