



## CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:  
RP160460

Project Title:  
High resolution imaging for early and better detection of bladder cancer

Award Mechanism:  
Individual Investigator Research Awards for Prevention and Early  
Detection

Principal Investigator:  
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Entity:  
Rice University

### Lay Summary:

Bladder cancer is the 6th most common cancer in the US. When detected early, bladder cancer can be treated successfully. Unfortunately, bladder cancer has a very high rate of recurrence, and as a result, is the most expensive cancer to treat. Bladder cancer is initially diagnosed during endoscopy. Because of the high risk of recurrence, patients who have been treated for bladder cancer undergo follow-up endoscopy every 3-6 months. Standard endoscopy has a number of shortcomings; some flat cancers are hard to visualize during endoscopy and are not detected at the earliest stage when they are most easily and effectively treated. At the same time, it is difficult for physicians to tell whether lesions that appear suspicious contain cancer or are benign, and so all lesions must be biopsied. It is especially difficult to visualize recurrent cancers using standard endoscopy, because lesions are flat and appear similar to other benign changes. There is an important need to improve the ability of endoscopy to identify suspicious bladder lesions without missing any cancers, and characterize bladder lesions as benign or malignant with high accuracy. To meet this need, we propose to develop a simple and affordable technology to improve the ability to identify early cancers during endoscopy. We will develop a fiber optic microscope that can be used during endoscopy to image bladder tissue with sub-cellular detail. This new, low-cost device can be used to image the bladder in real time, providing the same kind of information that is now only available by biopsy. We will use this device to image suspicious areas in 50 patients undergoing endoscopy because they are at high risk for bladder cancer; we will use the data to develop image analysis tools that can provide real time results. In a follow up study of 50 patients, we will evaluate whether the imaging system improves diagnostic accuracy for early lesions at a time when they are most amenable to successful treatment.