

Application for Round-6 QIBA Project Funding

<b>Title of Proposal:</b> Examination of Flow Phantom as Reference Standard for Validation of Ultrasound Volume Blood Flow Measurement		
QIBA Biomarker Committee/Task Force: Ultrasound Volume Blood Flow (USVBF-1)		
NIBIB Contract Objective(s): Objective 4		
<b>PI (Project Coordinator or Lead Investigator Information)</b>		
Last Name: Kripfgans	First Name: Oliver	Degree(s): PhD
e-mail:		Tel #:
Institution/Company: University of Michigan		
Total Amount Requested:		

**Project Description**

The development of a robust and accurate measurement method for volumetric blood flow using several commercial ultrasound systems would provide physicians with a simple to use clinical method for the assessment of patients. This QIBA group with the administrative support of the American Institute of Ultrasound in Medicine (AIUM) has been meeting over the last several months to pursue the development of a biomarker protocol. The objective of this project is to provide groundwork results in support of the Ultrasound Volume Blood Flow Profile to establish this measurement as a quantitative biomarker for renal transplant assessment with rapid extension to many applications involving large vessels.

This groundwork project would investigate the performance among systems and operators using a single established methodology<sup>i</sup> applied to 3D color Doppler data from a calibrated flow phantom as reference standard following the QIBA recommended methodology previously summarized<sup>ii</sup>. A single source for analysis software implementing this methodology would be used to calculate the corresponding volume blood flow from the acquired data. This software will be distributed to all participating sites along with a flow phantom supplied by Gammex (a modified 403 series phantom). Sites own appropriate ultrasound scanners that, with the proper technical support and supplemental equipment, such as specific 3D ultrasound probes, will be able to collect appropriate data for the assessment of bias and inter- and intra-observer variability (reproducibility and repeatability) including results from more than one ultrasound platform. The objectives are to assess and to isolate sources of variability and bias in operator or system performance by the analysis of data using the same algorithm for data processing. Future algorithms can be compared with that open algorithm.

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