

RISE Talks Series

Who? Bjorg Larson, Assistant Professor of Physics

What? **Confocal microscopy for cancer detection and diagnosis**

Where? Hall of Sciences, Room 326

When? 12:00-1:00 on Thursday, April 17

Traditional pathology is based on the microscopic examination of cellular detail in tissue. Such examination is possible with biopsy (removal of tissue), physical sectioning (cutting into thin slices) and staining of cellular structures with dyes to provide contrast. Optical imaging technologies are being developed for noninvasive observation of cellular detail in living tissue, without the need for biopsy. Confocal microscopy provides “optical sectioning” – i.e., collection of signal from the focal plane but rejection from outside, which allows for noninvasive imaging of cellular detail in thin “slices” in living tissue. Morphological detail is visible due to endogenous reflectance contrast of skin structures.

Confocal microscopy has been shown to be effective for detecting and mapping both melanoma and non-melanoma skin cancers, and is being tested in other sites such as head-and-neck and breast. Other applications include strip mosaicing of excised tissue for rapid pathology-at-the bedside and mapping of tumor margins for laser ablation.