Imaging research has many stories to tell.

As research advocates, it is our role to paint a picture or tell a story for policymakers about the important work that imaging researchers are doing. Over the years, this has perhaps been best captured in the Academy of Radiology Research’s annual Capitol Hill Day, where academic scientists have joined with industry partners and patient advocates — who together make up a division of the Academy known as the Coalition for Imaging and Bioengineering Research — to present some of the latest advances in imaging science on Capitol Hill. Whether advocates talk about specific diseases or imaging modalities, together they convey a vital message: that imaging science is providing better health and hope for patients everywhere, and that a strong and sustainable investment in medical research must regain its mantle as a national priority.

Medical research is one of the few federal programs that Members of Congress from all walks of life can get behind. Just last year during the federal government shutdown, one of the first programs that lawmakers tried to get back online was the National Institutes of Health (NIH). But while this bipartisan recognition of the importance of research was welcome, that same political will to support life-saving research has not shown up when it has mattered most — in the federal budget process. With nearly a decade of flat-to-declining budgets for NIH, it is time for legislators to once again put NIH back on a sustainable budget trajectory.

As a community of scientists, industry partners and patients advocates, we are working hard to bring our incredible discoveries and innovations directly to policymakers in order to carry this message. Whether it is our annual Medical Technology Showcase (p.12), tours of cutting-edge imaging departments or the imaging labs at NIH for congressional staff (p.22), a grassroots booth at the RSNA annual meeting of 55,000 people (p.20), imaging science continues to capture the interest of lawmakers, and has been a powerful surrogate for the larger research enterprise.

Every interaction, grassroots letter and visit to a congressional office helps immensely towards achieving these goals. For that, the entire imaging community has done a laudable job on behalf of researchers everywhere. Through this commitment to advocacy, imaging researchers are helping to inspire policymakers to once again recommit to medical research.
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The Academy of Radiology Research is an alliance of 27 professional imaging societies. Established in 1995, the Academy was the catalyst for the creation of the National Institute of Biomedical Imaging and Bioengineering (NIBIB) at the National Institutes of Health (NIH). The Academy also includes 43 academic research departments, which together with the professional societies, represent the scientific community advocating for medical imaging research.

By presenting a unified voice in support of imaging research, the Academy and CIBR represent the three-legged stool of medical research: academia, industry and patient advocates. Together, these stakeholders help ensure that the federal government continues to invest in research at the NIBIB and the other agencies that support imaging research.
The lens through which we view imaging research is rapidly changing.

We often tell the story of the incredible growth in the sophistication and application of advanced imaging, leading to better clinical care across the world. While meaningful improvements in human health will always inspire imaging scientists to push the limits of technology, we can now begin to complement these public health success stories by quantifying the significant economic contributions of imaging science to the nation’s innovation economy.

A recent study authored by the Academy in *Nature Biotechnology* found that research conducted through the National Institute of Biomedical Imaging and Bioengineering (NIBIB) has the highest rate of patent production across National Institutes of Health (NIH). Not only was the rate of patenting the highest among NIH’s various Institutes and Centers, but the quality, as measured by the rate at which additional downstream patents were also spurred, was also the second highest. This is significant from a policy perspective: since patents are strongly correlated with greater economic activity, the NIH’s investment in imaging science is not only sustainable beyond the initial taxpayer investment, but it is also helping to create high-quality R&D jobs in the private sector, spur start-up activity, and drive U.S. exports in key sectors. It truly makes NIBIB and imaging science a model for innovation within the federal government’s R&D portfolio, and a meaningful outlier to positively demonstrate to lawmakers the economic reach of federally-supported medical research.

With Washington increasingly utilizing a “Moneyball” approach to government - applying advanced metrics to identify high-performing public programs (p.18) - there is strong evidence to suggest that imaging science not only provides an enormous public health return on investment, but a significant economic return as well. The Academy will continue to deliver this message to Capitol Hill: that programs like imaging science are vital to the future of our innovation economy, and that scaling up programs such as NIH and NIBIB will not only improve human health, but ensure the long-term fiscal health of our nation.

~JSL
The Academy’s ACADEMIC COUNCIL continues to grow, totaling 43 of the top academic Radiology Departments in 2014.

Beth Israel Deaconess Medical Center
Brigham and Women’s Hospital
Case Western Reserve University, University Hospitals Health System
Dartmouth-Hitchcock Medical Center
Duke University School of Medicine
Emory University School of Medicine
Johns Hopkins Medicine
Jefferson Medical College
Keck School of Medicine of USC
Massachusetts General Hospital
Mayo Clinic
Medical College of Wisconsin
Medical University of South Carolina
Memorial Sloan-Kettering Cancer Center
NewYork-Presbyterian Hospital, Weill Cornell Medical College
Northwestern University, Feinberg School of Medicine
NYU Langone Medical Center
Oregon Health & Science University
The Ohio State University Wexner Medical Center
Stanford University

“The Academic Council is the backbone of the Academy, providing a vast and diverse advocacy voice for medical research and imaging science.”

Ty Bae, MD, PhD
Chair, ARRAC

University of Alabama at Birmingham
University of California, Davis
University of California, Irvine
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University of California, San Francisco
University of California, San Diego School of Medicine
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University of North Carolina at Chapel Hill School of Medicine
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Paul Tuma
Siemens Healthcare, USA

“CIBR continues to demonstrate to legislators that imaging research has enormous public health impact. Together, our 80 patient advocacy groups and 9 industry partners are committed to telling the story each year on Capitol Hill about the value of sustainable investments in medical research.”

Steven E. Seltzer, MD
On April 29th the Coalition for Imaging and Bioengineering Research (CIBR) held its 5th annual Medical Technology Showcase in the Kennedy Caucus Room of the Russell Senate Office Building. The goal of this annual event is to highlight the impact imaging research has on patients, academic research institutions and industry through collaborative imaging technology displays.

Each of the 10 display areas at the event focused on a particular imaging technology, with a participant from each of the three CIBR stakeholders describing a different aspect of the technology’s impact— from basic R&D to improved clinical care. The Academy’s Academic Council also displayed more than 20 academic research posters, and also supported travel awards for 10 junior imaging scientists to attend the event.

The Academy of Radiology Research, the umbrella organization for CIBR and the driver behind legislation which led to the creation of the National Institute for Biomedical Imaging and Bioengineering (NIBIB), presented Senator Richard Burr (R-NC) and Congresswoman Anna Eshoo (D-CA) with an Imaging Research Advocacy Award (an “Academy Award”). Together, Burr and Eshoo have been longstanding supporters of research funding at the NIH, and both spoke about the importance of innovative research in imaging science.

The medical technology showcase followed two full days of meetings with several Institutes at the NIH, such as NIBIB, NCI, NIDDK, NIMH and others, as well as meetings on Capitol Hill where academics, patients and industry scientists met together with more than 50 congressional offices in support of imaging research funding.
CIBR academic members represent some of the nation’s top researchers from a variety of scientific disciplines. Imaging science continues to see increased demand in the translational arena and as a bench-to-bench research tool. Imaging science creates the most new patent activity of all NIH research.

CIBR partnerships represent the three-legged stool of research: academia, industry and patients. With some of the largest global R&D brands, CIBR members represent the long-term economic impact from NIH basic and translational research.

THE PEOPLE OF CIBR

Clinical Decision Support
Academic Partner: University of Minnesota, University of Washington
Industry Partner: Medicalis Corporation

Technology, Healthcare Providers, and Patient Advocacy Groups Partnering to Improve Patient Outcomes
Patient Partner: TBI Out Loud Tumors
Academic Partner: Case Western Reserve University
Industry Partner: Nuance Healthcare

Improve Patient Care with Access to All Images within the eMedical Record, Health Information Exchange and Beyond
Patient Partner: Society for Women’s Health Research
Academic Partner: Medical University of South Carolina
Industry Partner: Agfa HealthCare

Critical Care Neonates in the ICU
Patient Partner: Tuberous Sclerosis Alliance
Academic Partner: University of South Carolina
Industry Partner: TIME MEDICAL Systems, Inc.

Sharing Data on Traumatic Brain Injury Across the Research Continuum
Patient Partner: Pink Concussions
Academic Partners: ACR Head Injury Institute; Weill Cornell Medical, Brown University

Meaningful Innovations in Radiology Informatics
Patient Partner: eHealth Initiative
Academic Partner: University of Chicago
Industry Partner: Philips Healthcare

CIBR partners work with some of the largest global R&D brands to improve patient outcomes.

Innovative CIBR partnerships represent the three-legged stool of research: academia, industry and patients.

Economic Impact
With some of the largest global R&D brands, CIBR members represent the long-term economic impact from NIH basic and translational research.

Patient Partner: Sugar Mommies
Academic Partner: Children’s National Medical Center
Industry Partner: Toshiba Medical Research Institute USA, Inc.

Future of Diabetes management: Listen to the pain with micro-ultrasound and photoacoustics imaging

Patient Partner: Image Gently
Academic Partner: Children’s National Medical Center
Industry Partner: Toshiba Medical Research Institute USA, Inc.

Imaging Traumatic Brain Injury (TBI) in Children, Adolescents, and Young Adults
Patient Partner: Sugar Mommies
Academic Partner: Children’s National Medical Center
Industry Partner: Toshiba Medical Research Institute USA, Inc.

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Evidence-based policy has arrived. Policymakers from both sides of the political aisle are increasingly demanding that federal agencies develop a metrics-driven approach to empirically measure the effectiveness of federal research and development (R&D) programs—particularly the economic impact. During the Senate confirmation hearing for President Obama’s Acting Director of the Office of Management and Budget, Brian Deese said that, “the focus should be on evidence-based investment and evidence-based grant-making because there are a number of places where we can do better and, in fact, we can be more effective with the same or fewer dollars if we actually have better systems to measure and test results and then scale programs when we actually see positive effects.”
DEVELOPING EVIDENCE TO TELL A COMPELLING STORY FOR IMAGING SCIENCE

2014: Both the Administration and Congress develop policies to strengthen the Nation’s patent system, which is seen as critical to the nation’s innovation economy. Combining this notion with the calls for better evidence for R&D programs, the Academy saw this as an opportunity to explore the available evidence and empirically analyze two key issues of national priority: the rate and quality of new patents from across the NIH.

Advocating before Congress

Advocating before the Administration

The Academy has also met with key members of the Administration to see how such data may help guide federal science budgets in the short term.

"I would be very interested in these data and similar data in considering future budget decisions. As you carefully point out, economic impacts aren’t the primary consideration for allocating NIH resources but there are clearly opportunities to consider economic-impact data more fully in making decisions about NIH and patent data are one type of economic-impact data."

Kei Koizumi
Ass’t Director for Federal R&D, White House Office of Science and Technology Policy

Since the development of new patents is strongly correlated with high regional employment and startup activity, the Academy’s President Jonathan Lewin, MD, was invited to testify before Congress on the findings.

The Academy’s analysis was published in a highly-rated journal, which helped to disseminate the results throughout the wider science community and foster a dialogue about an econometric approach to NIH funding.

After months of data mining, using publicly-available NIH/USPTO patent and grant data, the Academy found compelling evidence that imaging and bioengineering research were an outlier at NIH for producing high rates of new intellectual property.

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During RSNA 2013, the Academy set up a grassroots advocacy booth in the Grand Concourse of McCormick Place. The goal was to leverage the incredible attendance of the RSNA annual meeting to send a powerful message to Congress - right in the middle of a vital budget debate. The results were tremendous. The imaging community sent over 10,000 letters to Congress in 2013 urging their members of Congress to recognize the dual public health and economic virtues of medical research. These letters then allowed Academy staff in DC to request meetings with specific offices of strategic importance, and reiterate the message in person on behalf of the constituents that took action.

RSNA and the Academy: amplifying imaging’s voice on behalf of NIH research.
In January, the Radiology Departments at UNC and Duke hosted Congressman David Price (D-NC) at the new Biomedical Research Imaging Center at UNC-Chapel Hill. The Congressman, who sits on the powerful Appropriations Committee, was interested to learn about the new imaging center, with UNC and Duke researchers delivering the message that the current funding environment makes supporting new centers difficult.

The Academy partnered with the American Institute for Medical and Biological Engineering to organize a tour of the NIBIB intramural labs on the NIH campus in Bethesda. The event was attended by over 50 congressional staff, who saw cutting-edge bioengineering and biomedical imaging technologies first hand.

The Academy hosted its first scientific symposium at the NIH, entitled: “Uncovering Connections: Imaging Advances in Autism, TBI and Alzheimer’s Disease.” The goal of the event was to address the technological advances that may lead to pathophysiological and pathogenic connections between the three conditions. Over 100 NIH, Department of Defense and FDA staff attended. Proceedings from the conference will be published in late 2014.

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The Academy continued with its State of the Science series at NIH. These briefings are short, high-impact presentations to a Director-level audience at various NIH Institutes that maintain a significant imaging portfolio. The goal is to keep imaging research a priority within the Institutes, and explore any obstacles or areas of mutual interest. In May, imaging scientists met with NHLBI Director Gary Gibbons, MD and his senior staff on the latest in cardiovascular imaging advances.
Total imaging research at NIH saw its first overall decrease since the Academy began tracking imaging projects at NIH in 2001. However, in terms of funding to academic Radiology Departments, overall funding was up 2.5%.
The Academy of Radiology Research is pleased to announce that 46 researchers have been selected as recipients of the Academy’s 2014 Distinguished Investigator Award. This prestigious honor recognizes individuals for their accomplishments in the field of medical imaging. Over the past few decades, the radiology research community has been responsible for many important advances that have had a profound impact on healthcare. Researchers who have been named a Distinguished Investigator have made significant contributions to the field and rank within the top 10 percent of all Radiology department faculty.

Lubomir M. Hadjiiski, PhD  
Bryan Hargrove, PhD  
C. Cézanne Harlow, PhD  
Brian Harrower, PhD  
D. Gordon Harris, PhD  
Richard Hargrove, PhD  
Joseph H. Harrower, PhD  
Mark Harwood, PhD  
Joseph H. Hargrove, PhD  
Brian Hargrove, PhD  
Robert Harris, PhD  
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Innovative and transformative Investigators are among the most innovative and transformative investigators in medical research.
The Advanced Multimodality Image Guided Operating (AMIGO) Suite at Brigham and Women’s Hospital and Harvard Medical School, a one-of-a-kind surgical facility combining real-time imaging of X-ray fluoroscopy and ultrasound with computed tomography (CT), magnetic resonance imaging (MRI) and positron emission tomography (PET). AMIGO, supported by NIH, enables radiologists, surgeons, engineers, computer scientists and physicists to work together to introduce, test and perfect cutting-edge surgical procedures for a wide range of diseases.
MEMBERSHIP GROWTH
The organization continues to see strong growth, adding eight new Academic Departments in 2014.

As the Academy has grown, the revenue share has adjusted over time. The Academy’s Academic Council has grown over the past five years, now accounting for almost 1/3 of the Academy’s operating budget. This share is expected to grow even greater in 2015, as the Academic Council welcomed 8 more members for the coming year. For the first time in the Academy’s history, the cost-share by radiology societies is expected to be less than 50% of the total revenue for the Academy in 2015, as it continues to rely more on academic radiology departments.