

RADIOLOGY RESEARCH UPDATE July 2016 Issue 1

Department of Diagnostic Radiology and Nuclear Medicine

FACULTY SPOTLIGHT

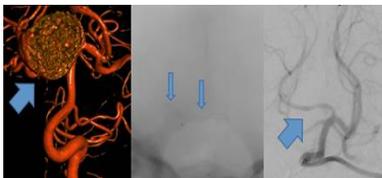
Dheeraj Gandhi, MBBS is a Professor of Radiology, Neurology and Neurosurgery and Chief of Interventional Neuroradiology.



As an active researcher and educator in the field of interventional neuroradiology, his research has focused on minimally invasive techniques for treatment of neurovascular pathologies. Dr. Gandhi's group has investigated novel ways of imaging and endovascular treatment of intracranial aneurysms which were traditionally considered untreatable or carried a high risk of rupture with endovascular technique. His group is studying the impact of flow

diversion on safety and durability in the treatment of intracranial aneurysms and recently reported one of the largest single center experiences on Pipeline Flex, a second generation flow diverter. They demonstrated that the use of Pipeline Flex significantly reduces the total procedure and fluoroscopy time, contrast usage, patient radiation exposure, and proportion of recaptured devices in comparison with the Pipeline Classic.

As the clinical director of the Center for Metabolic Imaging and Therapeutics (CMIT) that houses the MR guided focused ultrasound system, he has been an integral part of a multidisciplinary team consisting of radiology, neurology and neurosurgery that has played a crucial role in the recently completed multicenter essential tremor trial and an ongoing Parkinson's trial. Working closely with **Dr Gullapalli's** lab, Dr Gandhi is investigating the use of diffusion tensor imaging to precisely direct focused ultrasound and ablate small nuclei in thalami of patients. Efforts are also underway to expand the use of this technology in the treatment of conditions such as neuropathic pain and intracranial hemorrhages.



Giant aneurysms of cerebral circulation carry very high morbidity and mortality. (a) giant aneurysm of right posterior cerebral artery is evident. (b) This is treated with pipeline flow diversion. (c) Complete occlusion of this lesion, with reconstruction of the posterior cerebral artery.

We welcome your contributions.
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3 FACULTY AWARDED RSNA GRANTS - *An Unprecedented Record*

David Dreizin, MD was awarded a \$152,000 Research Scholar Grant to develop and validate an MDCT-based decision support and outcome prediction tool for bleeding pelvic fractures. **Prashant Raghavan, MD** was awarded an RSNA Seed grant of \$40,000 to investigate neural network disruption to predict neurodevelopmental outcome in perinatal hypoxic-ischemic injury. **Derik L. Davis, MD** also received an RSNA seed grant of \$40,000 to study the association of the intramuscular fatty infiltration in the functional outcome and re-tear rate following surgical repair of rotator cuff tears.

Research Day

Dr. Alexander Norbash, MD, MS, Professor and Chairman of Radiology at the University of California, San Diego School of Medicine, was the Keynote Speaker at the 12th Annual John M. Dennis, MD Research Day. He spoke on "Leadership: Examples, Body of Knowledge, and Lessons Learned." At the ceremonies, **Dirk Mayer, PhD** was awarded the 2016 Reuben S. Mezrich Research Prize for his outstanding work on hyperpolarized MR, and **Paul B. Stoddard, MD, PGY-5**, was awarded the 2016 RSNA Resident Research Award.

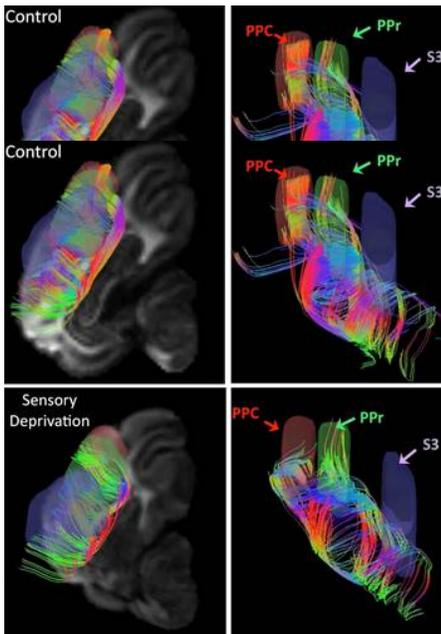


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TECHNIQUE HIGHLIGHT

Dr. Prashant Raghan, Dr. Rao Gullapalli & Dr. Jiachen Zhou have been actively working with investigators in Pediatrics (Dr. Alex Medina, Dr. Cynthia Bearer, & Dr. Dina El-Metwally) to establish a neurodevelopment research program. Research is underway to understand neurodevelopmental trajectories, including work on pre-clinical models. The image below showcases 3D diffusion kurtosis imaging (DKI) acquired on infant ferret brains subjected to sensory deprivation. Tractography seeded



in the posterior parietal cortex (PPC) shows reduced fiber tracts to the rostral posterior parietal (PPr) and somatosensory cortex (S3) compared to the control animal representing reduced axonal maturity and organization within crucial multisensory processing pathways. Armed with very promising preliminary data, the above group, along with Dr. Su Xu, recently submitted a P01 grant titled, "Cortical Multisensory Connectivity: a Predictor of Neurodevelopment Outcome."

RESIDENT ROUNDUP

As a first year resident, **Michael Morris, MD** began working with mentor **Eliot Siegel, MD** on a project exploring skin cancer imaging using the emerging technology of ultrasound elastography. They, along with **Bahar Dasgeb, MD**, a dermatologist at Memorial Sloan Kettering Cancer Center who completed a nuclear medicine residency here and **Darius Mehregan, MD**, of Wayne State University, published "Quantified Ultrasound Elastography in the Assessment of Cutaneous Carcinoma" in the *British Journal of Radiology*. A follow-up study was also presented at RSNA 2015. A manuscript about this research is currently under review.

SPR GRANT AWARDED

The Society for Pediatric Radiology (SPR) awarded a \$10,000 Education Project Award to **Jane Kim, MD**, Assistant Professor and residents **Cara Morin, MD, PhD**, **Jason Hostetter, MD**, and **Steven Rothenberg, MD**, for "MOOC-based Repetitive Image Quizzes for Learning Concepts in Pediatric Radiology." The grant will allow them to expand and refine the quiz program for residents that they developed over the past two years.

SELECTED PUBLICATIONS

Zahr NM, Sullivan EV, Rohlfing T, **Mayer D**, Collins AM, Luong R, Pfefferbaum A. Concomitants of alcoholism: Differential effects of thiamine deficiency, liver damage, and food deprivation on the rat brain in vivo. *Psychopharmacology (Berl)*. 2016. Jul;233(14):2675-86.

Menon RG, Miller GW, **Judy J**, Rajagopalan S, **Shin T**. Free breathing three-dimensional late gadolinium enhancement cardiovascular magnetic

resonance using outer volume suppressed projection navigators. *Magn Reson Med*. 2016 Apr 28

Davis DL, Resnik CS. Case 229: Burn-related global ankylosis of interphalangeal joints with associated acroosteolysis. *Radiology*. 2016 May;279(2):645-9.

Talaie T, Pratt SJ, Vanegas C, **Xu S**, Henn RF 3rd, Yarowsky P, Lovering P. Site-specific targeting of platelet-rich plasma via superparamagnetic nanoparticles was the winner of the 2016 OJSM Award for Best Original Research, which is given for the most outstanding research paper that appeared in the *Orthopaedic Journal of Sports Medicine* in 2015.

ISMRM RECAP

The International Society for Magnetic Resonance in Medicine held its 24th Annual Meeting in Singapore in May. A number of faculty, students, and post docs attended. Of note, *Postdoctoral Fellow Stephen DeVience, PhD* received a *Magna Cum Laude* award from the ISMRM Program Committee and won 2nd place for his presentation selected by the *Hyperpolarization Methods and Equipment Study Group*. Graduate students *Chia-Chu Chou* and *Shiyu Tang* were awarded the *Educational Stipend*.

INTRODUCING ILAB

UMSOM has launched an online iLab system to facilitate ordering research. Services offered by the Core for Translational Research in Imaging (CTRIM), which includes both human and animal imaging research can now be ordered using the iLab system once the investigator is a registered user. To register for an iLab account, go to <https://cibr.umaryland.edu>. Questions regarding service requests, please contact **Jiachen Zhuo, PhD** (jzhuo@umm.edu) for human imaging, and **Su Xu, PhD** (sxu@umm.edu) for animal imaging.