MARK CUSHMAN

Sitting in a University of California, San Francisco, lecture hall in the 1960s, Mark Cushman was much like his fellow pharmacy classmates: young, idealistic and eager to invent new medications to help people. Cushman's dreams, however, were quickly put to rest by a well-intentioned professor who warned that the chances of discovering a viable compound, finding someone to finance it, and getting all the way to FDA approval were next to impossible.

That was then. This is now.

Nearly 50 years after completing his Pharm.D. and 40 years after serendipitously creating promising new anti-cancer agents in his Purdue laboratory, two of Cushman's drugs — LMP400 (indotecan) and LMP776 (indimitecan) — have just passed phase 1 clinical trials. They're now headed into phase 2.

"We saw efficacy in some of the cancer patients, which was encouraging," says Cushman, distinguished professor of medicinal chemistry. "While not every single patient responded to the medications, those who did showed no cancer progression and fewer side effects than with traditional chemotherapy."

Drug discovery is a steep uphill climb. Current estimates indicate that only 1 in 10,000 drugs developed in the laboratory actually make it into the marketplace, and the total cost of developing a single successful drug is upwards of $2.6 billion.

To better his own odds, Cushman has invested in Linus Oncology, the company that has licensed his intellectual property. He also serves on its board. "This has given me access to National Cancer Institute clinical data that I wouldn't have had otherwise and has also allowed me to contribute to the success of the drug," he says.

But Linus has reached a critical juncture. The company needs to successfully negotiate with an international company to fund phase 2 trials, which would include mass-producing the drugs for a few hundred patients, recruiting physicians to administer the medications, and recording results.

If negotiations are successful, Linus will target Phase 2 trials at patients with particular types of cancer. Then, Cushman's drugs would have one more barrier to overcome. "Phase 3 would be for thousands of patients, and the company would have to work with many different clinics to have it trialed," he says. Even at that point, potential side effects could keep the drugs from being approved.

Meanwhile, Cushman is thrilled he's gotten this far. "The drugs have already helped 17 patients," he says. "For them to be approved and available to anyone with cancer, that would be beyond my wildest expectations."