

QIBA Overview

The Quantitative Imaging Biomarkers Alliance (*QIBA*) was organized by RSNA in 2007 to unite researchers, healthcare professionals, and industry stakeholders in the advancement of quantitative imaging and the use of biomarkers in clinical trials and practice.

Definition

Quantitative imaging is the acquisition, extraction and characterization of relevant quantifiable features from medical images for use in research and patient care. Standardizing the use of imaging biomarkers in clinical trials will reduce the variance inherent across different hardware and software platforms. RSNA views this work as a step toward an ultimate goal of enhancing the use of quantitative imaging methods in clinical practice.

QIBA is an important part of RSNA's commitment to transforming radiology from a *qualitative* to a more *quantitative* science and to the improved patient care resulting from accelerated development and dissemination of new pharmacologic, biologic and interventional diagnosis and treatment approaches.

QIBA Mission

Improve the value and practicality of quantitative imaging biomarkers by reducing variability across devices, patients and time.

The work of QIBA has advanced through the generous efforts of volunteer members from academia, the medical device industry, the pharmaceutical and other business sectors, and government. There are 18 biomarker committees open to all interested persons. These Committees have specific tasks and deliverables for their respective modalities and disease-based approach:

CT Angiography	Magnetic Resonance Elastography (MRE)
CT Small Lung Nodule	Musculoskeletal (MSK)
CT Volumetry	Proton Density Fat Fraction (PDFF)
Lung Density	FDG-PET/CT
Arterial Spin Labeling (ASL) [EIBIR]	PET-Amyloid
DCE-MRI	SPECT I-123
DSC-MRI	SPECT Tc 99m
DTI+ MRI	Ultrasound Shear Wave Speed (US-SWS)
DWI-MRI	Ultrasound Volume Blood Flow (US-VBF) [AIUM]
Functional magnetic resonance imaging (fMRI)	Contrast Enhanced Ultrasound (CEUS)

The QIBA Approach

The work of the QIBA Committees follows a defined, coordinated process to develop solutions and promote their adoption.

- I. Identify Sources of Error and Variation in Quantitative Results from Imaging Methods:** Stakeholders work to identify problems leading to error or variability in quantitative results from imaging methods.
- II. Specify Potential Solutions:** Stakeholders identify potential strategies and infrastructure for error mitigation and collaborate on development of hardware, software, and protocol solutions, documenting them in the form of QIBA Profiles.
- III. Test Solutions:** Vendors and researchers implement QIBA solutions to assess their feasibility and efficacy.
- IV. Promulgate Solutions:** Validated solutions are disseminated and implemented through vendor adoption, research integration and clinical education.

QIBA Resources

QIBA meeting summaries, key criteria for identifying biomarker opportunities, the *QIBA Newsletter* and other documents are available on the QIBA website RSNA.ORG/QIBA and wiki <http://qibawiki.rsna.org/>.

New! QIBA is now on LinkedIn! Follow us at: www.linkedin.com/company/RSNA-QIBA/

Volunteers for the QIBA Committees are welcome; please contact us at: qiba@rsna.org

QIBA Committees

QIBA Governance Structure

QIBA Chair:	Edward F. Jackson, PhD	(University of Wisconsin, School of Medicine & Public Health)
QIBA Vice Chair:	Alex Guimaraes, MD, PhD	(Oregon Health & Science University)
Scientific Liaison: CT:	Andrew J. Buckler, MS	(Elucid Bioimaging, Inc.)
Scientific Liaison: MR:	Thomas L. Chenevert, PhD	(University of Michigan Health System)
Scientific Liaison: NM:	Paul E. Kinahan, PhD	(University of Washington)
Scientific Liaison: US:	Paul L. Carson, PhD	(University of Michigan Health System)

Process Committee

Chair:	Kevin O'Donnell, MASc	(Canon Medical Research USA)
Vice Chair:	Daniel Sullivan, MD	(Duke University Medical Center)

Coordinating Committees

Computed Tomography (CT) Coordinating Committee

Co-Chairs:	Rudresh Jarecha, MBBS, DNB, DMRE	(PAREXEL International)
	Lawrence Schwartz, MD	(New York Presbyterian Hospital / Columbia University)
Vice Chair:	David Lynch, MD	(National Jewish Health)

Magnetic Resonance Imaging (MR) Coordinating Committee

Co-Chairs:	Mark Rosen, MD, PhD	(University of Pennsylvania)
	Gudrun Zahlmann, PhD	(Independent Consultant)
Vice Chair:	Cathy Elsinger, PhD	(NordicNeuroLab, Inc.)

Nuclear Medicine (NM) Coordinating Committee

Co-Chairs:	Richard Wahl, MD	(Mallinckrodt Institute, Washington University)
	Eric Perlman, MD	(Perlman Advisory Group, LLC)
Vice Chair:	P. David Mozley, MD	(Weill Cornell Medical College)

Ultrasound (US) Coordinating Committee

Chair:	Tim Hall, PhD	(University of Wisconsin, School of Medicine & Public Health)
Vice Chair:	Brian Garra, MD	(Washington DC VA Medical Center / FDA)

Biomarker Committees (by imaging modality)

CT

CT Volumetry

Co-Chairs:

Rudresh Jarecha, MBBS, DNB, DMRE	(PAREXEL International)
Ehsan Samei, PhD	(Duke University Medical Center)
Jenifer Siegelman, MD, MPH	(Takeda Pharmaceuticals)

Lung Density

Co-Chairs:

Sean Fain, PhD	(University of Wisconsin, School of Medicine & Public Health)
Matthew Fuld, PhD	(Siemens Medical Solutions USA, Inc.)
David Lynch, MD	(National Jewish Health)

Small Lung Nodule

Co-Chairs:

Samuel Armato III, PhD	(University of Chicago)
David Gierada, MD	(Mallinckrodt Institute of Radiology, Washington University in St. Louis)
James Mulshine, MD	(Rush University Medical Center)

CT Angiography

Co-Chairs:

Andrew Buckler, MS	(Elucid Bioimaging, Inc.)
Luca Saba, MD	(University of Cagliari (Italy))
Uwe Joseph Schoepf, MD...	(Medical University of South Carolina MUSC)

MR

Arterial Spin Labeling (ASL) [Supported by EIBIR]

Co-Chairs

Eric Achten, PhD	(University Hospital of Gent, EIBALL)
Xavier Golay, PhD	(University College London)
Matthias Guenther, PhD	(Fraunhofer MEVIS)
Siegfried Trattnig, MD	(Vienna General Hospital / ESR)

Dynamic Contrast-Enhanced (DCE) MRI

Co-Chairs

Caroline Chung, MD	(University of Texas, MD Anderson Cancer Center)
Hendrik Laue, PhD	(Fraunhofer MEVIS)

Dynamic Susceptibility Contrast (DSC) MRI

Co-Chairs

Bradley Erickson, MD, PhD	(Mayo Clinic)
Ona Wu, PhD	(Massachusetts General Hospital)

Diffusion Tensor Imaging (DTI+)

Co-Chairs

Walter Schneider, PhD	(University of Pittsburgh)
Christopher Whitlow, MD, PhD	(Wake Forest University)

Diffusion-Weighted Imaging (DWI)

Co-Chairs

Michael Boss, PhD	(NIST)
Thomas Chenevert, PhD	(University of Michigan Health System)

fMRI

Co-Chairs:

Feroze Mohamed, PhD
Jay Pillai, MD
David Soltysik, PhD

(Thomas Jefferson University Hospital)
(Johns Hopkins University)
(U.S. Food and Drug Administration (FDA))

MRE

Co-Chairs:

Patricia Cole, PhD, MD
Richard Ehman, MD

(Cole Imaging and Biomarker Consulting, LLC)
(Mayo Clinic)

MSK

Co-Chairs

Thomas Link, MD, PhD
Xiaojuan Li, PhD

(University of California, San Francisco)
(Cleveland Clinic Foundation)

Proton Density Fat Fraction

Co-Chairs:

Scott Reeder, MD, PhD
Takeshi Yokoo, MD, PhD

(University of Wisconsin, School of Medicine & Public Health)
(University of Texas Southwestern Medical Center)

NM

FDG-PET

Co-Chairs:

Rathan Subramaniam, MD, PhD, MPH
John J. Sunderland, PhD
Scott Wollenweber, PhD

(University of Texas, Southwestern Medical Center)
(University of Iowa)
(GE Healthcare)

PET-Amyloid

Co-chairs:

Satoshi Minoshima, MD, PhD
Anne Smith, PhD
Dawn C. Matthews, MS, MBA

(University of Utah)
(Siemens Medical Solutions USA, Inc.)
(ADM Diagnostics, LLC)

SPECT I-123

Co-Chairs:

John Dickson, PhD
John Seibyl, MD

(National Health Service)
(Yale University / Institute for Neurodegenerative Disorders)

SPECT Tc99m

Co-Chairs:

Yuni Dewaraja, PhD
Robert Miyaoka, PhD

(University of Michigan Health System)
(University of Washington)

US

Contrast Enhanced Ultrasound (CEUS)

Co-Chairs:

Michalakis (Mike) A. Averkiou, PhD
Richard G. Barr, MD, PhD
Todd Erpelding, PhD, MSE

(University of Washington, Seattle)
(Northeastern Ohio Medical University)
(Canon Medical Systems USA)

Ultrasound Shear Wave Speed

Co-Chairs:

Brian Garra, MD

(Washington DC VA Medical Center / FDA)

Timothy J. Hall, PhD

(University of Wisconsin, School of Medicine & Public Health)

Andy Milkowski, MS

(Siemens Medical Solutions USA, Inc.)

Ultrasound Volume Blood Flow [Supported by AIUM]

Co-Chairs:

J. Brian Fowlkes, PhD

(University of Michigan Health System)

James Jago, PhD

(Philips Healthcare)

Oliver Kripfgans, PhD

(University of Michigan Health System)

QIDW Oversight Committee

Chair:

Bradley J. Erickson, MD, PhD

(Mayo Clinic)

Statistician/Metrology

Nancy Obuchowski, PhD

(Cleveland Clinic)