Photodynamic Therapy with Spatially-Resolved Dual Spectroscopic Monitoring for Feedback Controlled Delivery

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Technology I.D. Number: URMC 6-1320 and URMC 6-1582
Intellectual Property Status: US and Foreign Patents Pending

Background:
Photodynamic therapy (PDT) is a light activated drug treatment for cancer that utilizes a photosensitive drug and light to induce cell death in cancerous tissue. A key issue during PDT treatment is dosage monitoring to enhance selectivity of cancerous tissue over healthy tissue and to reduce patient discomfort and pain.

Technology Summary and Advantages:
Since 2003, a collaborative research effort between researchers at the University of Rochester Medical Center (URMC) and the Roswell Park Cancer Institute (RPCI) has resulted in the development of a system for delivery of PDT with capabilities for realtime spectroscopic monitoring and feedback controlled dosimetry.

Feedback in the form of fluorescence spectra analyzed in realtime enables continuous monitoring of dosage levels to improve efficacy, reduce or eliminate pain associated with therapy and alleviate or eliminate the need for anesthetics or continuous sedation of patients undergoing PDT. This also has the effect of minimizing treatment time in the clinic. Optimized dosimetry also takes into account measured patient pain thresholds.

To date, the instrumentation has been successfully used in two clinical research trials to optimize PDT dosimetry, as described in the sample publications below.

Sample Publications:


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Figure: (A) Schematic illustration and (B) computer-controlled clinical instrumentation of the system. (C) LABView user interface for the instrumentation

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