## MISD Literature Unit 6.3—Exploration and Discovery—Linking Text

**THEME:** Discovery requires experience and reflection.

# The Case of the Frog That Healed Leads Dr. Michael Zasloff to a Medical Leap Ahead

**by Montgomery Brower**

Isaac Newton got his inspiration from a falling apple; Dr. Michael Zasloff got his from a frog. Sitting in his laboratory at the National Institutes of Health in Bethesda, Md., one day last summer, Zasloff was watching an African clawed frog swim in its tank, something he had casually observed for years. Suddenly a new insight struck him. As the lowly amphibian bellied up to the aquarium glass, Zasloff noticed that a surgical cut he had made a few days earlier on the frog's abdomen was healing nicely, with no evidence of pus or inflammation. Yet the brown, murky water in the tank was a bacterial playground that should have caused infection. "For the first time I realized there must be a mechanism that protected the frog's wounds from becoming infected," he says. "I felt an extraordinary sense of sheer joy, because I knew that with just some good hard work, the process could be defined."

After five months of scientific sleuthing, Zasloff, 41, succeeded in isolating two natural antibiotics found in the frog's skin that kill not only a wide range of bacteria but fungi and parasites as well. There is even the possibility that it could attack some cancers and viruses. Zasloff dubbed the substances "magainins" (ma-GAY-nins), from the Hebrew word for "shield," and news of his discovery sparked excitement in the scientific community. Some compared Zasloff's serendipitous find to the accidental discovery of penicillin by Sir Alexander Fleming 59 years ago, though magainins' safety and effectiveness in treating humans remains to be shown. For Zasloff, who is chief of human genetics at the National Institute of Child Health and Human Development, the breakthrough was a signal achievement. "It's the kind of experience a scientist gets once in a lifetime," says NIH Director Dr. James Wyngaarden, "if he's lucky."

Zasloff started the painstaking process of discovery by testing fluids drawn from a healing frog to see if they could stop bacteria from growing on a prepared laboratory dish. He got only weak results, so he next tried grinding up frog skin and treating it chemically to extract about 50 components that could be tested. "There were times when he'd have vast amounts of weariness, but not doubts," says his wife, Barbara, 41. "He's extraordinarily optimistic."

Barbara herself contributed some insight to her husband's efforts. A psychologist who works mostly with children, she had a patient whose father lost his legs and pelvis from an infected wound inflicted by a boat propeller in a freshwater pond. Her account of the incident led Zasloff to wonder why a cold-blooded amphibian could fend off what a human could not.

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Daughters Daniella, 14, Eva, 11, and Joanna, 6, shared the thrill of their dad's discovery. "He came home one day and said, 'Kids, something exciting is going on,' " says Daniella. "He told us about the frogs and it was neat because we could understand." Zasloff was so keyed up that he had trouble sleeping nights; Daniella would hear him getting up at all hours to check the lab dishes he'd placed on top of the water heater. The next morning he would show the children how his find had destroyed more bacteria. Zasloff finally succeeded in narrowing down his search to the two peptides (very small proteins) that he called magainins.

"I've been playing like this from the time I was a kid," says Zasloff of his research. While other children were out playing around frog ponds, Zasloff was filling his family's Manhattan apartment with smoke and fumes from his makeshift laboratory. He and Barbara met while students at Columbia University and Barnard. Married the week after graduation in 1967, they spent the next seven years earning their respective multiple degrees. As an M.D.-Ph.D., Zasloff still sees patients at NIH and acts as family doctor for his daughters while also pursuing research.

Zasloff thinks the magainins may help account for the evolutionary success of amphibians and could also explain the traditional use of frogs as remedies in folk medicine.

"These compounds will not replace penicillin," he says. Instead "we expect they will be used to treat organisms for which there are no known antibiotics." Zasloff thinks a probable first use in humans will be to treat burn patients, who are particularly susceptible to infections. Although human tests may be two years away, Zasloff looks forward to the day when his discovery will open the way to relieving suffering. "My dream," he says, "is in the next five years to sit at the bedside of one of my patients and see magainins work."

http://www.people.com/people/archive/article/0,,20096899,00.html

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