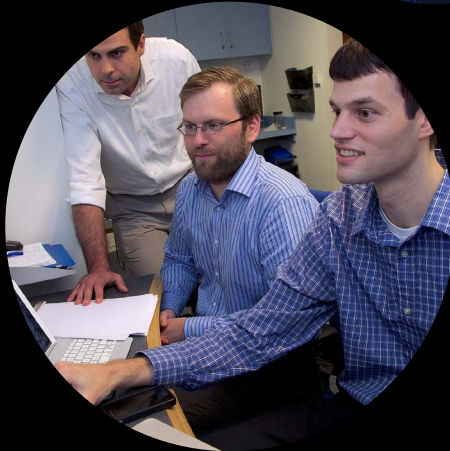EMORY
UNIVERSITY
SCHOOL OF
MEDICINE

**Department of Radiology
and Imaging Sciences**

Adopt-a-Resident Program

## Message from the Chair

Dear Friends and Colleagues,

I am exceedingly proud of what we have done together to shape the future of radiology by supporting our best and brightest future leaders. The Adopt-a-Resident Program, implemented in 2008, has had a major impact on Emory and our field in a short period of time. By offering highly motivated and talented radiology residents the support, mentorship, and resources to pursue their dream projects, we have developed and sustained innovative programs in global radiology, electronic education, and health policy and advocacy. Our "adoptees" have exceedingly bright career paths; they also are well on their way to enhancing the value of radiology for us all.

Please join me in continuing to support our future through the Emory Radiology and Imaging Sciences Adopt-a-Resident Program.

Best wishes,

CAROLYN CIDIS MELTZER, MD, FACR
William P. Timmie Professor and Chair
Department of Radiology and Imaging Sciences
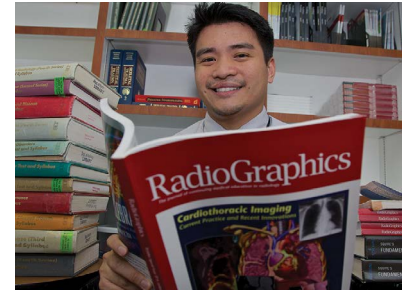
Emory Radiology and Imaging Sciences Adopt-a-Resident Program

Emory's Department of Radiology and Imaging Sciences is a community dedicated to promoting health, supporting discovery and innovation, and educating the future healthcare workforce. We embrace and celebrate a collaborative culture, adaptive approaches to continuous innovation, and aligned partnerships in patient-centered care.

That's why Emory Radiology encourages its diagnostic radiology residents to be well-rounded professionals with a broad range of skills needed to improve healthcare worldwide. The **Adopt-A-Resident Program** provides funding and faculty mentorship for enterprising residents to undertake and complete specialized projects that advance the quality of clinical, academic, and research training.

The following stories explain how **Adopt-A-Resident** grantees have harnessed the power of technology to improve training, and also created innovative program tracks to more formally prepare trainees for careers as educators, researchers, informatics specialists, and even medical entrepreneurs.

Join us by supporting the **Adopt-A-Resident Program**. Your generosity is an investment in both the people and the promise of radiology and imaging sciences.

	2018
PROJECT AWARDED	**Radiology at Emory Medical Innovation (REMI) Track**
MENTORS	**Zachary Bercu, MD, and Janice Newsome, MD**

Alex Dabrowiecki, MD

Alex Dabrowiecki sees his proposed *Radiology at Emory Medical Innovation (REMI) Track* as a logical addition to the residency program.

"I chose radiology because of the exciting manipulation of technology that drives our contributions in medicine," **Dr. Dabrowiecki** wrote in the proposal. "Even as a hard-working and capable (albeit junior) resident attempting to bring a solution of mine to fruition, I quickly stalled realizing product development was never part of my formal academic education."

His proposed REMI track would combine didactic education with hands-on learning to equip residents with the knowledge and skills necessary to turn a good idea into a marketable product. Participating residents would attend monthly lectures on the theories and tenets of entrepreneurship and product development during their first two years of residency. REMI-track residents in their third and fourth years of residency then would conceive and develop a prototype technological solution with an accompanying business plan as a capstone project.

Once the work is completed and approved, the REMI track would launch in 2019.

	2018
PROJECT AWARDED	**Neuroanatomy Live: An Interactive Curriculum Using 3D Print Technology**
MENTORS	**Mark Mullins, MD, PhD, and Kristin Baugnon, MD**

Anna Trofimova, MD, PhD

Anna Trofimova hopes *"Neuroanatomy Live: An Interactive Curriculum for Radiology Residents and Fellows Using 3D Printing Technology"* will make it easier for residents to master the complexities of neuroanatomy.

"Radiology is one of, if not the most rapidly developing technology-driven fields in medicine, and we as radiologists work with an increasing number of different imaging modalities and techniques," says **Dr. Tromifova** in her proposal. "Emory Radiology trainees are very lucky to have the 3D printer available for their use."

Dr. Trofimova will develop a neuroanatomy curriculum with six workshops that focus on neuroanatomic information with 3-dimenional printed anatomic models of the brain, head, and neck. Each workshop will allow residents to better see, feel, and understand complex anatomical and neuroanatomical systems and structures. 3D printing can produce an endless variety of models which can be designed and redesigned as needed.

"I'm very excited to have an opportunity to bring together my passion for neuroradiology and cutting-edge technologies to enhance residents' education in our and, potentially, other residency programs," shares **Dr. Trofimova**.

	2017
PROJECT AWARDED	**Integrated Imaging Informatics Track (I3T)**
MENTOR	**Nabile Safdar, MD, MPH**

Patricia Balthazar, MD

Dr. Patricia Balthazar recognizes how radiologists are increasingly expected to take the lead in information systems and envisions I3T providing in-depth imaging informatics experience to trainees working closely with the Division of Imaging Informatics. "I3T residents will learn skills needed to improve the quality and efficiency of imaging services while supporting clinical, educational, and research efforts through the use of information technology, thus placing Emory Radiology at the forefront of imaging informatics education."

Dr. Balthazar will act as a liaison between the residency program and the Division of Imaging Informatics. I3T projects will prioritize improving the residency training, while acquiring hands-on experience. She already has some potential I3T projects in mind: improving resident call workflow, and creating a resident dashboard application for monitoring practice habits while providing resident feedback.

She additionally hopes to develop a formal imaging informatics curriculum for all Emory radiology residents. "Many information technology tools are part of our day-to-day lives and have been the focus of recent national policies that will affect our future."
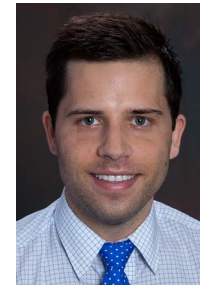
	2016
PROJECT AWARDED	**Versatile 3D Printed Training Models**
MENTORS	**Ryan Peterson, MD, and Amanda Corey, MD**

Sean Z. Goodin, MD

The models medical students encounter in their training may not be idealized beauties revered for their nearly perfect bodies but they're just as far from a representation of the average person as the supermodel.

That's why **Dr. Sean Z. Goodin**, R1, proposed developing a new kind of anatomic model to be used in training: a dynamic 3D printed model. These models could easily and inexpensively be altered to simulate body conditions like high or low BMI and produce degenerative pathologies so residents could practice troubleshooting such difficulties.

Like **Dr. Goodin's** proposed 3D printed model project, half of Adopt-a-Resident projects employ technology in innovative ways. Projects also are evenly split between exploring innovations in teaching and training and advancing the quality of clinical practice. Some projects even focus on global health issues.

Dr. Goodin's project may allow residents (or even caregivers in underserved parts of the world) to gain experience in ultrasound-guided breast biopsies before ever seeing an actual patient.

	2015
PROJECT AWARDED	**Cloud-Based Teaching Database and PACS for Simulated Medical Student Training**
MENTORS	**Brent Little, MD, and Stefan Tigges, MD**

Frederic Bertino, MD

Dr. Frederic Bertino feels medical students deserve a clinical radiology experience that allows them to create reports, experience how a radiologist thinks, and learn clinical medicine from the other side. Learning to think like a radiologist diversifies the educational experience and will translate into better patient care regardless of the student's chosen career path.

Dr. Bertino envisions medical students working in the reading rooms on their simulated PACS at the same time radiology faculty are interpreting patient images so students get a real feel for image-guided medicine. The simulated PACs would have about 120 case files, allowing the student to engage in evidence-based clinical decision-making within the radiologists' real work environment: reading and interpreting patients' imaging studies, dictating their findings. "This allows students the opportunity to act clinically, feel integrated into the reading room team, and learn the thought process of a radiologist to better prepare them for residency both in and outside of radiology," says **Dr. Bertino**.

	2015
PROJECT AWARDED	**Radiology START: Stratified Training in Academic Research and Teaching**
MENTORS	**Mark Mullins, MD, PhD, and Bruno Soares, MD**

Dexter Mendoza, MD

Dr. Mendoza proposed the *"Radiology START: Stratified Training in Academic Research and Teaching"* program. The project is a 2- to 3-year longitudinal program with the goal of preparing radiology residents as they become educators of the future. As part of the program, **Dr. Mendoza** will recruit experts in education, both in and out of the Emory University system, to provide seminars and facilitate group discussions in education-centered topics including: learning theories, learning and teaching styles, providing feedback, developing curricula, mentorship, and research.

After providing the participants a foundation, they will be given a chance to put theory into practice by working directly with medical students and more junior residents. Each participant will also be paired with a mentor to complete a capstone project, such as a lecture series, an online learning module, or an education-centered research project.

Dr. Mendoza hopes that the Radiology START program will just be the beginning of a lifelong pursuit of academic radiology for many residents. He also sees the program growing in the future and eventually expanding it and offering it to residents from other specialties.

2014

PROJECT AWARDED: **Investigating the Effect of Multitasking and Interruptions on the Quality and Practice Environment in Radiology**

MENTORS: **Michael Osipow, MD, and Aarti Sekhar, MD**

Drew Streicher, MD

Dr. Streicher realized that interruptions such as clinical consults, phone calls, and protocoling exams are inevitable and in fact, these experiences are often valuable interactions. However, depending on the timing, these interactions likely have an impact on the quality and efficiency of the radiologist's ability to perform the primary task of image interpretation, as well as increase levels of stress/fatigue. Through a mutual interest in the topic with his mentors, **Drs. Michael Osipow** and **Aarti Sekhar**, a project idea was developed.

Dr. Streicher aims to identify the types and number of interruptions a radiologist experiences, how these interruptions affect stress levels, and how thoughtful reading room design can impact the number of interruptions and decrease the need for multitasking. Additionally, through a unique partnership with the SimTigrate design lab at Georgia Tech, Streicher will perform a case-control simulation that will involve image interpretation in two different environments, an interruption heavy and interruption free environment, to determine the effect of multitasking and interruptions on efficiency, report quality, and error rate.

2013

PROJECT AWARDED: **Radiologists as Imaging Consultants: The Challenges and Lessons Learnt from Comparing the Roles of Canadian and American Radiologists**

MENTOR: **Kimberly Applegate, MD, MS**

Nima Kokabi, MBBS

Dr. Kokabi proposed investigating the occurrence of unnecessary imaging examinations across two different healthcare systems: the US and Canada.

During two 2-week elective rotations at a tertiary referral center in Canada, **Kokabi** will investigate the utility of various imaging modalities for a specific clinical presentation in a targeted group of patients. The emphasis will be on clinicians conforming to available guidelines and the role of radiologists in reducing unnecessary examinations. The working dynamic of such a system will be studied by surveying both clinicians and radiologists. He has begun the same process at Emory University. The differences between the two systems will be identified.

A Resident Quality Assurance Committee has been initiated to investigate practical ways to assess use of medical imaging at Emory and our adherence to best practice guidelines. The committee participates in educating trainees in other specialties about evidence-based use of imaging for various clinical presentations.
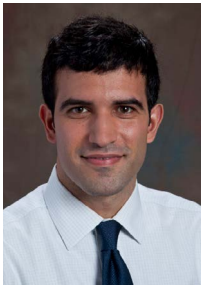
	2013
PROJECT AWARDED	**Data Visualization of Diagnostic Radiological Errors**
MENTORS	**Walt Carpenter, MD,PhD, Travis Henry, MD, and Brent Little, MD**

Faramarz Edalat, MD

Dr. Edalat proposed an anonymous, HIPAA-compliant, web-based interface for the storage of residents' diagnostic errors and missed cases as a solution to appropriately share such cases across the residency program. This interface, currently in development, will display the frequency of most commonly missed diagnoses, have a built-in search engine, and have the ability to organize cases based on diagnosis, section and modality. While many different programs exist for storing and sharing cases, none has the ability to sort these cases by frequency of missed cases, diagnosis, body section or modality.

Edalat's interface will not only be useful as a direct interface with the residents, but also, based on its internal results, can suggest areas that residents would benefit from more teaching. Furthermore, given the ACGME mandate for resident quality assurance conferences and feedback, this project can be used to streamline identification of cases for use in such conferences. Future applications of this project include using missed cases for training purposes in a dynamic fashion such as teaching files, simulators and assessments.

	2012
PROJECT AWARDED	**Portable Radiology Teaching File**
MENTORS	**Travis Henry, MD, and Walt Carpenter, MD, PhD**

Thomas Loehfelm, MD, PhD

Dr. Loehfelm was awarded a grant to develop a tablet-computer application to make it easy to share medical images for teaching purposes among faculty and residents at Emory and beyond. Radiologists often collect images from interesting cases to share with their colleagues—a remarkable spine MRI, a rare tumor or infection, or a classic radiographic finding. A typical radiologist might accumulate hundreds or thousands of such images on a USB thumb drive, a shared network folder, and/or external hard drive. Tablet computers, like the iPad, provide an ideal platform for such images: nearly every resident has one, and they are portable, internet-enabled, and have high-quality touch-screen displays. All that would be required to make the images useable on tablet-computers would be an application that could retrieve and display these interesting cases, and a platform to allow anyone sitting at a workstation to easily create them. Thus far, **Loehfelm** has developed a PC program to create shareable tests, cases, and teaching files, and an application for Android tablets. The Android app, RADIANT, has been downloaded more than 1500 times around the world, and he was able to use it to digitize the film library of a hospital in Ethiopia. He plans to translate these programs for the iPad and distribute them to the faculty and other residents.

2011	
PROJECT AWARDED	**Radiologists as Anatomists: Improving Gross Anatomy and Radiology Education**
MENTORS	**Stefan Tigges, MD, MSCR, and Walt Carpenter, MD, PhD**

Ryan Peterson, MD

Dr. Peterson received an award from the Adopt-a-Resident Program to incorporate advanced imaging into human anatomy courses. **Dr. Peterson** sought to provide more hands-on learning opportunities in radiology to medical students because "diagnostic and interventional radiology has become an essential part of every patient's care." He used cross-sectional CT imaging to scan cadavers to show the importance of radiology for medical planning and management. Peterson secured a workstation capable of rendering 3D images and worked with the directors of the human anatomy course to provide images that mesh with their curriculum. He also worked to integrate radiology into medical education and raise medical students' involvement in radiation by offering greater access to radiology for medical students.
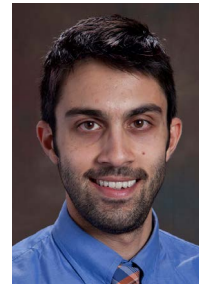
2010	
PROJECT AWARDED	**Audience Response System**
MENTOR	**Ashley Aiken, MD**

Neil Shah, MD and

Bryan Yi, MD, MPH

Dr. Yi initiated a project to transform the classroom experience for residents by creating an audience response system that will render didactic lectures interactive. Using this technology, called ResponseWare, enables the lecturer to query all of his/her students at once or to obtain instant feedback. Since **Dr. Yi's** graduation, **Dr. Shah** has taken over the project. In the past year, **Dr. Shah** has developed tutorials to facilitate the use of ResponseWare. It has been successfully used by many lecturers. **Shah** aims to create templates to make ResponseWare even more user-friendly.

	2010
PROJECT AWARDED	**Diagnostic Radiology in Comprehensive Health CareClinics and Teaching Hospitals in Nigeria**
MENTOR	**Yemi Ibraheem, MD**

Nnenna Aguocha, MD, MPH

Dr. Aguocha embarked on a funded, month-long international rotation in March, 2012 to Nigeria to examine the role of radiology in primary, secondary, and tertiary health care institutions in Abuja and Jos. In Jos, **Aguocha** provided radiological interpretations for imaging studies performed at nonprofit comprehensive health care clinics, and she organized lectures for radiology residents and faculty at the Jos University Teaching Hospital. In Abuja, she conducted needs assessments and cost/benefits analyses of primary health care clinics and mobile health care units to assess the feasibility of introducing portable ultrasound machines to these clinics, which offer free antenatal care. **Aguocha** hopes that her project will "encourage radiology residents to think of radiology in global terms and to formulate innovative ideas to extend some of the benefits of radiological advances and resources to developing countries."

	2009
PROJECT AWARDED	**Political and Business Influences that Shape Radiology Practice in the US**
MENTOR	**Carolyn Meltzer, MD, FACR**

John Chenevey, MD

Well aware of how political and business influences shape the way radiology is practiced in the United States, **Dr. John Chenevey** used the award to participate in radiology organizations and learn more about critical issues in health care policy. **Chenevey** served as the resident member of the American College of Radiology (ACR) All Members Meeting Steering Committee and the ACR Neuroradiology Commission, as well as participating in the ACR Resident and Fellow Membership Subcommittee. He wrote web articles for the ACR Resident and Fellow Section and contributed to Emory's residency program through newsletter articles, email updates, and noon conferences. In addition to lecturing at the Georgia and South Carolina state radiology society meetings, he also spoke at the American Institute for Radiologic Pathology as the ACR introductory speaker.

2009	
PROJECT AWARDED	**Project: International Humanitarian Radiology Elective in Ethiopia**
MENTOR	**Pat Hudgins, MD, FACR**

Ali Tahvildari, MD

Driven by his interest in global health, **Dr. Ali Tahvildari** created an educational partnership with the Addis Ababa University (AAU) Department of Radiology in Ethiopia. **Tahvildari** and his mentor, **Dr. Pat Hudgins**, traveled to Ethiopia to teach at AAU in 2011 and 2012. Together they created the Global Health Radiology Initiative curriculum. As a part of a joint effort between AAU and Emory to develop a neuroradiology fellowship for the AAU radiology program, Ethiopian faculty has also served rotations in Emory's neuroradiology division. **Drs. Tahvildari** and **Hudgins** published an article in the July 2012 JACR about their experience, which drew the attention of RAD-AID, a global health imaging nongovernmental organization (NGO) based in The Johns Hopkins University Department of Radiology. **Tahvildari** was invited to speak about his experiences at the RAD-AID annual meeting and collaborated on a chapter on education in RAD-AID's Global Health Imaging Textbook. He has created a sustainable resident elective rotation that continues to draw attention to medical humanitarianism in radiology.

| 2008	
PROJECT AWARDED	**Radiology Podcasting and iTunes U**
MENTOR	**Mark Mullins, MD, PhD**

Jay Patel, MD

The first beneficiary of the Adopt-a-Resident Program, **Dr. Jay Patel** created a virtual library of radiology conferences, lectures, and case studies available as podcasts. "Podcasting presents a new conduit to quickly provide radiologists with state-of-the-art information about CT and MRI scanners, acquisition protocols, and post-processing of data sets 24 hours a day. The ease of creation and delivery enables the information to be rapidly updated," said Patel. These podcasts can be accessed anywhere, even while on the go, moving learning from the library and the computer. Over 150 lectures are now available to Emory residents; these files come in various high-quality formats compatible with desktop computers, iPods, tablets, and other smart devices. Though he has moved on to another institution, current residents continue to create podcasts and refine the application.

Adopt-a-Resident Program
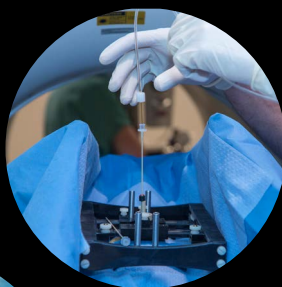
If you wish to discuss support for our department with a member of our development team, please contact **Ashley Michaud** at **404.778.1250** or **ashleymichaud@emory.edu**.