**Opportunity and Significance**

- The overwhelming need for, and clinical interest in, noninvasive diagnostic procedures
- Single modalities alone can only provide a limited amount of information
- A dual-modality system would allow for enhancements in noninvasive diagnostic procedures for tumor detection\(^1,2,3\)

**Technical Objectives**

- The development of a dual-modality imaging system that combines photoacoustic (PA) microscopy and fluorescence imaging (FI)
- To outline the enhancements to the both qualitative and diagnostic information available in the combined images from this system

**Related Work and State of Practice**

- The development of a unique laboratory setup for the project was designed and implemented
- Validation of the system, including image acquisition and data acquisition, in progress

**Technical Approach, Accomplishments, and Results**

- The combined system has been designed and is being optimized for dual image acquisition
- System is designed with external triggering to coordinate acquisition between PA and FI
- Validation of system requires FI image acquisition and PA image reconstruction

**Next Steps for Development and Test**

- Final validation and optimization of system function to enhance imaging capabilities
- Acquisition of biological samples or specimens to test diagnostic capabilities
- Enhance design for imaging biological systems

**Commercialization Plan & Partners**

- The research effort was done entirely at Wayne State’s Optical & Photoacoustic Imaging Research and Analysis Laboratory (OPIRA)
- We have connect with a physician from the Henry Ford Health System to develop a project for imaging nanoparticles in glioblastoma
- Limitations to research efforts are related to resources available for the laboratory

**References**


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