

Biodesign researcher helped develop tobacco-based platform for Ebola vaccine development

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ASU Regents' Professor Charlie Arntzen's research has focused on plant-based vaccine delivery systems; now he may have hit on an unlikely combination of using tobacco as a way to make and deliver a promising vaccine for the Ebola virus.

Charlie Arntzen has worked tirelessly on new platforms to deliver vaccines. He has focused on plant-based vaccine delivery systems, testing a wide range of plants as possible "manufacturing platforms" for vaccines for the developing world.

Now Arntzen, an ASU Regents' Professor and founding director of the

Biodesign Institute at Arizona State University, may have hit on an unlikely combination of using tobacco as a way to make and deliver a promising vaccine for the Ebola virus.

That treatment already may have saved the lives of two aid workers infected with the virus, with the continuing recovery of Kent Brantly and Nancy Writebol from the [deadly virus](#).

"This is an incredible step for plant biology and biotechnology," said Arntzen of the successful use of the vaccine on the two missionaries.

Arntzen is quick to point out that the vaccine itself was developed by researchers at Mapp Biopharmaceutical in San Diego. Researchers there had been working with Arntzen's team at ASU and with a team at Kentucky BioProcessing, on the vaccine called ZMapp.

Kentucky BioProcessing is where ZMapp, the cocktail of antibodies that were injected into Brantly and Writebol, is produced. The antibodies are produced in specially modified tobacco plants. The plants are harvested, ground up into a green liquid, purified and turned into tiny doses of vaccine.

Arntzen has worked with Mapp Biopharmaceutical for 15 years on the idea of plant-based vaccines with the work eventually focusing on the Ebola virus and receiving funding through the U.S. Army. The work steadily progressed over several years when, suddenly, the two Americans became infected in the worst outbreak of Ebola.

"The stars were aligned," said Arntzen who has studied plant-based vaccines for 20 years. "We had some of the [vaccine](#) available, we had risk takers in the government willing to use the vaccines and we had two patients who consented to its use."

"It's extremely gratifying," said Arntzen, who adds that notoriety for a scientist is usually limited to publication of a scientific paper or presenting findings at a conference of peers. "It's astonishing and rewarding as a biologist to see a straight line from a technology to the saving of two lives."

Provided by Arizona State University

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