

QIBA Musculoskeletal (MSK) Biomarker Committee (BC) Meeting

Tuesday, March 22, 2022, at 10 a.m. CT

Meeting Summary

In attendance

Xiaojuan Li, PhD (Co-chair)
Thomas Link, MD, PhD (Co-Chair)
Michael Boss, PhD
Angie Botto-van Bemden, PhD
Majid Chalian, MD
Maggie Fung, MEng
Ali Guermazi, MD, PhD
Amer Hanano, MD

Gabby Joseph, PhD
Jason Kim, PhD
Feliks Kogan, PhD
Kecheng Liu, PhD, MBA
Elena Losina, PhD
Nancy Obuchowski, PhD
Edwin Oei, MD

Yuxi Pang, PhD
Chris Peng, PhD
Daniel Thedens, PhD
Nicole Wake, PhD
Carl Winalski, MD
Cory Wyatt, PhD
Yansong Zhao, PhD

RSNA

Joe Koudelik
Susan Stanfa

Topics Discussed

- [Stage 3: Technical Confirmation](#) process and participating sites (Dr. Link)

Participating sites with phantoms

- Albert Einstein College of Medicine (Chris Peng) NIST phantom
 - Brigham and Women Hospital (Stacy Smith and Elena Losina) Dr. Li's phantom
 - Cleveland Clinic (Carl Winalski, Xiaojuan Li) NIST phantom
 - Cleveland Clinic Florida (Amer Hanano) Dr. Li's phantom
 - Duke University (Brian Soher and Virginia Kraus) NIST phantom
 - Erasmus University Medical Center (Edwin Oei) phantom lab phantom (GE)
 - Stanford University (Feliks Kogan) phantom lab phantom (GE)
 - University of California, San Francisco (Jing Liu, Thomas Link) NIST phantom
 - University of Iowa (Daniel Thedens and Don Anderson) NIST phantom
 - University of Kentucky (Peter Hardy) NIST phantom
 - University of North Carolina Chapel Hill (Brian Pietrosimone) NIST phantom
 - University of Washington Medical Center (Majid Chalian) Dr. Li's phantom
 - University of Sao Paulo – Julio Guimaraes (phantom lab phantom?)
- Overview: [March 16 version of RSNA QIBA MSK Profile Stage 3 and 4 Conformance Testing Scope of Work document](#)
 - Standard Operating Procedure (SOP) for stage 3 and 4: T1p and T2 Phantom MR scan
 - Scope of Work
 - Proposed timeline
 - Simplified version of phantom and human subject SOP
 - Q&A from participating testing sites

Next Steps / Action Items

- Scope of Work goal is to confirm that it is practical for imaging sites to conform with the technical requirements of the QIBA MSK Profile and thus be able to reproducibly obtain quantitative cartilage T1p and T2 imaging data
- There was discussion on the following aspects
 - Hardware requirements: 3T MRI scanner and knee coil (1Tx/>= 8 channel Rx) – suggestion to test standard knee coil and flex coil in comparison (comment Dr. Kogan)
 - Focus of study is on early detection of osteoarthritis, which is the rationale for including healthy volunteers and patients with mild osteoarthritis (grade KL<=2) (comment Dr. Obuchowski)
 - Sites include three major scanner vendors
 - Funding to engage 5-10 volunteers per site and make personnel compensation more feasible (comments Drs. Losina and Li)

- Differences between phantoms, e.g., [NIST, The Phantom Lab \(from GE\) and Dr. Li's phantom](#), concern about bias, but there is no cross-site calibration, so this should not be an issue (comments Dr. Oei and Dr. Li)
- Bilateral knees can be used to increase number of scans, but within-subject correlation needs to be considered (comments Drs. Chalian and Obuchowski)
- Suggestion to omit x-ray to fit this project more easily under existing technical IRB approval, **consensus** to use either knee radiograph (KL 0-2) **or** no significant cartilage damage on MRI, *protocol will be changed* accordingly (Drs. Link and Li)
- Discussion of software platforms, more recent MRI software which runs MAPSS and DESS sequences
- Dr. Fung to ship GE phantom to Dr. Oei and help address software update issue
- [The March 16 SOW document](#) (which includes the list of participating sites) will be updated and circulated
- Questions from participating sites to be addressed by [Dr. Li](#) through April, then protocols will be finalized in May
- Sites with immediate access to phantoms may begin scanning as soon as they are ready; another batch of six NIST phantoms will be completed by June and distributed

Next Meeting: Tuesday, April 26, 2022, at 10 a.m. CT [4th Tuesday of each month]

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