

Abstract Submitted
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Ultrafast Laser Detection of Cancer in a Single Cell PAUL GOURLEY, JUDY HENDRICKS, ANTHONY MCDONALD, GUILD COPELAND, KEITH BARRETT, CHERYL GOURLEY, Sandia National Labs, ROBERT NAVIAUX, Univ. CA, San Diego, SANDIA NATIONAL LABS TEAM, UNIV. CA, SAN DIEGO COLLABORATION — Currently, pathologists rely on labor intensive microscopic examination of tumor cells using century-old staining methods that can give false readings. Emerging BioMicroNanotechnologies have the potential to provide accurate, realtime, high throughput screening of tumor cells without invasive chemical reagents. These techniques are critical to advancing early detection, diagnosis, and treatment of disease. Using our award-winning Hyperspectral InceptorTM to rapidly assess the properties of cells flown through a micro/nano semiconductor device, we discovered a method to rapidly assess the health of a single mammalian cell. The key discovery was the elucidation of biophotonic differences in normal and cancer cells by using intracellular mitochondria as biomarkers for disease. This technique holds promise for detecting cancer at a very early stage and could nearly eliminate delays in diagnosis and treatment.

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