

# A Molecule to Paint Cancer

"I LOVE IT when people tell me I can't do something," says Jim Olson. A pediatric oncologist at Seattle's Fred Hutchinson Cancer Research Center and the founder of two biotech companies, Dr. Olson specializes in brain cancer. Surgeons trying to remove brain tumors often find it devilishly complicated to distinguish healthy tissue from a malignant mass—and even tiny errors can mean devastating consequences. Dr. Olson's work is making those errors less likely.

In 2004, one of Dr. Olson's patients, a 17-year-old girl, emerged from an all-day surgery (performed by another doctor) with "a rather large piece of cancer," mistaken for normal tissue, still left in her brain. "We felt extremely frustrated by that particular case," Dr. Olson says. "So we decided to make a molecule that would light up cancer."

That is exactly what he's done, building on an idea he came up with as a medical student studying pharmacology at the University of Michigan in the 1980s. (Back then, he remembers, some senior faculty scoffed and called him "Buck Rogers.") The molecule, which Dr. Olson dubbed "tumor paint," binds to cancer cells and makes them glow—letting physicians see the exact borders between malignant cells and healthy ones. Some 500 times more sensitive than an MRI scan, it could be a lifesaving aid in detecting precisely the areas to target in delicate surgery.

This year, tumor paint—derived in part from the venom of a Middle

Eastern scorpion known as the deathstalker—is in clinical trials for cancer patients in Australia. Additional trials are planned in the U.S. later this year. If these and other trials succeed, the next step will be to seek approval by the U.S. Food and Drug Administration.

Dr. Olson, 51, is a Michigan native who wanted to be a doctor from age 4. He shifted his specialization from radiation oncology to pediatrics after being inspired to do so by the parents of a 7-year-old patient of his who had died. His patients' backing has been key: In the past decade, they and their families have raised \$8

million through bake sales, runs and other efforts to support his work on tumor paint and other cancer treatments, including studies of the acne drug Accutane, which (according to research by Dr. Olson and others) can boost chemotherapy's efficacy in killing the most common pediatric brain-cancer cells. Last year, Dr. Olson launched Project Violet, a crowdfunding site where, for \$100 each, donors can sponsor research of cancer-fighting compounds based on blueprints from nature. He and his team are compiling thousands of such potential remedies. "I'm confident," he says, "that our drug candidates will evolve to help patients with currently incurable diseases."

