Hope you all had an exciting Summer with some time for rest and rejuvenation. My summer was great. Like all of you I love that time of the year, sun, beach, family time but also a time to reflect, learning new things and recharging. I keep learning that the “key to resilience is trying really hard, stopping, recovering and repeating” (https://hbr.org/2016/06/resilience-is-about-how-you-recharge-not-how-you-endure). It is apparent that all of us at TMII are practicing this routine with glimpses about this given in this Newsletter.

We look forward to the October 9 Brain Imaging Center Annual Symposium which promises again to be as stimulating and successful as in past years. Your hard work is also leading to top publications, patents, research grants, and new application such as the new AHA Scientific Development Grant by one of our junior faculty member Dr. Carlos Perez-Medina on PET imaging of atherosclerosis.

Other announcement such as the TMII seminar series, TMII 2nd Annual TMII Medical Imaging and Bioengineering lecture by Dr. Todd Constable from Yale and the TMII 2017 7th Annual Symposium (April 7, 2017). We also feature Dr. Venkatesh Mani and his clinical trial unit efforts and group, mentoring activities within TMII, one of your F31 fellow Benjamin Ely, TMII would like you to join us and welcoming Francesco Padorno, PhD to the group. Dr. Padorno obtained his PhD in MRI Physics from Imperial College London in 2012. He then undertook a postdoc at King’s College London, working on Parallel Transmission at 3T and 7T in collaboration with Oxford University. Now working under Priti Balchandani, PhD, he will be developing imaging methods for 7T.

Dr. Fayad’s graduate student Mootaz Eldib, PhD successfully defended his PhD dissertation and has moved on to a biotech company upstate. TMII News & Updates

Congratulations to Carlos Perez-Medina, PhD on his recently awarded AHA Scientist Development Grant. This 3 year grant, of over $230,000, will help Dr. Perez-Medina study “Atherosclerosis phenotyping and targeted treatment by nanoreporter PET imaging” TMII would like you to join us and welcoming Francesco Padorno, PhD to the group. Dr. Padorno obtained his PhD in MRI Physics from Imperial College London in 2012. He then undertook a postdoc at King’s College London, working on Parallel Transmission at 3T and 7T in collaboration with Oxford University. Now working under Priti Balchandani, PhD, he will be developing imaging methods for 7T.

Dr. Fayad’s graduate student Mootaz Eldib, PhD successfully defended his PhD dissertation and has moved on to a biotech company upstate.

Don’t forget the abstract submission deadline for the ISMRM 25th Annual Meeting & Exhibition, November 9, 2016.

Lastly, TMII has reached another major milestone, @TMIInyc has surpassed 100 followers on Twitter. Follow us and stay current on the latest happenings.

UPCOMING EVENTS

TMII Frontiers of Imaging Seminar Series
> Sept 27 2017 - 1pm - 2pm: CSM Davis Seminar Room B - Hersh Chandarana, PhD Associate Professor, Department of Radiology, NYU School of Medicine “Motion robust continuous comprehensive abdominal MR imaging”

TMII Seminar Series
> Oct 4, 2016 - 10am - 11am: CSM Davis Seminar Room A - Mark Does, PhD, Professor of Biomedical Engineering, Vanderbilt University “Advances in MRI Methods of Evaluating Bone Fracture Risk”

2nd Annual TMII Medical Imaging and Bioengineering Lecture
> Dec 16, 2016 - 2pm - 3pm: CSM Davis Auditorium - R. Todd Constable, PhD, Professor Radiology and Biomedical Imaging, Yale University Medical School “Connectome Predictive Models: Brain/Behavior Predictions and Extension to Clinical Variables”

For more info on these and other events go to http://tmii.mssm.edu/events
Imaging is inherently interdisciplinary. New symposium, seminar series, and the yearly TMII well as nanomedicine), to more formal training cardiovascular, body, and neuroimaging, as one interactions with a diverse body of faculty resources for training, spanning from one-on-one experiences in grantsmanship, and foster maturation towards an independent career. The outstanding body of faculty members at Mount Sinai provides ample opportunities for co-mentoring (as in the case of Benjamin Ely’s F31 predoctoral fellowship, featured in this issue). At the predoctoral level, the focus is on mentoring trainees to conduct fruitful and impactful dissertation research without significant delays in PhD defense. At the postdoctoral level, besides research productivity, additional focus is put on career independence, with protected time at the end of postdoctoral training for grant writing, networking, and faculty-level job search.

Should some postdoctoral fellows decide to develop his/her independent research career at Mount Sinai, TMII has instructor level positions open for qualifying candidates.
Training the Future - continued

Benjamin Ely, BS

TMII XNAT Database

DICOM repositories, HIPAA de-identification, support for data migration between various

is fully HIPAA compliant and team provides

investigators can access their data. TMII XNAT

managed data, and provides tools for exploring

supports automated pipelines for processing

TMII XNAT is built upon a secure database,

research data transfer, archive, and sharing.

TMII XNAT serves as the central point for

research data transfer, archive, and sharing. TMII XNAT is built upon a secure database, supports automated pipelines for processing managed data, and provides tools for exploring the data. Only users authorized by the study investigators can access their data. TMII XNAT is fully HIPAA compliant and team provides support for data migration between various DICOM repositories, HIPAA de-identification, image preprocessing, image quality control, and other customized services. Currently TMII XNAT runs on two mirrored Linux servers with 60TB storage space on each. It can host more than 15,000 image sessions with backups. TMII XNAT user training, documentation, and imaging data management consultations are available by request (https://tmii.mssm.edu/xnat).

Predoctoral Fellowship Award

Benjamin Ely, BS

I am a fourth year graduate student in neuroscience. My PhD dissertation project examines the role of reward circuitry in psychiatric disorders, particularly major depression, using high-resolution fMRI and high-fidelity analysis techniques. I am particularly interested in the habenula (Hb), a pair of small nuclei near the dorsomedial thalamus that inhibits dopaminergic reward signaling in a range of animal models. Mounting evidence implicates the Hb in depression; however, in vivo imaging research has been limited by its small size.

Building on the recent advances in fMRI resolution and the objective Hb segmentation methodology developed by our group (Kim J-W et al., Neuroimage, 2016), last year I conducted the first-ever whole-brain Hb resting-state functional connectivity study in a healthy adult population (25 with high and 25 with low subclinical depression scores) from the Human Connectome Project (Ely BA et al., Human Brain Mapping, 2016). My analyses revealed Hb connectivity with key reward regions, including the ventral tegmental area (VTA) and anterior cingulate. In addition, Hb connectivity with the amygdala and anterior insula differed between the subclinical depression groups.

This work served as the basis for my F31 NRSA predoctoral fellowship, which was awarded by NIH/NIMH earlier this year. Under the guidance of my mentorship team of Drs. Vilma Gabbay, Emily Stern, and Junqian (Gordon) Xu, I am now pursuing fMRI studies to examine reward processing in depressed patients, as well as refining the definition of small subcortical regions in functional image space, a key analysis step for further Hb fMRI research.

Dr. Joo-won Kim (post-doc) TMII
1. 24th Annual Meeting of the ISMRM: Trainee educational stipend and the Diffusion & Perfusion study group selection of his poster, titled “Non-linear distortion correction in human optic nerve diffusion-weighted image”.
2. 32nd Congress of the European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS): travel stipend for his poster, titled “Reproducible quantitative cervical spinal cord MRI for progressive MS”.

Joseph Borrello (graduate student in Biomedical Science, co-mentored with Dr. Kevin Costa)
1. 24th Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM): Summa cum laude Award and

New Entrant educational stipend for his oral presentation, titled “Towards accurate spinal cord morphometry with in situ grid phantom calibrated gradient non-linearity correction”.

Dr. Alan Seifert (post-doc) TMII
1. Gordon Research Conference (GRC) 2016: In-vivo Magnetic Resonance: outstanding poster award and travel stipend for his abstract, titled “Myelin density measurement by ZTE in the D2O-exchanged spinal cord is unaffected by tissue fixation”.
2. Radiological Society of North America (RSNA) 2016: travel stipend for his Introduction to Academic Radiology for Scientists (ITARSc) program acceptance and his oral presentation, titled “Structural, functional, and diffusion MRI of the cervical spinal cord at ultra-high field”.

Junqian "Gordon" Xu PhD
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Neuroimaging Section
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Benjamin Ely, BS
Emily Stern, Junqian (Gordon) Xu, Vilma Gabbay- Co-Mentors
Graduate Student (Neuroscience)
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The Brain Imaging Center’s (BIC) Third Annual Symposium is quickly approaching. This year’s keynote address will be presented by Helen Mayberg MD, ahead of sessions on Computational Approaches to Neuropsychiatric Disease, Novel and Naturalistic fMRI Methods, and Brain Stimulation. This BIC DAY will be held on Wednesday October 19, so please be sure to register soon at https://bic.mssm.edu.

BIC is pleased to announce the new addition of Anna Zilverstand’s baby daughter. Her expanded family is reported to be quite happily experiencing the very best neurofeedback nature provides.

BIC's Prantik Kundu and Rafael O’Halloran design and implementation of the web-based BIC. BOT service will be the topic of upcoming presentations at the Department of Psychiatry’s Mood and Anxiety Program (9/7 at 2 pm) and BIC User venues this fall. The BICBOT integrates and automates user simplifications for organizing and executing study-wide pre-processing of MRI data. BIC. BOT will unify many of the presently separate operations between the XNAT study database and Minerva supercomputing platforms. Users will immediately benefit from simplification in defining and collecting datasets for processing. Streamlined and self-documenting pipeline operations will substantially increase processing efficiency while eliminating the need for users to operate the Minerva system directly. The system will better-enable BIC’s vision for data analysis across multiple studies, leveraging the collection of data using the BIC standard protocol by many Mount Sinai investigators.

The BIC is also gearing towards supporting the NIH funded multi-site ABCD study, longitudinally tracking elementary level children for the study of brain development, to be launched at Sinai in September.