Noninvasive diagnosis of tissue pathologies with optical spectroscopy: Biomedical Optics Lab, Prof. Irving Bigio, Biomedical Engineering, ECE

Project Description:

The educator team in the Biomedical Optics Laboratory will work on the development of optical-spectroscopy and optical interferometry technologies used for minimally-invasive measurements on living systems. These technologies, often mediated by fiber-optic probes, are for noninvasive diagnosis of tissue pathologies, including cancer, and for the measurement of drug concentrations in tissue. Collaborators at medical research centers are testing some of the optical instrumentation we have developed in clinical studies. Other optical methods are being tested in our labs to image nerve activation in real time. The educator team will have the opportunity to directly contribute to one or more components of the program by developing and testing experimental elements and/or invoking computational methods for analysis of optical data from laboratory and/or clinical studies.

The Experience for the RET teachers:

Supporting personnel:

Prof. Irving Bigio, BME, ECE

Biomedical Optics and Biophotonics

www.bu.edu/bmo
617-358-2041
Location: PHO 512
Associated faculty: Bigio

The core theme of biomedical optics/ photonics is minimally invasive optical diagnostics and therapeutics. This laboratory focuses on the development of optics-based technologies for clinical applications and biomedical research. Current research topic areas include:

- Advanced spectroscopic technologies for tissue diagnosis
- Noninvasive measurement of drug concentrations in tissue
- Interstitial laser thermotherapy and photodynamic therapy
- Computational methods for modeling optical transport in tissue
- Optical interferometry for imaging nerve activation