2013 Research Annual Report

Radiology

Cincinnati Children's

Division Details

Division Data Summary

RESEARCH AND TRAINING DETAILS	
Number of Faculty	**52**
Number of Joint Appointment Faculty	**2**
Number of Research Fellows	**1**
Number of Research Students	**11**
Number of Support Personnel	**71**
Direct Annual Grant Support	**$3,101,261**
Direct Annual Industry Support	**$43,564**
Peer Reviewed Publications	**114**

CLINICAL ACTIVITIES AND TRAINING	
Number of Clinical Staff	**216**
Number of Clinical Fellows	**13**
Number of Other Students	**40**
Inpatient Encounters	**52,601**
Outpatient Encounters	**152,271**

Division Photo

Row 1: E Crotty, R Fleck, D Babcock, B Coley, J Woods, R Giaquinto, S Holland
Row 2: H Kim, J Tkach, T Laor, B Koch, K Strauss, A Trout, G Lee
Row 3: J Leach, M Gelfand, C Dumoulin, J Racadio, R Nachabe, K Cecil, D Podberesky, A Brody

Significant Accomplishments

Safety Initiatives Expand

Our “Right Patient, Right Exam” initiative, designed to decrease inappropriate imaging from order entry errors, prevented more than 750 errors from reaching patients in fiscal 2013.

An accurate history is known to be an essential component to optimal radiographic interpretation, yet is present in only about 60 percent of physician orders. Our “What, When, Where” initiative empowered our technologists to fill in the missing components of the history. This has led to a sustained level of 95 percent of all studies having an appropriate history, allowing our physicians to make more accurate and complete interpretations.

This year’s efforts to minimize pediatric imaging radiation exposure have focused on radiography, which accounts for 70 percent of all imaging studies in children. While our doses were already low, further adjustments in techniques have allowed us to cut doses by 50 to 75 percent without compromising diagnostic quality.

Advances in Airway and Pulmonary Imaging

In collaboration with Pulmonology, Otolaryngology, Plastic Surgery and others, we have developed an integrative approach for the diagnosis and treatment of airway diseases that combines CT and MRI to make

more precise, non-invasive diagnoses. Our engineering partners at the University of Cincinnati have applied computational fluid dynamics (CFD) and flow structure interaction (FSI) modeling to these imaging data sets to achieve new insights into the mechanisms of airway diseases. This analysis also allows virtual treatments to be modeled, allowing proposed interventions to be assessed prior to actual surgery and thus improving the likelihood of a successful outcome.

Jason Woods, PhD, joined Imaging Research Center this year with faculty appointments in Pulmonary Medicine, Radiology, and Developmental Biology. Woods and his team bring an entirely new area of pulmonary MR research to Cincinnati Children's. Hyperpolarized gas imaging allows detailed functional and structural assessment of the healthy and disease lung, and advances in MRI pulse sequences promise to provide anatomic detail that may ultimately replace CT (and its attendant radiation) in the evaluation of the pediatric chest.

Expanded Informatics Capability

Our Radiology Informatics group has developed the infrastructure needed to support imaging-based research studies within the hospital and throughout the country. Improvements include a research Picture Archiving and Communication System (PACS) and a reliable method for anonymizing research image datasets.

Our team also increased the archive space, implemented disaster recovery capabilities, and created a method for secure access to the research system by remote users. These enhancements have allowed researchers from Cincinnati Children's to lead multi-institutional trials in an attempt to answer questions as varied as "Are there differences in the appearance of diffuse intrapontine gliomas in patients who are long-term versus short-term survivors?" and "What is the diagnostic reference range for radiation dose for CT examinations of the abdomen?"

The Radiology Informatics group also produced its own research, and were recognized with a second place Innovation Award from the Society of Imaging Informatics in Medicine.

Research Highlights

Imaging Research Center

Primary investigators in the Imaging Research Center received $2 million in new direct and indirect funding this year. Significant expansion in the breadth and depth of research capabilities has occurred with the installation of a new 1.5T Philips MRI, renovations to allow the installation of hyperpolarizers for 3He and 129Xe MR imaging, and the acquisition of new interventional guidance technologies. Research collaborations with multiple other divisions continue, and these investments in infrastructure will strengthen and expand these collaborations.

Pediatric Neuroimaging Research Consortium

The C-MIND project (Cincinnati MR Imaging of NeuroDevelopment), an NICHD-sponsored contract to provide a normative database of brain structural, functional, and perfusion MRI, has successfully scanned over 140 children and teens ages 0-18. The Pediatric Neuroimaging Research Consortium (PNRC) has developed methods for MRI scanning in infants and young children without sedation, and over 2/3 of scans attempted in children age five and under are successful using this protocol. This database will be made available to the scientific community in fall of 2013.

The PNRC, with the Division of Neurology, recently recruited Dr. Darren Kadis, PhD, a neuropsychologist and MEG (magnetoencephalography) scientist with research interests in language and cognitive development. Dr. Kadis' expertise will allow the PNRC to expand further our multimodality neuroimaging research.

NICU MRI

There were further developments and refinements to our Neonatal ICU MRI scanner, still the only one of its kind in the world. Over 150 patients have now been imaged successfully, most without the need for sedation. This capability is leading to improved clinical care, and is also allowing investigation into neurological and abdominal conditions that will lead to diagnostic and treatment improvements in the future. A paper describing our initial experiences won the Slovis Award for best basic science paper in the journal *Pediatric Radiology*. Further advancement of this program will be aided by a recently obtained Innovation award.

Significant Publications

Kim HK, **Merrow AC**, Shiraj S, Wong BL, Horn PS, **Laor T**.**Analysis of fatty infiltration and inflammation of the pelvic and thigh muscles in boys with Duchenne muscular dystrophy (DMD): grading of disease involvement on MR imaging and correlation with clinical assessments**. *Pediatr Radiol.* 2013.

As treatments for muscular dystrophy come closer to reality, it is important to have non-invasive methods for monitoring disease progression or improvement. Imaging changes may occur prior to clinically detectable functional changes, and this paper advances these methodologies.

Kurosawa Y, Degrauw TJ, **Lindquist DM**, Blanco VM, Pyne-Geithman GJ, Daikoku T, Chambers JB, Benoit SC, Clark JF.**Cyclocreatine treatment improves cognition in mice with creatine transporter deficiency**. *J Clin Invest*. 2012;122(8):2837-46

This is an extension of a discovery at Cincinnati Children's Hospital of a specific brain spectroscopic finding of creatine transported deficiency in a cohort of boys with developmental delay. The current study evaluates treatment effects in a mouse model, which promises to lead to an effective clinical treatment in patients.

Li Y,**Dumoulin C**. **Correlation imaging for multiscan MRI with parallel data acquisition**. *Magn Reson Med*. 2012;68(6):2005-17

This paper presents a new approach to high-speed magnetic resonance imaging (MRI) that uses all the data acquired in a multiscan imaging session. This approach accelerates MRI data acquisition by statistically estimating correlation

Szaflarski JP, Altaye M, **Rajagopal A**, **Eaton K**, Meng X, Plante E, **Holland SK**. **A 10-year longitudinal fMRI study of narrative comprehension in children and adolescents**. *Neuroimage*. 2012;63(3):1188-95

Comprehension of spoken narratives requires coordination of multiple language skills. As such, for normal children narrative skills develop well into the school years and, during this period, are particularly vulnerable in the face of brain injury or developmental disorder. The dynamic changes observed in this longitudinal fMRI study support the increasing role of bilateral Brodmann areaas 21 and 22 in narrative comprehension, involving non-domain-specific integration in order to achieve final story interpretation. The presence of a continued linear development of this area throughout childhood and teenage years with no apparent plateau, indicates that full maturation of narrative processing skills has not yet occurred and that it may be delayed to early adulthood.

Tkach JA, Hillman NH, Jobe AH, **Loew W**, **Pratt RG**, **Daniels BR**, Kallapur SG, **Kline-Fath BM**, Merhar SL, **Giaquinto RO**, **Winter PM**, **Li Y**, Ikegami M, Whitsett JA, **Dumoulin CL**. A**n MRI system for imaging neonates in the NICU: initial feasibility study**. *Pediatr Radiol*. 2012;42(11):1347-56

Developed entirely by the staff and faculty of the IRC, the dedicated NICU MRI remains a unique system in the

entire world. This paper reports on the initial experience with the system and its benefits for preterm infants. The paper won the Thomas Slovis Best Scientific Paper Award from the journal *Pediatric Radiology*

Division Publications

1. Abeykoon S, Sargent M, Wansapura JP. **Quantitative myocardial perfusion in mice based on the signal intensity of flow sensitized CMR**. *J Cardiovasc Magn Reson*. 2012; 14:73.
2. Abruzzo T, Patino M, Leach J, Rahme R, Geller J. **Cerebral vasoconstriction triggered by sympathomimetic drugs during intra-atrerial chemotherapy**. *Pediatr Neurol*. 2013; 48:139-42.
3. Adamson C, Yuan W, Babcock L, Leach JL, Seal ML, Holland SK, Wade SL. **Diffusion tensor imaging detects white matter abnormalities and associated cognitive deficits in chronic adolescent TBI**. *Brain Inj*. 2013; 27:454-63.
4. Alaraj A, Tobin MK, Birk DM, Charbel FT. **Simulation in Neurosurgery and Neurosurgical Procedures**. In: AI Levine, S DeMaria, AD Schwartz, A Sim, eds. *The Comprehensive Textbook of Healthcare Simulation*. Springer; 2013.
5. Allendorfer JB, Lindsell CJ, Siegel M, Banks CL, Vannest J, Holland SK, Szaflarski JP. **Females and males are highly similar in language performance and cortical activation patterns during verb generation**. *Cortex*. 2012; 48:1218-33.
6. Azevedo AC, Artigalás O, Vedolin L, Komlos M, Pires A, Giugliani R, Schwartz IV. **Brain magnetic resonance imaging findings in patients with mucopolysaccharidosis VI**. *J Inherit Metab Dis*. 2013; 36:357-62.
7. Bauman DR, Whitehead A, Contino LC, Cui J, Garcia-Calvo M, Gu X, Kevin N, Ma X, Pai LY, Shah K, Shen X, Stribling S, Zokian HJ, Metzger J, Shevell DE, Waddell ST. **Evaluation of selective inhibitors of 11beta-HSD1 for the treatment of hypertension**. *Bioorg Med Chem Lett*. 2013; 23:3650-3.
8. Beckwith T, Cecil KM. **Acquired White Matter Injury: Infection and Inflammatory Processes**. *Journal of Pediatric Neuroradiology*. 2013; 2:97-108.
9. Beckwith T, Cecil KM. **Advanced Magnetic Resonance Techniques for Evaluating White Matter**. *Journal of Pediatric Neuroradiology*. 2013; 2:3-15.
10. Birkemeier KL, Podberesky DJ, Salisbury S, Serai S. **Limited, fast magnetic resonance imaging as an alternative for preoperative evaluation of pectus excavatum: a feasibility study**. *J Thorac Imaging*. 2012; 27:393-7.
11. Bischoff A, Calvo-Garcia MA, Baregamian N, Levitt MA, Lim FY, Hall J, Peña A. **Prenatal counseling for cloaca and cloacal exstrophy-challenges faced by pediatric surgeons**. *Pediatr Surg Int*. 2012; 28:781-8.
12. Blaser SI, Koch BL. **CPA Mass, Child**. In: CD Robson, BL Koch, HR Harnsberger, eds. *Specialty Imaging: Temporal Bone*. Canada: Amirsy; 2013:62.
13. Bouchoux G, Bader KB, Korfhagen JJ, Raymond JL, Ravishankar S, Abruzzo TA, Holland CK. **Validation of a finite-difference acoustic propagation model of transcranial ultrasound**. *J Acoust Soc Am*. 2012; 132:1927.
14. Bouchoux G, Bader KB, Korfhagen JJ, Raymond JL, Shivashankar R, Abruzzo TA, Holland CK. **Experimental validation of a finite-difference model for the prediction of transcranial ultrasound fields based on CT images**. *Phys Med Biol*. 2012; 57:8005-22.
15. Brown A, Hirsch R, Laor T, Hannon MJ, Levesque MC, Starz T, Francis K, Kwoh CK. **Do patients with juvenile idiopathic arthritis in clinical remission have evidence of persistent inflammation on 3T magnetic resonance imaging?**. *Arthritis Care Res (Hoboken)*. 2012; 64:1846-54.
16. Calvo-Garcia MA, Kline-Fath BM, Rubio EI, Merrow AC, Guimaraes CV, Lim FY. **Fetal MRI of cloacal**

exstrophy. *Pediatr Radiol*. 2013; 43:593-604.
17. Cecil KM, Beckwith T. **A Toxicological Model of Frontal Lobe Injury: Childhood Lead Exposure**. In: A Cavanna, ed. *Frontal Lobe: Anatomy, Functions and Injuries*. London: Nova; 2013:57-78.
18. Cecil KM, Lindquist DM. **Infection and encephalitis**. In: S Bluml, A Panigrahy, eds. *MR Spectroscopy in Pediatric Brain Disorders*. 2013:155-166.
19. Cecil KM, Lindquist DM. **Leukodystrophies**. In: S Bluml, A Panigrahy, eds. *MR Spectroscopy in Pediatric Brain Disorders*. Springer; 2013:105-122.
20. Cecil KM, Lindquist DM. **Lysosomal and Peroxisomal Disorders Producing Leukodystrophies**. *Journal of Pediatric Neuroradiology*. 2013; 2:47-55.
21. Cecil KM, Lindquist DM. **Metabolic Disorders**. In: S Bluml, A Panigrahy, eds. *MR Spectroscopy in Pediatric Brain Disorders*. Springer; 2013:123-148.
22. Cecil KM, Lindquist DM. **Primary Leukodystrophies**. *Journal of Pediatric Neuroradiology*. 2013; 2:33-45.
23. Chen W, Adams D, Patel M, Gupta A, Dasgupta R. **Generalized lymphatic malformation with chylothorax: long-term management of a highly morbid condition in a pediatric patient**. *J Pediatr Surg*. 2013; 48:e9-12.
24. Clark E, Giambra BK, Hingl J, Doellman D, Tofani B, Johnson N. **Reducing Risk of Harm From Extravasation: A 3-Tiered Evidence-Based List of Pediatric Peripheral Intravenous Infusates**. *J Infus Nurs*. 2013; 36:37-45.
25. Dewitt EM, Li Y, Curtis JR, Glick HA, Greenberg JD, Anstrom KJ, Kremer JM, Reed G, Schulman KA, Reed SD. **Comparative effectiveness of nonbiologic versus biologic disease-modifying antirheumatic drugs for rheumatoid arthritis**. *J Rheumatol*. 2013; 40:127-36.
26. Dietz KR, Merrow AC, Podberesky DJ, Towbin AJ. **Beyond acute appendicitis: imaging of additional pathologies of the pediatric appendix**. *Pediatr Radiol*. 2013; 43:232-42; quiz 259.
27. Don S, Macdougall R, Strauss K, Moore QT, Goske MJ, Cohen M, Herrmann T, John SD, Noble L, Morrison G, Lehman L, Whiting BR. **Image gently campaign back to basics initiative: ten steps to help manage radiation dose in pediatric digital radiography**. *AJR Am J Roentgenol*. 2013; 200:W431-6.
28. Downes KJ, Tagher RJ, Johnson ND, Brady RC. **Fever and upper back pain in a 15-year-old boy**. *Pediatr Infect Dis J*. 2012; 31:881, 886-7.
29. Duffis EJ, Gandhi CD, Prestigiacomo CJ, Abruzzo T, Albuquerque F, Bulsara KR, Derdeyn CP, Fraser JF, Hirsch JA, Hussain MS, Do HM, Jayaraman MV, Meyers PM, Narayanan S. **Head, neck, and brain tumor embolization guidelines**. *J Neurointerv Surg*. 2012; 4:251-5.
30. Fleck RJ, Mahmoud M, McConnell K, Shott SR, Gutmark E, Amin RS. **An Adverse Effect of Positive Airway Pressure on the Upper Airway Documented With Magnetic Resonance Imaging**. *JAMA Otolaryngol Head Neck Surg*. 2013; 139:636-638.
31. Forman HP, Larson DB, Kazerooni EA, Norbash A, Crowe JK, Javitt MC, Beauchamp NJ Jr. **Masters of radiology panel discussion--is imaging in decline?**. *AJR Am J Roentgenol*. 2013; 200:127-31.
32. Forman HP, Larson DB, Kazerooni EA, Norbash A, Crowe JK, Javitt MC, Beauchamp NJ Jr, Mendelson EB. **Masters of radiology panel discussion: hyperefficient radiology--can we maintain the pace?**. *AJR Am J Roentgenol*. 2012; 199:838-43.
33. Fujiwara H, Greiner HM, Lee KH, Holland-Bouley KD, Seo JH, Arthur T, Mangano FT, Leach JL, Rose DF. **Resection of ictal high-frequency oscillations leads to favorable surgical outcome in pediatric epilepsy**. *Epilepsia*. 2012; 53:1607-17.
34. Garrett KM, Levitt MA, Peña A, Kraus SJ. **Contrast enema findings in patients presenting with poor functional outcome after primary repair for Hirschsprung disease**. *Pediatr Radiol*. 2012; 42:1099-106.

35. Goske M, Applegate K, Frush D, Schulman MH, Morrison G. **CT scans in childhood and risk of leukaemia and brain tumours**. *Lancet*. 2012; 380:1737-8.
36. Goske MJ, Applegate KE, Bulas D, Butler PF, Callahan MJ, Don S, Farley S, Frush D, Hernanz-Schulman M, John SD, Kaste SC, Kaupp S, McElveny C, Morrison G, Sidhu M, Strauss K, Treves ST. **Image gently 5 years later: what goals remain to be accomplished in radiation protection for children?**. *AJR Am J Roentgenol*. 2012; 199:477-9.
37. Goske MJ, Callahan MJ, Fresh DP, Kaste SC, Morrison G, Strauss KJ. **The Image Gently Campaign: Championing radiation protection for children through awareness, educational resources and advocacy**. In: D Tack, M Kalra, PA Gevenois, eds. *Radiation Dose from Adult and Pediatric MDCT*. Springer; 2012:509-535.
38. Gupta A, Sheridan RM, Towbin A, Geller JI, Tiao G, Bove KE. **Multifocal Hepatic Neoplasia in 3 Children With APC Gene Mutation**. *Am J Surg Pathol*. 2013; 37:1058-66.
39. Hawkins CM, Hall S, Hardin J, Salisbury S, Towbin AJ. **Prepopulated radiology report templates: a prospective analysis of error rate and turnaround time**. *J Digit Imaging*. 2012; 25:504-11.
40. Hayes L, Cecil KM. **Neurotoxicant Effects on White Matter**. *Journal of Pediatric Neuroradiology*. 2013; 2:73-86.
41. Heilman JA, Derakhshan JD, Riffe MJ, Gudino N, Tkach J, Flask CA, Duerk JL, Griswold MA. **Parallel excitation for B-field insensitive fat-saturation preparation**. *Magn Reson Med*. 2012; 68:631-8.
42. Hussain MS, Fraser JF, Abruzzo T, Blackham KA, Bulsara KR, Derdeyn CP, Gandhi CD, Hirsch JA, Hsu DP, Jayaraman MV, Meyers PM, Narayanan S, Prestigiacomo CJ, Rasmussen PA. **Standard of practice: endovascular treatment of intracranial atherosclerosis**. *J Neurointerv Surg*. 2012; 4:397-406.
43. Jan-Mendelt T, Hopkins S, Rodriguez M, Leach JL. **Imaging of multiple sclerosis and related acquired demyelinating disorders in childhood**. *Journal of Pediatric Neuroradiology*. 2013; 2:57-72.
44. Kay BP, Difrancesco MW, Privitera MD, Gotman J, Holland SK, Szaflarski JP. **Reduced default mode network connectivity in treatment-resistant idiopathic generalized epilepsy**. *Epilepsia*. 2013; 54:461-70.
45. Kline-Fath B, Tkach J, Merhar S. **Premature white matter disease**. *Journal of Pediatric Neuroradiology*. 2013; 2:17-32.
46. Koch BL. **Congenital Auricle Malformations**. In: CD Robson, BL Koch, HR Harnsberger, eds. *Specialty Imaging: Temporal Bone*. Canada: Amirsys; 2013:8-9.
47. Koch BL. **Ossicular Dislocatons and Disruptions**. In: CD Robson, BL Koch, HR Harnsberger, eds. *Specialty Imaging: Temporal Bone*. Canada: Amirsy; 2013:8.
48. Koch BL. **Perauricular Lymphatic Malformations**. In: CD Robson, BL Koch, HR Harnsberger, eds. *Specialty Imaging: Temporal Bone*. Canada: Amirsy; 2013:24-28.
49. Koch BL. **Periauricular 1st Branchial Cleft Cyst**. In: CD Robson, BL Koch, HR Harnsberger, eds. *Specialty Imaging: Temporal Bone*. Canada: Amirsy; 2013:16-20.
50. Koch BL. **Periauricular Venous Malformation**. In: CD Robson, BL Koch, HR Harnsberger, eds. *Specialty Imaging: Temporal Bone*. Canada: Amirsys; 2013:20-24.
51. Koch BL. **Petrous Apex Overview**. In: CD Robson, BL Koch, HR Harnsberger, eds. *Specialty Imaging: Temporal Bone*. Canada: Amirsy; 2013:2.
52. Koch BL. **Posterior Fossa Neoplasm, Child**. In: CD Robson, BL Koch, HR Harnsberger, eds. *Specialty Imaging: Temporal Bone*. Canada: Amirsy; 2013:68.
53. Koch BL. **Postoperative Mastoid**. In: CD Robson, BL Koch, HR Harnsberger, eds. *Specialty Imaging: Temporal Bone*. Canada: Amirsy; 2013:74-78.

54. Koch BL. **Post-Traumatic Cephalocele**. In: CD Robson, BL Koch, HR Harnsberger, eds. *Specialty Imaging: Temporal Bone*. Canada: Amirsy; 2013:12.
55. Koch BL. **Sensorineural hearing Loss, Child**. In: CD Robson, BL Koch, HR Harnsberger, eds. *Specialty Imaging: Temporal Bone*. Canada: Amirsy; 2013:82.
56. Koch BL. **Temporal bone Embryology Overview**. In: CD Robson, BL Koch, HR Harnsberger, eds. *Specialty Imaging: Temporal Bone*. Canada: Amirsys; 2013:8-10.
57. Koch BL, Robson CD. **Pseudosemicircular Canal Dehiscence**. In: CD Robson, BL Koch, HR Harnsberger, eds. *Specialty Imaging: Temporal Bone*. Canada: Amirsy; 2013:16-17.
58. Koch BL, Robson CD. **Semicircular Canal Small Bone Island**. In: CD Robson, BL Koch, HR Harnsberger, eds. *Specialty Imaging: Temporal Bone*. Canada: Amirsy; 2013:39.
59. Krueger DA, Care MM, Agricola K, Tudor C, Mays M, Franz DN. **Everolimus long-term safety and efficacy in subependymal giant cell astrocytoma**. *Neurology*. 2013; 80:574-80.
60. Kurosawa Y, Degrauw TJ, Lindquist DM, Blanco VM, Pyne-Geithman GJ, Daikoku T, Chambers JB, Benoit SC, Clark JF. **Cyclocreatine treatment improves cognition in mice with creatine transporter deficiency**. *J Clin Invest*. 2012; 122:2837-46.
61. Laor T, Zbojniewicz AM, Eismann EA, Wall EJ. **Juvenile osteochondritis dissecans: is it a growth disturbance of the secondary physis of the epiphysis?**. *AJR Am J Roentgenol*. 2012; 199:1121-8.
62. Larson DB, Towbin AJ, Pryor RM, Donnelly LF. **Improving Consistency in Radiology Reporting through the Use of Department-wide Standardized Structured Reporting**. *Radiology*. 2013; 267:240-50.
63. Li Y, Dumoulin C. **Correlation imaging for multiscan MRI with parallel data acquisition**. *Magn Reson Med*. 2012; 68:2005-17.
64. Li Z, Sanders DB, Rock MJ, Kosorok MR, Collins J, Green CG, Brody AS, Farrell PM. **Regional differences in the evolution of lung disease in children with cystic fibrosis**. *Pediatr Pulmonol*. 2012; 47:635-40.
65. Lindquist DM. **White matter abnormalities in psychiatric disorders**. *Journal of Pediatric Neuroradiology*. 2013; 2:109-118.
66. Mackey J, Brown RD Jr, Moomaw CJ, Hornung R, Sauerbeck L, Woo D, Foroud T, Gandhi D, Kleindorfer D, Flaherty ML, Meissner I, Anderson C, Rouleau G, Connolly ES, Deka R, Koller DL, Abruzzo T, Huston J 3rd, Broderick JP. **Familial Intracranial Aneurysms: Is Anatomic Vulnerability Heritable?**. *Stroke*. 2013; 44:38-42.
67. Mahmoud M, Jones B, Podberesky DJ. **Teamwork among pediatric anesthesia and radiology providers at a large tertiary-care children's hospital: past, present and future**. *Pediatr Radiol*. 2013; 43:460-3.
68. Malatesta-Muncher R, Wansapura J, Taylor M, Lindquist D, Hor K, Mitsnefes M. **Early cardiac dysfunction in pediatric patients on maintenance dialysis and post kidney transplant**. *Pediatr Nephrol*. 2012; 27:1157-64.
69. Matthay KK, Weiss B, Villablanca JG, Maris JM, Yanik GA, Dubois SG, Stubbs J, Groshen S, Tsao-Wei D, Hawkins R, Jackson H, Goodarzian F, Daldrup-Link H, Panigrahy A, Towbin A, Shimada H, Barrett J, Lafrance N, Babich J. **Dose escalation study of no-carrier-added 131I-metaiodobenzylguanidine for relapsed or refractory neuroblastoma: new approaches to neuroblastoma therapy consortium trial**. *J Nucl Med*. 2012; 53:1155-63.
70. Meyers AB, Kim HK, Emery KH. **Elbow plica syndrome: presenting with elbow locking in a pediatric patient**. *Pediatr Radiol*. 2012; 42:1263-6.
71. Meyers AB, Laor T, Zbojniewicz AM, Anton CG. **MRI of radiographically occult ischial apophyseal**

avulsions. *Pediatr Radiol*. 2012; 42:1357-63.
72. Meyers AB, Towbin AJ, Geller JI, Podberesky DJ. **Hepatoblastoma imaging with gadoxetate disodium-enhanced MRI--typical, atypical, pre- and post-treatment evaluation**. *Pediatr Radiol*. 2012; 42:859-66.
73. Milla SS, Coley BD, Karmazyn B, Dempsey-Robertson ME, Dillman JR, Dory CE, Garber M, Hayes LL, Keller MS, Meyer JS, Paidas C, Raske ME, Rigsby CK, Spottswood S, Strouse PJ, Widmann RF, Wootton-Gorges SL. **ACR Appropriateness Criteria® Limping Child-Ages 0 to 5 Years**. *J Am Coll Radiol*. 2012; 9:545-53.
74. Moore QT, Don S, Goske MJ, Strauss KJ, Cohen M, Herrmann T, Macdougall R, Noble L, Morrison G, John SD, Lehman L. **Image gently: using exposure indicators to improve pediatric digital radiography**. *Radiol Technol*. 2012; 84:93-9.
75. Narayanan S, Hurst RW, Abruzzo TA, Albuquerque FC, Blackham KA, Bulsara KR, Derdeyn CP, Gandhi CD, Hirsch JA, Hsu DP, Hussain MS, Jayaraman MV, Meyers PM, Patsalides A, Prestigiacomo CJ. **Standard of practice: embolization of spinal arteriovenous fistulae, spinal arteriovenous malformations, and tumors of the spinal axis**. *J Neurointerv Surg*. 2013; 5:3-5.
76. O'Brien K, Leach J, Jones B, Bissler J, Zuccarello M, Abruzzo T. **Calcifications associated with pediatric intracranial arterial aneurysms: incidence and correlation with pathogenetic subtypes**. *Childs Nerv Syst*. 2013; 29:643-9.
77. Oestreich AE. **The Pediatric Elbow - Trauma - The Radiograph Revisited**. *Osteologiai Kozlemenyek*. 2013; 21:13-17.
78. Oestreich AE, Jankovic´ S, Dolic´ K, Krnic´ A, Sekovski B, Marovic´ A. **Metabolic Disease [in Croatian]**. In: Jankovic´ S, B N, eds. *Spine and Spinal Cord Neuroimaging - Clinical Approach [Klinicka neuroradiologija kraljeznice i kraljeznicne mozdine]*.. Zagreb: Medicinska naklada: 2013:299-324.
79. Oestreich AE, Offiah AC. **Pediatric Radiology**. *Year Book of Diagnostic Radiology*. 2012:115-190.
80. Parikh SN, Allen M, Wall EJ, May MM, Laor T, Zbojniewicz AM, Eismann EA, Myer GD. **The Reliability to Determine "Healing" in Osteochondritis Dissecans From Radiographic Assessment**. *J Pediatr Orthop*. 2012; 32:e35-e39.
81. Patel MN, Komlos M, Racadio JM. **Intrathyroidal thymic tissue mimicking a thyroid nodule in a 4-year-old child**. *J Clin Ultrasound*. 2013; 41:319-20.
82. Pearce JM, Mahoney MC, Lee JH, Chu WJ, Cecil KM, Strakowski SM, Komoroski RA. **(1)H NMR analysis of choline metabolites in fine-needle-aspirate biopsies of breast cancer**. *MAGMA*. 2013; 26:337-43.
83. Podberesky DJ, Angel E, Yoshizumi TT, Toncheva G, Salisbury SR, Alsip C, Barelli A, Egelhoff JC, Anderson-Evans C, Nguyen GB, Dow D, Frush DP. **Radiation dose estimation for prospective and retrospective ECG-gated cardiac CT angiography in infants and small children using a 320-MDCT volume scanner**. *AJR Am J Roentgenol*. 2012; 199:1129-35.
84. Qin L, Schmidt EJ, Tse ZT, Santos J, Hoge WS, Tempany-Afdhal C, Butts-Pauly K, Dumoulin CL. **Prospective motion correction using tracking coils**. *Magn Reson Med*. 2013; 69:749-59.
85. Rahme R, Abruzzo TA, Martin RH, Tomsick TA, Ringer AJ, Furlan AJ, Carrozzella JA, Khatri P. **Is Intra-Arterial Thrombolysis Beneficial for M2 Occlusions? Subgroup Analysis of the PROACT-II Trial**. *Stroke*. 2013; 44:240-2.
86. Rahme R, Abruzzo TA, Zuccarello M, Ringer A. **Intra-arterial veramil-induced seizures: drug toxicity or rapid reperfusion?**. *Can J Neurol Sci*. 2012; 39:550-2.
87. Rahme R, Jimenez L, Bashir U, Adeoye OM, Abruzzo TA, Ringer AJ, Kissela BM, Khoury J, Moomaw CJ, Sucharew H, Ferioli S, Flaherty ML, Woo D, Khatri P, Alwell K, Kleindorfer D. **Malignant MCA territory infarction in the pediatric population: subgroup analysis of the Greater Cincinnati/Northern**

Kentucky Stroke Study. *Childs Nerv Syst*. 2013; 29:99-103.

88. Rahme R, Jimenez L, Pyne-Geithman GJ, Serrone J, Ringer AJ, Zuccarello M, Abruzzo TA. **Endovascular management of posthemorrhagic cerebral vasospasm: indications, technical nuances, and results**. *Acta Neurochir Suppl*. 2013; 115:107-12.
89. Reading BD, Laor T, Salisbury SR, Lippert WC, Cornwall R. **Quantification of humeral head deformity following neonatal brachial plexus palsy**. *J Bone Joint Surg Am*. 2012; 94:e1361-8.
90. Serai SD, Jones BV, Podberesky DJ, Coley B. **Is it time for a dedicated pediatric MRI ACR accreditation program?**. *J Am Coll Radiol*. 2013; 10:274-8.
91. Serai SD, Towbin AJ, Podberesky DJ. **Pediatric Liver MR Elastography**. *Dig Dis Sci*. 2012; 57:2713-9.
92. Sharp SE, Parisi MT, Gelfand MJ, Yanik GA, Shulkin BL. **Functional-metabolic imaging of neuroblastoma**. *Q J Nucl Med Mol Imaging*. 2013; 57:6-20.
93. Shatzkes DR, Hutchins T, Koch BL. **T-Bone Fractures**. In: CD Robson, BL Koch, HR Harnsberger, eds. *Specialty Imaging: Temporal Bone*. Canada: Amirsy; 2013:4.
94. Silberstein EB, Alavi A, Balon HR, Clarke SE, Divgi C, Gelfand MJ, Goldsmith SJ, Jadvar H, Marcus CS, Martin WH, Parker JA, Royal HD, Sarkar SD, Stabin M, Waxman AD. **The SNMMI practice guideline for therapy of thyroid disease with 131I 3.0**. *J Nucl Med*. 2012; 53:1633-51.
95. Slovis TL, Frush DP, Goske MJ. **An amazing accomplishment--CT manufacturers deserve our thanks**. *Pediatr Radiol*. 2013; 43:132-4.
96. Slovis TL, Strouse PJ, Coley BD, Rigsby CK. **The creation of non-disease: an assault on the diagnosis of child abuse**. *Pediatr Radiol*. 2012; 42:903-5.
97. Smith EA, Salisbury S, Martin R, Towbin AJ. **Incidence and etiology of new liver lesions in pediatric patients previously treated for malignancy**. *AJR Am J Roentgenol*. 2012; 199:186-91.
98. Spar DS, Anderson JB, Palumbo JS, Kukreja KU, Czosek RJ. **Symptomatic upper-extremity deep venous thrombosis after pacemaker placement in a pediatric patient: how to treat?**. *Pediatr Cardiol*. 2013; 34:1275-9.
99. Szaflarski JP, Altaye M, Rajagopal A, Eaton K, Meng X, Plante E, Holland SK. **A 10-year longitudinal fMRI study of narrative comprehension in children and adolescents**. *Neuroimage*. 2012; 63:1188-1195.
100. Szaflarski JP, Kay B, Gotman J, Privitera MD, Holland SK. **The relationship between the localization of the generalized spike and wave discharge generators and the response to valproate**. *Epilepsia*. 2013; 54:471-80.
101. Tillema J, Leach J, Pirko I. **Non-lesional white matter changes in pediatric multiple sclerosis and monophasic demyelinating disorders**. *Mult Scler*. 2012; 18:1754-9.
102. Tkach JA, Hillman NH, Jobe AH, Loew W, Pratt RG, Daniels BR, Kallapur SG, Kline-Fath BM, Merhar SL, Giaquinto RO, Winter PM, Li Y, Ikegami M, Whitsett JA, Dumoulin CL. **An MRI system for imaging neonates in the NICU: initial feasibility study**. *Pediatr Radiol*. 2012; 42:1347-56.
103. Towbin AJ, Diniz LO. **Schatzki ring in pediatric and young adult patients**. *Pediatr Radiol*. 2012; 42:1437-40.
104. Towbin AJ, Iyer SB, Brown J, Varadarajan K, Perry LA, Larson DB. **Practice policy and quality initiatives: decreasing variability in turnaround time for radiographic studies from the emergency department**. *Radiographics*. 2013; 33:361-71.
105. Trout AT, Podberesky DJ, Serai SD, Ren Y, Altaye M, Towbin AJ. **Does secretin add value in pediatric magnetic resonance cholangiopancreatography?**. *Pediatr Radiol*. 2013; 43:479-86.
106. Turpin BK, Morris VR, Lemen L, Weiss BD, Gelfand MJ. **Minimizing nuclear medicine technologist radiation exposure during 131I-MIBG therapy**. *Health Phys*. 2013; 104:S43-6.

107. Vannest J, Szaflarski JP, Eaton KP, Henkel DM, Morita D, Glauser TA, Byars AW, Patel K, Holland SK. **Functional magnetic resonance imaging reveals changes in language localization in children with benign childhood epilepsy with centrotemporal spikes**. *J Child Neurol*. 2013; 28:435-45.
108. Wallihan DB, Podberesky DJ. **Hepatic pathology after Fontan palliation: spectrum of imaging findings**. *Pediatr Radiol*. 2013; 43:330-8.
109. Wallihan DB, Towbin AJ, Denson LA, Salisbury S, Podberesky DJ. **Inflammatory bowel disease in children and adolescents: assessing the diagnostic performance and interreader agreement of magnetic resonance enterography compared to histopathology**. *Acad Radiol*. 2012; 19:819-26.
110. Wang Y, Adamson C, Yuan W, Altaye M, Rajagopal A, Byars AW, Holland SK. **Sex differences in white matter development during adolescence: A DTI study**. *Brain Res*. 2012; 1478:1-15.
111. Wiggins RH, Koch BL. **T-Bone Langerhans Cell Histiocytosis**. In: CD Robson, BL Koch, HR Harnsberger, eds. *Specialty Imaging: Temporal Bone*. Canada: Amirsy; 2013:14.
112. Winter PM. **Magnetic resonance chemical exchange saturation transfer imaging and nanotechnology**. *Wiley Interdiscip Rev Nanomed Nanobiotechnol*. 2012; 4:389-98.
113. Young CM, Shiels WE 2nd, Coley BD, Hogan MJ, Murakami JW, Jones K, Higgins GC, Rennebohm RM. **Ultrasound-guided corticosteroid injection therapy for juvenile idiopathic arthritis: 12-year care experience**. *Pediatr Radiol*. 2012; 42:1481-9.
114. Yuan W, McKinstry RC, Shimony JS, Altaye M, Powell SK, Phillips JM, Limbrick DD Jr, Holland SK, Jones BV, Rajagopal A, Simpson S, Mercer D, Mangano FT. **Diffusion tensor imaging properties and neurobehavioral outcomes in children with hydrocephalus**. *AJNR Am J Neuroradiol*. 2013; 34:439-45.

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

Research Interests Pediatric neuroradiology, neuro-oncology and crebrovascular 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; Chief Division of Radiography

Research Interests Musculoskeletal diseases

Diane S. Babcock, MD, Professor Emerita

Williams S. Ball, MD, Professor

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

Alan S. Brody, MD, Professor

Leadership Associate Director, Clinical 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-Garcia, 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, 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, specifically childhood interstitial lung disease and also resident education

Mark DiFrancesco, PhD, Assistant Professor

Research Interests Imaging structure and function of brain networks impacted by behavioral and disease-related challenges

Charles L. Dumoulin, PhD, Professor

Leadership Scientific 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

Leadership Division Chief, Cardiac MRI

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; Endowed Chair, The Corning Benton Chair for Radiology Education

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

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 Imaging

Research Interests Fetal MRI, fetal ultrasound and neuroimaging

Marcia Komlos, , Instructor

Research Interests Neuroradiology and fetal imaging

Steven J. Kraus, MD, Associate Professor

Leadership Division Chief, Fluoroscopy

Research Interests Gastrointestinal malformations

Kamlesh U. Kukreja, MD, Instructor

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

David Larson, MD, Associate Professor

Leadership 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

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

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

Diana Lindquist, PhD, Associate 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 including RF coil array technology for clinical MRI

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

Research Interests Pediatric musculoskeletal and fetal imaging including muloskeletal neoplasms and vascular lesions,and rheumatologic imaging

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, 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

Leadership Division Chief, Thoraco-Abdominal Imaging

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

John M. Racadio, MD, Professor

Leadership Division Chief, Interventional Radiology; Director IR Research Lab

Research Interests Viral oncolytic therapy, 3D image fusion and intervention and radiation safety

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.

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

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

Janaka Wansapura, PhD, Associate 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 imaging, US-guided therapy

Joint Appointment Faculty Members

Michael Taylor, MD, Assistant Professor (Cardiology)
Research Interests Cardiovascular imaging

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

Tangayi Githu, MD, PL6, University of Miami, Jackson Memorial Hospital, Miami, FL
C.. Matthew Hawkins, MD, PL6, University of Cincinnati, Cincinnati, OH
Jennifer H. Johnston, MD, PL6, Tulane University School of Medicine, New Orleans, LA
Amy Kolbe, MD, PL6, Mayo Clinic, Rochester, MN
Jennifer Kucera, MD, PL6, University of South FL, Tampa, FL
Lisa LaForest, MD, PL6, University of Minnesota, Minneapolis, MN
Luke Linscott, MD, PL6, Mallinckrodt Institute, St. Louis, MO
Janice McDaniels, MD, PL6, University of Cincinnati, Cincinnati, OH
Francis R. Pianki, DO, PL6, Grandview Hospital, Dayton, OH
Yanerys Ramos, MD, PL6, UCLA Medical Center, Los Angeles, CA
Amy Rowell, MD, PL6, Louisiana State University HSC, Shreveport, LA
Lilly L. Wang, MD, PL7, Prince of Wales/Sydney Childern's Hospitals, Randwick Australia
Shannon N. Zingula, MD, PL6, Mayo Clinic, Rochester, MN

Division Collaboration

Cancer and Blood Disease; Radiology » Maureen O'Brien, Courtney Blank, Jenny Thomas-Quinn, Christine Phillips, Laurie Jean Grimme, Lars Wagner, Megan Westendorf, Karen Burns, Ulie Plummer, Donna Jackson, Mariko DeWire, Beth Ann Stockman, Adrienne Hammill, Andrea Ferris, Mary Suhre, Normal Woolum, Carrye Cost, Jenavieve Kirkendall, Jonathan Fisk, Kathleen Dorris, Maryam Fouladi, Lane Satterthwaite, Laura Mayer, Dennis Adams, Cara Wiburn, Susan Sharp, Brian Weiss, Lori Backus, Julie McDonald, Lionel Chow, , and Stacey Crane

Expanded Access MIBG

Neurology; Radiology » Michelle Rodgers, Pawel Matykiewicz, Lili Miles, Hansel Greiner, Hisako Fujiwara, Douglas Rose, Naomi Van Horn, James Leach, Jeffrey Tenney, Lori Heflin, John Pestian, Todd Arthur, Anna Weber Byars, Leonid Rozhkov, Barbara Hallinan, Michael Gelfand, Nicole Inman, Leslie Reed, Tracy Glauser, Sally Monahan, April Flannery, Michele turner, Cindy Wesolowski, Francesco Mangano, Diego Morita, Paul Horn, Katherine Holland-Bouley, Shannon Standridge, Elizabeth Skulas, and Jody Hessling

Seizure Database.

Oncology; Radiology » Michael Gelfand, Timothy Cripe, Susan Sharp, and Abubakar Durrani

Changes on PET and CT Imaging After Limb Salvage Surgery for Bone Tumors

Cancer and Blood Diseases; Radiology » Maureen O'Brien, Courtney Blank, Karen Burns, Michael Grimley, Lars Wagner, Laurie Jean Grimme, Christine Philips, Parinda Mehta, Jenny Thomas-Wuinn, Stacey Crane, Julie Plummer, Donna Jackson, Mariko DeWire, Stella Davies, Beth Ann Stockman, Sonata Jodele, Mary Suhre, Norma Woolum, Carrye Cost, Jenavieve Kirkendall, Kathleen Dorris, Maryam Fouladi, Lane Satterthwaite, Laura Mayer, Denise Adams, Cara Wiburn, Susan Sharp, Brian Weiss, Lori Backus, Julie MDonald, Siri Steiner, and Lionel Chow

NANT 2001-02

Cardiothoracic Surgery; Otolaryngology; Radiology » Rupa Radhakrishnan, Robert Fleck, Lane Donnelly, Peter Manning, and Michael Rutter

Spectrum of Imaging Findings of Complete Tracheal Rings (Congenital Tracheal Stenosis)

Gastroenterology; Biostatistics and Epidemiology; Radiology » Dan Podberesky, Lee Denson, Dana Dykes, Shelia Salisbury, Alex Towbin, and Dan Wallihan

CT Enterography in Pediatric and Adolescent Crohn Disease Patients

Pathology; Pediatric General and Thoracic Surgery; Radiology » Maria Calvo, Eva Rubio, Anita Gupta, Denise Adams, Tim Crombleholme, Constance bitters, Beth Kline-Fath, Foong Yen Lim, and Tal Laor

Prenatal Diagnosis of vascular birthmarks: Soft Tissue Vascular Tumors and Malformations

Biostatistis; Epidemiology; Radiology » Steven Kraus, Gary Halverson, Shelia Salisbury, and

Air reduction enema for ileocolic intussusception. What is our success rate? What factors influence failure of this technique?

Clinical Effectiveness; Education and Training Research; Radiology » Marilyn Goske, Seth Hall, Keith Mandal, and Rebecca Phillips

Image Gently: A National Web-based Practice Quality Improvement Module in CT Safety for Children-Built-In Survey Analysis

Cancer and Blood Diseases; Radiology » Michael Gelfand, Susan Sharp, and Michael Absalon

Dose Reduction in Follow-up PET/CT imaging of Lymphoma: When does Localization CT Actually Provide Additional Diagnostic Information?

Cancer and Blood Diseases; Radiology » Michael Gelfand, Chris Anton, Hong Yin, Susan Sharp, and Brian Weiss

Detection of Malignant Peripheral Nerve Sheath Tumor (MPNST) by 2-fluoro-2-deoxyglucose (FDG) PET in Patients with Neurofibromatosis Type 1 (NF1)

Cancer and Blood Diseases; Radiology » Rashni Dasgupta, Lars Wagner, Donna Jackson, Joel Sorger, Norma Woolum, Carrye Cost, Hong Yin, Jonathan Fisk, Gregory Tiao, Lane Satterthwaite, Laura Mayer, Cara Wiburn, Susan Sharp, Michael Gelfand, Renee Doughman, Erin McGuire, Anusua Dasgupta, Tal Laor, Brian Turpin, Daniel von Allmen, and Rajaram Nagarajan

Sentinel Lymph Node Biopsy

Pediatric General and Thoracic Surgery; Radiology » Beth Kline-Fath, Foong-Yen Lim,, Carl Merrow, Carolina Guimaraes, Jeremy Neum, Maria Calvo, and Connie Bitters

Spectrum of amniotic band imaging findings with fetal MR

Pediatric General and Thoracic Surgery; Radiology » Eva Rubio, Foong-Yen Lim, Monira Habli, Carolina Guimaraes, and Maria Calvo-Garcia

Fetal Magnetic Resonance Imaging Features of Fetal Mediastinal Teratomas

Pediatric General and Thoracic Surgery; Radiology » Maria Calvo-Garcia, Foong-Yen Lim, Beth Kline-Fath, and Carl Merrow

Fetal MRI Findings in OEIS Complex

Oncology; Radiology » Jennifer Reed, Sara O'Hara, Sundeep Keswani, Nicole McClanahan, Jarrod Peebles, Beth Schwartz, Bin Huang, Alice King, Andrea Kachelmeyer, Jonathan Gagi, Chen Chen, Alison Damon, Michael Bennett, Richard Thomas Strait, Jill Huppert, Melanie Hounchell, Regina Taylor, and Beth Schwartz

Female Lower Quadrant Abdominal Pain.

Biostatistics and Epidemiology; Emergency Medicine; Radiology » Marilyn Goske, Dianne Hater, Steve Kraus, Catherine Leopard, Shelia Salisbury, and Lisa Vaughn

Assessing Parents' Medical Literacy in Radiologic Fluoroscopic Procedures Before and After an Informational Brochure about the Procedure.

Pediatric Neurosurgery; Division of Nephrology; Radiology » Todd Abruzzo, James Leach, Francesco Mangano, John Bissler, and Blaise Jones

Phenotypes Among Children With Intracranial Arterial Aneurysms.

Hematology; Radiology » Michael Gelfand, Joseph Palumbo, and Susan Sharp

FDG PET in Langerhans Cell Histiocytosis.

Cancer and Blood Diseases; Radiology » Alexander Towbin, James Geller, Art Meyers, Amy Kolbe, and Dan Podberesky

Use of gadoxetate disodium in the diagnosis of pediatric hepatic lesions.

Cancer and Blood Disease; Biostatistics and Epidemiology; Radiology » David Larson, Janet Adams, Sara O'Hara, Beth Schnell, Charles Quinn, and David Dow

Comparison of the Toshiba Aplio Scanner to the Siemens Acuson Sequoia Scanner for Transcranial Doppler Ultrasonographic Detection of Cerebral Blood Flow Velocities.

Cancer and Blood Disease; Radiology » Susan Sharp, Michael Gelfand, and Michel Absalan

Altered FDG Uptake patterns in Pediatric Lymphoblastic Lymphoma Patients.

Oncology; UC Radiation Safety Office; Radiology » Michael Gelfand, Lisa Lemen, Victoria Morris, Brian Turpin, and Brian Weiss

Minimizing nuclear medicine technologist radiation exposure during 131I-MIBG Therapy.

Pediatric General and Thoracic Surgery; Radiology » Michael Gelfand, Timothy Cripe, and Susan Sharp
FDG PET Appearance of Local Recurrences of Malignant Bone Tumors After Limb Salvage Procedures.

Imaging Research Center; Cardiology; Radiology » Serai Suraj, Alan Brody, Kim Cecil, Charles Dumoulin, Robert Fleck, Kan Hor, Hee Kim, Dan Podberesky, Joshua Sticka, Michael Taylor, and Alex Towbin
Sequence Development and Optimization on Clinical MR Scanners.

Research Pathology; Radiology » Kim Hee Kyung, Kevin Bove, and Tal Laor
Quantitative Evaluation of the cartilage cap of osteochondromas: T2 relaxation time mapping and pathologic correlation.

Cancer and Blood Diseases; Radiology » Alex Towbin, Alexandra Filiprich, and Rupa Radhakrishnan
Radiology Findings in Patients with hemophagocytic lymphohisteocytosis.

Biostatistics and Epidemiology; Radiology » Alex Towbin, Shelby Fierke, David Larson, and Shelia Salisbury
Predictive Findings of Appendicitis on Ultrasound.

Research Pathology; Radiology » Tal Laor, Henry Baskin, Kathy Emery, and Yin Hong
MRI of Epiphyseal and Non-Epiphyseal Ends of Long Bones of the Hands and Feet in Children.

Heart Institute; Biostatistics and Epidemiology; Hopsital Medicine and Global Health Center; Radiology » Lilliam Ambroggio, Kara Fawley, Brian Coley, Daniel Weiser, Mantosh Rattan, Maurizio Macaluso, Sara O'Hara, Brieanne Sheehan, Alan Brody, Samir Shah, Matthew Test, Diane Babcock, and Mark Steinhoff
Diagnostic Tools for Detecting Pneumonia in Children.

Pediatric Surgery; Cancer and Blood Disease; Vascular Malformation; Pediatric and Thoracic Surgery; Radiology » Daniel Podberesky, Anusua Asgupta, James Geller, Chinnaya Parimi, Alex Towbin, Andrew Trout, Daniel von Allme, and Lars Wagner
CT Imaging of Pulmonary Parenchymal Nodules in Patients with Solid Organ Tumors: Use of Routine Reconstructions, Thin Volume Data Sets, and Maximum Intensity Projections.

Neurology; Imaging Research Center; Neurosurgery; Radiology » James Leach, Hansel Greiner, Scott Holland, Francesco Mangano, Douglas Rose, Leonid Rozhkov, Marko Wilke, and
Brain Imaging Analysis in Pediatric Epilepsy: Detection of Abnormal Cortex in Surgically Treated Patients.

Gastroenterology; Cardiology; Radiology » Daniel Wallihan, Kathleen Campbell, Bradley Marino, Dan Podberesky, Serai Suraj, and Joshua Sticka
Hepatic Imaging Abnormalities after Fontan Palliation.

Neurology; Neurosurgery; Research Pathology; Radiology » James Leach, Michael Gelfand, Hansel Greiner, David Henkel, Francesco Mangano, Lili Miles, and Leonid Roshkov
Imaging-Pathology Correlations in Pediatric Epilepsy.

Hematology; Biostatistics and Epidemiology; Radiology » Robert Fleck, Charles Quinn, Matthew Fenchel, Rhonda Strunk, Suraj Serai, and Daniel Podberesky
Retrospective Comparison of T2* and Ferriscan Analysis Methods for Estimating Liver Iron Content.

Pediatric General and Thoracic Surgery; Radiology » Maria Calvo-Garcia, Constance Bitters, Beth Kline-Fath, and Foong Yen Lim
Prenatal evaluation of fetal lower urinary tract obstruction: imaging findings to define underlying etiology.

Gastroenterology; Radiology; » Daniel Podberesky, Rohit Kohli, Stavra Xanthakos, and Serai Suraj
Liver Magnetic Resonance Elastography-Clinical Study in Children.

Neurosurgery; Radiology » James Leach, Luke Linscott, and Charles Stevenson

Post-Operative Cerebral Venous Thrombosis-Case Series and Literature Review.

Pediatric General and Thoracic Surgery; Pediatric Urology; Radiology » Maria Calvo-Garcia, Alberto Pena, Marc Levitt, Andrea Bischoff, Beth Kline-Fath, and Pramod Reddy

Prenatal diagnosis of variants of the exstrophy-epispadias complex (Covered cloacal exstrophy variants).

Cancer and Blood Disease; Radiology » Andrew Trout, Michael Gelfand, Susan Sharp, and Brian Turpin

Marrow stimulatory effects of granulocyte colony stimulating factors and their effect on PET Scans.

Gastroenterology; Radiology » Tom Lin, Sara O'Hara, and Albert Feng

Normograms for common bile duct diameter in the pediatric population.

Gastroenterology; Cardiology; Radiology » Dan Wallihan, Kathleen Campbell, Bradley Marino, Dan Podberesky, and Serai Suraj

Liver Elastography as a marker for progressive hepatic disease and failing Fontan physiology.

Neurology; Neurosurgery; Radiology » James Leach, Anan Weber Byars, Hansel Greiner, Craig Hansen , Darren Kadis, and Francesco Mangano

fMRI in Pediatric Epilepsy Surgery

Otolaryngology; Pulmonary Medicine; Radiology » Robert Fleck, Robin Cotton, Ravindhra Elluru, Sara Halula, Daniel Podberesky, Douglas Sidell, Robert Thomen, Jason Woods, Robert Wood, and Sarah Haula

Automated Segmentation and Derivatin of Normal Values for Dynamic Modeling of the Trachea in Health and Disease.

Critical Care Medicine; Radiology » Samraj Ravi, Sharon Banschbach, Eric Crotty, Eillen Catherine Beckman, Lesley Doughty, and Derek Wheeler

Procalcitonin Levels in Critically ill Children with Status Asthmaticus and Ractive Airway Disease.

Cancer and Blood Diseases; Radiology » Kalfa and Robert Fleck

TwiTCH Treatment Study

Cancer and Blood Diseases; Radiology » Nicholas Cost, Ashley Walther, James Geller, and Eric Crotty

Nephrometry for Renal Tumors

Cancer and Blood Diseases; Radiology » Karen Kalinyak and Robert Fleck

Rolse of Placenta Growth Factor in Sickle Acute Chest Syndrome.

Cancer and Blood Diseases; Radiology » Charles Quinn and Robert Fleck

Novel Cardiac Magnetic Resonance Imagine to Define a Unique Retrictive Cardiomyopathy in Sickle Cell Disease.

Endocrinology; Radiology » Gutmark Little and Robert Fleck

Computational Modeling Airway and Blood Vessels in Carious Endocrine Disorders.

Endocrinology; Radiology » Gutmark LIttle and Robert Fleck

Prediction of Sleep Disordered Breathing based on Airway Anatomy and flow in Turner Syndrome Patients.

Pulmonary Medicine; Radiology » John Clancy and Robert Fleck

Pilot Study of Cardiac MRI to assess pulmonary perfusion and pulmonary hemodynamics in patients with cystic fibrosis.

Pulmonary Medicine; Radiology » Rami Amin and Robert Fleck

Dynamic Compultational Modeling of Obstructive Sleep Apnea in Down Syndrome.

Cancer and Blood Disease; Radiology » Jennifer Williams, Denise Adams, Arnold Merrow, and Anita Gupta

2012-12-4-KLA

Cancer and Blood disease; Radiology » Denise Dams, Arnold Merrow, Ravindhra Ellurua, Alex Vinks, Renne Doughman, Donna Jackson, Christine Minges, Carol Chute, John Perentesis, Mary Sue Wnetzel, Lisa Campbell, Cara Wilbourn, Manish Patel, and Renne Doughman

SIR-DA-1202

Cancer and Blood Disease; Radiology » Hammill Adrienne, Anita Gupta, Erin Mundt, Arnold Merrow, Denise Adams, and Paula Mobberley Schuman

PTEN Mutations

Cancer and Blood Diseases; Radiology » James Gellar, Marueen O'Brien, Courtney Blank, Lori Miller, Kren Burns, Megan Westendorf, Lars Wagner, Laurie Jean Grimme, Christine Phillips, Jeny Thomas-quinn, Stacey Crane, Donna Jackson, Alex Towbin, Mariko Dewire, Beth Ann Stockman, Adrienne Hammill, Mary Suhre, Norma Wollum, Carrye Cost, Johannes C.M. van der Loo, Jonathan Fisk, Kamlesh Kukreja, Maryam Fouladi, Lane Satterthwate, laure Mayer, Denise Adams, Cara Wilburn, Brian Weiss, Lori Backus, Julie McDonald, Siri Steiner, Lionel Chow, Benjamin Mizukawa, Renee Doughman, Michael Absalon, Neill Johnson, John Racadio, Erin McGuire, Trent Hummel, Manish Patel, Jennifer Mangino, Brian Turpin, Michelle Bierman, Rajaram Nagarajan, and Mariane Torontali

A Phase I , Open-Label, Doe Escalation Study of JX-594 (Thymidine Kinase-inactivated Vaccinia Virus plus GM-CSF) Administered by Intratumoral Injection in Pediatric Patients with Unresectable Refractory Solid Tumors.

Technology Development; Imaging Research Center; Radiology » Charles Dumoulin, John Lanie, Yu Li, Diana Lindquist, Weihong Yuan, Scott Holland, Julie Franks-Henry, Kim Cecil, Janaka Wansapura, lacey Sickinger, Gregory Lee, Brynne Williams, Lisa Tully, Leonid Rozhkov, Rachel Wolf, Jean Tkach, Sara Simpson, John Racadio, Charles Dumoulin, Patrick Winter, Suraj Serai, Julie Young, Mark DiFrancesco, Michael Taylor, Sarah Finucane, Jason Woods, Jennifer Vannest, Kansie Somers, and

Technology Development on Clinical and Research MR Scanner.

Safe and Healthy Children; Radiology » Mary Greiner, James Leach, Marguite Care, and Broks Keeshin

Enlarge Subarachnoid Spaces

Neurology; Biostatistics and Epidemiology; PNRC; Biomedical Informatics; Radiology » Scott Holland, Gregory Lee, Jennifer Vannest, Mekibib Altaye, Anna Byars, Akila Rajagopal, Julie Franks-henry, Nautiah Robinson, Michael Wagner, Andrew Rupert, Nicholas Felicelli, Nicole Cicchino, Mark Schapiro, Kansie Somers, Sara Finucane, James Leach, and Mary Sroka

HHSN275200900018C, Pediatric Functional Neuroimaging Research Network

Psychiatry; PNRC » Scott Holland, Robert Kowatch, Jennifer Combs, K Robbins, Sarah Finucane, and Nicole Cicchino

Longitudinal Assessment of Manic Symptoms.

Biostatistics and Epidemiology; Neurology; PNRC » Scott Hollan, Mekibib Altaye, Anna Byars, and Mark Schapiro

fMRI Normal Languarge Development in Children.

Neurosurgery; PNRC; Biostatistics and epidemiology; » Weihong Yuan, Francesco Mangano, Scott Holland, Mekibib Altaye, Sarah Simpson, and Akila Rajagopal

Longitudinal DTI study in children treated for congenital hydrocephalus.

Rheumatology; PNRC » Mark DiFrancesco and Hermine Brunner

Improved Diagnostics & Advanced Magnetic Resonance Imaging for Pediatric NPSLE.

Pediatric Medicine and Rehabilitation; PNRC » Weihong Yuan and Shari Wade
Effects of Cognitive training on attention following pediatric TBI.

Pulmonary; PNRC » Mark DiFrancesco and Raouf Amin
Disorder of Central Cardiolbascular Control in Children with OSA.

Behavioral Medicine and Clinical Psychology; PNRC » Mark DiFrancesco and Dean Beebe
Effect of Adolescent Sleep Restriction on Neural and Neurobehavioral Functioning.

Biostatistics & Epidemiology; Imaging Research Center » Janaka Wansapura and Rhonda Szczesniak
Cardiac structure and function in early familial cardiomyopathy.

Pediatric Otolaryngology; Pulmonary Medicine; Anesthesia; Biostatistics & Epidemiology; Radiology; Imaging Research Center » Robert Fleck, Charles Dumoulin, Sally Shott, Raouf Amin, Katie VanDeGrift, Keith McConnell, Mohamed Mahmoud, Matthew Fenchel, Rhonda Szczesniak, , and
Dynamic Computational Modelin of Obstructive Sleep apnea in Down Syndrome (DYMOSA).

Speech-Language Pathology; Neurology; Imaging Research Center » Jean Tkach, Thomas Maloney, Erin Redle, Jennifer Vannest, and Kate Hibbard
Functional MR Imaging Study of Speech Production in Childhood Apraxia of Speech.

Pulmonary Medicine; Radiology; Imaging Research Center » Alan Brody, Robert Fleck, and John Clancy
MR predictors of infection, inflammation, and structural lung damage in CF.

Neurology; Imaging Research Center » Kim Cecil and Donald Gilbert
2/2-anomalous Mortor Physiology in ADHD.

Biostatistics and Epidemiology; Imaging Research Center » Kim Cecil and Patrick Ryan
Neurobehavioral and neuroimaging effects of traffic exposure on children.

Nephrology; Image Research Center » Charles Dumoulin, John Bissler, and Yu Li
TS Alliance Courage Award

Neonatlogy and Pulmonary Biology; Image Research Center » Jean Tkach and Andrew South
Intestinal Motility and Gastroschisis.

Grants, Contracts, and Industry Agreements

Grant and Contract Awards		Annual Direct
AMIN, R / FLECK, R / GUTMARK, E / SHOTT, S		
Dynamic Computational Modeling of Obstructive Sleep Apnea in Down Syndrome		
National Institutes of Health		
R01 HL 105206	09/17/10-08/31/14	$750,679
BALL, W		
Silent Cerebral Infarct Multi-Center Clinical Trial		
National Institutes of Health(Washington University)		
U01 NS 042804	09/30/03-06/30/13	$6,739
BRODY, A		

Therapeutic Development Center - TDN Imaging Center

Cystic Fibrosis Foundation Therapeutics, Inc.

11/3/03-12/31/13 $17,723

DUMOULIN, C

Endorectal Prostate MRI w/Tetrahedron Tracking: Better Cancer Delineation

National Institutes of Health(Brigham & Women's Hospital)

R21 CA 158987 07/01/12-06/30/14 $35,000

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

National Institutes of Health(Stanford University)

R01 CA 121163 04/01/06-05/31/14 $49,020

Ohio Third Frontier Medical Imaging Program

Ohio Department of Development(GE Healthcare)

ODODTECH11-49 07/15/12-07/14/14 $144,712

HOLLAND, S

Pediatric Functional Neuroimaging Research Network

National Institutes of Health

HHSN275200900018C 09/28/09-09/27/14 $1,271,869

Reading Fluency Training in Grade 4 and Reading and Writing Fluency Training in Grade 5

US-Israel Binational Science Foundation

2009053 09/01/11-08/31/13 $15,000

The Ability of Executive Functions and Reading to Improve Following Reading Intervention among Children with Reading Disability: An fMRI Study

University of Cincinnati

07/01/12-06/30/13 $25,000

KIM, H

MR Quantification of Muscular Fat in Duchenne Muscular Dystrophy: Integrating T2 Relaxation Time Mapping and MR Spectroscopy

RSNA Research & Education Foundation

RSCH1204 07/01/12-06/30/14 $76,000

LEACH, J

Diagnostic Imaging Review: NIH COG Chair Grant

National Institutes of Health(Children's Hospital of Philadelphia)

U10 CA 098543 03/01/13-02/28/14 $1,848

LI, Y

MR-guided HIFU for Cancer Therapy

St. Baldrick's Foundation

Baldrick 2012 07/01/12-06/30/13 $100,000

Non-Invasive MR-Guided HIFU Therapy of TSC-Associated Renal Angiomyolipomas
Department of Defense

W81XWH1110299	07/01/11-06/30/13	$50,467

LINDQUIST, D

Epigenetics of Lead Toxicity in Mouse Brain
National Institutes of Health(University of Cincinnati)

R21 ES 020048	06/09/11-05/31/13	$29,304

White Matter Protection in Acute Ischemic Stroke
National Institutes of Health(Emory University)

R21 NS 074559	09/10/12-06/30/13	$21,287

TOWBIN, A

Diagnostic Imaging Review: NIH COG Chair Grant
National Institutes of Health(Children's Hospital of Philadelphia)

U10 CA 098543	03/01/13-02/28/14	$1,725

WANSAPURA, J

Cardiac Structure and Function in Early Familial Cardiomyopathy
National Institutes of Health

K25 HL 102244	04/15/10-03/31/15	$135,039

YUAN, W / MANGANO, F (MPI)

Longitudinal DTI Study in Children Treated for Congenital Hydrocephalus
National Institutes of Health

R01 NS 066932	09/30/09-06/30/13	$369,849

Current Year Direct **$3,101,261**

Industry Contracts

BRODY, A

PTC Therapeutics, Inc.	$31,244

FLECK, R

Bayer HealthCare Pharmaceuticals, Inc.	$12,320

Current Year Direct Receipts **$43,564**

Funded Collaborative Efforts

BRODY, A

MR predictors of infection, inflammation, and structural lung damage in CF

National Institutes of Health

Clancy, J	9/26/12-6/30/13	5%

CECIL, K

2/2-Anomalous Motor Physiology in ADHD

National Institutes of Health

Gilbert, D	5/15/2012-4/30/2014	16%

Neurobehavioral and Neuroimaging Effects of Traffic Exposure on Children

National Institutes of Health

Ryan, P	7/1/2012-3/31/2014	20%

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

University of Cincinnati

Dietrich, K	6/1/2007-3/31/2013	26%

Epigenetics of Lead Toxicity in Mouse Brain

University of Cincinnati

Lindquist, D	06/09/11-05/31/13	5%

DIFRANCESCO, M

Cincinnati Multidisciplinary Clinical Research Center

National Institutes of Health

Lovell, D	09/01/01-07/31/13	20%

Effects of Adolescent Sleep Restriction on Neural and Neurobehavioral Functioning

National Institutes of Health

Beebe, D	09/01/09-07/31/13	40%

DUMOULIN, C

Cincinnati Center for Clinical & Translational Sciences & Training

University of Cincinnati

Heubi, J	04/03/09-03/31/14	8%

Dynamic Computational Modeling of Obstructive Sleep Apnea in Down Syndrome

National Institutes of Health

Amin, R / Fleck, R / Gutmark, E / Shott, S	09/17/10-08/31/14	3%

Non-Invasive MR-Guided HIFU Therapy of TSC-Associated Renal Angiomyolipomas

Department of Defense

Li, Y	07/01/11-06/30/14	2%

TS Alliance Courage Award

Tuberous Sclerosis Alliance

Bissler, J	03/15/11-06/30/13	3%

FLECK, R

MR predictors of infection, inflammation, and structural lung damage in CF

National Institutes of Health

Clancy, J	9/26/12-6/30/13	10%

HOLLAND, S

Imaging the effect of centrotemporal spikes and seizures on language in children

National Institutes of Health

Vannest, J	09/15/11-06/30/16	2%

Longitudinal Assessment of Manic Symptoms (LAMS)

National Institutes of Health

Kowatch, R	09/16/05-02/28/15	27%

Effects of Adolescent Sleep Restriction on Neural and Neurobehavioral Functioning

National Institutes of Health

Beebe, D	09/01/09-07/31/13	2%

Longitudinal DTI study in Children Treated for Congenital Hydrocephalus

National Institutes of Health

Yuan, W	09/30/09-06/30/13	5%

LEACH, J

Pediatric Functional Neuroimaging Research Network

National Institutes of Health

Holland, S	09/28/09-09/27/14	10%

LEE, G

Pediatric Functional Neuroimaging Research Network

National Institutes of Health

Holland, S	09/28/09-09/27/14	31%

LI, Y

TS Alliance Courage Award

Tuberous Sclerosis Alliance

Bissler, J	03/15/11-06/30/13	4%

TKACH, J

Intestinal Motility and Gastroschisis

The Gerber Foundation

South, A	07/01/13-06/30/16	10%

WINTER, P

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

National Institutes of Health

Butts Pauly, K	04/01/06-05/31/14	6%

YUAN, W

Effects of Cognitive training on attention following pediatric TBI

Ohio EMS

Wade, S	07/01/11-06/30/13	5%

Total	**$3,144,825**