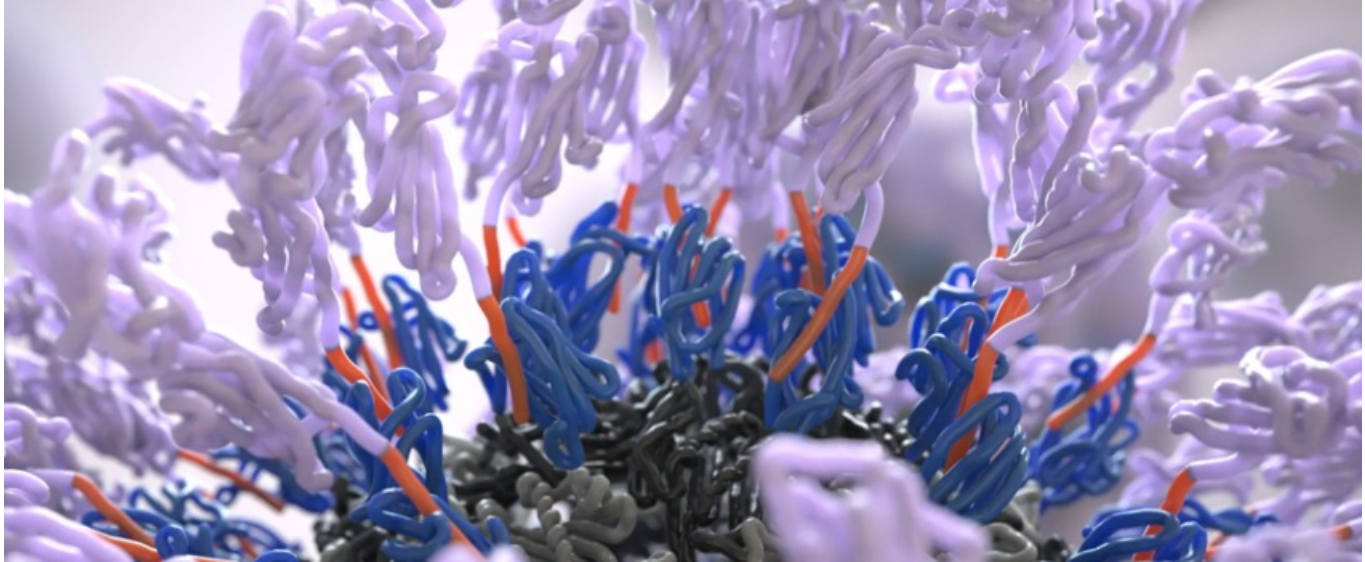


Spybiotech seeks new vaccines



[Amy Brown](#)



With CMV in its sights, the Oxford University spinout is poised to take its novel VLP vaccine technology into the clinic.

Novel vaccine technologies have understandably received much attention over the past few years, with the pandemic prompting an uptick in investment. One beneficiary was Spybiotech, an Oxford University spinout that reckons it has an answer to one of the biggest problems with vaccines that are based on virus-like particles.

The group is poised to take its first candidate into the clinic, against cytomegalovirus, and its new chairman, Eddie Gray, tells *Evaluate Vantage* he hopes to see “game-changing” immunogenicity.

Some very successful vaccines are based on VLP technology, most notably the blockbuster HPV products Gardasil and Cervarix, respectively made by Merck & Co and GSK. VLP vaccines are seen as a safer alternative to using attenuated viruses; the basic idea is that the harmless VLP is armed with disease-specific antigens that illicit an immune response and, ultimately, protection against future infection.

For its CMV project Spybiotech is using as the VLP the hepatitis B surface antigen, which provides “well-trusted immunogenicity”, Mr Gray says. HBsAg VLPs are used in the numerous hepatitis B vaccines on the market, including Dynavax’s Hepлисav-B; Mr Gray was chief executive of this US biotech when that product was approved.

Superglue

Attaching antigens to the VLP represents one of the biggest problems with this approach. Spybiotech says its technology provides a solution, using what it describes as a “protein superglue”.

This involves splitting a protein isolated from the *Streptococcus pyogenes* bacterium in two. One half binds to the target antigen and the other to the VLP; the protein then undergoes spontaneous re-conjugation, forming what the company calls “an unbreakable covalent bond”.

“If you’re trying to present antigens to the immune system, the more you can make available the better. And in making them available, not undermining their structure or damaging them in any way gives a much better chance of getting a high immune response,” Mr Gray says.

By maintaining the “purity” of the antigen structure, Spybiotech’s technology holds the potential for “game-changing levels of antigen presentation, and immunogenicity and antibody response,” he says, opening the door to treatments for diseases that have proved tough to target.

This all needs proving in the clinic, of course. Mr Gray expects healthy human volunteer trials to start “very quickly”. He does not think that an adjuvant will be needed in CMV, though he acknowledges that this might not always be the case, as “different viruses present different hills to climb”.

Kicking the tyres

Preclinical work is under way with potential follow-on projects, Mr Gray says, and these could include therapeutic vaccines against long-term diseases with a basic viral component, and possibly even cancer. The group also has a technology based on recombinant adenovirus.

“Move this into an adenovirus environment, where you can get into the cell and stimulate T cells, and that opens up a whole range of possibilities for higher immune responses for all sorts of different viruses,” he says.

As for funding, Spybiotech raised a \$33m series A in 2021, led by Braavos Investment and Oxford Investment Consultants, who joined founding investors Oxford Science Enterprises and GV. A new chief executive, Mark Leuchtenberger, who has headed various small US biotechs like Aleta and Chiasma, was hired last year.

Mr Gray describes the company as “well funded” and says the focus is on generating data in CMV and identifying a full development plan for the project.

“We have a relatively new CEO, I’ve just arrived, so this is a good opportunity to kick the tyres on the current strategy. But at the moment we are comfortable with the level of investment we have for our current plans,” he says.

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