

# Noviplex device will diagnose and track Zika in the Amazon

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Jiri Adamec, associate professor of biochemistry, is pictured. Credit: University Communications/University of Nebraska-Lincoln

A University of Nebraska-Lincoln researcher is partnering with Brazilian officials to distribute a device that could accelerate testing for the Zika virus and monitor contamination of the country's freshwater food sources.

In 2014, biochemist Jiri Adamec and colleagues introduced the Noviplex card, which separates plasma from a blood sample taken by the simple prick of a finger. After the sample is blotted on a small card, the [technology](#) can upload a digital image of the separated plasma to a clinic or laboratory that can analyze it for signs of disease.

If those signs are detected, the sample—which retains its integrity for weeks even in the humidity of a tropical rainforest—can be sent to a medical facility and further tested for a diagnosis.

This unprecedented capability makes the technology especially suited to prescreening for the Zika [virus](#), Adamec said. The virus has been strongly linked with microcephaly: abnormally small heads, and often underdeveloped brains, among the babies of women who have contracted the virus.

"The current Zika virus outbreak is affecting remote areas such as the Amazonian region of Brazil, and it's extremely difficult to get to those areas to screen residents for the virus," said Adamec, associate professor of biochemistry. "Medical professionals (currently) have to fly in and out by helicopter very quickly to ensure the blood samples remain stable at a low temperature."

This reality has made mapping the prevalence of Zika more difficult, Adamec said. Moreover, he said, an existing test used to screen for Zika has exhibited unacceptably high rates of false positives and false negatives. This means that some uninfected individuals are identified as carrying Zika, even as some who actually have the virus are mistakenly told they do not.

In an effort to overcome these challenges, Adamec said Noviplex cards will soon be distributed to eight South American states throughout the Amazon. The World Health Organization, which has classified Zika as

an international public health emergency, is monitoring the project.

The technology is already addressing another health issue within South America's largest country. Because some Brazilian mining operations illegally use mercury to extract gold—afterward dumping the toxic element in local rivers—officials are also using Noviplex cards to prescreen for elevated levels of mercury in marine life and citizens who consume seafood.

And with the Olympic Games set to descend on Rio de Janeiro in August, the Brazilian Olympic Team has adopted the technology to monitor biomarkers that can indicate the onset of fatigue and other physiological stressors.

Modifying the technology, which R&D Magazine named a top-100 invention of 2014, might even allow physicians to eventually detect biomarkers of brain injury in athletes, Adamec said.

"It's difficult to say what impact Noviplex will have in the next five years," he said, "because the possibilities are really endless."

Adamec and his colleagues, who developed their technology through a co-founded company named Novilytic LLC, received research support from the National Institutes of Health.

Provided by University of Nebraska-Lincoln

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