

# The Utah Statesman

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## Helpful Venom

### Snake venom research benefits medicine

By Seth Bracken

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It shouldn't come as a surprise for anyone that snake venom can be used for medicinal purposes, ranging from diabetes to cancer, said Stephen Mackessy Thursday afternoon.

"The difference between drugs and poison is a matter of dosage," said Mackessy, a professor from University of Northern Colorado.

There have been some successful developments with the application of snake venom to treat medical issues, the most successful development being a treatment for type 2 diabetes, Mackessy said. It is a drug that is used by thousands and is extracted from the venom of Gila monsters, he said. The drug sold for \$350 million when it reached the production and application stage, he said.

"It's a miracle drug," Mackessy said. "It even promotes weight loss."

The level of toxicity in a snake's venom is not directly related to the possibility of medical application, Mackessy said. Isolating the useful agents and parts of the venom is the lengthy processes that Mackessy is researching and developing, he said.

"The work is really just starting," Mackessy said. "There's enough industry to keep me busy for the rest of my life."

The members of the lab at Northern Colorado University have been experimenting with the effects different types of snake venom have on cultured breast cancer cells, Mackessy said. However, there are more than 2,000 species of venomous snakes and little is known about most of them, he said. There has been some progress, but he said there is still more research to be done.

There are two types of venomous snakes, front-fanged and rear-fanged, he said. There is a lot more knowledge about the front-fanged snakes, such as rattlesnakes, vipers and cobras, simply because the venom is easy to extract, he said. The process involves grasping the snake and squeezing lightly by the fangs and catching the excreting venom, he said. On the other hand, there are many snakes that have their venom releasing teeth in the back of their mouths and the process is much more complicated and can take about 30 minutes to extract even small amounts of venom, he said.

"It's very boring work," Mackessy said.

The way that each venom works varies not only between species of snakes, but also in the age of the snake, Mackessy said. Some venom is meant to paralyze and others are meant to tenderize the muscles and tissue to make it easier to eat, he said. There is even one type of venom that stops the blood from clotting, he said, and there are some practical applications for this in surgeries to stop blood from clotting. Some venom is very complex molecularly, and some is quite simple, relatively speaking, he said.

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Photo by Cameron Peterson

There are two kinds of snakes, front-fanged and rear-fanged, said Stephen Mackessy, professor from the University of Northern Colorado, at the Merrill-Cazier Library Thursday. Venom from snakes has been found useful in treatments of cancer and diabetes. How each type of venom works in medicine varies depending on the species as well as the age of the snake, he said.