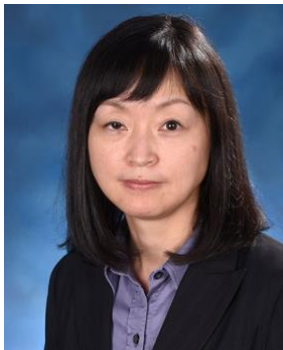


# RADIOLOGY RESEARCH UPDATE *April 2022, Issue 23*

Department of Diagnostic Radiology and Nuclear Medicine

## FACULTY SPOTLIGHT



Associate Professor

**Peiying Liu, PhD** is a recognized leader in physiological MRI of the brain. Dr. Liu's research is focused on the development and implementation of MRI techniques to evaluate neural function and vascular health of the brain and use them to understand brain pathophysiology.

Dr. Liu has received continuous NIH funding since 2014 and currently has three projects under investigation. She has an R01, "Gas-free Cerebrovascular Reactivity (CVR) MRI in Vascular Cognitive Impairment," which focuses on CVR, an index of cerebral vessels' capacity to dilate in response to stimulation. The overarching hypothesis is that CVR is a plausible biomarker for the diagnosis of vascular cognitive impairment, for which no

other biomarkers are currently available. Current CVR mapping methods typically require hypercapnic gas inhalation or breath-holding as a vasoactive challenge, which require considerable subject cooperation and could be challenging in some clinical studies. Therefore, the central goal of this project is to develop the next-generation CVR technology without the use of any gas challenges. The new gas-free CVR mapping technique, which is based on the fluctuations of the subjects' breathing pattern, can provide comparable sensitivity to CO<sub>2</sub>-inhalation CVR but with a higher level of comfort for patients.

Another R01, "Assessment of Brain Oxygen Consumption in Neonates Using MRI," involves development and evaluation of the clinical utility of novel biomarkers related to the neonatal brain's oxygen utilization, including cerebral metabolic rate of oxygen (CMRO<sub>2</sub>) and its key component, oxygen extraction rate (OEF). PET methods that have been used for adult CMRO<sub>2</sub> imaging cannot be easily used in the neonatal

population due to the complexity of the procedures and radiation concerns. The goal is to develop an MR based technique to measure OEF and CMRO<sub>2</sub> without using any exogenous contrast agent. A critical component in OEF and CMRO<sub>2</sub> quantification is venous oxygen saturation. In this project, the team will devise a novel pulse sequence, accelerated T<sub>2</sub>-Relaxation-Under-Phase-Contrast, to measure venous oxygenation in a region-specific manner, from which OEF and CMRO<sub>2</sub> will be quantified.

Lastly, an R21, "Calibration of fMRI in Emotional Aging," aims to measure vascular function in the aging brain and examines how emotional brain circuits are modified by age-related changes in vascular function. This represents the first study in the field to characterize age-related differences in the emotional neural circuit using advanced, vascular-corrected fMRI techniques.

## ALAVI-BRADLEY SYMPOSIUM

The inaugural Alavi-Bradley Symposium on Molecular Imaging and

Theranostics, will take place on May 24, 2022 at the SMC Campus Center.

This symposium is made possible by generous donation from Dr. Abass Alavi and his wife, Dr. Jane Alavi. The goal of the symposium is to bring together physicians, scientists, and students interested in advancing molecular imaging and developing theranostic agents and applications for image-guided therapy. Dr. Alavi will give the keynote address.

[For more information, and to register, click here](#)

## RESIDENT RESEARCH & PUBLICATIONS

### *Congratulations to:*

**Elham Beheshtian, MD**, PGY 2, who received the American Roentgen Ray Society Resident/Fellow in Radiology Award. She will be honored with the award at the ARRS meeting this May. Dr. Beheshtian is the first author of a paper that evaluated systematic bias in a bone age AI algorithm. The award reflects the team effort of Dr. Beheshtian and her mentors **Paul Yi, MD**, and **Vishwa Parekh, PhD**, the incoming Technical Director of University of Maryland Medical Intelligent Imaging (UM2ii) Center. Dr. Yi is the senior author.

*and*

**Lakir D. Patel, MD**, PGY 5 and Senior Chief and **Jonathan Ciriello, MD**, PGY3, **Kelly Bridgham, MS4** along with their faculty mentors, on the publication of **Patel LD, Bridgham K, Ciriello J, Almardawi R, Leon J, Hostetter J, Yazbek S, Raghavan P**. PET/MR Imaging in Evaluating Treatment Failure of Head and Neck Malignancies: A Neck Imaging Reporting and Data System-Based Study. AJNR Am J Neuroradiol. 2022 Feb 17. Epub.

*and*

**Luke Miller, MD**, PGY 3, **James Tonascia, MD**, PGY 3, along with Dr. Awan, on the publication of **Miller L, Tonascia J, Awan OA**. Augmenting Medical Student Education: A Radiology Resident Perspective. Acad Radiol. 2022 Feb 12. Epub

## GRANTS



**Rong Chen, PhD**, received a \$163,687 administrative supplement to his R01 grant titled, "Dissemination of Real-time Neural Decoding for Cellular Imaging Laboratory."



**Linda Chang, MD, MS**, and Donna Calu, PhD, Assistant Professor, Department of Anatomy and Neurobiology, were the recipients of a one-year, \$100,000 award from the Focused Ultrasound Foundation for "Focused Ultrasound for Neuromodulation in the Treatment of Opioid Addiction."



**Vikas Kundra, MD, PhD** received a \$89,772 subcontract from UC Riverside on an NSF EAGER grant titled "Dual Magnetic Resonance and Optical Modalities for Image-guided Early Detection, Staging, and Resection of Ovarian Tumors," where he is a significant coinvestigator.

## IN THE NEWS

Dr. **Ze Wang**'s research on sleep effects on the adolescent brain and mental health was featured in *Newsweek* ([read it here](#)) and *PsyPost* ([read it here](#))

Drs. **Piotr Walczak** and **Mirosław Janowski**'s research on opening the blood brain barrier was featured in a SOM press release ([read it here](#))

Dr. **Omer Awan** appeared on FOX45 twice, on WJZ once, and WBAL once to speak about COVID-19 and imaging. ([view them here](#))

## KUDOS

**Paul Yi, MD**, received the Young Investigator Travel Award from Society of Skeletal Radiology. Also, Dr. Yi and **Vishwa Parekh, PhD**, of University of Maryland Medical Intelligent Imaging (UM2ii) had eight abstracts accepted to the Society for Imaging Informatics 2022 Annual Meeting (six podium presentations and two posters) – one of these was selected for The Helen and Paul Chang Foundation New Investigator Travel Award (Yi Lab trainee **Kesavan Venkatesh**). Lastly, the RSNA R&E Foundation is planning to highlight Dr. Yi's artificial intelligence work in an article that will be part of an official RSNA newsletter published this spring.

**Omer Awan, MD, MPH**, placed in the top 0.1% of scholars writing about teaching over the past ten years, a level Expertscape's PubMed-based algorithms labels as "World Expert." As part of their "Daily Experts" announcements to recognize world experts, on January 24, 2022, Expertscape tweeted the following: "Jan 24 is International Day of Education. So, congratulations to Dr. Omer Awan of the University of Maryland Baltimore— Recognized as an Expertscape World Expert in Teaching."

## NEW RESEARCH ADMINISTRATION STAFF MEMBERS



**Olga Aquino** is the department's new contracts and grants specialist. Her extensive experience includes 12 years at JHU as a program specialist. Since 2002, she has worked in various positions within the University of Maryland system. Most recently, she spent three years at SOM's Center for Vaccine Development as a grants and contracts specialist working with faculty on pre- and

post-award grant administration. She is located in the 100 N. Greene St. building and may be reached at:

[oaquino@som.umaryland.edu](mailto:oaquino@som.umaryland.edu)



**Charlesa Plummer** is a clinical research supervisor. She has over nine years of experience in clinical research, most recently at Johns Hopkins, where she started her career in radiation oncology. She has a certification in Clinical Research Project Management through the Association of Clinical Research Professionals. Charlesa may be reached at: [charlesa.plummer@som.umaryland.edu](mailto:charlesa.plummer@som.umaryland.edu)

**Autumn Hentrich** is a research program coordinator for vascular and interventional radiology. She has over ten years of clinical research experience, most recently at Johns Hopkins University where she worked in phase 1 investigational infectious disease vaccine research. She has worked in public health for 20 years. She can be reached at [autumn.hentrich@umm.edu](mailto:autumn.hentrich@umm.edu)