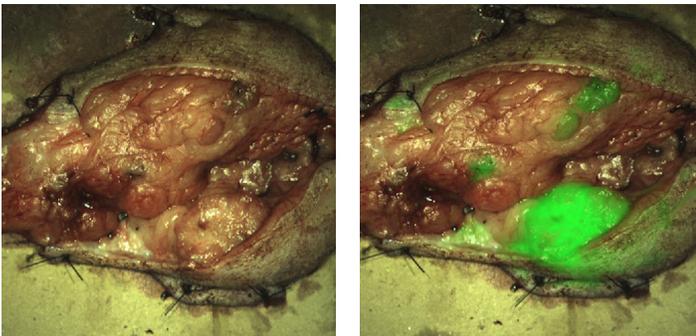


A PROMISING TECHNIQUE THAT IS PUSHING THE FRONTIER OF NEUROSURGERY: **TUMOR PAINT**

Chlorotoxin, the substance used to make tumor cells glow, is a molecule found in deathstalker scorpion venom and has been around for decades. Yet, this surprisingly non-toxic venom's ability to solely locate tumor cells in humans has created potential advancements in cancer treatment and neurosurgery. In this application, the luminous substance has been appropriately named Tumor Paint and is changing the process of neurosurgery, allowing surgeons to distinguish cancer cells from healthy tissue more accurately by giving them a visible fluorescent glow. This method can replace surgeons' need to target the tumor using a combination of their eyes, fingers, and thumbs – poking around in a human brain – making it nearly impossible to completely remove the smallest bits of the tumor and risking possible damage to healthy brain cells.



Tumor Paint illuminates tumor cells, allowing surgeons to distinguish the smallest cancerous areas that could otherwise go undetected.

THE MAN BEHIND THE PAINT

The mastermind behind the tumor potion is Dr. Jim Olson, a 51 year-old pediatric oncologist from Seattle, Washington who is no stranger to the difficulties of removing tumors. 18 months ago, Olson's experimental substance – a treasure in the biotech world – was still a clinical trial technique. After several trials on dogs, Tumor Paint was approved for human testing at Cedars Sinai Medical Center in Los Angeles.

The application of the substance is surprisingly simple. A medical professional injects the tumor paint into the patient's bloodstream via an IV, where it travels to the brain, binding to Annexin A2, and trickles into to the tumor.

At this phase of human trials, Olson and his team are proving that Tumor Paint is in fact reaching its target: tumor cells. Future studies will focus on the technique's impact on tumor removal surgery and if the results present a better outcome when compared to traditional tumor removal procedures for patients. Olson is driven by a commitment to his patients, pushing him to research and develop Tumor Paint technology for application in cancer treatment.

AN UNCONVENTIONAL METHOD TO FUNDING

When Olson reached out to large grant-making organizations for funding, they found his potion to be a far-fetched gamble. Olson then turned toward a crowd-funding approach, accepting donations from individuals while focusing on the families of current and former patients. He raised an impressive \$5 million for an untested novel technology, through non-traditional funding methods. He has also gained traction by pitching the story of Tumor Paint around the United States at various conferences and urging individuals to contribute to his lab directly, by visiting his crowd-funding platform – Project Violet. Throughout the years, traditional funding methods such as the National Cancer Institute who donated a \$250,000, have been more inclined to fund his research. Nonetheless, the bulk of his funding still comes from individuals. In hopes of furthering his research, Olson founded Blaze Bioscience in 2010, through which he ran the first human clinical trial of Tumor Paint in December 2013.

THE FUTURE OF NEUROSURGERY

The ultimate goal of Tumor Paint is not to just simplify neurosurgery, but to develop an anti-cancer drug treatment that travels directly to a tumor. Olson's technique has dramatically advanced since human trials began in 2013, bringing greater precision to the field of neurosurgery and the potential for advancements in cancer treatment.

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