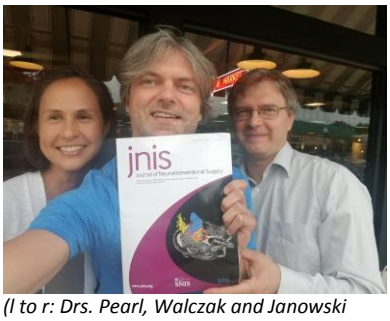
UNIVERSITY of MARYLAND SCHOOL OF MEDICINE

RADIOLOGY RESEARCH *UPDATE* *Winter 2020, Issue 15*

Department of Diagnostic Radiology and Nuclear Medicine

NEW PROGRAM SPOTLIGHTED

Professor **Piotr Walczak, MD, PhD** and Associate Professor **Miroslaw Janowski, MD, PhD,** longstanding collaborators with more than 50 jointly published papers, joined the department's Center for Advanced Imaging Research last fall and are spearheading the new Program for Image Guided Neurointerventions (PIGN). They also are members of the UM Greenebaum Comprehensive Cancer Center's Tumor Immunology and Immunotherapy Program. Their team consists of Assistant Professor **Yajie (Kevin) Liang, PhD**, research associate **Anna Jablonska, PhD**, post-doctoral fellows **Xiaoyan Lan, MD, Yue Gao, MD, Chengyan Chu, MD**, graduate student **Jipeng Zhang, MS**, visiting scientist **Athar Shadmani** and high school intern **Dariush Aligholizadeh**. The group is complemented by Adjunct Associate Professor **Monica Pearl, MD,** an interventional neuroradiologist from JHU and Children's National Hospital. Altogether, the team has over $1M in current year direct cost research funding from NIH and the Maryland Stem Cell Research Fund. These resources and projects converge on developing multimodality imaging tools for advanced image guidance of therapies for neurological and neurooncological disorders, which is the main mission of PIGN.



(l to r: Drs. Pearl, Walczak and Janowski celebrate the cover image from their paper on the first-in-man, real-time MRI guided neuroendovascular procedure)

Dr. Walczak's current research focuses on developing non-invasive imaging-based methods to guide therapies of the central nervous system. Dr. Walczak's effort towards in-depth understanding of the processes governing brain accumulation and function of injected stem cells and other therapeutics requires sophisticated tools. He will supplement the existing state-of-the-art imaging infrastructure within CAIR with the latest intravital two-photon microscopy.

Dr. Janowski, a neurosurgeon by training, focuses on clinical translation of advanced image guidance to neurointerventions within a paradigm of precision medicine. Dr. Janowski's expertise and interest also is in radiolabeling of macromolecules and interventional PET imaging. Because it is highly sensitive and quantitative, this method is ideal for guiding precision and improving targeting of therapeutic agents to the brain.

Both state-of-the-art intravital two-photon microscopy and macromolecule radiolabeling cores are new and unique additions to UMB's portfolio of expertise and instrumentation.

Drs. Walczak, Janowski and Pearl invented and patented a method that allows the prediction of a territory of blood brain barrier opening using real-time feedback from MRI. Based on this invention, they launched a startup called IntraART, LLC to develop and commercialize a tool capable of quantitative real-time MRI. They are also initiators and founding members of a new Society for Image Guided Neurointerventions (SIGN) registered in Maryland, but with a global reach to promote the development of tools and strategies for monitoring brain penetration and clearance of the rapidly growing arsenal of neurotherapeutic agents. The inaugural SIGN conference was held in Warsaw, Poland (2018), followed by Baltimore (2019), and SIGN 2020 will be held June 29-30 in Warwick, UK.

NEW CAIR BUSINESS OPERATIONS MANAGER

Kathleen Gatchalian-Magtibay, MBA has been appointed business operations manager of CAIR. She has been with UMB for nine years, most recently as a senior grants and contracts administrator with

the Institute of Human Virology. Her office is located in HSF III, Rm. 1181, and she may be reached at (410) 706-4206 JKGatchalian@som.umaryland.edu

Welcome, Kathleen!

GRANTS

Miroslaw Janowski, MD, PhD, was awarded a two year, $345,000 grant by Maryland Stem Cell Research Commission/Maryland Technology Development Corporation (TEDCO) for "Image-guided, Intra-arterial Delivery of Human Mesenchymal Stem Cell-derived Extracellular Vesicles for Treatment of Ischemic Stroke."

Rao P. Gullapalli, PhD, MBA, was awarded a two year $234,989 grant from Walter Reed Army Institute of Research to study RAT/FERRET Characterization and Comparison of Ferret to Rat Traumatic Brain Injury. Dr. Gullapalli also was awarded a fifteen month, $101,700 grant from the Focused Ultrasound Foundation for "The Feasibility of Targeting Temporal Lobe using Transcranial MRI- Guided Focused Ultrasound."

Dheeraj Gandhi, MBBS was awarded a three year, $180,000 grant by MicroVention, Inc for "Sofia® Aspiration System as First Line Technique." Dr. Gandhi will serve as the national PI.

Victor Frenkel, PhD was awarded a five-year, $165,771 RO1 Subcontract for "HIV Theranostic." Dr. Frenkel also was awarded a one year $156, 826 grant from Maryland Development Center LLC/ DARPA SBIR Phase II to study Wearable Ultrasound for Imaging and Modulation (Sub No: S-120119-CP9 DARPA PHII)

Thomas Ernst, Dr rer nat, and **Linda Chang, MD, MS**, (MPIs; Subcontract from University of Utah, Prescot, PI), were awarded a one year NIH $154,500 grant for "Brain MRS GABA Measures, Impulsivity and the Adolescent Brain."

Mark Smith, PhD (PI) and **Thomas Ernst, Dr rer nat**, (Co-I) were awarded a three year, $105,000 grant by Siemens Medical Solutions, USA, Inc for "Brain Pet Motion Correction on the Biograph mMR using KinetiCor Camera Head Tracking Device."

FEATURED PUBLICATIONS

Expert Panel on Urological Imaging, Purysko AS, Nikolaidis P, … **Wong-You-Cheong JJ**, et al. ACR Appropriateness Criteria® Post-Treatment Follow-up and Active Surveillance of Clinically Localized Renal Cell Cancer. J Am Coll Radiol. 2019 Nov;16(11S):S399-S416.

Chu C, **Jablonska A**, Lesniak WG, Thomas AM, Lan X, Linville RM, Li S, Searson PC, Liu G, Pearl M, Pomper MG, **Janowski M**, Magnus T, **Walczak P**. Optimization of Osmotic Blood-brain Barrier Opening to Enable Intravital Microscopy Studies on Drug Delivery in Mouse Cortex. J Control Release. 2019 Nov 18;317:312-321. [Epub ahead of print]

Bodanapally UK, Shanmuganathan K, Gunjan YP, Schwartzbauer G, Kondaveti R, **Fleiter TR**. Quantification of Iodine Leakage on Dual-Energy CT as a Marker of Blood-Brain Barrier Permeability in Traumatic Hemorrhagic Contusions: Prediction of Surgical Intervention for Intracranial Pressure Management. AJNR Am J Neuroradiol. 2019 Nov 14 [Epub ahead of print]

Maziero D, Rondinoni C, Marins T, Stenger VA, **Ernst T**. Prospective Motion Correction of fMRI: Improving the Quality of Resting State Data Affected by Large Head Motion. Neuroimage. 2020 Feb 7 [Epub ahead of print]

KUDOS TO DR. AWAN

Omer Awan, MD, MPH was selected as one of only four RSNA Global Learning Center (GLC) Program Team Members. GLC is a new program in radiology education with the goal of building a sustained presence in middle to low income countries. Dr. Awan will be traveling to Stellenbosch University in South Africa to address their need for subspecialty education in the area of musculoskeletal radiology.

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