### 8:00-8:15
**COFFEE AND JUICE BREAK**

### 8:15-8:30
**WELCOME**
Asher Salmon MD/PhD/MHA Deputy Director, Hadassah Ein Kerem, Anat Lapidot-Firilla PhD Executive Director, US-Israel Educational Foundation

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Institution</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Julie Price, PhD</td>
<td>University of Pittsburgh</td>
<td>PET Imaging of Amyloid-Beta and Tau Neuropathology: Advances and Challenges</td>
</tr>
<tr>
<td>Antonio Strafella, MD/PhD</td>
<td>Toronto Western Hospital/Research Institute &amp; Center for Addiction and Mental Health, University of Toronto</td>
<td>PET Imaging in Parkinson’s Disease: Application to Motor and Non-motor Symptoms</td>
</tr>
</tbody>
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### 10:00-10:30
**COFFEE BREAK**

### 10:30-11:15
**Session 2 From Brain Circuits to Brain Treatments**
Chair: Gadi Goelman, PhD

<table>
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<tr>
<th>Time</th>
<th>Speaker</th>
<th>Institution</th>
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<tbody>
<tr>
<td>10:30</td>
<td>Rafi Malach, PhD</td>
<td>Weizmann Institute of Science</td>
<td>The functional role and information content of spontaneous brain fluctuations revealed through BOLD-fMRI in the human cerebral cortex.</td>
</tr>
<tr>
<td>11:15</td>
<td>Ilan Rabiner, MD</td>
<td>Imanova &amp; King’s College London</td>
<td>The use of PET and fMRI imaging in CNS drug development.</td>
</tr>
</tbody>
</table>

### 12:00
**LUNCH**

### 13:15-14:00
**Session 3 New Targets, Tracers, and Animal Models. Translation to Humans (Yale-Radiology Sponsored)**
Chair: Sagi Tshori, MD/PhD

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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>13:15</td>
<td>Henry Huang, PhD</td>
<td>Yale University</td>
<td>Development and Clinical Translation of Novel PET Radiotracers for Neuroimaging</td>
</tr>
<tr>
<td>14:00</td>
<td>Bradley Christian, PhD</td>
<td>University of Wisconsin, Madison</td>
<td>PET Investigation of Neurodevelopment and Behavior: Of Monkeys and Men</td>
</tr>
</tbody>
</table>

### 14:45-15:15
**COFFEE BREAK**

### 15:15-16:00
**Session 4 Imaging of Alcoholism and Smoking Addiction**
Chair: Omer Bonne, MD

<table>
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<th>Time</th>
<th>Speaker</th>
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<th>Title</th>
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<tbody>
<tr>
<td>15:15</td>
<td>David Kareken, PhD</td>
<td>Indiana University School of Medicine</td>
<td>Dissecting what Drives Dopamine in Drinking. Findings from PET and fMRI</td>
</tr>
<tr>
<td>16:00</td>
<td>Evan Morris, PhD</td>
<td>Yale University</td>
<td>Dopamine 'Movies' from PET Images Reveal Sex Differences in Brain Response to Smoking Cigarettes</td>
</tr>
</tbody>
</table>

### 16:45
**SUMMARY**

### 17:00-18:30
**Reception**
**Session 1**

**Julie Price** is Professor of Radiology and Biostatistics at the University of Pittsburgh. Her expertise is in quantitative PET methodology for translational imaging of protein targets, blood flow and glucose metabolism including studies of aging, neurodegeneration, neuropsychiatric disorders and brain injury. Her primary research involves PET imaging of amyloid-beta and (more recently) tau protein deposits in the validation and application of biomarkers of Alzheimer's disease. She is a leading expert in PET pharmacokinetic modeling and published the pioneering work on quantitative evaluation of Pittsburgh Compound-B (PiB), that is one of the most widely used PET amyloid-imaging agents. Julie received her B.S. in physics and M.S. in medical physics from the University of Wisconsin, Madison. She completed doctoral training in radiation health sciences at Johns Hopkins University and post-doctoral training at the NIH PET/Nuclear Medicine Department. She joined the University of Pittsburgh in 1994. In 2014, she was Visiting Professor of Radiology at the MGH Martinos Center. She was Chair of the NIH Clinical Neuroscience and Neurodegeneration study section (2013-2015). She is the co-author of 140 research publications.

pricejc@upmc.edu // www.rad.pitt.edu/?research/pet/pet-projects.html

**Dr. Antonio P. Strafella** is a Canada Research Chair in Movement disorders and Neuroimaging, a Professor in the dept. of Medicine/Neurology at UHN, University of Toronto, Senior Scientist in the Division of Brain Imaging & Behaviour Systems at the Krembil Research Institute and Senior Scientist in the Research Imaging Centre at CAMH. He is using a number of PET tracers and novel radio-ligands to investigate the pathophysiology of motor, cognitive and behavioral symptoms in Parkinson’s disease.

Antonio.strafella@uhn.ca // wwwuhnresearch.ca/researchers/profile.php?lookup=15729

**Session 2**

**Eugenie (Ilan) A Rabiner**, BSc Hons, MBChB, FCPsych SA was born in 1965 in Kiev, Ukraine, grew up in Nahariyya, Israel and Johannesburg, South Africa. Studied at the University of the Witwatersrand, Johannesburg, [BSc Hons in Physiology and Medical Biochemistry (1988) and MBChB (1990)]. Received specialist training in psychiatry at the University of Cape Town (FCPsych SA, 1994). Trained in molecular imaging at the MRC Cyclotron Unit, Hammersmith Hospital, London (1997-2001) and spent time at the MRC Psychopharmacology Unit, University of Oxford (1997-1999). Joined GlaxoSmithKline as Director in Translational Medicine and Technologies group in 2001. From 2004, Head of Clinical Imaging Applications at the GSK Clinical Imaging Centre on the Hammersmith Hospital campus in London. In 2011 transferred with the GSK Clinical Imaging Centre to form Imanova, Centre for Imaging Sciences, and took on the role of Head of Imaging Applications, and Chief Medical Officer. In 2012 appointed as Reader in Molecular Neuroimaging at the Centre for Neuroimaging Sciences, in the Institute of Psychiatry, Kings College, London. Research interests focus on the application of molecular imaging to the investigation of neurochemistry and psychopharmacology and in particular to CNS drug development.

ilan.rabiner@imanova.co.uk
Born in Israel, Prof. Rafael Malach earned a BSc in biology (1974) and an MSc in neurobiology (1977) from the Hebrew University of Jerusalem. He received his PhD in physiological optics (1982) from the University of California at Berkeley. He then spent several years as a postdoctoral fellow studying neuroanatomy at the Massachusetts Institute of Technology (MIT). In 1985, he returned to Israel and joined the staff of the Weizmann Institute. Prof. Malach’s research aim is to uncover principles by which the human brain underlies the emergence of sensory perceptual images. To that end he combines functional brain imaging using magnetic resonance with invasive electrophysiological recordings, performed for diagnostic purposes in patients. He made major contributions to mapping of human brain areas involved in recognition and perceptual awareness, their principle of organization and the delineation of the hierarchy of visual processing.

More recently his work extended to the examination of spontaneous brain activity patterns and their potential role in understanding intrinsic brain functions and neuro-cognitive biases in health and disease.

rafi.malach@gmail.com

Session 3

Henry Yiyun Huang, Ph.D., is a Professor at the Department of Radiology and Biomedical Imaging, and Director of Chemistry and Co-Director of the Yale University PET Center. Professor Huang is an internationally known expert in the development, evaluation and application of PET radiopharmaceuticals. His research focuses on the design, development and validation of PET imaging agents for the investigation of neuropsychiatric diseases, addictive disorders, metabolic diseases, and tumors. In the ten years he has guided the development and translation of more than 30 PET imaging agents to the clinical research application stage, with many of them starting their first-in-human clinical trials at Yale. He is currently principal investigator or co-investigator on more than 10 research projects using PET imaging to facilitate new drug development funded by the United States NIH, Juvenile Diabetes Research Foundation, Dana Foundation, and major pharmaceutical companies. He has published more than 130 peer-reviewed articles in professional journals. He is member of the editorial board and reviewer for multiple professional journals and granting agencies.

henry.huang@yale.edu

Bradley Christian received a PhD in Medical Physics (1994) from the University of Wisconsin-Madison where his thesis research focused on the cyclotron production of 99mTc as a radionuclide for positron emission tomography (PET) imaging. He served as a research associate at Massachusetts General Hospital with the research program that originally pioneered the development of PET as a medical imaging modality. Following an NIH post-doctoral fellowship in PET neuroimaging at the University of Iowa in 1996, he returned to the University of Wisconsin-Madison to rejoin the Department of Medical Physics as a member of their faculty, teaching a graduate course in the physics of radionuclide imaging. Dr. Christian’s research focuses on the development of PET molecular imaging methodologies for understanding biochemical pathways in neurodevelopment and neurodegenerative disorders of the brain. His research group has conducted first-in-human studies of novel PET radiotracers to complete the translation of biomarkers characterized from preclinical models.

bchristian@wisc.edu
Speakers

Session 4

**David A. Kareken, Ph.D., ABPP-CN**, is a Professor and the Director of the Neuropsychology Section in the Department of Neurology at the Indiana University School of Medicine. He also serves as the Deputy Director of the Indiana Alcohol Research Center. Dr. Kareken received his Ph.D. in Clinical Psychology from Hahnemann University (Philadelphia, PA) in 1992, with post-doctoral studies in the brain imaging of schizophrenia at the University of Pennsylvania (1992 – 1994). His research interests are targeted toward understanding the vulnerabilities that may predispose individuals to disorders such as alcoholism and obesity, using in vivo neuroimaging (fMRI, PET) to study the human brain’s reward system and motivated behavior.

dkareken@iu.edu

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**Evan Morris** received SB degrees in Biology and Chemical Engineering from MIT. He earned the PhD in Biomedical Engineering from Case Western Reserve University in 1991. He trained in Radiological Sciences (PET) at Massachusetts General Hospital. From 2001–2009, he was on the faculty at Indiana University and Purdue University, Indianapolis. He is now Associate Professor of Radiology and Biomedical Imaging, Biomedical Engineering, and Psychiatry at Yale University and Co-director for Imaging at the Yale PET Center. He is a 2015/16 Fulbright Scholar for Teaching and Research at Hadassah Hospital and Hebrew University Medical School. His research interests include the development of kinetic models to aid in the understanding of dynamic PET data and their applications to drug addiction and cancer. He uses PET to study the action of medications at molecular targets and relate drug binding to efficacy. His work is currently funded by NIH and has been funded, previously, by pharmaceutical companies as well. With the help of Drs. Anat Lapidot of Fulbright and Nanette Freedman of Hadassah, Dr. Morris organized the “Advances in Brain Imaging” Symposium.

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National Institute on Drug Abuse (US)
National Institutes of Health (NIH)

As the lead United States federal agency supporting scientific research on drug use and its consequences, the mission of the National Institute on Drug Abuse (NIDA) is to advance science on the causes and consequences of drug use (including nicotine) and addiction and to apply that knowledge to improve individual and public health. Over the last four decades, NIDA-supported research has revolutionized our understanding of drug use and addiction, driving a new understanding of the neurobiological, genetic, epigenetic, social, and environmental factors that contribute to substance use disorders. These advances have helped to transform how drug use and addiction are conceptualized. Society’s responses to drug use have often been shaped by the misconception that people with addictions are morally flawed and lacking in willpower, resulting in an emphasis on punishment rather than prevention and treatment. Today, thanks to groundbreaking scientific discoveries about the brain and its role in addiction, society’s views are changing in ways that will enable us to respond more effectively to the problem.

from: www.drugabuse.gov/about-nida/noras-blog/2016/02/nidas-2016-2020-strategic-plan

The Advances in Brain Imaging Conference is funded, in part, by a grant (R21DA040852-01) from NIDA to Evan Morris, PhD. The NIDA granting program is the International Research Collaboration on Drug Abuse and Addiction Research (R21), PA 12-041.

R21DA040852-01 states:
Addiction to smoking is a global health concern. Dr. Morris has established a new image analysis method for identifying patterns of dopamine activation in PET images of the brains of smokers while they smoke (“dopamine movies” of smoking). The present pilot project will initiate a collaboration between Morris and colleagues at Hadassah Hospital in Jerusalem to establish this new method in Israel. The long term goal is to image early-stage smokers in Israel in order to understand the acquisition of addiction in a population who are old enough to be imaged with PET.
The United States–Israel Educational Foundation (USIEF) was established in 1956 by the Governments of the United States and Israel to administer the Fulbright Program in Israel. The Foundation is funded by the United States and Israeli Governments and is governed by a binational Board of Directors.

The Foundation aims to promote mutual understanding between the people of the United States and Israel by means of student and faculty exchanges at the highest possible level of academic excellence.

One of the objectives of the Foundation is to advance knowledge by contributing to both the Israeli and American higher education environments. The Foundation is committed to the fostering of creative, forward thinking leaders both in academia and in other areas of public life. Over the years, the Foundation has played an important role in advancing research, intellectual discourse and social leadership.

To achieve our mission we work through the following channels:

- The Fulbright Grant Program
- The Fulbright Seminar for Advanced Studies
- USIEF Lecturer Program
- Alumni Activities

The Fulbright Program, initiated in 1946 by Senator J. William Fulbright, to strengthen the basis for peace by promoting mutual understanding between the people of the United States and the peoples of partner countries around the world, is the US Government’s flagship academic exchange program. Many distinguished alumni of the Program have made their mark on the academic world and in all walks of life. Israel is particularly proud of its two Nobel prize laureates.

The Fulbright Program in Israel offers a variety of core programs and designated programs. The core programs are open to excellent, path breaking scholars and promising students in all academic fields. Our commitment to social responsibility is evidenced by our designated programs, which support research, study, exchange of knowledge of cultures and customs and leadership development among underserved populations.

from: fulbright.org.il/content/who-we-are

Anat Lapidot-Firila, PhD
Executive Director US-Israel Educational Foundation
Yale Department of Radiology and Biomedical Imaging

The first X-rays ever to be created in the United States took place at Yale University in 1898 by physicist Arthur W. Wright. Since then, Radiology & Biomedical Imaging at Yale University's School of Medicine has developed into a pre-eminent academic teaching facility where cutting edge imaging takes place in three main arenas; diagnosis and patient care, image guided therapy and bio-imaging science research.

In 2012, Yale School of Medicine ranked 5th overall for NIH funding with Radiology ranking in the top ten. High level research into MRI, MRS, PET and Image Processing is undertaken by over 60 research faculty and post-doctorates who together generated grants totaling in excess of $20 million in 2012. Yale-New Haven Hospital (YNHH) is the 5th largest hospital in the United States, and is ranked by U.S. News and World Report as one of the best hospitals in the country. The Smilow Cancer Hospital at YNHH sees more oncology patients than any other hospital in the State. Our equipment is some of the most technologically advanced available and includes an intraoperative MRI/IR/OR suite. Our residency is the third largest in the United States and provides enviable training to the best and brightest in their field.

Please spend some time browsing our website and enjoy learning more about YDR and what it has to offer. Our Grand Rounds Calendar gives updated information on speakers, titles, dates, and times for each semi-monthly lecture.

Jeff Geschwind, M.D.
Professor and Chairman
Radiology & Biomedical Imaging

from: radiology.yale.edu

Post-doctoral training opportunity.

Our multi-disciplinary group of engineers, physicists, and neuroscientists is seeking highly qualified post-doctoral candidates to work at the Yale PET Center on kinetic modeling, and data analysis and visualization projects related to three current NIH-funded projects, “Imaging sex differences in smoking-induced dopamine release via novel PET methods” (ROI DA038709), “PET-derived ‘Dopamine Movies’ of Early-Stage Addiction to Cigarette Smoking: A Pilot Study” (R21 DA040652), and “PET imaging of Naltrexone Occupancy of Kappa Receptors in Heavy Drinkers” (R01 AA021818). Appointment is for one year with possible re-appointment.

The PET Center at Yale University Medical School is one of the most active, most productive PET centers in the world. The PET Center is part of the Department of Radiology and Biomedical Imaging.

The candidate must have excellent knowledge mathematical modeling, programming, medical imaging and neuroscience. Candidates should have a PhD in a multi-disciplinary subject such as Biomedical Engineering or Neuroscience or have comparable training with excellent quantitative skills.

Please email cover letter, CV, sample published paper(s), and names and contact info for 3 references to Evan.Morris@yale.edu
Hadassah Hospital

A substantial proportion of research at Hadassah is done in cooperation with researchers from the Hebrew University, as well as with researchers from other research institutes in Israel and worldwide. Thus, Hadassah is particularly devoted to openness to interdisciplinary research not only within its schools and departments, but also within its laboratories, institutes and research centers in Israel and abroad.

Hadassah's research labs are an inseparable part of the hospital's clinical departments. In addition, research also takes place in designated research units and in multi-disciplinary research centers, such as the Women's Health Center, the Gene Therapy Center, the Bone Marrow Transplantation Center, Cancer Immunotherapy and Cell Therapy, the Bone Calcium and Metabolism Research Center, and others. The Ministry of Science recognizes the Gene Therapy Center and Embryonic Stem Cell Center at Hadassah as foundational national centers.

These research centers are providing information, help and service to the entire research community in Israel (information on these centers is found in the second chapter of this book).

In addition to the departmental labs and the multi-disciplinary research centers, our researchers have at their disposal unique basic laboratories, including the cGMP-grade Vector Production Lab; laboratories that meet P2 standards; the Transgenic Mice Production Unit; the SPF-grade Animal Lab; an Animal MRI Lab, and more.

Funding of research at Hadassah is provided via both internal and external sources. The Hadassah Women's Zionist Organization of America (HWZOA) has made commitment to research its watchword, and invests heavily in this area.

From: www.hadassah-med.com/medical-research.aspx

Asher Salomon, MD PhD MHA
Deputy Director Hadassah Ein Kerem
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