

QIBA Dynamic Contrast Enhanced (DCE) Biomarker Committee (BC) Call

Monday, October 15, 2018 at 11 AM (CT)

Call Summary

Participants

Caroline Chung, MD (Co-Chair)

Hendrik Laue, PhD (Co-Chair)

Jacob Fluckiger, PhD

Wei Huang, PhD

Harrison Kim, PhD, MBA

Cristina Lavini, PhD

Ho-Ling (Anthony) Liu, PhD

Nancy Obuchowski, PhD

Ona Wu, PhD

Gudrun Zahlmann, PhD

RSNA

Joe Koudelik

Susan Stanfa

Moderator: Dr. Laue

Perfusion Open Source Initiative

- An overview of this initiative from the ISMRM perfusion community was provided

[Content below provided by Dr. Chung]



- Are you working on perfusion MRI post-processing and do you have code to share? Do you feel like you are spending ridiculous amounts of time writing code that other people have written many times before? Would you like to get more out of the hours you spend writing code by sharing it with others? Do you want to help make our science more reproducible? Then join the Perfusion Open Source Initiative!!**
- What is the aim of the Perfusion Open Source Initiative?** We will build an open-source, transparent, well-documented, version-controlled and dynamic library of core functionality for processing MRI perfusion data. The aim is to reduce duplicate development and economise efforts, remove differences between implementations that may affect the comparability of results, and increase the transparency and reproducibility of our research.
- How can I join the Perfusion Open Source Initiative?** Please fill in [this form](#) (5 min) to express your interest and let us know how you are able to help. The deadline for signing up is **1 November 2018** and we will get back to you with next steps shortly after.
- Who is coordinating the Perfusion Open Source Initiative?** This is an initiative of the ISMRM perfusion study group, and is currently coordinated by the secretary Steven Sourbron and Trainee Representative Laura Bell. The initiative builds on the Perfusion Freeware presentations organised by Fernando Calamante in the meetings in Toronto (2015) and Singapore (2016). The summary slides of the presented packages are still available on the [study group page](#).
- What is the scope of the Perfusion Open Source Initiative?** We will include all perfusion MRI methods, including ASL, DCE, DSC, and all application areas (brain, body, heart etc). The software will include image processing and model fitting algorithms, visualisations, but also digital reference objects and use cases.
- Who can join the Perfusion Open Source Initiative?** Everyone willing to invest time and effort is welcome, and we are particularly keen to have involvement from PhD students and junior postdocs.
- How will the Perfusion Open Source Initiative work in practice?** We will start by bringing together and harmonising code that already exists and has been tried and tested in previous research. Once the a critical mass of contributors is established we will start a formal process, identify responsibilities, write specifications, decide on licensing principles, define a development plan, define a structure for the library, collect existing tools together, and develop unit tests and harmonised algorithms. Additional events may be organized through ISMRM and perhaps dedicated workshops.
- How can I get credit for my work on the Open Source Initiative?** All contributors will be recognised through a transparent system of authorship. The software will be made available through a version control system which can assign DOI's so your work can also be referenced directly. We will aim to publish one or more accompanying

papers to describe process and rationale, and all contributors will be recognised as authors. The freeware will also be made available via the ISMRM's open access software platform (www.ismrm.org/MR-Hub/).

Poster Preparation for RSNA 2018

- Due to the growing number of BCs, 5 posters have been allocated among the 8 MR BCs for 2018; the DCE-MRI BC:
 - will be sharing a poster with the DSC-MRI Biomarker Committee
 - and the DSC BC and Profile share common issues
- The 2017 MSK BC poster is being used as a template
- Dr. Laue provided an overview of the current DCE/DSC BC poster draft and live modifications were made
- Dr. Wu to provide DSC BC content and images
- Poster format was modified in response to suggestions
- Focus to include:
 - Claims and associated issues due to limitations of test-retest data
 - Test-retest data from study used to develop Claim
 - A request of colleagues to publish their test-retest data in an open journal such as PLOS One: <https://journals.plos.org/plosone/>
 - The QIBA literature review process and supporting statistics
- Draft poster to be circulated and reviewed/additional edits encouraged
- Final poster review expected on the 10/29 call; full BC focus to shift back to the Profile

QIBA Working Meeting and Meet-the-Experts Sessions at RSNA 2018

- All are encouraged to RSVP for the [QIBA Working Meeting](#) on Wednesday, November 28th
- All are invited to volunteer for the poster [Meet-the-Expert](#) session times
- There is one more DCE-MRI BC call prior to the poster deadline of October 31

Important Points for DCE-MRI [some information taken from Dr. Laue's slides]

- Feeding vessel in image
- Sufficiently high flip angle for max C(t) in target tissue and blood (linearity?)
 - Consider native T1
 - Consider relaxivity and volume of ca
 - Max for artery in image for individual arterial input function (AIF)
 - Flow
- Beware of view-sharing, steady-state
- Keep scanner calibration constant during acquisition
- Recommendation to be more proscriptive, providing suggested solutions for each challenge
- Discussion to continue offline

DCE Profile Update

- DCE BC members encouraged to review and comment on Profile at:
<https://docs.google.com/document/d/1in76va1Q96tVX97RWLHHqimOHxCeDsMqh98na8pwOb8/edit?usp=sharing>
 - Please note: Google Doc is being used for its collaborative properties and versioning control; please make comments directly on the document (as opposed to downloading Profile to one's local computer and emailing)
- Efforts are being made to reduce the length of the Profile; nonessential text to be removed, making Profile more digestible
- Dr. Chung reviewed edits made from the start up to Section 3.5 and requested input from the group
- Section 3.6 Protocol Design: comments on content are needed (not format), particularly regarding specifications
- Dr. Lavini offered to review the Profile sections focusing on physics detail
- Due to time constraints, discussion to continue offline

Next DCE BC Call: Monday, October 29, 2018 at 11 AM CT

RSNA Staff attempt to identify and capture all committee members participating on WebEx calls. However, **if multiple callers join simultaneously or call in without logging on to the WebEx, identification is not possible.** Call participants are welcome to contact RSNA staff at QIBA@RSNA.org if their attendance is not reflected on the call summaries.