

Research leads to affordable technology to fight mosquito-borne diseases

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The Kite Mosquito Patch disburses non-toxic compounds that provide individuals with up to 48 hours of protection from mosquitoes. Credit: ieCrowd.

Technology that hampers mosquitoes' host-seeking behavior, identified at the University of California, Riverside in 2011, has led to the development of the world's first product that blocks mosquitoes' ability to efficiently detect carbon dioxide, their primary method of tracking human blood meals.

The initial research was performed in the laboratory of Anandasankar Ray, an associate professor of [entomology](#), and was featured on the [cover of the journal Nature](#). Ray's lab identified volatile odor molecules that can impair, if not completely disrupt, [mosquitoes' carbon dioxide](#) detection machinery.

The intellectual property was licensed to [Olfactor Laboratories Inc.](#), a company that grew around the technology, expanded the research, filed additional patents, and developed related technologies that led to the mosquito-warding product.

Called the [Kite Mosquito Patch](#), the product marks a significant advancement in the global fight against mosquito-borne diseases such as [malaria](#), West Nile virus and dengue fever. The patch delivers mosquito-repelling compounds in a simple, affordable and scalable sticker that can be used by individuals in regions impacted by malaria and other mosquito-borne diseases.

"UCR is committed to strengthening and expanding its ties with industry partners," said Michael Pazzani, the vice chancellor for research and economic development. "Olfactor Laboratories Inc. is a great example of how UCR innovations result in new industries, which, in turn, lead to the development of products impacting the lives of people around the globe."

Simple and affordable, Kite is a colorful sticker, small enough to be worn virtually without notice. It disburses the non-toxic compounds that provide individuals with up to 48 hours of protection from mosquitoes. Estimated to cost a fraction of existing repellents, Kite is applied to clothing and can be used by people of all ages, including infants and [pregnant mothers](#).

"I am very excited to see how Olfactor Labs has rapidly taken our initial

discovery to a product that can have great value in the war against mosquitoes and disease," Ray said. "I am most impressed that they have designed something affordable and convenient for use in Africa and around the world. I am rooting for this to become a game changer in lowering instance of malaria, dengue, filariasis and other dangerous diseases."

Video in which Ray discusses his research:

Kite's technology is the culmination of years of development work on a class of [odor molecules](#), all of which are non-toxic compounds approved for human consumption by the U.S. Food and Drug Administration.

"The Kite Mosquito Patch isn't just another mosquito product, but a powerful alternative to most products on the market, enabling people to live normal lives with a new level of protection against contracting mosquito-borne diseases," said Michelle Brown, the chief scientist and vice president of Olfactor Laboratories, Inc.

Initial funding for the technology came to Ray's lab from the Bill and Melinda Gates Foundation and the National Institutes of Health. Olfactor Laboratories Inc. has funding from the National Institute of Health, agreements with the Walter Reed Army Institute for Research and the U.S. Department of Agriculture to test a range of technologies developed at the company relating to mosquito and other vector insects. The Kite Mosquito Patch is one of a number of new products with the 'Kite' product family, all of which use non-[toxic compounds](#) to repel, kill or lure vector insects.

"Kite will provide a new level of protection to, for example, children in Uganda, for the elderly in Mali, and hikers in Seattle or Sarasota seeking a safer, socially responsible solution," said Grey Frandsen, project lead and chief marketing officer at Innovation Economy Crowd ([ieCrowd](#)), a

crowd-powered platform aimed at transforming innovations into solutions. Olfactor Laboratories Inc. is an ieCrowd company.

The first Kite Mosquito Patches will be tested in districts of Uganda hardest hit by malaria. In 2010 an estimated 219 million cases of malaria occurred worldwide and 660,000 people died, 91 percent in the African Region.

Provided by University of California - Riverside

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