

QIBA Newsletter November 2023 • Volume 15, Number 3: History of Quantitative Imaging at RSNA

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By QIBA Leadership:

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QIBA MISSION

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

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Timothy J. Hall, PhD
QIBA Chair



History of Quantitative Imaging at RSNA

Over the past 16 years, RSNA's Quantitative Imaging Biomarkers Alliance (QIBA) has become recognized as a community of representatives of imaging health care professionals, medical associations, government regulatory agencies and pharmaceutical and scanner industries working together to enable quantitative imaging to improve clinical care of our patients.

This has been achieved through numerous groundwork studies, working on metrology underpinnings and developing consensus among experts in the field to create rigorous quantitative imaging Profiles. QIBA's mission has been to improve the value and practicality of quantitative imaging biomarkers by reducing variability across devices, sites, patients and time. Since its creation in 2007, QIBA has collaborated with multiple organizations (see detail below) and has evolved from three to 23 Biomarker Committees with a following of 1,500 and a core of over 229 highly engaged members! QIBA's work has developed and demonstrated the value and impact of quantitative imaging biomarkers, nationally and internationally.



International collaborations have included Japan-QIBA, ESR's European Imaging Biomarkers Alliance (EIBALL) and Australia's National Imaging Facility (NIF).

The success of QIBA was the result of the dedication and effort of a wide variety of stakeholders in the medical imaging community, including radiologists, physicists, imaging technicians, engineers, imaging scientists, clinical trialists, as well as representatives from imaging system and software manufacturers, the NIH, FDA, NIST, pharma and others.

Since this was a novel organization, we needed to create standardized processes, procedures and documents, as well as establish and grow a community with shared motivation around the quantitative approaches we created. Much of this was published in peer-reviewed literature and, notably, led to an FDA guidance document for manufacturers claiming performance in quantitative imaging.

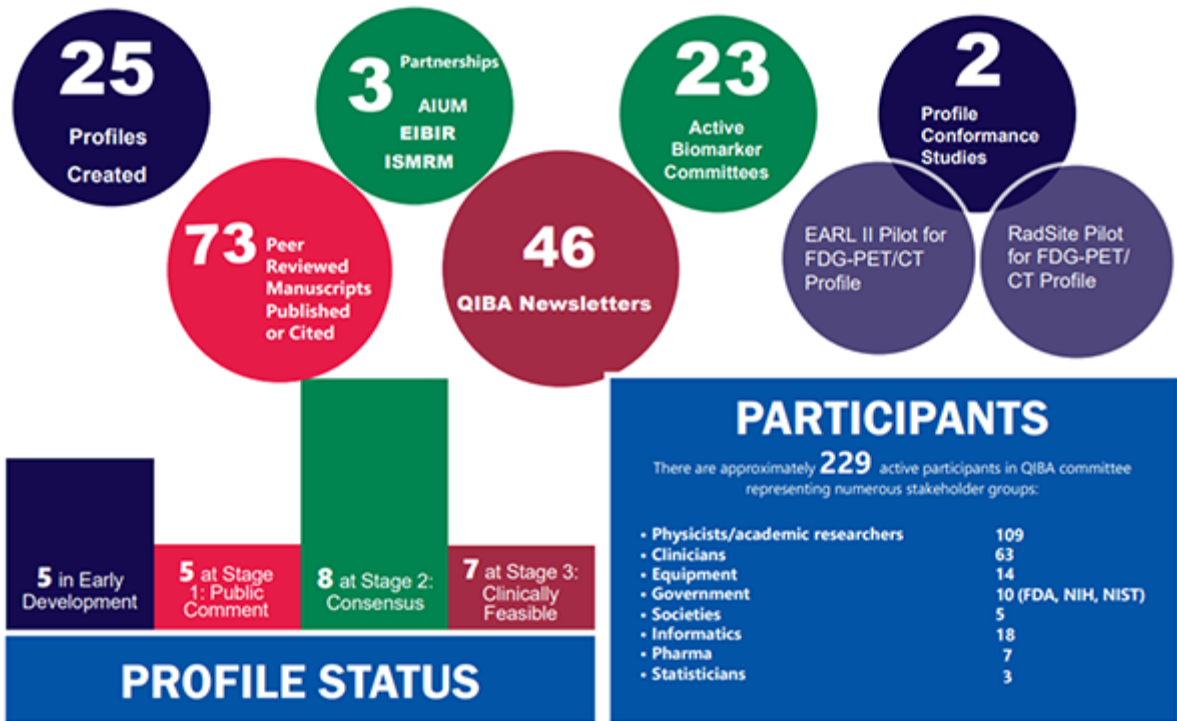
Studies of Profile conformance with accreditation bodies (EARL and RadSite) as well as a third-party evaluator (CaliberMRI) laid the groundwork for future conformance testing. Continuing to look forward, we had started communicating the benefits of quantitative imaging in the era of rapidly growing AI applications through our presentations around “#QIforAI” and “#AIforQI” at RSNA 2022.

QIBA Groundwork Studies

QIBA was fortunate to receive federal funding between 2010 and 2017. QIBA projects and activities were funded in whole or in part with funds from the National Institute of Biomedical Imaging and Bioengineering, National Institutes of Health, Department of Health and Human Services, under [Contract Nos. HHSN268201000050C](#), [HHSN268201300071C](#), and [HHSN268201500021C](#). The 77 groundwork studies that were conducted informed numerous Profiles, resulted in the development of physical phantoms and digital reference objects (DROs) and advanced a more rigorous metrology understanding.

QIBA Highlights from 2007 to 2023

QIBA has made great progress on multiple foundational fronts to help realize clinical implementation of quantitative imaging. QIBA volunteers have advanced quantitative imaging biomarker standardization across academia and manufacturers while raising awareness of the relationship between quantitative imaging and AI performance for development and testing on quantitative measurement quality. Profile conformance testing and algorithm performance challenges have demonstrated the value of quantitative imaging to the radiology community. Metrology standards for quantitative imaging biomarkers were developed to help with performance claims and implementation.



The RSNA Future for Quantitative Imaging

RSNA is committed to transforming patient care by making radiology a more quantitative science. The next stage in this evolution is to expand RSNA's quantitative imaging activities beyond development of Profiles, to collaborate with stakeholders to focus on adoption and implementation in clinical trials and practice. To oversee this broader initiative, the Quantitative Imaging Committee (QUIC) has been created. The QUIC will be comprised of radiologists, physicists, and other thought leaders from stakeholder groups, including industry, government and partner organizations. QIBA has paved the way for QUIC with its work to change the practice of medicine by transforming radiology from an imaging art to a measurement science.

We would like to thank all volunteers for their unwavering vision for quantitative imaging and support of the QIBA initiative. QIBA's success and its legacy has been due to the dedication of its volunteers, who have been the driving force behind RSNA's evolving quantitative imaging initiatives. We look to the future as RSNA expands on these recognized QIBA initiatives under the guidance of the QUIC.



The QIBA Kiosk at the 2017 RSNA annual meeting



QIBA members at the QIBA Working Meeting during the RSNA annual meeting



- QIBA Chair from February 2008 – June 2015
- Interim Chair, November 2019 – December 2020

Daniel Sullivan, MD, QIBA Founder



- QIBA Chair, July 2015 – October 2019

Edward Jackson, PhD



- QIBA Chair, January 2021 – September 2021
- QIBA Vice Chair, January 2017 – December 2021

Alexander Guimaraes, MD, PhD



Timothy J. Hall, PhD

- QIBA Chair, October 2021 – December 2023
- QIBA Vice Chair, November 2020 – September 2021



Eric Perlman, MD

- QIBA Vice Chair, July 2015 – December 2016



Gudrun Zahlmann, PhD

- QIBA Vice Chair, January 2021 – December 2023



Caroline Chung, MD, MSc

- QIBA Vice Chair, April 2022 – December 2023



[QIBA Acknowledgments Page](#)

QIBA gratefully acknowledges all volunteers who have helped advance quantitative imaging throughout the medical community. We recognize those that have made significant contributions over the past year, especially in areas of Profile development, implementation, metrology and various advisory roles. [Click to view award recipients](#). Thank you for your contributions!

QI Sessions and Activities at RSNA 2023

- *Building a Quantitative Imaging Research Study*, Tuesday, Nov. 28, 2023, from 11 a.m. to noon CT at McCormick Place, **Room S405**.
- *2023 QI Symposium Sponsored by QIBA: Quantitative Imaging in the Era of Artificial Intelligence: Opportunities and Needs*, Wednesday, Nov. 29, 2023, from 2 to 4 p.m. CT at McCormick Place, **Room E253AB**.

QIBA Resources:

- [About QIBA](#)
- [QIBA Webpage](#)
- [QIBA Wiki](#)
- [QIBA Biomarker Committees](#)
- [QIBA Organization Chart](#)
- [QIBA LinkedIn page](#)
- [QIBA Twitter page](#)
- [QIBA Videos](#)

Please contact qiba@rsna.org for more information.

[QIBA and QI/Imaging Biomarkers in the Literature](#)

Please note that the list of references has been migrated to EndNote. To obtain access to the RSNA EndNote citations, please send an email request to: qiba@rsna.org.

The list of references showcases articles that mention QIBA, quantitative imaging, or quantitative imaging biomarkers. In most cases, these are articles published by QIBA members or relate to a research project undertaken by QIBA members that may have received special recognition.



For more information: [RSNA.org/Annual-Meeting](https://rsna.org/Annual-Meeting)