Malaria Vaccine Relies on Mosquito Bites

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kbrannon@tulane.edu

The same menace that spreads malaria ? the mosquito bite ? could help wipe out the deadly disease, according to researchers working on a new vaccine at Tulane University.

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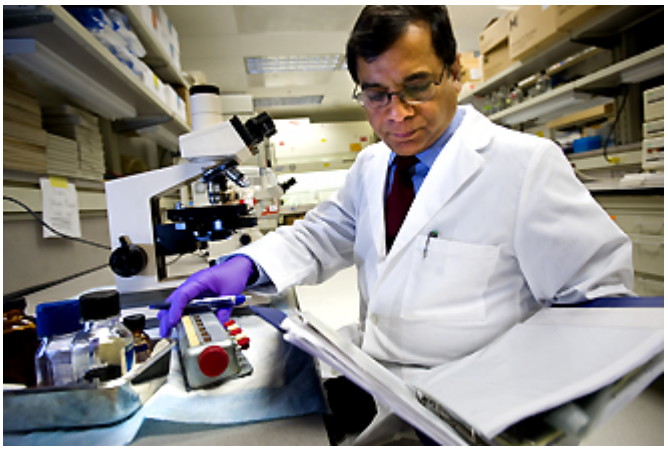

Nirbhay Kumar, a professor of tropical medicine at Tulane, is collaborating with India's Gennova Biopharmaceuticals to produce and test a novel malaria vaccine that aims to inoculate mosquitoes when they bite people. (Photo by Paula Burch-Celentano)

The PATH Malaria Vaccine Initiative (MVI) announced on Monday (Feb. 14) is a collaboration with the Tulane University School of Public Health and Tropical Medicine and India's Gennova Biopharmaceuticals to produce and test a novel vaccine that aims to inoculate mosquitoes when they bite people. A grant from the Bill & Melinda Gates Foundation established the initiative in 1999.

The vaccine would work by triggering an immune response in people so they produce antibodies that target a protein the malaria parasite needs to reproduce within a mosquito.

Malaria, which kills nearly 800,000 people every year worldwide, is caused by a microscopic parasite that alternates between human and mosquito hosts at various stages of its life cycle. Once a mosquito bites a vaccinated person, the antibodies would neutralize the protein essential for the malaria parasite's reproduction, effectively blocking the parasite's ? and the mosquito's ? ability to infect others.

The vaccine relies on a protein ? known as Pfs48/45 ? that is very difficult to produce synthetically, says Nirbhay Kumar, professor and chair of the Department of Tropical Medicine at Tulane.

“With MVI's support we can now work with Gennova to produce sufficient quantity of the protein and develop a variety of vaccine formulations that can be tested in animals to determine which one gives us the strongest immune response,” Kumar says.

Such transmission-blocking vaccines, though not yet widely tested in humans, are attracting widespread interest due to their potential to be used in conjunction with more traditional malaria vaccines and other interventions ? such as malaria drugs and bed nets ? to make gradual elimination and even eradication of the disease a reality.

Dr. Christian Loucq, director of MVI, says the organization hopes to introduce “an 80 percent efficacious malaria vaccine by the year 2025.”