

Transitions

Fall 2106 Newsletter

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"The IOG and MPSI had become young again. Retirements and other changes led to a high percentage of junior faculty."

-Dr. Lichtenberg

New grant awardees (l to r) Drs. Thomason, Stacks, and Ofen



Patience and Persistence Yield Major Grant Milestone

It's been a red-letter year at the IOG and its sister institute for child and family development, the Merrill Palmer Skillman Institute (MPSI). Total grant awards won during the past 12 months topped \$11.5 million. This achievement is even more remarkable considering three of the four biggest grants went to junior faculty still in the early years of their careers. The fourth, a \$3.6 million grant, went to Dr. Naftali Raz whose research into brain aging has been continuously funded for 23 years (see page 2).

"There is currently great pressure on institutes to deliver high impact research," said Dr. Peter Lichtenberg, director of both the IOG and MPSI. "But a tree does

not bear fruit the first season it is planted. It takes time." It also requires a long-term strategy. Six years ago, Dr. Lichtenberg created the Lifespan Alliance to foster research, training and community engagement collaborations between the two institutes. The IOG and MPSI remain independent but have created strong intersections, especially in the Lifespan Cognitive Neuroscience program directed by Dr. Raz.

Drs. Noa Ofen and Moriah Thomason joined the Lifespan Cognitive Neuroscience program in 2011, from postdoctoral fellowships at MIT and Stanford respectively. Dr Ofen's research focused on using

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Naftal Raz

\$3.6M Grant Marks 23 Years of Continuous Funding for Lifespan Cognitive Neuroscience Director

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\$1.9M Grant to Identify Memory Networks in Children with Epilepsy

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Mapping Memory in Children
- illustration by Julian Wong

\$3.6 Million to Continue Study of Healthy Aging

Naftali Raz, PhD, received a \$3.6 million research grant from the National Institute on Aging to continue his work on brain aging, its relation to cognitive performance, and the role of common vascular and metabolic risk factors in shaping how we age. The 5-year grant continues his decades-long study of healthy volunteers, and marks 23 years of continuous NIH funding for this project, a rare accomplishment.

The focus of the study is healthy aging. “Although dementia is a major health concern, and its prevention is the ultimate aim of many leading programs of basic and clinical research, advancement toward that goal necessitates an understanding of normal aging,” said Dr. Raz, principal investigator, professor of psychology, and director of the IOG’s Lifespan Cognitive Neuroscience Program.

“We strive to elucidate the relationships between changes in brain properties (regional volume, cortical thickness, iron content, energy metabolism, myelin content and connectivity among the brain regions), and changes in cognitive performance across the multiple domains of memory, speed of processing, and complex reasoning skills,” he said. He is also investigating how risk factors for vascular and metabolic disease can modify these relationships.

Span and Complexity

The research involves noninvasive evaluation of the brain through MRI scans, assessing cognitive performance, and examining blood biomarkers and genetic variants with known links to vascular and metabolic diseases. A project of such span and complexity requires multidisciplinary

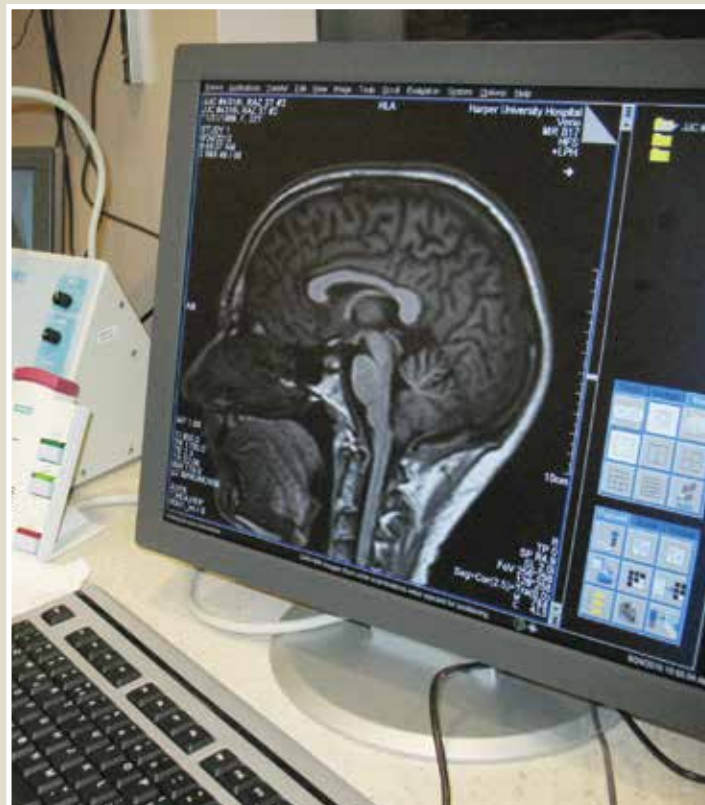
collaboration. Dr. Raz forged fruitful partnerships with Wayne State colleagues Drs. Jeffrey Stanley and E. Mark Haacke, and his international collaborators Drs. Lindenberger of Max Planck Institute for Human Development (Berlin, Germany) and Paolo Ghisletta (University of Geneva, Switzerland).



“This illustrates how indispensable longitudinal studies are for understanding the process of aging.”

– Dr. Naftali Raz

Director, Lifespan Cognitive Neuroscience Program



Real-time brain imagery from an MRI done through WSU’s School of Medicine facilities.

Novel Findings

This ongoing study has already yielded novel findings. For example, in one longitudinal follow-up study – a first-of-its-kind – Dr. Raz and Dr. Ana Daugherty (a graduate student at the time, currently at the University of Illinois, Urbana-Champaign) found that a higher iron content in the striatum increases shrinkage of that region and negatively affects working memory.

Earlier studies from the Raz lab demonstrated that distinct brain regions – the hippocampus, orbital-frontal cortex, entorhinal/parahippocampal cortex and cerebellum – are particularly vulnerable to aging. Two common risk factors, hypertension and genetic markers of increased pro-inflammatory response, also exacerbate negative changes.

It Takes Time

“This illustrates how indispensable longitudinal studies are for understanding the process of aging,” Dr. Raz said. “Lifestyle and behavior changes can blunt the effect of risk factors and possibly slow brain aging, but it can take many years to sort out the effects in such a complex system. We are grateful for the continuous confidence of our peers and the support of NIH that makes this study possible.”

For more information about the Cognitive Neuroscience of Aging Lab and this study, visit:

www.agingbrain.wayne.edu

AWARDS & HONORS



CHRISTINA WONG



LINGFEI TANG



NASIM FERDOWS



ANDRIA NORMAN



QIJING YU



RAJENDRA DULAL

Talent and Stellar Work – IOG trainees swept top awards at the WSU Graduate and Post-Doctoral Research Exhibition this spring: 1st Place **Christina Wong**, 2nd Place **Lingfei Tang** and **Nasim Ferdows**, and 3rd Place **Andria Norman** and **Qijing Yu**. Our graduate students competed against about 150 campus-wide. “I was worried the competition would be pretty stiff,” said IOG Training Director Gail Jensen Summers. “Yet the talent of our trainees and the stellar quality of their work emerged as some of the best pre-doctoral research on campus. I’m proud of them all.

Into the Ivy – Dr. **Nasim Ferdows** accepted a post-doctoral fellowship at Brown University. Her work also won a Blue Cross Blue Shield of Michigan Foundation Student Award and was profiled (with photos!) in their annual report.

Next Stop Stanford – IOG Trainee **Rajendra Dulal** had a whirlwind six months. He won WSU’s 2016 Mendelson Endowed Award in Economics in April. The funds from the highly competitive fellowship allowed him to concentrate on completing his dissertation. In May, the newly minted Dr. Dulal accepted a post-doctoral fel-

lowship at Stanford University where he will work on using electronic health records to decrease postoperative pain and improve prostate cancer care.



Dr. Summers (lt) and Dr. Lichtenberg (rt) pose with Olson Award winners Nasim Ferdows and Qijing Yu.

Tied for First – Try as they might, faculty judges for the 2016 Olson Memorial Award could not agree on a first place winner. So they named two: IOG trainees **Nasim Ferdows** and **Qijing Yu** each received \$500 for Best Paper in Gerontology.

Nasim’s paper looked at the factors that contribute to healthy aging and found that unfavorable childhood conditions can be overcome with later exercising, normal weight, and not smoking.

Qijing, a cognitive neuroscientist, wrote about the link between a child’s socioeconomic status and the size of the brain’s hippocampus, the seat of learning and memory. The higher the SES, the larger the volume of the hippocampus.

\$11.5M Milestone

neuroimaging to track where memories are encoded in the brain at different stages of development. She forged a collaboration with a highly-respected neurosurgery clinic at the Children’s Hospital of Michigan and augmented her array of techniques with a unique procedure that is applied before surgery on children with intractable epilepsy. Entering a new field was a daring move and the initial scores on her funding proposals were good but not within the award range. (See *Memory*

Networks, page 4)

“So the IOG funded Dr. Ofen and her team for a whole year because the project showed such promise,” Dr. Lichtenberg said. “Successful research institutes must be willing and able to invest money in junior researchers during bridge periods and gaps in the funding stream.” Though some of these monies come from enhancement and post-doc grants, most is drawn from the institute’s budget built on donor gifts. These investments allow the projects to collect enough preliminary data to cement their research value and strengthen the

applications for funding. “There is a lot of waiting, watching and anxiety,” he added.

Dr. Raz agreed, noting that cognitive neuroscience research, which often requires extensive equipment, large data collection, and human volunteers, can be particularly costly. Creative and innovative projects, like that of Dr. Ofen, frequently take time to develop and require extra investment. “None of our core projects would be possible even on a small scale without significant external contributions, of which NIH is by far the most significant one,” he said. The pressure

Training

Identifying Memory Networks in Children with Epilepsy

Noa Ofen, Ph.D., an IOG researcher in lifespan cognitive neuroscience, received a five-year \$1.9 million grant from the National Institute of Mental Health to study the development of memory networks in children. Her team will investigate brain activity that predicts memory formation in children who are undergoing surgery to manage epilepsy that has not been controlled through other treatments. “Our goal is to add to our knowledge of how memory forms,” Dr. Ofen said, “and take a first step toward improving the quality of life for children with medically uncontrolled focal epilepsy.”

Little is now known about how memory systems develop in the human brain. “We

will use a combination of unique neuroimaging methodologies,” Dr. Ofen said. “These will allow us to add new insights about the neural basis of memory development.”

Two Dimensions at Once

Commonly used noninvasive neuroimaging methods, such as functional MRI or EEG, cannot simultaneously measure the spatial and temporal dimensions of the neural correlates of memory at high resolution. A different approach known as electrocortography (ECoG) can provide high resolution measures of spatial and temporal dimensions, but it requires electrodes to be implanted directly on the

surface of the brain.

Children who require surgery to manage their epilepsy undergo brain mapping prior to surgery in which electrodes are implanted directly on the brain. Dr. Ofen’s team will use these electrodes to take intracranial ECoG recordings, measuring spatial and temporal dimensions in high resolution to examine the neural basis of human memory. This will allow them to capture the temporal dynamics of information flow in the brain that are predictive of whether information and experiences are remembered.

Extending Maps of the Brain

Dr. Ofen hopes a foundation will be laid to eventually extend her mapping of the brain to include pre-surgical brain mapping of memory networks in children with epilepsy. This could help to reduce the memory decline that sometimes occurs after surgical removal of the seizure focus. Dr. Ofen is jointly appointed to the Department of Psychology and the IOG’s Lifespan Cognitive Neuroscience Program.

This project is in collaboration with WSU School of Medicine faculty Eishi Asano, M.D., who is also a member of the Epilepsy Surgery Program at Children’s Hospital of Michigan; Vaibhav Diwadkar, Ph.D.; Robert Rothermel, Ph.D.; and Harry Chugani, M.D. (now at Nemours/Alfred I. duPont Hospital for Children in Delaware). Robert Knight, M.D., of the University of California, Berkeley, is also an integral member of this project.

This year’s research team of graduate and undergraduate students in the Ofen Lab for Cognitive and Brain Development. Dr. Ofen is at far right.



to win these awards is particularly hard on junior faculty, where “repeated grant applications divert resources, energy and time that these talented young scientists should be investing in their labs.”

It also takes time to develop the necessary collaborative networks. Dr. Thomason’s success in obtaining a \$2.3 million grant to examine brain development from fetus to toddler was fostered by her ability to build close ties across campus, including with an outstanding intramural NIH research program at the School of Medicine.

Dr. Raz finds the success of Drs. Ofen and Thomason gratifying, and appreciates the role the IOG and MPSI played in supporting them toward that success. “Their accomplishments illustrate the importance of a strategic investment in attracting and fostering talented young investigators,” he said. “It is also a testament to Peter’s leadership and the commitment of

senior faculty to the same goal.”

That culture of commitment is critical. While discretionary money can be necessary to nurture new faculty, it is not sufficient. Mentoring, collaborations, encouragement and perseverance are core ingredients. The \$11.5 million banner year results from the resolve of seasoned

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“There is a lot of waiting, watching and anxiety.”

– Dr. Lichtenberg

A Legacy of Service to Seniors

This year the IOG will grant the *Odessa N. Merrill Scholarship for WSU IOG* to support a student trainee and to recognize its namesake's lifelong commitment to older adults.

Odessa Norwood Merrill committed her life to education and service across the lifespan. She spent the early years of her career teaching in several Detroit Public Schools and the Harris Adult Education Center. She was an active member of the League of Women Voters and the Citizens for Better Care. Throughout her life, she held a special interest in the care of older adults, so while earning her master's degree in education at Wayne State in the 1980s, she also received her Certificate in Gerontology from the IOG.

Odessa later became a founding board member of Amethyst Health, a non-profit multi-state provider of care services led by her daughter, CEO and founder Claudia Merrill, M.Ed. Odessa worked tirelessly to improve the lives of older adults until her death in 2006.

"Mom wanted older adults to be able to maintain their independence as long as possible," Claudia said. "We spent years

"Mom wanted older adults to be able to maintain their independence as long as possible."

— Claudia Merrill, M.Ed

consulting with agencies and service providers to train staff to care for older adults with dignity, and not assume the next step from the hospital must be to the nursing home. In the 1980s that was the standard of care. Mom was ahead of her time in encouraging rehabilitation and independence."



Odessa N. Merrill



Amethyst Health board members present the scholarship funds during a visit to the IOG. Left to right: Dr. Lichtenberg, IOG Outreach Director Donna MacDonald, Amethyst CEO Claudia Merrill, IOG Training Director Dr. Summers, and Amethyst board members Wilma Dixon, Patricia Pickett, and Vice-Chair Ernest Thompson.

Odessa believed all people have worth in life, and no one should be left without the tools that an education can bring. To honor her mother's memory and wishes, Claudia created the Odessa N. Merrill Scholarship, to help with college expenses. The 2017 scholarship will go to a trainee at the IOG, in recognition of Odessa's deep commitment to aging issues. "Whatever their goal is in working with older adults," Claudia said of the IOG trainees, "this scholarship can be of some assistance to further that dream."

\$11.5M Milestone from page 4

faculty members to support younger members. "I give our senior faculty a lot of credit," Dr. Lichtenberg said. "They read manuscripts and proposals, edit, advise and nurture. This is the culture of our institutes."

Consistency and perseverance are also key for more experienced colleagues. Dr. Ann Stacks, long an expert in infant mental health, is director of MPSI's Infant Mental Health program. She had received a series of grants in the \$10,000

to \$200,000 range for her work with the foster care system and Shaken Baby Syndrome. This year she became principal investigator on a \$2.5 million grant to teach early childhood teachers, parents and children supportive practices.

Pressure to hire candidates who can be successful is intense, and it takes experience to identify which researchers can go the distance. "You take a gamble whenever you hire new faculty," Dr. Lichtenberg said, but he's found an approach that improves the odds. "I look at a young researcher's depth of preparation. How

do they set up a team? How does it function?" No matter how well chosen, new faculty members require an adjustment period, prudent advice and mentoring.

"Young researchers are bright and curious, so they will be attracted to many ideas and competing projects. We help them sort and prune those," he said. "I try to keep them laser-focused, moving forward on key fronts while concentrating on quality. Feedback on grant applications is also critical and should be welcomed, dissected and analyzed. Not getting funded is not a failure," he said. "It's a chance to learn."



Promoting Successful Aging in Detroit and Beyond

UPCOMING EVENTS



Men's Forum

Saturday, October 8, 2016 | 9:30 am – Noon

Greater Christ Baptist Church, 3544 Iroquois Ave, Detroit, MI 48214
"Communicating Mental Health Concerns with Your Doctor" will be presented by Dr. Jamie Mitchell, co-director of the Gender and Health Research Lab and an assistant professor of Social Work at the University of Michigan. Presenters will also cover the health of African American men, mental health trends and cognitive issues. Free health screenings and lunch. **Event is free but you must register by calling LaToya at 313-664-2604.**

SAVE THOSE DATES!

Art of Aging Successfully Senior Conference

Thursday, April 27, 2017

Mark your calendar for another fun-filled day of learning, creating and socializing. We'll be back at spacious Fellowship Chapel at 7707 West Outer Drive in Detroit. Submissions from non-professional artists of all types are encouraged and will be on display. Information mailed in late January.

Issues in Aging Professional Conference

Monday & Tuesday, May 15 & 16, 2017

Held at Schoolcraft College's VisTaTech Center in Livonia for persons working with older adults. Earn CEs while learning advancements in dementia care and healthy aging. Details available in February.



Community Engagement

The IOG educated more than

11,000 people in the past year alone:

49% older adults most of them

Detroiters, and **51%** professionals

who work with older adults. Outreach

Director Donna MacDonald coordinated

183 programs in 12 months. Thank you to

everyone who attended or supported our

programs. Together we make aging better.