UC SANTA BARBARA

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Donation of UC Santa Barbara Discovery to Institute for Oneworld Health May Accelerate New Treatment for Global Health Problem

The University of California, Santa Barbara announced today that it has donated all rights to a patent that covers the novel use of an established class of cardiovascular medicines as a potential new drug against a global parasitic disease.

The Institute for OneWorld Health, a nonprofit pharmaceutical company based in San Francisco, will use the UCSB discovery and the wealth of data associated with the medicines to accelerate drug development for treatment of schistosomiasis.

Two UCSB researchers discovered that calcium channel blockers may prove to be an inexpensive alternative for controlling schistosome infection, a serious global health problem that afflicts more than 200 million people annually in developing nations.

An estimated 200,000 people, many of them older children, die every year from schistosomiasis.

Many more suffer chronic damage to vital organs, including the liver and bladder.

The inventors are Mark Walter, a research biologist, and Armand Kuris, professor of biology.

"Calcium channel blockers look very promising for the treatment of schistosomiasis, which is a devastating disease," said Kuris, an expert in parasitology and associate provost of the College of Creative Studies.

Physicians routinely prescribe calcium channel blockers to treat high blood pressure, correct abnormal heart rhythms, treat panic attacks and bipolar disorder, and prevent migraine headaches.

"We know that the drugs are safe for people," said Kuris.

"They are available, and not terribly expensive.

For a tropical disease that is very, very important.

We are gratified by OneWorld Health's interest in our discovery, and confident in its ability to develop this inexpensive treatment for schistosomiasis for children in rural villages throughout the world."

OneWorld Health partners with pharmaceutical and biotechnology companies, universities, government agencies, and global health advocates to develop compounds or medicines that exhibit promise in treating developing world diseases.

Its strategy is to secure intellectual property rights to innovations that might not otherwise be developed.

"The generous donation of this UCSB patent is a sterling model for other academic and biopharmaceutical organizations seeking to contribute to global health," said Victoria G. Hale, CEO of OneWorld Health.

"We are excited at the prospect of creating a new use for these drugs.

Their well-documented safety and effectiveness could reduce the number of years it might take to bring a new treatment to people with schistosomiasis."

Hale is an expert in the treatment of tropical infectious diseases and drug development, and has had experience at the Food and Drug Administration and Gennetech.

About Schistosomiasis

For more than 30 years, scientists have attempted to develop a vaccine against schistosomiasis with no success.

The parasitic flatworm infects more than 200 million people worldwide, with three times that many individuals at risk for infection.

Although the schistosome life cycle also involves an invertebrate host, the parasite is not transmitted through the bite of an insect, but rather develops within freshwater snails.

After exiting from the snail vector, schistosome larvae swim along until they contact a human host bathing or working in the water.

They penetrate the skin and subsequently migrate through the blood vessels until finally establishing residence in veins of the intestines or urinary bladder.

The adult male and female worms pair, mate, and produce large numbers of eggs, some of which are excreted in either feces or urine and end up in the water supply, where they hatch and complete the cycle by infecting new snail hosts.

Those eggs that are not excreted become trapped in the tissues of the liver, spleen, intestine and bladder, where they become calcified.

Over time the accumulation of thousands of eggs causes severe and irreversible damage to these organs.

A number of existing drugs treat schistosomiasis by killing the adult worms, but side effects can occur and none of the treatments provides lasting immunity.

In fact, reinfection after anti-schistosomal drug treatment is fairly common, according to the researchers, because people return to infected water sources.

The widespread and repeated treatment of people with these drugs has also resulted in the appearance of drug resistant strains of schistosomes.

Moreover, the cost of drug treatment is beyond the reach of many Asian, African, and Latin American countries.

Mark Walter decided to attack schistosomiasis by attacking the ability of the worm to produce eggs.

By investigating the physiology of schistosome egg production, Walter and Kuris found that these parasites may need calcium to reproduce. They discovered that calcium channel blockers, medicines that slow the movement of calcium into the cells, suppressed the production of eggs by the schistosomes when tested in vitro.

The researchers explained that if schistosome egg production in humans could be suppressed by this type of treatment, then both the pathology of the disease and the continuation of the parasite lifecycle could be halted.

The presence of the nonreproductive worms may also help infected people keep their immunity to reinfection.

The Institute for OneWorld Health, a nonprofit pharmaceutical company, advances global health by developing new, affordable medicines for infectious diseases that disproportionately affect people in the developing world.

OneWorld Health accomplishes this through an entrepreneurial business model in which its staff of experienced pharmaceutical scientists identifies promising drug leads and drives their development from pre-clinical studies to clinical trials through regulatory approval.

The Institute for OneWorld Health, headquartered in San Francisco, is a tax-exempt 501(c)(3), U.S. corporation.

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One World Health

Armand Kuris

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The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.