

Zika virus vaccine a step closer

February 2 2016, by Michele Nardelli



Researchers are confident of quickly finding a vaccine for the Zika virus following the development of a vaccine for a similar mosquito-borne disease.

A research laboratory at the University of South Australia in Adelaide is working with Melbourne-based biotech company Sementis Ltd to

develop a [vaccine](#) to combat the mosquito-borne Zika virus, which is fast becoming a global health priority.

UniSA's Experimental Therapeutics Laboratory in partnership with Sementis has developed a proven vaccine platform to quickly develop new vaccines for a range of viruses.

The team has already used the vaccine platform to create a protective vaccine for Chikungunya virus.

Lab head Associate Professor John Hayball said he was confident his team could adapt the Sementis Chikungunya vaccine for Zika virus – which the World Health Organisation has declared an international emergency – before the end of the year.

Zika is suspected of causing birth defects, has already been detected in 23 countries in the Americas including Brazil, Colombia and Mexico and could infect three to four million people.

Assoc Prof Hayball said Zika virus, for which there is currently no treatment, had caught the world "flat footed".

"It's really a race against the clock to find a vaccine for Zika virus and our lab is starting preclinical laboratory based experiments immediately," he said.

Chikungunya is a viral disease transmitted to humans by infected mosquitoes. It causes fever and severe joint pain. Other symptoms include muscle pain, headache, nausea, fatigue and rash. Zika virus is spread by the same group of mosquitoes that spread the Dengue viruses and Chikungunya virus.

The Experimental Therapeutics Laboratory together with Sementis

developed a protective vaccine for Chikungunya virus late in 2015, and is finalising a contract for manufacturing clinical grade material with a full vaccine development process taking many years.

"The UniSA-Sementis team has taken the Chikungunya vaccine all the way through pre-clinical studies and shown it's 100 per cent effective," Assoc Prof Hayball said.

"Using this vaccine platform, we use genetic engineering techniques to insert genes for antigens from different diseases, so Chikungunya genes to make the Chikungunya vaccine ... and Zika genes to make the Zika vaccine.

"Now we've basically mastered this process ... we could get up to the stage (with Zika) where we are at with Chikungunya, which is basically generating a viral vaccine candidate that has been through all the pre-clinical testing that is required before we go off to a contract manufacturer by the end of this year."

Assoc Prof Hayball said the system his team had developed allowed it to make new vaccines in "probably a tenth or a hundredth of the time than what was historically taken to do it."

"The system is rapidly deployed, rapidly adaptable, commercial production friendly and ultimately will be economical and we don't need a cold chain for our vaccine, it can quite literally be carried in a backpack.

"What we're hoping to do here is not only prove that our approach is the best way to make vaccines for emerging infectious diseases, but that we can really make a difference with this urgent situation.

"There's no other system like it that pairs effectiveness with safeness

with production readiness – they're the keys to any vaccine."

"I believe that we will be significantly ahead of the game, not only for Zika, but for any other disease that emerges."

"We are watching the alert systems like hawks. We are looking for viruses that may well pop up and be a future problem and hope to be there ready for them."

An alarming development from the Zika virus outbreak in Brazil in 2015 is the strong association with microcephaly, a birth deformity linked with women who have had Zika infection. While the link between microcephaly and Zika infection has not been conclusively proven, the evidence is sufficiently strong to warrant warnings against pregnant women travelling to areas of Zika activity.

In addition to starting vaccine development, Assoc Prof Hayball is collaborating with the University of Adelaide's Robinson Institute to uncover what mechanisms of the Zika [virus](#) might cause birth defects.

Provided by The Lead

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