



**PULSE-ECHO QUANTITATIVE ULTRASOUND
BIOMARKER COMMITTEE**
Agenda for Friday, September 4, 2020
11:00am – 1:00pm

Attendees: Ivan Miguel Rosado-Mendez (Co-Chair), Anthony Samir (Co-Chair), Michael Wang, (Co-Chair), Michelle Alexander, Cristel Baiu, Jeffrey Bamber, Richard G. Barr, Guy Cloutier, Chris De Korte, Todd Erpelding, Raul Esquivel, Giovanna Ferraioli, David Fetzer, J. Brian Fowlkes, Timothy Hall, Aiguo Han, Viksit Kumar, Roberto Lavarello, Amy M. Lex, Tian Liu, Ted Lynch, Ravi Manguli, Stephen McAleavey, Marie Muller, Kibo Nam, Gary Ng, Shigeto Ono, Arinc Ozturk, Stephen Rosenzweig, Jonathan Matthews Rubin, Laurent Sandrin, Paul Sidhu, Timothy Stiles, Michael Thornton, Theresa Tuthill, Xiaohong Wang, Keith Wear, James Zagzebski, Gundrun Zahlmann, Nancy Obuchowski, Daniel Sullivan

AIUM Staff: Kelly Phillips

AS: Anthony Samir
IRM: Ivan Rosado-Mendez
MW: Michael Wang

TOPIC	COMMENTS	ACTION ITEMS
Introduction	Welcome (AS)	
Work Groups	Work groups progress reports <ul style="list-style-type: none"> • Attenuation WG (VK, AO, RB) • Backscatter WG (AH, RL, TT) • Sound Speed WG (SR, TP) • Phantom WG (TS, DF) 	<ul style="list-style-type: none"> - BM Work groups to communicate with phantom WG - Co-chairs will present report with 2 ppt slides
Phantoms	Phantom discussion	

Abstract	Discussion of abstract for groundwork study / Funding from QIBA and other sources (abstract attached below).	<ul style="list-style-type: none"> - Tim and Brian to introduce the co-chairs to relevant program officer at NIST - Please send comments by Tuesday 9/8
NEXT CALL	Date: October 2, 2020 Time: 11:00am, EST	

Attenuation WG: VK summarized last call

- RB: Not planning to send vendor questionnaire through AIUM staff; please CC the co-chairs

Backscatter WG: TT summarized last call

- AS: Ok to reach out to manufacturers; focus energy on the biomarkers that are most likely to be used (almost ready for deployment)
- IRM: other biomarkers can be discussed; effort is focused only on those that are close to or have already been deployed

Sound Speed WG: SR summarized last call

- AS suggests to consider adding vendor engagement

-AS: Echosens has joined our group – encourage committees to include them

Phantom WG: TS summarized last call

- AS: suggests a single varying parameter and try to hold other parameters constant (multiple phantoms); estimate what you think the expected co-variation is of the biomarkers – single phantom that represents the progression of all the relevant biomarkers
- AS: Ideally is there is one phantom that works for each biomarker; next ideal is one phantom for each biomarker; more becomes impractical
- IRM: suggestion is to have 3-4 phantoms that have variations in the 3 biomarkers that mimic clinical variations in the different stages of liver steatosis

-Abstract Discussion:

- QIBA leadership has ideas/suggestions for support for submitted grants and funding

- JB – helpful to have a starting sentence to establish the need for PEQUS features?

- IRM – option on phantom funding

- B. Fowlkes – there is flexibility on the abstract deadline
 - In response to question from AS: There is not specific funding available from QIBA, but this solicitation is an effort to figure out what might match up against funding opportunities known to the QIBA leadership. There was interest from NIST related to phantoms and those kinds of standardization activities. Things related to SBIRs or STTRs might fit the paradigm as well. It is much more generic at this point

- AS: Co-chairs to figure out when phantom funding needs to be available
- TH: QIBA was contacted by NCI to make us aware of their standing SBIR opportunity – they thought work on phantoms, software companies, several opportunities might occur
 - NIST creating a phantom library – more applicable to pet phantoms – could propose more complicated ultrasound phantoms to go into this library that would be “checked out” like a library book

- AS: Helpful for co-chair report backs to have two PP slides for the monthly calls –
 1. what you did
 2. what you’re going to do

- BF – Not a mandate that grants be submitted through RSNA, rather RSNA could serve in the administrative roll if it makes sense

- T. Lynch – CIRS qualifies, can help

- o More flexibility with an STTR

-AS – proposed next step: Tim and Brian to introduce the co-chairs to the relevant program officer at NIST

-TH: there is a NIST rep at QIBA that I would reach out to – will follow up

-AS – next call will be similar with progress reports from WG; useful if we could be closer to which grant opportunity is the best one

IRM – ask for comments on abstract to be sent by Tuesday 9/8

Multisite phantom study for claim validation of Pulse-Echo Quantitative Ultrasound features

The AIUM/QIBA Pulse-Echo Quantitative Ultrasound (PEQUS) Biomarker Committee is working towards the standardization of PEQUS features (acoustic attenuation, backscatter coefficient, speed of sound) to be used as quantitative imaging biomarkers for liver fat infiltration in the context of non-alcoholic fatty liver disease (NAFLD). A key step of this effort is the validation of claims on accuracy, precision, and reproducibility that can be achieved when quantifying these features. To this end, the PEQUS biomarker committee will perform multisite “round-robin” study, in which a set of calibrated phantoms emulating clinically relevant levels of fat infiltration will be circulated among participating institutions to perform independent quantification of the PEQUS features. Reference values for the PEQUS features obtained from standard laboratory calibrations on the phantoms before they are circulated. Each institution will quantify the PEQUS features using tools available in ultrasound scanners. Stability of the phantoms will be verified before and after phantom circulation by quantifying the PEQUS features using a Verasonics research ultrasound system. The working hypothesis is that the accuracy and precision levels achieved in this study agree with values previously reported in the literature and that the inter-institution variability (quantified in terms of the intra-class correlation coefficient) is not statistically different from the intra-institution variability. In the long term, this study will contribute to the widespread adoption of PEQUS features as non-invasive surrogates for liver fat infiltration, offering a practical and inexpensive approach to diagnose and monitor NAFLD.