

Inside Philanthropy

Snakebites Are a Deadly Threat Worldwide. Who's Behind the Push for a New Treatment?

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GREAT LAKES BUSH VIPER, A VENOMOUS SNAKE FOUND IN AFRICA. PHOTO: REPTILES4ALL/SHUTTERSTOCK

Back in 2019, the World Health Organization announced a strategy to battle what amounts to one of the world's least-recognized deadly tropical disease threats: snakebite. As many as 2.7 million people, primarily in Africa and Asia, are bitten by poisonous snakes each year, with an estimated 140,000 dying, and another 400,000 suffering permanent disability, such as loss of a limb.

The WHO's strategy aimed to reduce these deaths and disabilities by half over the next 12 years, in part by helping affected communities strengthen health systems and expand access to treatment. Roughly simultaneously with the WHO's announcement, global health funder Wellcome Trust launched a \$100 million

program to address the snakebite threat. To put that amount in perspective, in the entire decade leading up to Wellcome's program launch, only an estimated \$57 million had been committed to the problem.

“Treatment has progressed little in the last century, and is too rarely accessible, safe and effective in the places where it is needed the most,” said Mike Turner, Wellcome's director of science, in the organization's announcement of the program. “It's an incredibly challenging issue—there has been almost no investment in snakebite research over the last decade—but it's also one that is solvable with support from WHO, national governments, industry and other funders.”

Wellcome and the WHO wanted to encourage the development of new snakebite treatments. It may come as a surprise to folks unfamiliar with the slithering world of poisonous reptiles that the one existing treatment, antivenom, is far from perfect—very far. First of all, less than half of the antivenom the world needs is actually produced, and in any case, the stuff only works on bites from 57% of venomous snake species. The medicine is still produced through a correspondingly creepy 19th-century process that involves injecting horses with snake venom and then extracting antibodies from their blood, which is processed into medicine.

Also, antivenom is very expensive, must be kept refrigerated, and must be administered in a hospital or health facility as soon as possible. Many snakebite victims can't make it to a clinic in time. These factors combined make it difficult to keep sufficient supplies of antivenom in the isolated rural areas that have the greatest need.

Enter emergency and field medicine physician Matt Lewin, a fellow of the nonprofit California Academy of Sciences and director of the Center for Exploration and Travel Health. Having been aware of the need for a better snakebite treatment option for years, he founded Ophirex Inc. as a public benefit corporation to develop an antidote that would be inexpensive, safe, easy to administer in the field, and effective against many species of snake venom. He found a candidate in a drug called varespladib (don't try to pronounce it) that showed potential to act against venom of virtually all

species of poisonous snakes. He launched Ophirex with seed funding from friends, family—and rock musician Jerry Harrison of Talking Heads and other bands.

In 2020, in one of its early grants out of the snakebite program, Wellcome Trust contributed \$2.6 million to advance the clinical development of varespladib.

“Our reason for supporting Ophirex is quite simple,” Nick Cammack, head of Wellcome’s snakebite program area, told me. “The world urgently needs next-generation treatments that don’t involve animal products and are easy to administer as well as being cheap and easily stored.”

Cammack added: “Ophirex is blazing a trail with varespladib, and this will be the very first high-quality evaluation of a small molecule in snakebite. We wanted to help them get there, as there will be huge learnings for the field and real excitement if it works.”

But varespladib has also shown promise as a treatment for a health threat that’s immediate to nearly everyone: COVID-19, said Ophirex CEO Nancy Koch. The drug may be useful in preventing acute respiratory distress syndrome (ARDS), one of the life-threatening symptoms of COVID-19, as well as other illnesses. Ophirex won an additional SBIR III award to study the drug’s potential to prevent ARDS.

The story of varespladib is a textbook example of the role of philanthropy as an agent of discovery and the sector’s ability to respond to a need that is significant, but perhaps under the radar. A private funder can give a boost to those working on such problems, while also raising their profile.

As is often hoped in philanthropic giving for health and science research, the dollars from Wellcome did indeed lead to additional funding from government and other sources in this case. “Wellcome’s support was important to us on several levels,” said Koch. “It gave us additional credibility with other potential funders, and it allowed us to keep moving and bridge to the SBIR III award.”