

Immunotherapy Helps Retired Fisheries Biologist Get Back to Normal

Advanced chondrosarcoma — “shark” cancer — has no standard treatments beyond surgery, but a Fred Hutch oncologist explores new options.

April 11, 2023 By Fred Hutch News Service and Bonnie Rochman

The more than 170 types of sarcoma come in a “great variety,” according to [Lee Cranmer, MD, PhD](#), a Fred Hutchinson Cancer Center oncologist and researcher.

One of them, chondrosarcoma, is a cancer of the cartilage, the firm-yet-flexible connective tissue that makes up our noses and ears and protects and connects our bones, allowing our skeletons to move smoothly. Sharks, whose skeletons are made completely of cartilage, can suffer from chondrosarcomas, as can humans, including Cranmer’s patient, Mark Schuck, a retired fisheries biologist.

“This is a ‘shark cancer,’ so it’s sadly ironic for a fisheries biologist to suffer from this condition,” Cranmer said.

The diversity of [sarcomas](#) means the patients that Cranmer sees in clinic are like his research laboratory, and Schuck — first diagnosed in 2008 with a cartilage tumor in his left hip — was no exception.

“When dealing with such rare conditions, the way you make advances is by making observations in the clinic,” said Cranmer, the Curtis and Elizabeth Anderson Endowed Professor in Sarcoma Research in the Division of Medical Oncology at the University of Washington, and director of Sarcoma Medical Oncology and program director of the Bob and Eileen Gilman Family Sarcoma Research Program at Fred Hutch.

The primary treatment for chondrosarcoma is surgery.

“As a generalization, there are no other treatments,” Cranmer said.

Chemotherapy is ineffective; radiation is used occasionally to relieve symptoms, but chondrosarcoma is relatively radiation-resistant.

Schuck, who lives near Walla Walla, Wash., sought care in Spokane when diagnosed. By 2014, his

health had deteriorated, and he was in severe pain as the cancer had grown from a low-grade tumor to a more aggressive, fast-growing type. He returned to Spokane and underwent surgery to remove the top half of his left femur and put in an artificial hip joint.

In 2021, Schuck started to experience pain again and was referred to Fred Hutch, where Cranmer observed that he was exhausted, losing weight and had a mass growing on his leg and tumors in his lungs. At that point surgery wasn't an option; [Matthew Thompson, MD](#), an orthopedic oncologist who specializes in sarcoma, thought Schuck might need to have his leg amputated but worried that he wasn't strong enough for the procedure and suggested he see Cranmer.

Schuck thought he'd need to wait for an appointment but hadn't gone more than 100 feet outside the clinic when he got a call letting him know Cranmer could see him right away.

"It was amazing that he made an opening for me," Schuck said.

Cranmer told Schuck that it was possible that immunotherapy could be beneficial, but he'd need molecular testing to see if there were genetic markers present that backed up his hypothesis. As Schuck waited for the test results, his pain was increasing.

"My bloodwork did not look good," said Schuck. "I was depressed, thinking this might be the beginning of the end."

Once the results came in, Cranmer identified a finding that made him optimistic that immunotherapy would work, although it is not approved for Schuck's type of cancer.

"I was making an educated guess that this is what we should try," Cranmer said.

Cranmer's team was able to obtain pembrolizumab (also known by the brand name Keytruda), an immunotherapy drug, on a compassionate use basis for Schuck, free of charge. Because it's not approved for chondrosarcoma, Schuck's insurance would not have paid for it. The cost would have been tens of thousands of dollars per month for the drug infusion, tests and blood panels, according to Schuck's research.

Schuck received his first infusion in September 2021. In less than three weeks, he was able to manage his pain with over-the-counter medications; within six weeks, he was off all pain relief.

"I could feel the tumor was less angry, less hard and hot to the touch," Schuck said. "It was visibly shrinking."

Each time he had a new scan, the cancer was less apparent. He experienced only mild side effects such as itchy eczema that is controlled by Prednisone.

"I hike, I hunt, I fish — we went crabbing in the San Juans during the summer," said Schuck, who spent 34 years doing fisheries research with the Washington Department of Fish & Wildlife, most of that time working toward the recovery of endangered salmon and steelhead on the Snake River.

“There is no evidence of new disease, no new lesions and everything has shrunk. I’m essentially back to living as if I’m fully cured.”

Cranmer concurs.

“He’s had a dramatic and unexpected response despite there being no standard treatment for his condition,” Cranmer said. “Usually, nothing stops this disease, yet he is back to fishing, his pain went away, and he has gained weight.”

Cranmer is working to develop a clinical trial for a subset of patients like Schuck.

“We now have five patients with chondrosarcoma who have taken immunotherapy and responded dramatically,” he said.

Cranmer [published](#) the first case he observed and is preparing another case for publication, part of a campaign to get immunotherapy manufacturers to provide the drugs to patients.

“There are a variety of medications in this class that are all different flavors of the same thing,” he said. “I just want someone to provide me the drug so we can give it to these patients and try. Seeing immunotherapy work in five people says to me that it’s not a one-off. There is some real underlying biology that we can go after to help our patients. But they cannot wait for us to figure out the whole story — they need help now.”

The sort of jaw-dropping results that Schuck experienced foreshadows long-term control.

“We believe it is likely that he will benefit for a long time and hope it would be indefinitely,” said Cranmer.

Schuck is still taking the drug. He has also given Cranmer permission to use his health data for research purposes.

“I was a researcher my whole life, so research comes second nature to me,” said Schuck. “You need data and access to the data, so I was more than happy to sign the release. I want to help move the science of treating cancer forward.”

[This article](#) was originally published March 13, 2023, by Fred Hutch News Service. It is republished with permission.