

Division Data Summary

Research and Training Details

Number of Faculty	51
Number of Joint Appointment Faculty	2
Number of Research Fellows	1
Number of Research Students	7
Number of Support Personnel	232
Direct Annual Grant Support	\$2,922,071
Direct Annual Industry Support	\$458
Peer Reviewed Publications	103

Clinical Activities and Training

Number of Clinical Staff	37
Number of Clinical Fellows	9
Number of Other Students	83
Inpatient Encounters	51,725
Outpatient Encounters	156567

Division Photo



Row 1: B Koch, T Laor, A Towbin, K Kukreja, N Johnson, J Racadio
 Row 2: J Tkach, B Kline-Fath, H Kim, K Cecil, S Sharp, S Kraus, D Babcock, S O'Hara, S Holland, K Birkemeier
 Row 3: M Care, D Wallihan, R Fleck, M Goske, J Leach, M Komlos-Kukreja, D Larson, A Brody, D Podberesky, C Anton, B Coley, A Zbojnowicz, K Emery, E Crotty

Significant Publications

Division Highlights

Grant Funding

Primary investigators in imaging received \$11.0 million in new direct and indirect grant funding this year, adding to the \$17.9 million in imaging grants and \$3.9 million in imaging support of other research projects. These funds support diverse research efforts including developing novel non-invasive tumor therapies, neuroimaging of behavioral disorders, and the imaging of familial cardiac disease. Additionally, we have been notified of \$5.3 million in grant funding likely to be awarded in the coming fiscal year, indicating our expected growth and continued recognition of the value of our research activities to pediatric health. Our faculty authored or co-authored 102 peer reviewed publications this year, the most productive year ever and a 10% increase over last year.

Pediatric Functional Imaging Research Network

Funded by a \$6.5 million contract from NIH to CCHMC Radiology, Neurology, and Bioinformatics, the Pediatric Functional Neuroimaging Research Network has been formed as a nationwide resource for pediatric neuroimagers and researchers. With the collaboration of five other institutions, novel functional imaging techniques, analysis tools, and quality control methods have been developed that will be available to researchers free online. These tools will facilitate the gathering of neuroimaging and behavioral data of at

least 1000 children, creating a valuable resource for scientists worldwide.

Interventional Radiology Animal Research Lab

In May of 2011 we opened a new state-of-the art Interventional Radiology (IR) animal research lab, broadening the imaging capabilities of the Imaging Research Center (IRC). The Philips FD20 Allura angio/interventional system mirrors our clinical equipment we currently use in IR in the PeriOp area on A3, and will provide a facility to conduct translational research which can carry over to the clinical care of our patients. 3-D angiography, c-arm cone beam CT, and integrated real-time 3-D needle guidance are just a few of the cutting edge technologies available in the animal lab. It is the first IR animal research facility of its kind in the world in a pediatric institution. IR has already started collaborative research projects with other CCHMC departments. While the lab will be used primarily by Interventional Radiology, the facility is intended to be an institution wide, multi-disciplinary resource to develop and improve image guided treatment options for a broad variety of pediatric diseases.

Honors and Awards

Caffey Award for Best Basic Science Paper:

An MR System for Imaging Neonates in the NICU, Jean Tkach, Randy Giaquinto, Wolfgang Loew, Ronald Pratt, Barret Daniels, Blaise Jones, Lane Donnelly, Charles Dumoulin

Caffey Award for Best Case Report Exhibit:

MR Imaging Features of Fetal Mediastinal and Intrapericardial Teratomas, Eva Rubio, Beth Kline-Fath, Maria Calvo-Garcia, Carolina Guimares.

John Kirkpatrick Young Investigator Award:

Incidence and Etiology of New Liver Lesions in Pediatric Patients Previously Treated for Malignancy, Ethan Smith, Sheila Salisbury, Rose Martin, Alexander Towbin

In addition, the radiology IT group received the Roger A Bauman Award at the Society for Imaging Informatics in Medicine (SIIM) meeting for their paper: Standardized Reporting in Radiology: A Prospective Analysis of Error Rate and Turnaround Time. Matt Hawkins, Seth Hall, Judy Hardin, Shelia Salisbury, Alex Towbin. The award is given to the best student paper at the meeting. It is the only award for papers. Matt Hawkins also won one of the 4 New Investigator travel awards for this work.

Division Collaboration

Radiology; Neurology; » T. Abruzzo, MD; H. Greiner, MD; M. Kabbouche, MD; J. Leach, MD; M. Zuccarello
Rotational vertebral artery occlusion in a child with multiple strokes

Radiology; Oncology; » T. Abruzzo, MD; J. Leach, MD; R. Jackson; J. Keller; D. Adams, MD
Is the PHACE phenotype associated with a developmental lesion of trigeminal innervation?

Radiology; Nephrology » T. Abruzzo, MD; J. Leach, MD; B. Jones, MD; K. O'Brien; J. Bissler, MD
Calcifications associated with pediatric intracranial aneurysms: incidence and correlation with pathogenic subtypes

Radiology; Oncology; Speech Pathology; Ophthalmology; Neurology; Biostatistics and Epidemiology; Pharmacy » T. Abruzzo, MD; J. Geller, MD; J. Augsburg, MD; J. Leach, MD; B. Jones, MD; J. Perentesis, MD; R. Nagarajan, MD; L. Wagner, MD; D. Adams, MD; T. Cripe, MD; M. Absalon, MD; K. Burns, MD; B. Weiss, MD; M. Fouladi, MD; T. Hummell, MD; M. O'Brien, MD; C. Phillips, MD; C. Stewart, MD; C. West, MD; D. Rose, MD; Z

Correa; C. Lambert; M. Kim, MD

A pilot study of intra-ophthalmic artery topotecan infusion for patients with retinoblastoma for which ocular enucleation remains the only standard treatment option

Radiology; Emergency Medicine; Critical Care; Neurology » T. Abruzzo, MD;

Thrombolysis in pediatric stroke study

Radiology; Hematology/Oncology; Ophthalmology; Pharmacy; Neurology; Pathology » T. Abruzzo, MD

Intra-arterial topotecan for advanced retinoblastoma

Radiology; Pulmonary; Pathology » A. Brody, MD; L. Young, MD; T. Boyd, MD

Childhood Interstitial Lung Disease

Radiology; Nephrology and Hypertension » A. Brody, MD; J. Bissler, MD

Renal Angiomyolipomas

Radiology; Otolaryngology » A. Brody, MD; B. Hopkins, MD; B. Koch, MD

Diagnostic capability of airway in croup and bacterial tracheitis

Radiology; Pulmonary » A. Brody, MD; L. Young, MD; M. Rattan, MD

TSC-LAM Study

Radiology; Behavioral Medicine and Clinical Psychology » A. Brody, MD; S. Powers, MD

HRCT & Growth in preschoolers receiving behavioral and nutrition treatment

Radiology; Gastroenterology » A. Brody, MD; J. Franciosi, MD

A phase 2, open-label, multicenter study to assess the safety and efficacy of certolizumab pegol in children and adolescents with active Crohn's disease

Radiology; Developmental Disabilities » M. Care, MD; L. Kaun

Impact of congenital hearing loss on cerebellar white matter to gray matter volume ratios

Radiology; Mayerson Center » M. Care, MD; M. Greiner, MD

Child Abuse - Presence of subdural collections in patients with macrocrania and enlarged subarachnoid spaces

Radiology Imaging Research; General and Community Based Pediatrics » K. Cecil, PhD; K. Yoltan, PhD

Environmental Toxicants & Imaging in a Birth Cohort

Radiology Imaging Research; Neurology » K. Cecil, PhD; D. Gilbert, MD

Anomalous Motor Physiology in ADHD

Radiology Imaging Research; Human Genetics » K. Cecil, PhD; G. Grabowski, MD, PhD; C. Prada, MD, PhD

Imaging Markers of Treatment Response and Progression in Mucopolysaccharidoses

Radiology Imaging Research; Radiology; Neurosurgery » K. Cecil, PhD; J. Leach, MD; T. Maugans, MD

Pediatric Cerebral Concussion: a MRI Analysis

Radiology Imaging Research; Radiology; Neurology » K. Cecil, PhD; M. Care, MD; D. Franz, MD

Everolimus Therapy of Giant Cell Astrocytomas in Patients with Tuberous Sclerosis Complex

Radiology Imaging Research; Radiology; Nephrology and Hypertension » K. Cecil, PhD; M. Care, MD; J.

Bissler, MD, PhD

Therapy of Angiomyolipomas in Patients with Tuberous Sclerosis Complex (TSC) and Sporadic Lymphangioliomyomatosis (LAM)

Radiology Imaging Research; Radiology; Hematology and Cancer » K. Cecil, PhD; K. Kukreja, MD; A.

Towbin, MD; N. Johnson, MD; J. Racadio, MD; T. Cripe, MD, PhD

A Phase I Dose Escalation Study of Intra-tumoral Herpes Simplex Virus-1 Mutant HSV1716 in Patients with Refractory Non-Central Nervous System (non-CNS) Solid Tumors

Radiology Imaging Research; Radiology; Hematology and Cancer » K. Cecil, PhD; A. Towbin, MD; M. Fouladi, MD, PhD

Establishment of an International Diffuse Intrinsic Pontine Glioma (DIPG) Registry

Radiology Imaging Research; Behavioral Medicine and Clinical Psychology » K. Cecil, PhD; D. Beebe, PhD
Neurobehavioral Late-Effects in Pediatric Brain Tumors

Radiology Imaging Research; Radiology; Gastroenterology and Hepatology and Nutrition » K. Cecil, PhD; W.S. Ball, Jr., MD; J. Heubi, MD

Rare Disease Clinical Research Network: Smith-Lemli-Opitz Syndrome: A Longitudinal Study of Patients Receiving Cholesterol Supplementation: Sterol and Isoprenoid Research Consortium

Radiology Imaging Research; Radiology; Gastroenterology and Hepatology and Nutrition » K. Cecil, PhD; A. Towbin, MD; S. Xanthakos, MD

Development of MR-based biomarker panels for NAFLD - a NASH CRN Ancillary Study

Radiology Imaging Research; Neurology » K. Cecil, PhD; D. Lindquist, PhD; J. Clark, PhD; T. DeGrauw, MD
Treatment of Creatine Transporter Deficiency

Radiology Imaging Research; Behavioral Medicine and Clinical Psychology » M. Difrancesco, PhD; D. Beebe, MD

fMRI study of sleep deprivation in teens

Radiology Imaging Research; Rheumatology » M. Difrancesco, PhD; H. Brunner, MD
fMRI/DTI study of neuropsychiatric lupus

Radiology Imaging Research; Child Psychiatry » M. Difrancesco, PhD; E. Harris, MD
fMRI/TMS study of OCD

Radiology Imaging Research; Pulmonary Medicine » M. Difrancesco, PhD; R. Amin, MD
fMRI/DTI study of the baroreflex and blood pressure control

Radiology Imaging Research; Anesthesia » M. Difrancesco, PhD; M. Konig, MD; J. Leach, MD
Study of anesthesia impact on BOLD effect

Radiology Imaging Research Center; Heart Institute » C. Dumoulin, PhD; R. Giaquinto; M. Taylor, PhD, MD
Constructing new pediatric cardiac MR imaging coils

Radiology Imaging Research Center; Heart Institute » C. Dumoulin, PhD; T. Knilans, MD; J. Towbin, MD
Developing MR guided electrophysiology

Radiology Imaging Research Center; Perinatal Institute » C. Dumoulin, PhD; J. Tkach, PhD; J. Whitsett, MD; J. Greenberg, MD; N. Hillman; M. Ikegami; A. Jobe; S. Kallapur; S. Merher
Delivery of the first ONI MR scanner and animal study under a developmental biology protocol for neonatal sheep (N-12)

Radiology Imaging Research Center; Perinatal Institute » C. Dumoulin, PhD; J. Tkach, PhD; B. Haberman, MD; W. Brady; S. Merhar, MD
Installation of MRI scanner inside the NICU

Radiology Imaging Research Center; Pulmonary Medicine » C. Dumoulin, PhD; R. Amin, MD
Awarded an R01 Grant

Radiology Imaging Research Center; Pulmonary Medicine » C. Dumoulin, PhD; R. Amin, MD

Recruitment of senior imaging faculty member to focus on pulmonary imaging. Expansion of business plan to include commitments from Radiology, Pediatrics, and Perinatal Institute

Radiology Imaging Research Center; Oncology » C. Dumoulin, PhD; J. Perentesis, MD

Created business plan to bring clinical HIFU equipment and new faculty to the institution

Radiology Imaging Research Center; Oncology » C. Dumoulin, PhD; M. DiFrancesco, PhD; J. Perentesis, MD

Proton therapy task force for CCHMC for providing recommendations regarding technical aspects of this new therapy

Radiology Imaging Research Center; Nephrology » C. Dumoulin, PhD; Y. Li, PhD; J. Wanasapura, PhD; J. Bissler, MD

Novel uses of high intensity focused ultrasound in the treatment of preclinical models of angiomyolipomas associated with tuberous sclerosis complex

Radiology; Cardiology » R. Fleck, MD; J. Wanasapura, PhD; M. Taylor, MD; K. Hor, MD; D. Benson, MD; L. Cripe, MD

Cardiac MRI research

Radiology; Pulmonary Medicine » R. Fleck, MD; J. Wanasapura, PhD; S. Serai, PhD; R. Amin, MD; Dr. McPhall

MR imaging research in cystic fibrosis and congenital muscular dystrophy

Radiology; Anesthesia; Pulmonary Medicine; Otolaryngology » R. Fleck, MD; L. Donnelly, MD; M. Mahmoud, MD; R. Amin, MD; S. Shott, MD

MR imaging research: Dynamic modeling of obstructive sleep apnea

Radiology; Endocrinology » R. Fleck, MD; I. Little-Gutmark, MD

MR Imaging and modeling of the airway in Turner's Syndrome

Radiology; Cardiology » R. Fleck, MD; J. Wanasapura, PhD; M. Taylor, MD; K. Hor, MD; D. Benson, MD; L. Cripe, MD

Cardiac MRI research

Radiology; Anesthesia; Pulmonary Medicine; Otolaryngology » R. Fleck, MD; L. Donnelly, MD; M. Mahmoud, MD; R. Amin, MD; S. Shott, MD

MRI imaging research: dynamic modeling of obstructive sleep apnea

Radiology; Endocrinology » R. Fleck, MD; I. Little-Gutmark, MD

MR imaging and modeling of the airway in Turner's syndrome

Radiology; Pulmonary Medicine » R. Fleck, MD; J. Wanasapura, PhD; S. Serai, PhD; R. Amin, MD;

MR imaging research in cystic fibrosis and congenital muscular dystrophy

Radiology; Neurology » M. Gelfand, MD; K. Holland, MD; K. Lee, MD; D. Rose, MD

Evaluation and improvement of localization of epileptogenic foci in patients with intractable seizures

Radiology; Hematology-Oncology » M. Gelfand, MD; J. Palumbo, MD

PET with non-imaging CT in Langerhans cell histiocytosis (and additional localization CT as needed) to substantially reduce effective dose

Radiology; Hematology-Oncology » M. Gelfand, MD; R. Dasgupta, MD; L. Wagner, MD

Lymphoscintigraphy with SPECT for sentinel node localization in soft tissue sarcomas

Radiology; UC Radiation Safety; UC Radiation Physics » M. Gelfand, MD; V. Morris, MS; L. Lemen, PhD

Reduction of personnel dose in administration of I-131-MIBG by measurement of dose from each step of the radiopharmaceutical administration

Radiology; Hematology-Oncology » M. Gelfand, MD; B. Weiss, MD; S. Sharp, MD

I-131-MIBG therapy in neuroblastoma

Radiology; Hematology-Oncology » M. Gelfand, MD; T. Cripe, MD

PET/CT imaging in bone sarcomas after limb salvage surgery

Radiology; Orthopedics » M. Gelfand, MD; C. Mehlman, MD

SPECT in patients with back pain

Radiology; Hematology-Oncology » M. Gelfand, MD; M. O'Brien, MD

Retrospective study of children with primary bone lymphomas

Radiology; Medical Affairs/Pediatrics » M. Goske, MD; K. Mandel, MD

ACR Quality Improvement Registry in CT scans in children, part of the national Dose Index Registry

Radiology; Hematology » K. Kukreja, MD; R. Gruppo, MD

Develop guidelines for local tPA therapy for the hospital. Part of multidisciplinary thrombosis group

Radiology; Hematology/Oncology » B. Jones, MD; J. Geller, MD

A pilot study of intra-ophthalmic artery topotecan infusion for patients with retinoblastoma for which ocular enucleation remains the only standard treatment option

Radiology; Hematology/Oncology » B. Jones, MD; M. Fouladi, MD

A pilot study of bevacizumab-based therapy in patients with newly diagnosed high grade gliomas and diffuse intrinsic pontine gliomas

Radiology; Hematology/Oncology » B. Jones, MD; T. Hummell, MD

A study of the incidence of dural venous anomalies in children diagnosed with intracranial neoplasms

Radiology; Hematology/Oncology » B. Jones, MD; M. Fadell, MD; D. Adams, MD

Prenatal diagnosis and postnatal follow-up of rapidly involuting congenital hemangioma

Radiology; Hematology/Oncology » B. Jones, MD; C. Phillips, MD; L. Miles, MD; M. Sutton, MD; K. Crone, MD; M. Fouladi, MD

Medulloblastoma with melanotic differentiation

Radiology; Hematology/Oncology » B. Jones, MD; T. Hummel, MD; F. Mangano, MD; J. Geller, MD

The clinical heterogeneity of desmoplastic infantile ganglioglioma

Radiology; Emergency Medicine » B. Jones, MD; L. Babcock-Cimpello, MD

Axonal injury in mild traumatic brain injury: KL2 mentored career development program in clinical and translational research

Radiology; Neonatology; Neurology; Radiology Imaging Research Center; » B. Jones, MD; T. Tkach, PhD; R. Giaquinto; W. Loew, PhD; R. Pratt, PhD; B. Daniels; L. Donnelly, MD; C. Dumoulin, PhD

An MRI imaging system for imaging neonates in the NICU

Radiology; Psychology » B. Jones, MD; K. Dietrich, PhD; K. Cecil, PhD

Early lead exposure, ADHD, and persistent criminality: Role of Genes and environment

Radiology; Neurology; Psychiatry » B. Jones, MD; E. Harris, MD; D. Gilbert, MD; J. Xiang, PhD;

MEG patterns of brain electrical activity associated with tics in Tourette Syndrome

Radiology; Neurosurgery » B. Jones, MD; T. Abruzzo, MD; L. Serrano, MD; H. Kocaeli, MD; N. Zumberge, MD; F. Mangano, MD; M. Zuccarello, MD; K. Crone, MD

Neurovascular phenotypes among children with ruptured idiopathic intracranial arterial aneurysms and comparison with the adult phenotype

Radiology; Neurosurgery » B. Jones, MD; R. Buckley, MD; F. Mangano, MD; WH, Yuan, PhD

Longitudinal comparison of diffusion tensor imaging parameters and neuropsychological measures following endoscopic third ventriculostomy for hydrocephalus

Radiology; Oncology » K. Kukreja, MD; J. Geller, MD

Develop multi-disciplinary program for treatment of HCC

Radiology; Rheumatology » T. Loar, MD; HK. Kim, MD; T. Graham, MD; D. Kim, MD; C. Anton, MD; S.

Salisbury, MD; J. Racadio; B. Dardzinski, PhD

T2 relaxation time changes in distal femoral articular cartilage in children with juvenile idiopathic arthritis

Radiology; Epidemiology » T. Laor, MD; H. Kalkwarf, MD; J. Bean, MD

Fracture risk in children with a forearm injury is associated with bone density and bone geometry measured with peripheral QCT and DXA

Radiology; Orthopedics » T. Laor, MD; R. Desai, MD; S. Parikh, MD

Intra-articular entrapment of medial collateral ligament

Radiology; Hematology/Oncology » T. Laor, MD; L. Wagner, MD; M. Gelfand, MD; F. Ryckman, MD; H. Al-

Ghawi, MD; K. Bove, MD

Nodular fascitis presenting as soft tissue sarcoma

Radiology; Orthopedics » T. Laor, MD; K. Shea, MD; N. Grimm, MD; E. Wall, MD

Bone bruises and meniscal tears on MRI in skeletally immature children with tibial eminence fractures

Radiology; Rehabilitation » T. Laor, MD; R. Talbert, MD; L. Michaud, MD; C. Mehlman, MD; D. Kinnett, MD; S.

Foad, MD; B. Schnell, MD; S. Salisbury, MD

EMG and MRI are independently related to shoulder external rotation function in neonatal brachial plexus palsy

Radiology; Surgery; Hematology/Oncology » T. Laor, MD; B. Weiss, MD; R. Dasgupta, MD; M. Gelfand, MD;

J. Breneman, MD; R. Lavigne, MD; R. Elluru, MD; L. Wagner, MD

Use of sentinel node biopsy for staging parameningeal rhabdomyosarcoma

Radiology; Pathology; Rheumatology » T. Laor, MD; P. Ladd, MD; K. Emery, MD; S. Salisbury, MD; D. Lovell,

MD; K. Bove, MD

Juvenile dermatomyositis

Radiology; Orthopedics » T. Laor, MD; W. Lippert, MD; M Foad, MD; R. Cornwall, MD; C. Mehlman, MD

Intra- and inter-rater reliability of glenoid version and glenohumeral subluxation measurements in neonatal brachial plexus palsy

Radiology; Pathology » T. Laor, MD; J. Stanek, MD; J. Leach, MD

Diprosopus tetraophthalmos: computed tomography as a complement to autopsy

Radiology; Orthopedics » T. Laor, MD; B. Reading, MD; S. Salisbury, MD; R. Cornwall, MD; W. Lippert, MD

Quantification of humeral head deformity following neonatal brachial plexus palsy

Radiology; Rheumatology » T. Laor, MD; A. Brown, MD; C. Kwoh, MD; H. Hirsch, MD

Patients with juvenile idiopathic arthritis in clinical remission have evidence of persistent inflammation revealed by 3T MRI

Radiology; Orthopedics » T. Laor, MD; E. Wall, MD; A. Zbojniewicz, MD

Juvenile pediatric intercenter treatment of osteochondritis dissecans and osteoarthritis research

Radiology; Neurosurgery » J. Leach, MD; F. Mangana, DO

Imaging and Treatment of pediatric epilepsy; imaging and pathology correlations in pediatric cortical dysplasia; operative neuronavigation in pediatric neurosurgery; SMA syndrome after operative resection in the frontal lobes

Radiology; Oncology » J. Leach, MD; M. Fouladi, MD

High grade glioma imaging and treatment correlations; Imaging of diffuse brainstem glioma and treatment responses

Radiology; Neurology » J. Leach, MD; H. Greiner, MD; K. Holland, MD; D. Rose, MD;

Imaging and treatment of pediatric epilepsy

Radiology; Neurology » J. Leach, MD; D. Franz, MD; D. Kreuger, MD; J. Mandelt-Tillema, MD

Everolimus alters white matter diffusion in tuberous sclerosis complexes. DTI study.

Radiology; Oncology » J. Leach, MD; J. Geller, MD

A pilot study of intra-ophthalmic artery topotecan infusion for the treatment of retinoblastoma

Radiology; Neurology » J. Leach, MD; L. Lehman, MD; M. Kabouche, MD

Pediatric stroke

Radiology; Neurology » J. Leach, MD; J. Mandelt-Tillema, MD

DTI analyses in pediatric multiple sclerosis and demyelinating disorders; DTI analyses in tuberous sclerosis

Radiology; Neonatology » J. Leach, MD; B. Kline-Fath ; S. Merhar, MD

Imaging findings in Twin-twin transfusion syndrome

Radiology; Psychology; Emergency Medicine; Radiology Imaging Research Center; PNRC » J. Leach, MD; S. Wade, PhD

Imaging and neurobehavioral outcomes in traumatic brain injury

Radiology; Emergency Medicine » J. Leach, MD; L. Babcock-Cimpello, MD

Defining axonal injury in children with mild traumatic brain injury

Radiology; Pathology » J. Leach, MD; L. Miles, MD

Imaging/pathology correlations in pediatric cortical dysplasia

Radiology; Center for Safe and Healthy Children » J. Leach, MD; M. Greiner, MD

Does macrocephaly and enlargement of the subarachnoid spaces predispose children to subdural hematomas?

Radiology; Anesthesia; Oncology » J. Leach, MD; T. Abruzzo, MD; M. Patino, MD; J. Geller, MD

Reversible cerebral vasoconstriction syndrome (RCVS) associated with the administration of vasoconstrictors and antihistaminics to a toddler

Radiology Imaging Research Center; Developmental Biology » D. Lindquist, PhD; A. Kuan, MD, PhD

Mouse models of hypoxia/ischemia and treatment effects

Radiology Imaging Research Center; Developmental Biology » D. Lindquist, PhD; R. Waclaw, PhD

Mouse models of abnormal white matter development

Radiology Imaging Research Center; Hematology/Oncology » D. Lindquist, PhD; N. Ratner, PhD; D. Mayes, PhD; E. Jousma, PhD; J. Wu, PhD

Mouse models of neurofibromatosis I

Radiology Imaging Research Center; Developmental Biology » D. Lindquist, PhD; J. Wells, PhD

Early detection of pancreatic cancer

Radiology Imaging Research Center; Nephrology » D. Lindquist, PhD; J. Wansapura, PhD; M. Mitsnesfes, MD
Cardiac dysfunction in dialysis and kidney transplant patients

Radiology Imaging Research Center; Neurosurgery » D. Lindquist, PhD; F. Mangano, MD; W. Yuan, PhD
Animal models of hydrocephalus

Radiology Imaging Research Center; Hematology/Oncology » D. Lindquist, PhD; B. DasGupta, MD
AMPK signaling

Radiology Imaging Research Center; Neurology » D. Lindquist, PhD; M. Skelton, MD
Effects of whole-body creatine transporter deficiency

Radiology Imaging Research Center; Developmental Biology » D. Lindquist, PhD; M. Nakafuku, PhD
Mouse models of white matter damage following hypoxia-ischemia

Radiology Imaging Research Center; Molecular Cardiovascular Biology » D. Lindquist, PhD; Z. Khuchua, PhD
Mouse models of Barth Syndrome

Radiology Imaging Research Center; Otolaryngology » D. Lindquist, PhD; D. Choo, MD
Intratympanic antivirals for CMV related hearing loss

Radiology imaging Research Center; Exp. Hematology Cancer Biology » D. Lindquist, PhD; Q. Pang, PhD
Role of FA proteins in hematopoiesis

Radiology; Pediatric Pathology » A. Oestreich, MD; B. Vaughan, MD
Radiographs of fetuses and stillborns

Radiology; Genetics » A. Oestreich, MD; B. Tinkle, MD
Dysplasias

Radiology; Orthopedics » A. Oestreich, MD; A. Crawford, MD
Idiopathic scoliosis: the Harms Study Group Treatment Guide

Radiology; Adolescent Medicine » S. O'Hara, MD; J. Huppert, MD
Ovarian torsion retrospective project and long term follow-up

Radiology; Hematology » S. O'Hara, MD; T. Kalfa, MD
TCD with Transfusions Changing to Hydroxyurea (TWITCH): a phase III randomized clinical trial to compare standard therapy (erythrocyte transfusions) with alternative therapy (hydroxyurea) for the maintenance of lowered TCD velocities in pediatric subjects with sickle cell anemia and abnormal pre-treatment TCD velocities.

Radiology; Hematology/Oncology » M. Patel, DO; D. Adams, MD
Rapamycin for the treatment of complex vascular malformations

Radiology; Gastroenterology » D. Podberesky, MD; T. Denson, MD
Evaluation of CT and MR enterography in children

Radiology; Cardiology » D. Podberesky, MD; M. Taylor, MD; K. Hor, MD
Evaluation of MRI in pectus excavatum patients

Radiology; Radiology Imaging Research Center; Pediatric Surgery » J. Racadio, MD; M. Patel, MD; N. Johnson, MD; K. Kukreja, MD; R. Nachabe; D. Babic; D. VonAllmen, MD
Dedicated animal research interventional radiology suite: Philips state-of-the-art Allura FD20 angio-interventional system. Installation in Imaging Research Center

Radiology; Oncology » J. Racadio, MD; M. Patel, MD; K. Kukreja, MD; N. Johnson, MD; T. Cripe, MD

Herpes Simplex Virus-1 Mutant HSV1716 image guided injection into patients with refractory solid tumor.

Radiology; Gastroenterology » J. Racadio, MD; M. Patel, MD; K. Kukreja, MD; N. Johnson, MD; S. Xanthalos, MD

NASH (Non Alcoholic Steato Hepatitis): IR performs image guided liver biopsies on obese teens.

Radiology; Hematology/Oncology » J. Racadio, MD; M. Patel, MD; K. Kukreja, MD; N. Johnson, MD; R. Kohli, MD

Iron overload in Sickle Cell: IR performs image guided liver biopsies.

Radiology; Nephrology » J. Racadio, MD; M. Patel, MD; K. Kukreja, MD; N. Johnson, MD; F. Strife, MD; M. Mitsnesfes, MD

Renal/vascular hypertension in children: angiography and percutaneous balloon angioplasty

Radiology; Radiology Imaging Research Center » J. Racadio, MD; M. Patel, MD; K. Kukreja, MD; N. Johnson, MD; C. Dumoulin, PhD

MR-guided intervention

Radiology; Oncology » S. Sharp, MD; M. Gelfand, MD; M. Absalon

Altered FDG uptake patterns in pediatric lymphoblastic lymphoma patients receiving induction chemotherapy that includes very high dose corticosteroids

Radiology; Nephrology » A. Towbin, MD; D. Petry, RT; J. Bissler, MD

Novartis CRAD001M2302 Trial - Phase 3 trial evaluating the use of everolimus for the treatment of angiomyolipomas in patients with Tuberous Sclerosis

Radiology; Oncology » A. Towbin, MD; K. Kukreja, MD; M. Patel, MD; N. Johnson, MD; J. Racadio, MD; T. Cripe, MD

HSV 1716 intra-tumoral injection study - Phase 1 trial evaluating the safety of a recombinant herpes virus injection in treating solid tumors

Radiology; Oncology » A. Towbin, MD; K. Kukreja, MD; M. Patel, MD; N. Johnson, MD; J. Racadio, MD; T. Cripe, MD

Jennerex JX-594 Intra-tumoral Injection Study - Phase 1 trial evaluating the safety of an intratumoral injection of a recombinant vaccinia virus in treating solid tumors

Radiology; Pathology; Oncology » A. Towbin, MD; M. Collins, MD; J. Perentesis, MD; R. Nagarajan, MD

INI1 and mib-1 Expression in Childhood Chordoma - Retrospective study evaluating childhood chordoma at CCHMC

Radiology; Oncology » A. Towbin, MD; T. Hummel, MD; B. Weiss, MD

Response of NF1 related plexiform neurofibroma to high dose carboplatin. Case report.

Radiology; Oncology » A. Towbin, MD; A. Meyers, MD; S. Serai, PhD; D. Podberesky, MD; J. Geller, MD

Characterization of pediatric liver lesions with gadoxetate disodium - evaluation of liver tumors in children using a novel contrast agent

Radiology; Surgery; Oncology » A. Towbin, MD; K. Kukreja, MD; G. Tiao, MD; J. Geller, MD

Early chemotherapy response and identification of liver transplant candidates in patients with unresectable hepatoblastoma

Radiology; Gastroenterology » A. Towbin, MD; D. Podberesky, MD; L. Denson, MD; C. Dykes, MD

Biomarkers for Inflammatory Bowel Disease and Treatment Response - Clinical trial evaluating the ability of CT and MR enterography to detect inflammatory bowel disease and comparing it to lab values and

endoscopy findings

Radiology; Gastroenterology » A. Towbin, MD; L. Diniz, MD; P. Putnam, MD

Radiographic Findings in Eosinophilic Esophagitis - Retrospective study evaluating the fluroscopic findings in patients with eosinophilic esophagitis

Radiology; Pathology » A. Towbin, MD; J. Mo, MD

Focal Nodular Hyperplasia in Children, Adolescents and Young Adults - Evaluation of pathologically-proven FNH at CCHMC

Radiology; Emergency Medicine; Surgery » A. Towbin, MD; A. Spooner, MD; C. Showalter, MD; H. Brodzinski, MD; E. Alessandrini, MD; D. von Allmen, MD

Risk Stratification to Efficiently Diagnose Appendicitis - Prospective study evaluating the use of a clinical pathway in helping to efficiently diagnose patients with appendicitis

Radiology Imaging Research Center; Developmental Biology » P. Winter, PhD; A. Kuan, MD

Use of iron oxide nanoparticles for tracking the activation and infiltration of immune cells during cerebral infarction

Radiology Imaging Research Center; Neonatology; Pulmonary Biology » P. Winter, PhD; A. Jobe, MD

Use of MRI contrast agents for imaging the distribution of surfactant in the lung

Radiology; Orthopedics » A. Zbojniewicz, MD; S. Pairkh, MD

Intracapsular origin of the long head of the biceps tendon with glenoid avulsion of glenohumeral ligaments

Faculty Members

Lane F. Donnelly, MD, Professor

Director and Radiologist-in-Chief, (until February 1, 2011)

Endowed Chair, The Frederic N. Silverman Chair for Pediatric Radiology

Research Interests MR sleep studies, imaging care delivery, quality improvement, and patient safety

Bernadette L. Koch, M.D., Associate Professor

Interim Radiologist-in-chief (2/1/11-8/1/11), Associate Director, Physician Services and Education

Research Interests Imaging the pediatric head and neck, with particular interest in evaluating children with problems involving the face, orbits, sinuses, ears, airway and/or n

Todd A. Abruzzo, MD, Associate Professor

Research Interests Cerebrovascular disease, childhood stroke, aneurysms, intra-arterial chemotherapies, vascular malformations, neurovascular interventions

Christopher G. Anton, MD, Assistant Professor

Division Co-Chief CT

Associate Director, Radiology Residency Program

Research Interests Musculoskeletal diseases.

Diane S. Babcock, MD, Professor Emeritus

Research Interests

Williams S. Ball, MD, Professor

Research Interests Childhood stroke, neoplasms, sickle cell disease, brain perfusion imaging

Alan S. Brody, MD, Professor

Associate Director, Radiology Research

Chief, Division of Thoracic Imaging

Research Interests Imaging of the chest in cystic fibrosis and in childhood diffuse lung disease. He directs

the Center for Diagnostic Imaging of the Therapeutic Development Network

Maria A. Calvo, MD, Assistant Professor

Research Interests Fetal development and malformations including cloaca and other ano-rectal malformations, obstructive uropathy, skeletal dysplasias, vascular birthmarks, etc

Marquerite M. Care, MD, Assistant Professor

Research Interests Traumatic brain injury, child abuse, CT neuroimaging

Kim M. Cecil, PhD, Professor

Research Interests Application of MR spectroscopy and imaging in several populations by characterizing the features of inborn errors in metabolism and evaluating the effects of

Eric J. Crotty, MD, Assistant Professor

Director, Pediatric Radiology Fellowship Program

Research Interests Cardiothoracic radiology, specifically childhood interstitial lung disease and also resident education

Mark DiFrancesco, PhD, Assistant Professor

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

IRC Scientific Director, Imaging Research Center

Research Interests Physics and engineering of Magnetic Resonance, MRI of neonates, and interventional MRI. His interests in interventional MR include: MR-guided Focused

John C. Egelhoff, DO, Professor

Division Co-Chief, CT

Research Interests Spine, CT dose reduction and temporal bone

Kathleen H. Emery, MD, Professor

Division Co-Chief, MRI

Division Co-Chief, Musculoskeletal Imaging

Research Interests

Robert J. Fleck, MD, Assistant Professor

Division Chief, Cardiac MRI

Research Interests CT and MR of the cardiopulmonary system.

Michael J. Gelfand, MD, Professor

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

Marilyn J. Goske, MD, Professor

Chair, Educational Council

Endowed Chair, The Corning Benton Chair for Radiology Education

Research Interests Radiation protection for children, communication of radiation risk to families, practice quality improvement related to imaging in children, patient care and communication

Carolina Guimaraes, MD, Instructor

Research Interests Fetal imaging and pediatric neuroradiology.

Kathy J. Helton-Skally, MD, Assistant Professor

Research Interests

Scott Holland, PhD, Professor

Director, Pediatric Neuroimaging Research Consortium

Research Interests Advanced neuroimaging applications of MRI in pediatrics with a concentration on functional MRI of language, hearing and computational models of neural connectivity

Neil D. Johnson, MD, Professor

Endowed Chair, The Neil D. Johnson Chair for Radiology Informatics

Research Interests Interventional percutaneous image guided treatment of benign bone tumors such as Aneurysmal Bone Cyst and Osteoid Osteoma

Blaise V. Jones, MD, Professor

Director of Clinical Services

Division Chief, Neuroradiology

Division Co-Chief, MRI

Research Interests Brain neoplasms and cerebrovascular diseases.

Hee Kyung Kim, MD, Instructor

Research Interests

Beth M. Kline-Fath, MD, Associate Professor

Division Chief, Fetal Imaging

Research Interests Fetal MRI, fetal ultrasound and neuroimaging

Marcia Komlos, , Instructor

Research Interests

Steven J. Kraus, MD, Associate Professor

Division Chief, Radiography and Fluoroscopy

Research Interests

Kamlesh U. Kukreja, MD, Instructor

Research Interests Vascular interventions (Arterial and venous thrombolysis, IVC filters, renal artery angioplasty)

David Larson, MD, Assistant Professor

Chief, Quality Improvement

Endowed Chair, The Janet L. Strife Chair for Radiology Quality & Safety

Research Interests Healthcare Quality Improvement, Patient Safety, CT Dose Reduction and Image Optimization

Tal Laor, MD, Professor

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

Research Interests Epilepsy, functional MRI, neoplasms, cerebrovascular disease, brain perfusion imaging, diffusion imaging and image fusion

Diana Lindquist, PhD, Assistant Professor

Research Interests Metabolic effects of drugs used to treat psychiatric illness

Yu Li, PhD, Assistant Professor

Research Interests Technological development and clinical applications of high speed MR imaging and spectroscopy. Specifically, Dr. Li is interested in RF coil array for clinical MRI

Carl (Arnold) Merrow, Jr, M.D., Assistant Professor

Research Interests Pediatric musculoskeletal and fetal imaging. Particular areas of concentration include musculoskeletal neoplasms and vascular lesions, rheumatologic imaging, so

Michael P. Nasser, MD, Assistant Professor

Research Interests

Alan E. Oestreich, MD, Professor

Research Interests

Sara M. O'Hara, MD, Associate Professor

Division Chief, Ultrasound

Research Interests Cutting edge ultrasound techniques and equipment, genitourinary imaging, and newborn imaging

Manish N. Patel, MD, Assistant Professor

Research Interests Diagnosis and treatment of vascular malformation, pediatric PICC placement, and pre-operative evaluation of patient with anorectal malformation

Daniel J. Podberesky, MD, Assistant Professor

Division Chief, Thoraco-Abdominal Imaging

Research Interests Optimization of CT radiation dose and image quality, advanced CT and MR of the gastrointestinal

John M. Racadio, MD, Associate Professor

Division Chief, Interventional Radiology

Research Interests Viral oncolytic therapy, 3D image fusion and intervention and Radiation Safety

Mantosh Rattan, MD, Assistant Professor

Research Interests

Susan E. Sharp, MD, Assistant Professor

Research Interests Pediatric nuclear medicine, focusing on SPECT/CT and PET/CT.

Janet L. Strife, MD, Professor Emeritus

Research Interests Obesity, Patient Safety and Airway Obstruction in Children

Vincent J. Schmithorst, PhD, Associate Professor

Research Interests Neuroimaging of children with hearing loss and auditory processing disorders

Jean Tkach, PhD, Associate Professor

Research Interests Development, implementation and optimization of MRI acquisition techniques optimized for and to best address the most relevant clinical needs of the neonatal population

Alexander J. Towbin, MD, Assistant Professor

Director, Radiology Informatics

Research Interests Radiology informatics; cancer imaging and abdominal imaging

Janaka Wansapura, PhD, Assistant Professor

Research Interests MR imaging of familial cardiomyopathy in human and in transgenic animal models; vascular compliance, MR guided thermo-therapy and fat/water decomposition

Patrick Winter, PhD, Assistant Professor

Research Interests Molecular imaging of cancer and cardiovascular disease, multi-nuclear imaging and

spectroscopy, tracking USPIO labeled cell migration, and activatable MRI contrast agents

WeiHong Yuan, PhD, Assistant Professor

Research Interests Diffusion tensor imaging in clinical and experimental hydrocephalus and application of various imaging techniques in children with traumatic brain injury, epilepsy and other neurological disorders

Andrew M. Zbojniewicz, MD, Assistant Professor

Research Interests Musculoskeletal radiology

Joint Appointment Faculty Members

Michael Taylor, MD, Assistant Professor

Cardiology

Jennifer J. Vannest, PhD, Assistant Professor

Neurology

Research Interests Neuroimaging of language development and language function in neurological disorders

Clinical Staff Members

- Suraj Serai, PhD, Clinical MR Physicist

Trainees

- Krista L. Birkemeier, MD, PL6, Scott & White Memorial Hospital, Temple TX
- Kimberly A. Dannull, MD, PL6, Baptist Memorial Hospital, Memphis TX
- Lincoln O. Diniz, MD, PL6, Goa Medical College, Bambolim-Goa, India
- Asef B. Khwaja, MD, PL6, University of Maryland, Baltimore MD
- Arthur B. Meyers, MD, PL6, Yale New Haven Hospital, New Haven, Ct
- Jeremy T. Neuman, MD, PL6, Staten Island University Hospital, Staten Island NY
- Ethan A. Smith, MD, PL6, University of Michigan, Ann Arbor MI
- Daniel B. Wallihan, MD, PL6, University of Cincinnati Hospital, Cincinnati OH
- Lily L. Wang, MD, PL6, Prince of Wales/Sydney Children's Hospitals, Randwick, Australia
- Sumeda Abeykoon, MS, University of Cincinnati Department of Physics, Cincinnati, OH
- Travis Beckwith, , University of Cincinnati Neuroscience, Cincinnati, OH
- Hailong Li, B.S., M.S., PGY8, University of Cincinnati, Computer Science Department, Cincinnati, Ohio
- Monwabisi Makola, , University of Cincinnati College of Medicine, Cincinnati, OH
- Duke Shereen, PhD, University of Cincinnati, Cincinnati Ohio

Significant Accomplishments

Radiation Dose Reduction – Image Gently

Medical imaging using ionizing radiation has increased fivefold since 1986 in the United States. This poses a potential health risk to the pediatric population, especially when children are imaged using an adult dose rather than a child-sized dose. The Alliance for Radiation Safety in Pediatric Imaging was formed in 2007, led by one of our radiology faculty, to help improve safety. The alliance now involves more than 62 organizations, including the American Academy of Pediatrics, the International Atomic Energy Agency and the World Health Organization. The mission of the Image Gently campaign is to promote radiation protection worldwide and to improve safety through education, awareness and advocacy. The alliance sponsors a widely

used website (www.imagegently.org) that contains free instructional materials for medical professionals and parents. Many Cincinnati Children's radiology faculty are involved in this initiative to decrease radiation exposure to children undergoing X-rays, CT scans, fluoroscopy, interventional procedures and nuclear medicine procedures. The campaign has been recognized by the Food and Drug Administration and has worked with the Agency for Healthcare Research and Quality to child-size the radiation dose in CT scans for children. Recently, an adult campaign was created, "Image Wisely," sponsored by the Radiological Society of North America and the American College of Radiology.

New Neonate MRI

Imaging scientists in the Department of Radiology have developed a new type of magnetic resonance (MR) scanner for premature babies. The new scanner combines a small magnet designed for adult orthopaedic use, with state-of-the-art imaging electronics, custom-built patient handling systems and an MR-compatible incubator. It is lighter, less expensive and has a much smaller footprint than conventional MR scanners, without compromising imaging performance. It is small enough to place inside the Neonatal Intensive Care Unit (NICU) and overcomes the logistical challenges of moving fragile babies between the NICU and the Radiology Department. Early results with the research prototype system were presented in the 2011 meeting of the Joint Societies of Pediatric Radiology in London, where our team won the Caffey Award for best basic science paper. Installation of a second scanner in the NICU is scheduled for the end of 2011. This clinical scanner will be used for routine imaging and groundbreaking clinical research with colleagues from the Perinatal Institute and the Division of Developmental Biology. This new approach to neonatal MRI promises to provide premature babies routine access to the full breadth of modern MR, and will offer new objective metrics for patient management of many clinical conditions.

Report Turnaround Times Reduced

Multiple IT initiatives have been developed and implemented to improve report turnaround times. These include implementation of 24/7 overnight faculty coverage and use of standardized reports. Our current average turnaround time for Emergency Department and stat films is less than 30 minutes. In addition, a real-time radiology dashboard was created to track turnaround times, volumes of undictated and dictated studies, as well as days since the last MRI safety incident.

Division Publications

1. Abruzzo TA, Heran MK. **Neuroendovascular therapies in pediatric interventional radiology**. *Tech Vasc Interv Radiol*. 2011; 14:50-6.
2. Acehan D, Vaz F, Houtkooper RH, James J, Moore V, Tokunaga C, Kulik W, Wansapura J, Toth MJ, Strauss A, Khuchua Z. **Cardiac and skeletal muscle defects in a mouse model of human Barth syndrome**. *J Biol Chem*. 2011; 286:899-908.
3. Anton C, Podberesky DJ. **Little League shoulder: a growth plate injury**. *Pediatr Radiol*. 2010; 40 Suppl 1:S54.
4. Babcock DS. **The Pediatric Kidney and Adrenal Glands**. *Diagnostic Ultrasound*. Philadelphia: Elsevier Mosby; 2011.
5. Barnacle AM, Roebuck DJ, Racadio JM. **Nephro-urology interventions in children**. *Tech Vasc Interv Radiol*. 2010; 13:229-37.
6. Bischoff A, Gupta A, D'Mello S, Mezoff A, Podberesky D, Barnett S, Keswani S, Frischer JS. **Crohn's disease limited to the appendix: a case report in a pediatric patient**. *Pediatr Surg Int*. 2010; 26:1125-8.
7. Bischoff A, Levitt MA, Lim FY, Guimaraes C, Pena A. **Prenatal diagnosis of cloacal malformations**.

Pediatric Surgery International. 2010; 26:1071-1075.

8. Cai K, Caruthers SD, Huang W, Williams TA, Zhang H, Wickline SA, Lanza GM, Winter PM. **MR molecular imaging of aortic angiogenesis**. *JACC Cardiovasc Imaging*. 2010; 3:824-32.
9. Caruthers SD, Winter PM, Wickline SA, Lanza GM, Keupp J. **MR molecular imaging of angiogenesis using targeted perfluorocarbon nanoparticles**. *MedicaMundi*. 2010; 54:5-13.
10. Cecil KM, Dietrich KN, Altaye M, Egelhoff JC, Lindquist DM, Brubaker CJ, Lanphear BP. **Proton magnetic resonance spectroscopy in adults with childhood lead exposure**. *Environ Health Perspect*. 2011; 119:403-8.
11. Cecil KM, Lindquist DM. **Neurological Aspects of Dietary Lead**. *Handbook of Behavior, Food and Nutrition*. New York: Springer; 2011: 2755-2774. .
12. Costa NS, Laor T, Donnelly LF. **Superior cervical extension of the thymus: A normal finding that should not be mistaken for a mass**. *Radiology*. 2010; 256:238-242.
13. Costa NS, Salisbury SR, Donnelly LF. **Retropharyngeal lymph nodes in children: a common imaging finding and potential source of misinterpretation**. *AJR Am J Roentgenol*. 2011; 196:W433-7.
14. Crawford AH, Oestreich AE, et.al.. **Clinical and Radiographic Evaluation of the Scoliotic Patient**. *Idiopathic scoliosis : the Harms Study Group treatment guide*. New York: Thieme; 2010: 60-80. .
15. Dasgupta S, Wansapura J, Hariharan P, Pratt R, Witte D, Myers MR, Banerjee RK. **HIFU lesion volume as a function of sonication time, as determined by MRI, histology, and computations**. *Journal of Biomechanical Engineering*. 2010; 132:081005.
16. Deitte L, Chertoff JD, Mainiero MB, Strife JL, DeStigter KK. **Challenges and opportunities in restructuring radiology residencies: the APDR Residency Restructuring Committee report**. *J Am Coll Radiol*. 2010; 7:507-11.
17. Desai R, Parikh S, Laor T. **Intra-articular entrapment of the medial collateral ligament**. *Orthopedics*. 2010; 33:687.
18. Dickerson JM, Koch BL, Adams JM, Goodfriend MA, Donnelly LF. **Safety coaches in radiology: decreasing human error and minimizing patient harm**. *Pediatr Radiol*. 2010; 40:1545-51.
19. Donnelly LF. **QuIRI (quality improvement and research in imaging) program: a means to promote and coordinate research and quality-improvement activities in radiology**. *Pediatr Radiol*. 2011; 41:413-6.
20. Donnelly LF. **Beverage can stay-tabs: still a source for inadvertently ingested foreign bodies in children**. *Pediatr Radiol*. 2010; 40:1485-9.
21. Donnelly LF, Gessner KE, Dickerson JM, Koch BL, Towbin AJ, Lehkamp TW, Moskovitz J, Brody AS, Dumoulin CL, Jones BV. **Quality initiatives: department scorecard: a tool to help drive imaging care delivery performance**. *Radiographics*. 2010; 30:2029-38.
22. Garrett KM, Fleck RJ, Jr.. **Prominent middle genicular artery**. *Pediatr Radiol*. 2010; 40 Suppl 1:S56.
23. Garrett KM, Kim HK, Stanek J, Emery KH. **MR findings of primary bone lymphoma in a 15-year-old girl: emphasis on diffusion-weighted imaging**. *Pediatr Radiol*. 2011; 41:658-62.
24. Gelfand MJ. **Dose reduction in pediatric hybrid and planar imaging**. *Q J Nucl Med Mol Imaging*. 2010; 54:379-88.
25. Gelfand MJ, Parisi MT, Treves ST. **Pediatric radiopharmaceutical administered doses: 2010 North American consensus guidelines**. *J Nucl Med*. 2011; 52:318-22.
26. Goske MJ, Charkot E, Herrmann T, John SD, Mills TT, Morrison G, Smith SN. **Image Gently: challenges for radiologic technologists when performing digital radiography in children**. *Pediatr Radiol*. 2011; 41:611-9.
27. Greiner H, Leach JL, Lee KH, Krueger DA. **Anti-NMDA receptor encephalitis presenting with imaging findings and clinical features mimicking Rasmussen syndrome**. *Seizure*. 2011; 20:266-70.

28. Greiner HM, Abruzzo TA, Kabbouche M, Leach JL, Zuccarello M. **Rotational vertebral artery occlusion in a child with multiple strokes: a case-based update.** *Childs Nerv Syst.* 2010; 26:1669-74.
29. Guimaraes CV, Kline-Fath BM, Linam LE, Calvo Garcia MA, Rubio EI, Lim FY. **MRI findings in multifetal pregnancies complicated by twin reversed arterial perfusion sequence (TRAP).** *Pediatr Radiol.* 2011; 41:694-701.
30. Guthikonda B, Tobler WD, Jr., Froelich SC, Leach JL, Zimmer LA, Theodosopoulos PV, Tew JM, Jr., Keller JT. **Anatomic study of the prechiasmatic sulcus and its surgical implications.** *Clin Anat.* 2010; 23:622-8.
31. Harnsberger HR, Glastonbury CM, Michel MA, Koch BL. **Diagnostic imaging. Head and neck.** [Salt Lake City, Utah]; Amirsys
32. Hawkins CM, Towbin AJ. **Rupture of the left mainstem bronchus following endotracheal intubation in a neonate.** *Pediatr Radiol.* 2011; 41:668-70.
33. Hollingsworth CL, Wriston CC, Bisset GS, Strife JL, Bosma JL, Gerdeman AM, Becker GJ. **American Board of Radiology certifying examination: oral versus computer-based format.** *AJR Am J Roentgenol.* 2010; 195:820-4.
34. Hummel T, Anyane-Yeboah A, Mo J, Towbin A, Weiss B. **Response of NF1-related plexiform neurofibroma to high-dose carboplatin.** *Pediatr Blood Cancer.* 2011; 56:488-90.
35. Jordan LC, McKinstry RC, 3rd, Kraut MA, Ball WS, Vendt BA, Casella JF, DeBaun MR, Strouse JJ. **Incidental findings on brain magnetic resonance imaging of children with sickle cell disease.** *Pediatrics.* 2010; 126:53-61.
36. Kalkwarf HJ, Laor T, Bean JA. **Fracture risk in children with a forearm injury is associated with volumetric bone density and cortical area (by peripheral QCT) and areal bone density (by DXA).** *Osteoporos Int.* 2011; 22:607-16.
37. Karunanayaka P, Kim KK, Holland SK, Szaflarski JP. **The effects of left or right hemispheric epilepsy on language networks investigated with semantic decision fMRI task and independent component analysis.** *Epilepsy Behav.* 2011; 20:623-32.
38. Karunanayaka P, Schmithorst VJ, Vannest J, Szaflarski JP, Plante E, Holland SK. **A linear structural equation model for covert verb generation based on independent component analysis of FMRI data from children and adolescents.** *Front Syst Neurosci.* 2011; 5:29.
39. Kim HK, Crotty E. **Bilateral testicular adrenal rests in a boy with congenital adrenal hyperplasia.** *Pediatr Radiol.* 2010; 40 Suppl 1:S25.
40. Kim HK, Emery KH, Salisbury SR. **Bare spot of the glenoid fossa in children: incidence and MRI features.** *Pediatr Radiol.* 2010; 40:1190-6.
41. Kim HK, Gottliebson W, Hor K, Backeljauw P, Gutmark-Little I, Salisbury SR, Racadio JM, Helton-Skally K, Fleck R. **Cardiovascular anomalies in Turner syndrome: spectrum, prevalence, and cardiac MRI findings in a pediatric and young adult population.** *AJR Am J Roentgenol.* 2011; 196:454-60.
42. Kim HK, Laor T, Graham TB, Anton CG, Salisbury SR, Racadio JM, Dardzinski BJ. **T2 relaxation time changes in distal femoral articular cartilage in children with juvenile idiopathic arthritis: a 3-year longitudinal study.** *AJR Am J Roentgenol.* 2010; 195:1021-5.
43. Kim HK, Zbojnicki AM, Merrow AC, Cheon JE, Kim IO, Emery KH. **MR findings of synovial disease in children and young adults: Part 1.** *Pediatr Radiol.* 2011; 41:495-511; quiz 545-6.
44. Kim KK, Karunanayaka P, Privitera MD, Holland SK, Szaflarski JP. **Semantic association investigated with functional MRI and independent component analysis.** *Epilepsy Behav.* 2011; 20:613-22.
45. Kline-Fath BM. **The Pediatric Neck.** *Diagnostic Ultrasound.* Philadelphia: Elsevier Mosby; 2011.
46. Kline-Fath BM, Calvo-Garcia MA. **Prenatal imaging of congenital malformations of the brain.** *Semin Ultrasound CT MR.* 2011; 32:167-88.

47. Krueger DA, Care MM, Holland K, Agricola K, Tudor C, Mangeshkar P, Wilson KA, Byars A, Sahmoud T, Franz DN. **Everolimus for subependymal giant-cell astrocytomas in tuberous sclerosis**. *N Engl J Med*. 2010; 363:1801-11.
48. Kukreja K, Vaidya S. **Venous interventions in children**. *Tech Vasc Interv Radiol*. 2011; 14:16-21.
49. Lanza GM, Caruthers SD, Winter PM, Hughes MS, Schmieder AH, Hu G, Wickline SA. **Angiogenesis imaging with vascular-constrained particles: the why and how**. *European Journal of Nuclear Medicine and Molecular Imaging*. 2010; 37 Suppl 1:S114-26.
50. Larson DB. **The economic and regulatory impact of evidence-based medicine in radiology**. *Evidence-based imaging: Improving the Quality of Imaging in Patient Care*. New York: Springer; 2011: 43-57. .
51. Larson DB, Johnson LW, Schnell BM, Goske MJ, Salisbury SR, Forman HP. **Rising Use of CT in Child Visits to the Emergency Department in the United States, 1995-2008**. *Radiology*. 2011; 259:793-801.
52. Larson DB, Johnson LW, Schnell BM, Salisbury SR, Forman HP. **National trends in CT use in the emergency department: 1995-2007**. *Radiology*. 2011; 258:164-73.
53. Larson DB, Meyers ML, O'Hara SM. **Reliability of renal length measurements made with ultrasound compared with measurements from helical CT multiplanar reformat images**. *AJR Am J Roentgenol*. 2011; 196:W592-7.
54. Larson DB, Nance JJ. **Rethinking Peer Review: What Aviation Can Teach Radiology about Performance Improvement**. *Radiology*. 2011; 259:626-32.
55. Lee TC, Lim FY, Keswani SG, Frischer JS, Haberman B, Kingma PS, Habli M, Jaekle RK, Sharp G, Kline-Fath B, Rubio EI, Calvo M, Guimaraes C, Crombleholme TM. **Late gestation fetal magnetic resonance imaging-derived total lung volume predicts postnatal survival and need for extracorporeal membrane oxygenation support in isolated congenital diaphragmatic hernia**. *J Pediatr Surg*. 2011; 46:1165-71.
56. Leoni L, Serai SD, Magin RL, Roman BB. **Functional MRI characterization of isolated human islet activation**. *NMR Biomed*. 2010; 23:1158-65.
57. Linam LE, Yu X, Calvo-Garcia MA, Rubio EI, Crombleholme TM, Bove K, Kline-Fath BM. **Contribution of magnetic resonance imaging to prenatal differential diagnosis of renal tumors: report of two cases and review of the literature**. *Fetal Diagn Ther*. 2010; 28:100-8.
58. Lindquist DM, Dunn RS, Cecil KM. **Long term antipsychotic treatment does not alter metabolite concentrations in rat striatum: an in vivo magnetic resonance spectroscopy study**. *Schizophr Res*. 2011; 128:83-90.
59. Mahmoud M, McAuliffe J, Kim HY, Mishra P, Salisbury S, Schnell B, Hirsch P, Arbabi S, Donnelly LF. **Oral contrast for abdominal computed tomography in children: the effects on gastric fluid volume**. *Anesth Analg*. 2010; 111:1252-8.
60. McGrath-Morrow SA, Gower WA, Rothblum-Oviatt C, Brody AS, Langston C, Fan LL, Lefton-Greif MA, Crawford TO, Troche M, Sandlund JT, Auwaerter PG, Easley B, Loughlin GM, Carroll JL, Lederman HM. **Evaluation and management of pulmonary disease in ataxia-telangiectasia**. *Pediatr Pulmonol*. 2010; 45:847-59.
61. Merrow AC. **Persistent hypoglossal artery**. *Pediatr Radiol*. 2010; 40 Suppl 1:S162.
62. Merrow AC, Guion CJ. **Hemimyelomeningocele**. *Pediatr Radiol*. 2010; 40 Suppl 1:S168.
63. Merrow AC, Shah R. **Syntelencephaly: postnatal sonographic detection of a subtle case**. *Pediatr Radiol*. 2010; 40 Suppl 1:S160.
64. Meyer JS, Gunderman R, Coley BD, Bulas D, Garber M, Karmazyn B, Keller MS, Kulkarni AV, Milla SS, Myseros JS, Paidas C, Pizzutillo PD, Podberesky DJ, Prince JS, Ragheb J. **ACR Appropriateness Criteria((R)) on Suspected Physical Abuse-Child**. *J Am Coll Radiol*. 2011; 8:87-94.
65. Moinul Hossain AK, Shulkin BL, Gelfand MJ, Bashir H, Daw NC, Sharp SE, Nadel HR, Dome JS. **FDG**

- positron emission tomography/computed tomography studies of Wilms' tumor.** *Eur J Nucl Med Mol Imaging.* 2010; 37:1300-8.
66. Morrison G, John SD, Goske MJ, Charkot E, Herrmann T, Smith SN, Culbertson J, Carbonneau K. **Pediatric digital radiography education for radiologic technologists: current state.** *Pediatr Radiol.* 2011; 41:602-10.
67. Oestreich AE. **Vertebral column.** *Differential Diagnosis in Pediatric Imaging.* Stuttgart ; New York: Thieme; 2011: 413-485. .
68. Oestreich AE. **Early radiology and the National Medical Association.** *J Natl Med Assoc.* 2011; 103:46-9.
69. Oestreich AE. **Umbilical vein catheterization--appropriate and inappropriate placement.** *Pediatr Radiol.* 2010; 40:1941-9.
70. Oestreich AE. **Scenes from the past: "Skeeter": Harlem Renaissance author's description of a young man's impression of a radiology examination room.** *Radiographics.* 2010; 30:1411-4.
71. Oestreich AE, Bhojwani N. **Stress fractures of ankle and wrist in childhood: nature and frequency.** *Pediatr Radiol.* 2010; 40:1387-9.
72. O'Hara S M. **The Pediatric Liver and Spleen.** *Diagnostic Ultrasound.* Philadelphia: Elsevier Mosby; 2011: 1800-1844. .
73. Pacharn P, Ying J, Linam LE, Brody AS, Babcock DS. **Sonography in the evaluation of acute appendicitis: are negative sonographic findings good enough?** *J Ultrasound Med.* 2010; 29:1749-55.
74. Pirko I, Johnson AJ, Chen Y, Lindquist DM, Lohrey AK, Ying J, Dunn RS. **Brain atrophy correlates with functional outcome in a murine model of multiple sclerosis.** *NeuroImage.* 2011; 54:802-6.
75. Racadio JM, Kukreja K. **Pediatric biliary interventions.** *Tech Vasc Interv Radiol.* 2010; 13:244-9.
76. Sakagami T, Beck D, Uchida K, Suzuki T, Carey BC, Nakata K, Keller G, Wood RE, Wert SE, Ikegami M, Whitsett JA, Luisetti M, Davies S, Krischer JP, Brody A, Ryckman F, Trapnell BC. **Patient-derived granulocyte/macrophage colony-stimulating factor autoantibodies reproduce pulmonary alveolar proteinosis in nonhuman primates.** *Am J Respir Crit Care Med.* 2010; 182:49-61.
77. Sawnani H, Murugappan S, Gutmark E, Donnelly LF, Amin R, Mylavarapu G, Mihaescu M, Khosla S, Kalra M. **Influence of gender on pharyngeal airway length in obese adolescents.** *Ann Otol Rhinol Laryngol.* 2010; 119:842-7.
78. Schmithorst VJ, Holland SK, Plante E. **Diffusion tensor imaging reveals white matter microstructure correlations with auditory processing ability.** *Ear Hear.* 2011; 32:156-67.
79. Seo JH, Holland K, Rose D, Rozhkov L, Fujiwara H, Byars A, Arthur T, DeGrauw T, Leach JL, Gelfand MJ, Miles L, Mangano FT, Horn P, Lee KH. **Multimodality imaging in the surgical treatment of children with nonlesional epilepsy.** *Neurology.* 2011; 76:41-8.
80. Shea KG, Grimm NL, Laor T, Wall E. **Bone bruises and meniscal tears on MRI in skeletally immature children with tibial eminence fractures.** *J Pediatr Orthop.* 2011; 31:150-2.
81. Shereen A, Nemkul N, Yang D, Adhami F, Dunn RS, Hazen ML, Nakafuku M, Ning G, Lindquist DM, Kuan CY. **Ex vivo diffusion tensor imaging and neuropathological correlation in a murine model of hypoxia-ischemia-induced thrombotic stroke.** *J Cereb Blood Flow Metab.* 2011; 31:1155-69.
82. Sheyn DD, Racadio JM, Patel MN, Kukreja K, Rampton JW, Johnson ND. **Use of an Amplatz dilator to facilitate transrectal abscess drainage in children.** *J Vasc Interv Radiol.* 2011; 22:687-90.
83. Sidhu M, Goske MJ, Connolly B, Racadio J, Yoshizumi TT, Strauss KJ, Coley BD, Utley T. **Image Gently, Step Lightly: promoting radiation safety in pediatric interventional radiology.** *AJR Am J Roentgenol.* 2010; 195:W299-301.
84. Sidhu M, Strauss KJ, Connolly B, Yoshizumi TT, Racadio J, Coley BD, Utley T, Goske MJ. **Radiation safety in pediatric interventional radiology.** *Tech Vasc Interv Radiol.* 2010; 13:158-66.
85. Smith KM, Mecoli MD, Altaye M, Komlos M, Maitra R, Eaton KP, Egelhoff JC, Holland SK. **Morphometric**

- differences in the Heschl's gyrus of hearing impaired and normal hearing infants.** *Cereb Cortex*. 2011; 21:991-8.
86. Strife JL, Stephen Amis E, Jr.. **Changes in ACGME program requirements for pediatric radiology fellowships.** *Pediatr Radiol*. 2010; 40:1312-4.
87. Sun GH, Shoman NM, Samy RN, Cornelius RS, Koch BL, Pensak ML. **Do contemporary temporal bone fracture classification systems reflect concurrent intracranial and cervical spine injuries?.** *Laryngoscope*. 2011; 121:929-32.
88. Sundaram N, Tailor A, Mendelsohn L, Wansapura J, Wang X, Higashimoto T, Pauciulo MW, Gottliebson W, Kalra VK, Nichols WC, Kato GJ, Malik P. **High levels of placenta growth factor in sickle cell disease promote pulmonary hypertension.** *Blood*. 2010; 116:109-12.
89. Szaflarski JP, DiFrancesco M, Hirschauer T, Banks C, Privitera MD, Gotman J, Holland SK. **Cortical and subcortical contributions to absence seizure onset examined with EEG/fMRI.** *Epilepsy Behav*. 2010; 18:404-13.
90. Szaflarski JP, Vannest J, Wu SW, DiFrancesco MW, Banks C, Gilbert DL. **Excitatory repetitive transcranial magnetic stimulation induces improvements in chronic post-stroke aphasia.** *Med Sci Monit*. 2011; 17:CR132-9.
91. Talbert RJ, Michaud LJ, Mehlman CT, Kinnett DG, Laor T, Foad SL, Schnell B, Salisbury S. **EMG and MRI are independently related to shoulder external rotation function in neonatal brachial plexus palsy.** *J Pediatr Orthop*. 2011; 31:194-204.
92. Tlustos SJ, Chiu CY, Walz NC, Holland SK, Bernard L, Wade SL. **Neural correlates of interference control in adolescents with traumatic brain injury: functional magnetic resonance imaging study of the counting stroop task.** *J Int Neuropsychol Soc*. 2011; 17:181-9.
93. Towbin AJ, Hall S, Moskovitz J, Johnson ND, Donnelly LF. **Creating a comprehensive customer service program to help convey critical and acute results of radiology studies.** *AJR Am J Roentgenol*. 2011; 196:W48-51.
94. Towbin AJ, Luo GG, Yin H, Mo JQ. **Focal nodular hyperplasia in children, adolescents, and young adults.** *Pediatr Radiol*. 2011; 41:341-9.
95. Vannest J, Rasmussen J, Eaton KP, Patel K, Schmithorst V, Karunanayaka P, Plante E, Byars A, Holland S. **fMRI activation in language areas correlates with verb generation performance in children.** *Neuropediatrics*. 2010; 41:235-9.
96. Wagner LM, Gelfand MJ, Laor T, Ryckman FC, Al-Ghawi H, Bove KE. **A welcome surprise: nodular fasciitis presenting as soft tissue sarcoma.** *J Pediatr Hematol Oncol*. 2011; 33:316-9.
97. Wansapura JP, Millay DP, Dunn RS, Molckentin JD, Benson DW. **Magnetic resonance imaging assessment of cardiac dysfunction in delta-sarcoglycan null mice.** *Neuromuscul Disord*. 2011; 21:68-73.
98. Winter PM, Caruthers SD, Allen JS, Cai K, Williams TA, Lanza GM, Wickline SA. **Molecular imaging of angiogenic therapy in peripheral vascular disease with alphanubeta3-integrin-targeted nanoparticles.** *Magn Reson Med*. 2010; 64:369-76.
99. Winter PM, Caruthers SD, Lanza GM, Wickline SA. **Quantitative cardiovascular magnetic resonance for molecular imaging.** *J Cardiovasc Magn Reson*. 2010; 12:62.
100. Yazici Z, Kline-Fath BM, Yazici B, Rubio EI, Calvo-Garcia MA, Linam LE. **Congenital dacryocystocele: prenatal MRI findings.** *Pediatr Radiol*. 2010; 40:1868-73.
101. Young LR, Brody AS, Inge TH, Acton JD, Bokulic RE, Langston C, Deutsch GH. **Neuroendocrine cell distribution and frequency distinguish neuroendocrine cell hyperplasia of infancy from other pulmonary disorders.** *Chest*. 2011; 139:1060-71.

102. Yousefzadeh DK, Jaramillo D, Johnson N, Doerger K, Sullivan C. **Biphasic threat to femoral head perfusion in abduction: arterial hypoperfusion and venous congestion**. *Pediatr Radiol*. 2010; 40:1517-25.
103. Yuan W, Deren KE, McAllister JP, 2nd, Holland SK, Lindquist DM, Cancelliere A, Mason M, Shereen A, Hertzler DA, Altaye M, Mangano FT. **Diffusion tensor imaging correlates with cytopathology in a rat model of neonatal hydrocephalus**. *Cerebrospinal Fluid Res*. 2010; 7:19.

Grants, Contracts, and Industry Agreements

Grant and Contract Awards

Annual Direct / Project Period Direct

CECIL, K

Early Lead Exposure, ADHD and Persistent Criminality: Role of Genes and Environment

National Institutes of Health(University of Cincinnati)

R01 ES 015559 06/01/07-03/31/12 \$131,253

Bipolar Disorder Imaging & Treatment Research Center (BITREC)

National Institutes of Health(University of Cincinnati)

P50 MH 077138 07/01/07-06/30/12 \$99,266

DONNELLY, L

Dynamic Computational Modeling of Obstructive Sleep Apnea in Down Syndrome

National Institutes of Health

R01 HL 105206 09/17/10-08/30/14 \$766,742

DUMOULIN, C

MR-Guided Focused Ultrasound Ablation of Visceral Fat: A New Treatment for Metabolic Syndrome

Focused Ultrasound Surgery Foundation

08/01/10-07/31/11 \$100,000

MR-Image Guided Focused Ultrasound for Treatment of Liver and Renal Cancer

National Institutes of Health(Stanford University)

R01 CA 121163 04/01/10-05/31/15 \$82,778

Cincinnati Center for Clinical and Translational Sciences and Training (Imaging Research)

National Institutes of Health(University of Cincinnati)

UL1 RR 026314 04/03/09-03/31/14 \$25,761

HOLLAND, S

fMRI of Normal Language Development in Children

National Institutes of Health

R01 HD 038578 08/01/06-06/30/11 \$212,623

Pediatric Functional Neuroimaging Research Network

National Institutes of Health

HHSN275200900018C 09/28/09-09/27/14 \$781,344

fMRI of Language Recovery Following Stroke in Adults

National Institutes of Health(University of Cincinnati)

R01 NS 048281 09/30/08-07/31/13 \$24,887

KIM, H

T2 Relaxation Time Mapping as a Quantitative and Objective Measure of Inflammation and Fatty Infiltration of the Muscles in Children with Duchenne Muscular Dystrophy

RSNA Research & Education Foundation

07/01/10-06/30/11 \$40,000

LAOR, T

Use of Thermal and 3D Surface Imaging to Quantify Arthritis

National Institutes of Health(Children's Hospital of Pittsburgh)		01/01/10-03/31/11	\$12,681
R21 AR 056690			
TKACH, J			
Functional MR Imaging Study of Speech Production in Childhood Apraxia of Speech			
National Institutes of Health			
R21 DC 010188		11/03/10-05/31/12	\$101,562
WANSAPURA, J			
Cardiac Structure and Function in Early Familial Cardiomyopathy			
National Institutes of Health			
K25 HL 102244		04/15/10-03/31/15	\$134,689
WINTER, P			
Monitoring Tissue Oxygenation and Angiogenic Therapy in PAD with Perfluorocarbon Nanoparticles			
American Heart Association			
		07/01/10-06/30/12	\$65,000
YUAN, W			
Longitudinal DT Study in Children Tested for Congenital Hydrocephalus			
National Institutes of Health			
R01 NS 066932		09/30/09-06/30/13	\$343,485
Current Year Direct			\$2,922,071
Industry Contracts			
GELFAND			
Bristol -Myers Squibb			\$458
Current Year Direct Receipts			\$458
Total			\$2,922,529