

QIBA Musculoskeletal (MSK) Biomarker Committee (BC) Meeting

Tuesday, July 26, 2022, at 10 a.m. CT

Meeting Summary

In attendance

Xiaojuan Li, PhD (Co-chair)

Thomas Link, MD, PhD (Co-Chair)

Donald D. Anderson, PhD

Bruce Beynon, PhD

Michael Boss, PhD

Angie Botto-van Bemden, PhD

Jean Brittain, PhD

Majid Chalian, MD

Ruud de Boer, PhD

Ali Guermazi, MD, PhD

Peter Hardy, PhD

Gabby Joseph, PhD

Jason Kim, PhD

Ke Cheng Liu, PhD, MBA

Nancy Obuchowski, PhD

Chris Peng, PhD

Jiming Zhang, PhD, DABMP(MR), MRSE

RSNA

Joe Koudelik

Susan Stanfa

Topics Discussed

- QIBA MSK Profile Stage 3 and 4 Conformance Testing Updates (Dr. Li)
- NIST phantom
 - Calimetrix update on manufacturing timeline (Dr. Brittain)
- Technical Confirmation Feedback Resolutions Google Sheet (Dr. Link)
 - Update including subject selection and patient handling specifications

Next Steps / Action Items

- Arthritis Foundation (AF) has volunteered to sponsor stage 3 and 4 projects by providing support for centralized data processing, including cartilage segmentation and T2/T1rho value generation, and uploading into a central repository (the AF OA image repository which will be developed and managed by Cleveland Clinic)
 - Sites are asked to send both phantom and human data to the central repository
 - Each site needs to complete an IRB or amend their current IRB stating that human data generated may be sent to a central database/repository after deidentification for future data analysis (this also needs to be reflected in the consent form)
 - Dr. Li to modify IRB language and forward it to staff for distribution
 - Dr. Li will work with Dr. Jason Kim from AF for specifics on Data-use-agreement (DUA)
 - A cloud-based system will be used to upload and anonymize data that can be viewed through a portal; set up support will be provided
 - Data to be submitted in DICOM format
- The development of two phantom prototypes designed to mimic cartilage T1, T2, and T1rho was an R01-funded collaborative effort between Verellium LLC, NIST, and Cleveland Clinic
 - The stability of the gels has been continuously measured since NIST received the prototypes from Verellium; while the T1 vial contents have maintained stability, the T2 vial has been drifting over the past month
 - Calimetrix is planning to make a total of eight phantoms from a single gel batch, including one for each of the six sites, one to NIST, and one stays at Calimetrix for stability evaluation
 - Before taking over phantom manufacturing from Verellium, Calimetrix will need to observe long-term (at least six months) vial content stability and determine the cause of the drift (may have been due to bacterial contamination)
- In the meantime, a round-robin study using the Phantom Lab phantom at CC will be conducted to assess differences between vendor platforms (GE, Philips, Siemens); this will be useful to establish the expected range for bias and linearity for the imaging methods, and help finalize the protocols for each vendor
 - The study will begin with scanning at the four R01 study sites; in parallel, protocol will be refined, and data collection and transfer will be optimized before study will be extended to the nine other sites

- Number of phantom scan repetitions needed per site will be based on level of precision in the estimate which Dr. Obuchowski will calculate; a variation of ~10% is predicted
 - Temperature control during site-to-site phantom transport will be needed to avoid freezing/overheating conditions
 - These studies will be conducted during the coming months while awaiting vial content stability data; sites should also collect human data as soon as they are ready
- Dr. Link reviewed modifications made to subject selection, subject handling, and patient handling specifications which can be referenced in the MSK BC Stage 3: Technical Confirmation Resolutions Google Sheet to be distributed

Next Meeting: Tuesday, September 27, 2022, at 10 a.m. CT [4th Tuesday of each month]

Zoom meeting link: <https://rsna-org.zoom.us/j/81459724817?pwd=TkJPYTUrOEpzKy80SnNjNnIDRC9WUT09>

Meeting ID: 814 5972 4817

Passcode: MSK

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