Synthetic biologists fight snake venom with engineered DNA

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When the medical charity Médecins Sans Frontières called the worldwide shortage of snake antivenom a public-health crisis in September 2015, Brazilian biochemist Paulo Lee Ho wasn't surprised. He has spent his career at São Paulo's Butantan Institute searching for better ways to create antivenom to treat bites from coral snakes.

Conventional methods rely on natural coral-snake venom, which is hard to come by: the snakes produce only small amounts with each bite and are hard to raise in captivity. So Ho and others have turned to proteomics and synthetic biology in the hope of improving the quality and availability of antivenom. "We need a new way to meet the demand for antivenom from the Ministry of Health," he says.

These efforts are now bearing fruit. In March, Ho and his colleagues reported that they had engineered short pieces of DNA that, when injected into mice, triggered antibodies against coral-snake venom. The scientists then boosted the animals' immune response by injecting them with small pieces of synthetic venom antibodies synthesized in *Escherichia coli* bacteria.

Such progress is encouraging, given the severe medical burden caused by snakebites in the developing world, says Robert Harrison, head of the Alistair Reid Venom Research Unit at the Liverpool School of Tropical Medicine, UK. Each year, around 90,000 people die after being bitten by venomous snakes.

Read full, original post: Synthetic biology tackles global antivenom shortage