# Radiology

## Research and Training Details

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<th>Category</th>
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<tr>
<td>Faculty</td>
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<td>Joint Appointment Faculty</td>
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<td>Research Students</td>
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<td>Support Personnel</td>
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<td>Direct Annual Industry Support</td>
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<td>Peer Reviewed Publications</td>
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## Clinical Activities and Training

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<td>Clinical Staff</td>
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<td>Staff Physicians</td>
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<td>Other Students</td>
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<td>Inpatient Encounters</td>
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<td>Outpatient Encounters</td>
<td>154,706</td>
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Division Publications


Kaiser D, Leach J, Vannest J, Schapiro M, Holland S, Cincinnati MRIoNAC. Unanticipated findings in pediatric


86. Oestreich AE. RSNA centennial article: ALARA 1912: "As low a dose as possible" a century ago. Radiographics. 2014; 34:1457-60.


Faculty, Staff, and Trainees

Faculty Members

Brian D. Coley, MD, Professor
  Leadership Director and Radiologist-in-Chief; Endowed Chair, The Frederic N. Silverman Chair for Pediatric Radiology
  Research Interests Ultrasound, imaging care delivery

Bernadette L. Koch, M.D., Professor
  Leadership Associate Chief, Academic Affairs
  Research Interests Imaging the pediatric head and neck

Blaise V. Jones, MD, Professor
  Leadership Associate Chief, Clinical Operations; Division Chief, Neuroradiology; Division Co-Chief, MRI; Director, MRI Safety
  Research Interests Pediatric neuroradiology, neuro-oncology and cerebrovascular diseases

Todd A. Abruzzo, MD, Associate Professor
  Leadership Chief, Pediatric Interventional Neuroradiology
  Research Interests Cerebrovascular disease, childhood stroke, aneurysms, intra-arterial chemotherapies, vascular malformations, neurovascular interventions

Christopher G. Anton, MD, Assistant Professor
  Leadership Associate Director, Radiology Residency Program; Division Chief, Radiography
  Research Interests Musculoskeletal diseases

Alison Aquado, MD, Assistant Professor
  Research Interests Pediatric Transarterial Radioembolization for primary and secondary hepatic malignancies using yttrium-90 HIFU

Micahel Aquino, MD, Assistant Professor
  Research Interests Emergency and trauma imaging, ultrasound, medical education

Diane S. Babcock, MD, Professor Emerita

William S Ball, MD, Professor
  Research Interests Pediatric Neuroradiology

Alan S. Brody, MD, Professor
  Leadership Associate Director for Clinical Research in Radiology; Division Chief, Thoracic Imaging
Maria A. Calvo-Garcia, MD, Associate Professor
Research Interests Fetal development and malformations including cloaca and other ano-rectal malformations, obstructive uropathy, skeletal dysplasias, vascular birthmarks, etc.

Marguerite M. Care, MD, Assistant Professor
Research Interests Traumatic brain injury, child abuse, CT neuroimaging

Kim M. Cecil, PhD, Professor
Leadership Chair of the Imaging Research Center's Scientific Advisory Committee
Research Interests Application of MR spectroscopy and imaging in several populations by characterizing the features of inborn errors in metabolism, attention-deficit hyperactivity disorder (ADHD), traumatic brain injury, and evaluating the effects of environmental neurotoxicants.

Eric J. Crotty, MD, Assistant Professor
Leadership Director, Pediatric Radiology Fellowship Program
Research Interests Cardiothoracic radiology and resident education

Mark DiFrancesco, PhD, Assistant Professor
Leadership Assistant Director, Pediatric Neuroimaging Research Consortium
Research Interests Imaging structure and function of brain networks impacted by behavioral and disease-related challenges

Charles L. Dumoulin, PhD, Professor
Leadership Director, Imaging Research Center
Research Interests Physics and engineering of Magnetic Resonance, MRI of neonates, MR-guided vascular interventions, and MR-guided Focused Ultrasound Therapy

Kathleen H. Emery, MD, Professor
Leadership Division Co-Chief, Musculoskeletal Imaging
Research Interests Musculoskeletal imaging and sports medicine

Robert J. Fleck, MD, Assistant Professor
Research Interests CT and MR of the cardiopulmonary system.

Michael J. Gelfand, MD, Professor
Leadership Division Chief, Nuclear Medicine
Research Interests New applications of hybrid imaging (PET/CT, SPECT/CT, PET/MRI) in pediatrics, and radiation dose reduction in nuclear medicine and hybrid imaging

Randy O. Giaquinto, Instructor
Research Interests MR coil engineering

Marilyn J. Goske, MD, Professor
Leadership Chair, Educational Council
Research Interests Radiation protection for children, communication, education for radiologists, technologists and fellows.

Kathy J. Helton-Skally, MD, Assistant Professor

Scott Holland, PhD, Professor
Leadership Director, Pediatric Neuroimaging Research Consortium; Director, Communication Sciences Research Center
Research Interests Advanced neuroimaging applications of MRI in pediatrics with a concentration on functional MRI of language, hearing and computational models of neural connectivity

Tzipi Horowitz-Kraus, Professor
Leadership Program Director, Reading and Literacy Discovery Center
Research Interests  Neuroimaging: written language; oral language development

Neil D. Johnson, MD, Professor
Leadership  Endowed Chair, The Neil D. Johnson Chair for Radiology Informatics; Medical Director, Vascular Access
Research Interests  Interventional percutaneous image guided treatment of benign bone tumors such as Aneurysmal Bone Cyst and Osteoid Osteoma

Hee Kyung Kim, MD, Assistant Professor
Research Interests  Advanced MR techniques in pediatric MR studies, neuromuscular disease, and cartilage image

Beth M. Kline-Fath, MD, Associate Professor
Leadership  Division Chief, Fetal and Neonatal Imaging
Research Interests  Fetal MRI, fetal ultrasound and neonatal neuroimaging

Steven J. Kraus, MD, Associate Professor
Leadership  Division Chief, Fluoroscopy
Research Interests  Gastrointestinal malformations

Tal Laor, MD, Professor
Leadership  Division Co-Chief Musculoskeletal Imaging; Endowed Chair, The William S. Ball Chair for Radiology Research
Research Interests  Skeletal injuries to the child, congenital abnormalities, and normal and abnormal bone growth and development

James L. Leach, MD, Associate Professor
Leadership  Director, Pediatric Neuroradiology Fellowship Program
Research Interests  Epilepsy, functional MRI, neoplasms, cerebrovascular disease, brain perfusion imaging, diffusion imaging and image fusion

Greg Lee, PhD, Assistant Professor
Research Interests  High-speed MR imaging

Yu Li, PhD, Assistant Professor
Research Interests  Technological development and clinical applications of high speed MR imaging and spectroscopy including RF coil array technology for clinical MRI

Diana Lindquist, PhD, Associate Professor
Leadership  Director of the InVivo MicroImaging Laboratory
Research Interests  Metabolic effects of drugs used to treat psychiatric illness

Luke Linscott, MD, Assistant Professor
Leadership  Chair, MRI Division Quality Improvement Committee
Research Interests  Pediatric vascular brain injury and pediatric craniocervical junction

Carl (Arnold) Merrow, Jr, M.D., Assistant Professor
Leadership  Endowed Chair, The Corning Benton Chair for Radiology Education
Research Interests  Pediatric musculoskeletal and fetal imaging with particular attention to vascular anomalies

Usha Nagaraj, MD, Assistant Professor
Research Interests  Pediatric neuroimaging, fetal MRI

Michael P. Nasser, MD, Assistant Professor

Alan E. Oestreich, MD, Professor Emeritus
Research Interests  Musculoskeletal plain imaging; bone dysplasias; metabolic bone disease; umbilical vein catheterization; postgastric magnetopathy; sequential perception
Sara M. O'Hara, MD, Professor
Leadership Division Chief, Ultrasound
Research Interests Cutting edge ultrasound techniques and equipment, genitourinary imaging, and newborn imaging

Manish N. Patel, MD, Associate Professor
Leadership Medical Director, Radiology Liberty; Director of Daily Operations, IR
Research Interests Diagnosis and treatment of vascular malformation, pediatric PICC placement, and pre-operative evaluation of patient with anorectal malformation

John M. Racadio, MD, Professor
Leadership Division Chief, Interventional Radiology; Director IR Research Lab
Research Interests 3D image fusion and intervention, radiation safety, and viral oncolytic therapy

Mantosh Rattan, MD, Assistant Professor
Research Interests Thoracic imaging, neonatal abdominal MRI

Susan E. Sharp, MD, Assistant Professor
Research Interests Pediatric nuclear medicine, focusing on SPECT/CT and PET/CT.

Suraj Serai, PhD, Assistant Professor
Research Interests MR physics; t2 mapping; spectroscopy; diffusion; fMRI; optimization of MR imaging protocols for enhanced image quality and better diagnosis

Keith Strauss, , Assistant Professor
Leadership Clinical Imaging Physicist
Research Interests Radiation dose reduction, image optimization

Jean Tkach, PhD, Associate Professor
Research Interests Development, implementation and optimization of neonatal MRI acquisition techniques

Alexander J. Towbin, MD, Associate Professor
Leadership Director, Radiology Informatics
Research Interests Radiology informatics; cancer imaging and abdominal imaging

Andrew Trout, MD, Assistant Professor
Leadership Interim Division Chief, Thoraco-abdominal Imaging
Research Interests Nuclear medicine; advanced body CT and MR imaging

Daniel B. Wallihan, MD, Assistant Professor
Research Interests Cardiovascular imaging and education

Weihong Yuan, PhD, Associate Professor
Research Interests Diffusion tensor imaging in clinical and experimental hydrocephalus. Advanced neuroimaging techniques in pediatric patients with traumatic brain injury, sports concussion, TSC, epilepsy and other neurological disorders

Andrew M. Zbojniewicz, MD, Assistant Professor
Research Interests Musculoskeletal imaging, US-guided therapy

Joint Appointment Faculty Members

William S. Ball, MD, Associate Professor (Neuroimaging Research Consortium)
Research Interests Pediatric Neuroradiology

Scott Holland, PhD, Professor (Neuroimaging Research Consortium/Reading and Literacy Discovery Center)
Research Interests Advanced neuroimaging applications of MRI in pediatrics with a concentration on functional MRI of reading, language, hearing and computational models of neural connectivity supporting these
Tzipi Horowitz-Kraus, PhD, Assistant Professor (Neuroimaging Research Consortium/Communication Science)
Research Interests Neuroimaging: written language; oral language development

Darren Kadis, PhD, Assistant Professor (Neuroimaging Research Consortium/Neurology)

Jeffrey Tenney, PhD, Assistant Professor (Neuroimaging Research Consortium/Neurology and Neuroscience)
Research Interests Oral and written language typical and atypical development, Brain plasticity following intervention

Jennifer Vannest, PhD, Associate Professor (Neuroimaging Research Consortium/Neurology)
Research Interests Functional neuroimaging of language and cognitive development, effects of neurological and developmental disorders on language and cognitive function

Jason C. Woods, PhD, Professor (Neuroimaging Research Consortium/Pulmonary Medicine)
Research Interests Hyperpolarized 3He and 129Xe; pulmonary MRI; UTE MRI; translational studies related to asthma, CF, rare-lung diseases, COPD, and chronic lung disease of prematurity; image-guided pulmonary interventions, neonatal imaging and lung development

Jing Xiang, MD, PhD, Associate Professor (Neuroimaging Research Consortium/Neurology)
Research Interests Magnetoencephalography (MEG), MEG studies of migraine, epilepsy and autism

Trainees
- Aaron Betts, MD, PL-7, Brooke Army Medical Center
- Kelly Bradley, MD, PL-6, SUNY Upstate Medical University
- Jeffrey P. Clarke, MD, PL-6, Allegheny General Hospital
- Sinisa Haberle, MD, MPH, PL-6, Duke University Medical Center
- Grace S. Mitchell, MD, MBA, PL-6, Baystate Medical Center
- Matthew R. Plunk, MD, PL-6, University of Washington
- Rupa Radhakrishnan, MD, PL-7, University of Cincinnati College of Medicine
- Timothy R. Singewald, MD, PL-6, University of Cincinnati Medical Center
- Judy H. Squires, MD, PL-6, University of Cincinnati Medical Center
- Jill M. Stein, MD, PL-6, University of Utah School of Medicine
- Jonathan R. Woods, MD, PL-6, San Antonio Uniformed Services Health Education Consortium

Grants, Contracts, and Industry Agreements

Grant and Contract Awards

Abruzzo, T

Ultrasound-assisted Thrombolysis for Stroke Therapy

National Institutes of Health(University of Cincinnati)
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<tr>
<th>Grant ID</th>
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<td>R01 NS047603</td>
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<td>7/31/2019</td>
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<td>Holland, S</td>
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<td>HHSN275201400002C</td>
<td>9/26/2014</td>
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<td>Kim, H</td>
<td>Quantitative MR imaging of Cartilage in Juvenile Idiopathic Arthritis (JIA)</td>
<td>Society of Pediatric Radiology</td>
<td>9/1/2014-8/31/2015</td>
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<td>Lee, G</td>
<td>Comprehensive Quantitative Ultrafast 3D Liver MRI</td>
<td>National Institutes of Health(Case Western University)</td>
<td>8/1/2013-7/31/2018</td>
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<td>Li, Y</td>
<td>Novel RF Coils and k-t Space Imaging for Neonatal Chest MRI with NICUs</td>
<td>National Institutes of Health</td>
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<td>Lindquist, D</td>
<td>The Effect of Lithium on Intracellular Sodium in Brain in vivo</td>
<td>National Institutes of Health(University of Cincinnati)</td>
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**Industry Contracts**

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<td>Dumoulin, C</td>
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<td>GE Healthcare</td>
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<tr>
<td>Fleck, R</td>
<td>Bayer HealthCare Pharmaceuticals, Inc</td>
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<tr>
<td>Podberesky, D</td>
<td>Siemens Medical Solutions USA, Inc</td>
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**Current Year Direct Receipts**

$79,184

**Total**

$561,486
Scientific understanding of anesthesia’s impact on young children took a significant leap forward in June, when a multi-divisional study revealed correlations to slightly lower brain function and IQ.

Researchers were quick to caution that direct causation remains unresolved, and additional studies were needed to determine anesthesia’s precise molecular effects on several functions, including language comprehension, in children who underwent surgery before age 4.

The study, published online June 8, 2015, in *Pediatrics*, garnered wide-ranging media coverage, including pieces in *Scientific American*, *U.S. News and World Report* and *Anesthesiology News* and coverage on NPR, CTV and Slate.com. Andreas Loepke, MD, PhD, of the Department of Anesthesia, was the lead author. Scott Holland, PhD, Director of the Pediatric Neuroimaging Research Consortium, led the Division of Radiology’s contributions.

This new knowledge could make it possible to develop mitigating strategies for what scientists describe as a potential dilemma for child health.

“We have to better understand to what extent anesthetics and other factors contribute to learning abnormalities in children before making drastic changes to our current practice, which by all measures has become very safe,” Loepke says.

In the study, researchers compared test scores of 53 healthy participants in a language development study (ages 5 to 18 years with no history of surgery) with those of 53 children in the same age range who had undergone surgery before age 4.

The authors emphasized that average test scores for all 106 children were within population norms. Still, compared with children who had not undergone surgery, children exposed to anesthesia scored significantly lower in key areas that warrant additional examination.

Loepke, Holland and Mekbib Altaye, PhD, Division of Biostatistics and Epidemiology, have submitted an application to the National Institutes of Health seeking funding for a follow up study to investigate more deeply the influence of early anesthesia exposure on brain development.
Substantial concerns have recently been raised regarding the long-term effects of anesthesia and surgery on the developing brain. Brain functional and structural comparisons, conducted by using T1-weighted MRI scans, played a crucial role in a widely-discussed study reporting that exposure to surgical anesthesia can result in diminished language comprehension and IQ. Exposure did not lead to gross elimination of gray matter in regions previously identified as vulnerable in animals. However, decreased performance IQ was associated with diminished gray matter densities in the occipital cortex and cerebellum.