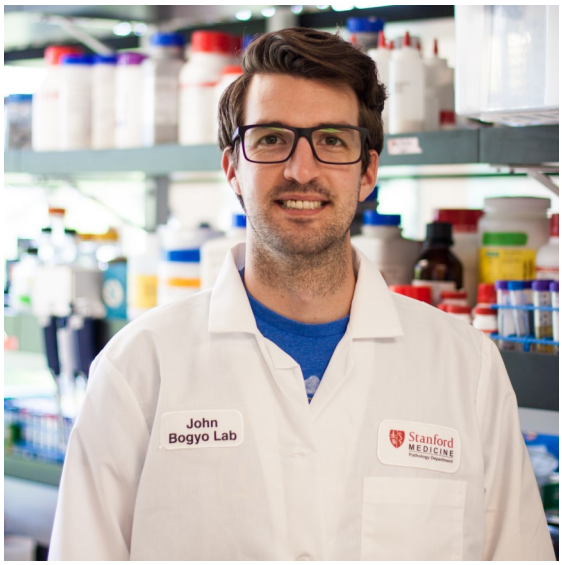
The Grand View League Funded Postdoctoral Fellowship 2019

The American Cancer Society's mission is to save lives, celebrate lives, and lead the fight for a world without cancer.



John Widen, PhD

Stanford University School of Medicine

Project Title
Dual Quenched Protease Substrates for Optically Guided Tumor Resection

Type of Cancer
Non Site-Specific Cancer

Area of Research
Technology Development, Marker Discovery, Localized Therapy Discovery and Development

Active Through
June 30th, 2022

Total Award Amount
$163,500

Surgical resection is typically the first line treatment for cancer patients with solid tumors, and the ability to completely remove all of the cancer cells from the body has a major impact on patient outcomes and survival. Furthermore, tumor resection followed by chemo and/or radiation therapy remains the best treatment option to obtain a curative result. **Therefore, the primary challenge for improving surgical treatment is developing better ways to visualize cancer cells to define margins between tumors and normal tissues.**

Despite the importance of surgical resection as part of the treatment plan for cancer patients, most research efforts are dedicated to designing and optimizing targeted chemotherapy. **This proposal focuses on the improvement of surgical resections by developing fluorescent probes for surgeons to help accurately identify and remove cancer from the body.**

Our research strategy is to develop targeted fluorescent tools that only become fluorescently active in the tumors to differentiate it from healthy tissue. Equipment is already available for surgeons to visualize fluorescent dyes during operations. However, only three non-targeted dyes are clinically available to aid in identifying vascular and ductal structures.

The fluorescent probes our lab is developing will specifically target cancer cells allowing surgeons to make real-time decisions on tumor margins, which will result in better patient outcomes and survival after surgery. The activatable fluorescent probes being developed in our lab react with multiple enzymes that are over expressed and hyperactive in tumors. Through this mechanism the activatable fluorescent probes will 'light up' the tumor to aid surgeons in visualizing tumor cells during surgery using fluorescent imaging equipment already available in the clinic

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