FACULTY SPOTLIGHT

Uttam Bodanapally, MBBS, Assistant Professor, joined the department in 2007 in the emergency and trauma section. He has pioneered the use of dual-energy CT (DECT) in detecting hemorrhagic contusions, an interest spurred after observing higher hemorrhagic contusion volumes on follow-up 120 kV images when compared to 190 keV images. He and his colleagues demonstrated that the discrepancy in measured volumes is caused by iodinated contrast leak likely through the dysfunctional and fragmented microvasculature in the penumbra of the contusions, a "pseudo-hematoma." Hence, 190 keV or virtual non-contrast images demonstrate the actual hematoma size. With the mean fraction of pseudo-hematoma to the true hematoma of 0.29 or 29%, hemorrhagic progression of contusions could be overestimated in approximately 30% of patients. His team recently finished conducting follow-up studies and found a strong predictive capability of iodine quantification in contusion in determining in-hospital mortality, Ranchos Los Amigos Scale, and disability rating score at hospital discharge. The results were presented at the NeuroTrauma and RSNA meetings in 2018 and published in *AJNR* and *Journal of Neurotrauma*.

Recently, Dr. Bodanapally and Co-I **Thorsten R. Fleiter, MD** were awarded an $85,000 grant from Siemens Medical Solutions, USA, for "Artificial Intelligence (AI) Pipeline in Detection of Traumatic Intracranial Bleeds on Head CT." The study concerns the automated detection of bleeding in trauma patients using AI. The retrospective study will assess to what extent the use of AI can increase diagnostic accuracy when compared to the unaided human reader. In addition, differences in algorithm performance when applied to either dual energy-derived images or conventional polyenergetic images will be assessed.

WELCOME, DR. TEE

Sui-Seng Tee, PhD recently joined the department as an assistant professor. Prior to his appointment, he was a research associate in the department of radiology at Memorial Sloan Kettering Cancer Center. His research interests are in the areas of cancer signaling pathways and metabolism. His expertise will significantly strengthen the ongoing hyperpolarized MRI research program.

GRAND INAUGURATION!
Maryland Center for Advanced Imaging Research (MCAIR)

Friday, March 15, 2019
1:00pm-3:00pm
HSF-III First Floor Auditorium
followed by a wine & cheese reception and facility tours. RSVP: bstewart@umm.edu

NEW RADIOLOGY RESEARCH WEBSITE LAUNCHED
We are pleased to announce that under the leadership and direction of **Dr. Thomas Ernst** (pictured above) and **Dr. Rao Gullapalli**, a website featuring MCAIR launched in November 2018.
We encourage you to visit the site: http://www.medschool.umaryland.edu/mcair/

TECHNIQUE HIGHLIGHT: Neuronal Tract Tracing Technique Substantiates Functional Connectivity Related to Auditory-tactile Multisensory Area

by: Shiyu Tang, PhD

Our interest in the developmental aspects of multisensory processing led us to examine connectivity of an auditory-tactile multisensory area in the ferret cortex, the lateral rostral suprasylvian sulcal area (LRSS), using two neural connectional techniques: a retrograde neuronal tract tracing technique using pressure injections of the tracer biotinylated dextran amine (BDA) directly in the LRSS, and resting state functional magnetic resonance imaging (rsfMRI). Our results indicate that the intrinsic functional architecture detected by rsfMRI is associated with anatomical connections detected by the BDA technique in various levels, as shown in the figures, largely substantiating the rs-fMRI findings.

Figures in the second column show anatomical and functional connectivity of a ferret auditory-tactile integrative region. Neurons projecting to LRSS are identified with BDA tracing (shown as black dots in the top figure). Regions showing resting-state functional connectivity with LRSS are highlighted in warm color (middle figure). Relationship between anatomical connections and functional connectivity (r2 = 0.24, p = 0.011) (bottom figure). Regions (hollow circles) having functional connectivity but no anatomical connectivity indicate the existence of anterograde or multi-synaptic connections with LRSS.
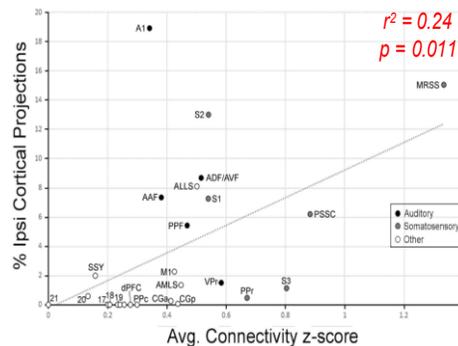
Neurons projecting to LRSS
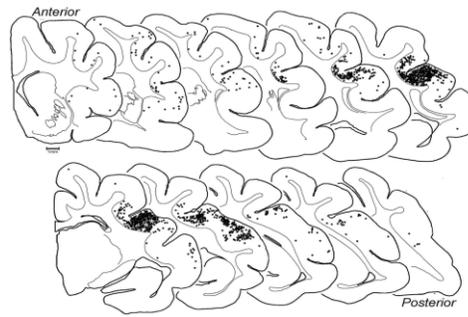
LRSS functional connectivity
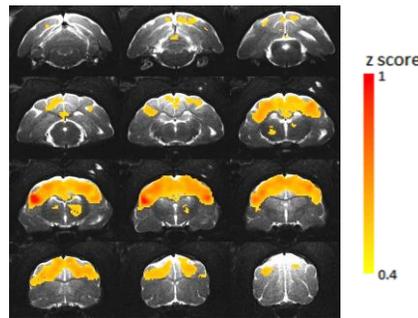
Tracer - rsfMRI correlation

$r^2 = 0.24$
$p = 0.011$

Source: *Meredith MA, Pricket, EH, Gullapalli RP, Tang S, Medina AE. Connectivity of the ferret multisensory cortical LRSS area by tracer (BDA) and by rsfMRI methods. Society for Neuroscience, 2018, San Diego.*

Editor's Note: Congratulations to Dr. Tang for successfully defending her thesis on November 8th!

MARYLAND NEUROIMAGING RETREAT

The annual meeting will be held April 9, 2019 in SMC Campus Center. The focus this year is "Functional Neuroimaging of Brain Development, Disorders and Disease."
Click to register

FEATURED PUBLICATIONS

Liang B, Zhang L, Barbera G, Fang W, Zhang J, Chen X, **Chen R**, Li Y, Lin DT. Distinct and Dynamic ON and OFF Neural Ensembles in the Prefrontal Cortex Code Social Exploration. *Neuron*. 2018 Nov 7;100(3):700-714.

Hanna-Pladdy B, Choi H, Herman B, Haffey S. Audiovisual Lexical Retrieval Deficits Following Left Hemisphere Stroke. *Brain Sci*. 2018 Nov 28;8(12).

MOVE TO HSF-III

Research faculty and staff began moving into the HSF-III building late last year and more are following. Both the new Siemens PRISMA and the PET-MR scanner (mMR BioGraph, the first PET-MR system in Maryland outside of NIH) are operational. The new Bruker 9.4T MR is slated to be ready for operation by mid-February.

Congratulations to **Dr. Rob Morales**, the lucky winner of the "*Free Lunch with the Research Administration Team*"! The drawing was offered at the Radiology Research Holiday Party.