

In the news

NEW VACCINE PROMISE

A new, synthetic vaccine for the picornavirus that causes foot-and-mouth disease shows promising results, according to a study in *PLoS Pathogens*.

The team that developed this vaccine, led by Bryan Charleston at The Pirbright Institute in Woking, UK, generated synthetic versions of the viral structural proteins and combined them to generate an empty viral capsid (lacking the viral RNA). In collaboration with David Stuart and colleagues at Diamond Light Source in Didcot, UK, they verified that the structure closely resembled that of the wild-type virus using X-ray crystallography.

The vaccine has now been tested in cattle and found to be as effective as the current vaccine, offering protection for up to 34 weeks. Importantly, there is no chance of it causing disease, as occurred with the current, live-attenuated vaccine in 2007. “Unlike the traditional vaccines, there is no chance that the empty shell vaccine could revert to an infectious form,” commented Stuart (*Financial Times*, 27 Mar 2013).

Moreover, owing to the addition of disulphide bonds between the different components of the capsid, the vaccine is highly stable and does not require cold storage. This, together with the fact that production does not require containment facilities, means that it should be much easier to produce and distribute the vaccine in parts of the world where the virus is endemic.

The hope is that the principles behind this vaccine can also be used to develop vaccines against other viruses. One such example is poliovirus (another picornavirus), for which the only available vaccine is live-attenuated and thus has a potential risk of reactivation. “Non-infectious vaccines would clearly provide a safeguard against this risk”, said virologist Andrew Macadam from the National Institute for Biological Standards and Control, Potters Bar, UK (*BBC News*, 27 Mar 2013).

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