



Depth-Resolved Fluorescence Instrument for Detecting Epithelial Pre-Cancers and Cancers

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a fluorescence instrument and technique for detecting pre-cancerous and early cancerous growth in human epithelial tissues at various depths below the surface.

Overview

Fluorescence spectroscopy involves irradiating tissue surfaces with light and detecting the fluorescence emitted by fluorophores in the tissue. This method provides a promising new means to detect human epithelial pre-cancerous and cancerous growths. However, the tissue depths at which current fluorescence spectroscopy and imaging devices can probe are fixed by the devices' illumination and collection geometries, and thus may not provide optimal contrast between neoplastic growth and normal tissue.

The Invention

UW-Madison researchers have developed a fluorescence instrument and technique that enables measurement of fluorescent targets, such as pre-cancerous or cancerous growths, at various depths below the tissue surface. The technique involves using the fluorescence instrument to illuminate the tissue surface with light of a selected wavelength and collect the fluorescent light emanating from the tissue. To probe at various depths beneath the tissue surface, the size of the the device's illumination and collection aperture is varied. By allowing characterization of the depth-dependent distribution of the fluorescent target, this technique maximizes the contrast between cancerous or pre-cancerous growth and normal tissue. It also yields additional information about the stage of cancers or pre-cancers in human epithelial tissue, and may provide important evidence for clinical diagnosis.

Applications

- Detects pre-cancerous and early cancerous growth in human epithelial tissues

Key Benefits

- Maximizes the fluorescence contrast between epithelial pre-cancers and cancers and non-neoplastic tissue
- Adaptable to current endoscopic optical imaging systems without significantly increasing their complexity or cost

Additional Information

Related Technologies

• [The inventors have developed an additional method of measuring fluorescent targets at different angles of illumination of the tissue surface and](#)

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