

## QIBA fMRI Biomarker Committee (BC) Call

Wednesday, September 18, 2019 at 11 AM CT

### Call Summary

#### In attendance

Feroze Mohamed, PhD (Co-chair)

Jay Pillai, MD (Co-chair)

David Soltysik, PhD (Co-chair)

Cathy Elsinger, PhD

Ping Hou, PhD

Ho-Ling (Anthony) Liu, PhD

Deqiang Qui, PhD

David Scott, PhD

James Voyvodic, PhD

#### RSNA staff

Joe Koudelik

Susan Stanfa

**Moderator(s):** Dr. Soltysik

#### Review of Previous Call Summary

- The 09.04.2019 call summary was approved as presented

#### Profile v2.0 (language-mapping)

- Dr. Voyvodic reiterated the methodology for his language reproducibility study, as discussed during the last fMRI BC call; the [September 4 call summary](#) can be referenced for details
  - A new screening method for a “good scan” has been developed and quality control criteria defined
  - Dr. Voyvodic possesses scans on 562 subjects with multiple language scans for 100+ time points; a substantial amount of usable data resulted and can be organized and prepared for analysis
  - The data will be reprocessed to generate language maps and QA metrics for motion and consistency of task performance; this will be used to screen-out subjects that do not meet criteria for “good scans/data”
  - The greater amount of usable data available, the more statistically sound the Claim will be (i.e., if 500 cases analyzed, this could support the “within 5mm” performance claim with 95% confidence)
- Table of repeatability measurements for the appropriate number of subjects needed; fMRI BC members to determine confidence interval and develop Claim
- Recommendation to create summary tables of data from more than one study
- Suggestion to develop 1-2 Claims based on data already acquired during the following two reproducibility/repeatability/reliability studies of language fMRI, though methods and language paradigms differ
  - Voyvodic J. [Reproducibility of single-subject fMRI language mapping with AMPLE normalization](#). *J Magn Reson Imaging*. 2012.
  - Agarwal S, Hua J, Sair HI, Gujar S, Bettgowda C, Lu H, and Pillai JJ. [Repeatability of language fMRI lateralization and localization metrics in brain tumor patients](#). *Hum Brain Mapp*. 2018.
- Discussion continued re: reprocessing and re-analyzing Dr. Voyvodic’s data to develop Laterality Index (LI) Claim for language-mapping
  - Plenty of human subject language-mapping data using a sentence completion task and word generation task based on antonyms are available
  - Areas of activation tend to be similar, but they will activate to various degrees among different individuals in response to different tasks
  - Dr. Voyvodic’s data were deemed reproducible, using various methods of screening for quality
  - Task activation will be needed to meet the Profile Claim; Dr. Voyvodic defined a reasonable threshold criterion for identifying active voxels

## RSNA Poster

- A broad, high-level perspective regarding the importance of quantitative imaging (QI) is the goal for 2019 QIBA Kiosk posters
- The 2019 posters will be modality-based, rather than BC based
- Posters with less text and more images (clean space) highlighting specific use cases for QI (both clinical and research) to be developed
- The fMRI BC to submit content illustrating the added value of QI in fMRI
  - Advantages of improved fMRI reproducibility (using AMPLE) for clinical trials to be highlighted
  - Concise description of criteria for defining “good” scans and “bad” scans to be provided
  - Suggestion that “value-add” statements be made and accompanied by supporting images

## Update on Potential fMRI BC Groundwork Project Submission to Pharma/ICROs

- The "Reproducibility of task-free (resting-state) fMRI as a clinical brain biomarker," project description was submitted to 35 pharma/ICRO contacts in May
- Pls included: Jay Pillai, MD (Johns Hopkins University), Ho-Ling (Anthony) Liu, PhD (UT MD Anderson Cancer Center) and James Voyvodic, PhD (Duke University)
- One CRO has responded with interest to QIBA leadership
- David Scott, PhD from BioClinica, Inc., reported that there may be funding opportunities for resting-state (r-s) or other fMRI methods; project funds remaining in Q4 budgets need to be spent by the end of the year
  - Biomarker teams have particular interest in resting-state fMRI due to pragmatism
  - Many clinical trials add resting-state fMRI as an extra study, e.g., Alzheimer's and Parkinson's disease trials could also benefit from resting-state reproducibility efforts
  - Task-based activation of interest to determine if compounds are binding to target areas
- Funding would greatly facilitate the fMRI BC's efforts to understand the issues and impact of reproducibility and how to address it
- Staff to forward the fMRI r-s project proposal to Dr. Scott and September 18 fMRI BC call attendees; Dr. Scott to share the project description with colleagues to solicit interest for potential funding
- Dr. Scott stated that when QIBA disseminates best practices, they are considered the gold standard
- The original impetus for forming the fMRI BC was to measure brain function in clinical trials; it needs to better position itself to be able to make an impact on clinical trials in order to obtain project funding

## Reminder:

- Please [RSVP for the Dec. 4 QIBA Working Meeting](#) during the 2019 RSNA Annual Meeting
- Please [sign up for the RSNA 2019 MTE Sessions](#) at the QIBA Kiosk:
  - Type in your name next to the presentation time slot that works for you (we encourage that each 30-minute time slot is filled by at least one committee member)
  - Simply close out of the document (there is no save button and changes will automatically save)

**NEW!** Visit the QIBA Citations EndNote Library! Details can be found on the [QIBA Wiki Education page](#)

**Next call:** Wednesday, October 2, 2019 at 11am CT (1<sup>st</sup> & 3<sup>rd</sup> weeks of each month)

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