

Transitions

International Brain Conference Hosted By IOG Yields Special Journal Section

Three years ago, the IOG hosted the First Margret M. and Paul B. Baltes International Conference on Lifespan Cognitive Neuroscience. A dozen top researchers from Europe and the United States presented their work on age-related changes to the brain and cognition to about 100 attendees of the three-day conference. A special section in *Neuroscience & Biobehavioral Reviews* (Nov. 2013) on neural and cognitive plasticity from a lifespan perspective is based on presentations and discussions made at that conference.

Dr. Naftali Raz, Director of the IOG's Lifespan Cognitive Neuroscience Program, organized the conference and is guest editor of the journal's special section. In the lead editorial, he and his colleague and frequent collaborator, Dr. Ulman Lindenberger, Director of the Max Planck Institute for Human Development, present an integrative view of the contributions to the special issue and discuss the insights and further questions they inspire.

"Research has demonstrated that training, physical and cognitive, significantly alters the basic structure of the mature brain . . ." they write,

but the meaning of these modifications remains obscure. Future investigations should emphasize:

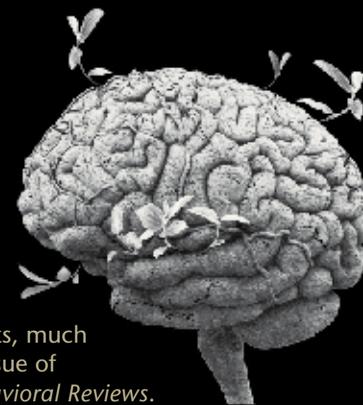
- Neuroscience research that crosses the lifespan;

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Dr. Gerd Kempermann of the Dresden Center for Regenerative Therapies, presenting to about 100 attendees of the Baltes Conference in the Freer House Hoobler Room.

The IOG's 2011 Baltes International Conference, "Life-Span Plasticity of Brain and Behavior," showcased the work of top cognitive neuroscientists, much of it now in a special issue of *Neuroscience & Biobehavioral Reviews*.



research
education
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partnerships



Promoting Successful Aging
in Detroit and Beyond



Dozens of student trainees at the IOG and the Merrill Palmer Skillman Institute presented their work at Lifespan Alliance Research Day, explaining projects ranging from prenatal development to end-of-life care.

Student Research Takes Center Stage

Dozens of graduate and undergraduate students got to “strut their stuff” (that’s jargon for display their academic and research prowess) to about 80 colleagues, professors and researchers at February’s Lifespan Alliance Research Day. The Lifespan Alliance is a collaboration between the IOG and its sister institute, the Merrill Palmer Skillman Institute for Child & Family Development. Research in the institutes touches on issues across the lifespan, from prenatal development to end-of-life care.

IOG work was well represented with seven large posters on display highlighting the phases and results of current research projects. Students stood aside their posters to explain data and field questions from faculty members and judges. Four doctoral candidates also gave 15-minute platform presentations on papers they have written for submission. The day was tense with excitement as students gained experience in communicating their research to a sometimes tough audience. The presentations held up well under scrutiny, according to Dr. Cathy Lysack, IOG deputy director. “The hardest job belongs to the judges,” she said. “They have to choose two winners from a highly com-

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The PhD Experience

by Dr. Andrew Bender

Dr. Bender successfully defended his dissertation, “Changes in cerebral white matter, vascular risk and cognition across the adult lifespan,” in December, after eight years at Wayne State working toward his PhD with mentor Dr. Naftali Raz in the Cognitive Neuroscience of Aging Lab. Dr. Bender has won more than a dozen awards for presentations of his research and is lead author on five peer-reviewed journal articles. His first-person account is a rare window into the world of the doctoral student at the IOG.

First a brief explanation of my research. From an oversimplified perspective, we can divide brain tissue into gray matter and white matter. Whereas gray matter is composed of cell bodies and can be thought of as the part that does the computation, white matter reflects the circuitry or wiring of the brain. Using an MRI scanner, we use a neuroimaging method called diffusion tensor imaging or DTI that measures the structural integrity of these white matter pathways that connect different parts of the brain.



Andrew contributes to brain measurement research at the Raz Lab by mastering the art of brain tracings.

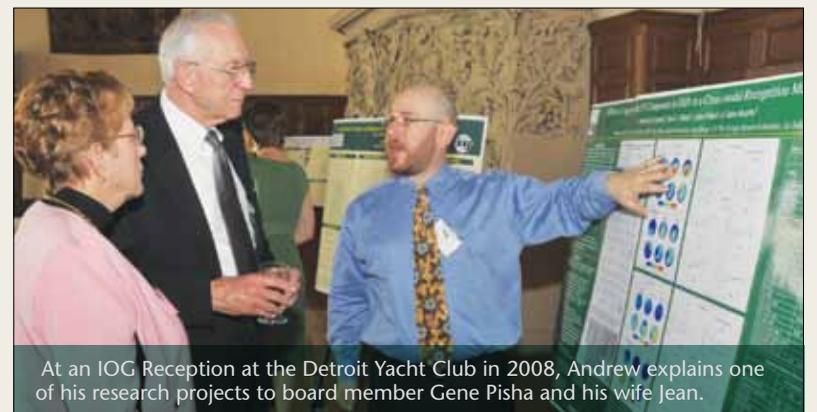
My dissertation work looked at how changes over two years in DTI measures of white matter was related to changes in memory, as well as how those changes varied from person to person based on age or vascular risk factors such as treated hypertension. We found that white matter changes differently, with some regions showing decline and other regions being less vulnerable to change. Furthermore, my dissertation found that study participants with higher prefrontal white matter integrity had better memory performance. This summer, I will present this work at the annual meeting of the Organization for Human Brain Mapping in Hamburg, Germany.



The annual Gerontological Society of America conference is a chance to present research and have a little fun with like-minded colleagues, like IOG cog neuro graduate student Cheryl Dahle.

When I first interviewed as a prospective graduate student, Dr. Raz handed me a newly published research paper that characterized the nature of his work, written with students and internationally renowned collaborators. Because the article was so sophisticated and impressive, I could barely understand much of what I was reading. Fast forward several years, and my PhD dissertation was essentially doing that same work, plus an additional complexity: doing it essentially by myself. I taught myself how to process neuroimaging data, how to write programs that

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At an IOG Reception at the Detroit Yacht Club in 2008, Andrew explains one of his research projects to board member Gene Pisha and his wife Jean.

AWARDS & HONORS

New Grant for Alzheimer's Research

– **Dr. Jessica Damoiseaux**, the IOG's newest researcher, studies the intersection between normal brain function and the onset of problems like Alzheimer's and other dementias. She received a \$45,000 grant from the Albert and Goldeye Nelson Research Fund (in collaboration with WSU's Dr. Shuja Haque) to test whether subjective cognitive impairment – as in “I feel like I'm not remembering as well as I used to” – is a precursor to Alzheimer's Disease. Twenty study subjects will be recruited through Detroit's Veterans Affairs Medical Center for MRI scanning and other testing.

Stroke Rehabilitation – **Dr. Diane Adamo**, assistant professor in the department of Health Care Sciences, received her post-doctoral training at the IOG and continues to assist the IOG with health screenings and community



Falls training is critical to the health of older adults. Dr. Adamo demonstrates the correct way to get up after a fall.



Lifespan Cognitive Neuroscience faculty Drs. Jessica Damoiseaux and Noa Ofen attend Research Day.

presentations on the important issue of “Falls and Balance.” Her research into how therapists rehabilitate stroke patients got a boost this year with a two-year \$72,500 grant from the Blue Cross Blue Shield of Michigan Foundation. The project will measure hand grasp force to test whether both hands show a loss of force after a stroke, which could lead to more effective interventions for therapy.

Heading South & West – Predoctoral student **Ana Daugherty** and **Dr. Andrew Bender** (who successfully defended his dissertation in December) won travel awards from the IOG to participate in the April Cognitive Aging Conference in Atlanta. They research brain changes in healthy adults as they age. Ana also received a travel award to present her research at the Society for Neuroscience Conference in San Diego, while predoc students **Mike Sugarman** and **Andria Norman** won funds to present their research at Seattle's International Neuropsychological Society Conference.

Wendy Bartlo's March trip to Albuquerque, New Mexico, to present at the Society for Applied Anthropology also won travel funding.

Brains Reign – Undergraduate students in **Dr. Noa Ofen's** lab presented posters outlining their research at last fall's Wayne State University Undergraduate Research Conference. **Robert Flinn**, **Nikhil Adapa** and **Ishan Patel**, all students in the joint IOG and Merrill Palmer Skillman Lifespan Cognitive Neuroscience Program, were excellent representatives of the high caliber of work accomplished by the program's undergraduates. **Robert Flinn** won 2nd place overall for his poster on *Hippocampal Head and Body Volumes are Related to Hippocampal Subfield Volumes*.

Above and Beyond – Predoc trainee **Mike Sugarman** won the prestigious John Teahan Memorial Award to the fourth year clinical student who goes beyond the requirements of the program and demonstrates exceptional personal drive in developing clinical skills. Mike receives \$1,000 and his name permanently recorded on a plaque in the Teahan Reading Room in the psychology clinic. **Ana Daugherty** won the Julie Thomas Memorial Scholarship to encourage work on the biological and ethological bases of behavioral problems to help people lead happier and more fulfilling lives.

Student Research from page 1

petitive and fascinating field of submissions.” And the winners (first authors) are . . .

1st Place Paper: **Peng Yuan** for *Prefrontal Cortex and Executive Functions in Healthy Adults*, an analysis of brain neuroimaging that found a link between a larger prefrontal cortex and higher scores on tests of executive function in healthy adults. Results support a “bigger is better” hypothesis of brain behavior.

Runner-Up Paper: **Andria Norman** for *Fear of Alzheimer's Disease Effects Subjective and Objective Memory*. Norman and colleagues found that fear of AD was associated with subjective frequency of forgetting but not with ob-

jective memory function.

1st Place Poster: **Ana Daugherty** for *Age, Sex and Regional Brain Correlates of Path Complexity in Virtual Water Maze Navigation*. Observational research has suggested that older adults take unnecessarily complex routes in thinking as they attempt to reach a goal. Ana investigated a method of measuring the brain path taken by older adults as they navigate a virtual maze, and found that this approach may be a useful way to quantify their performance. This poster is a two-time winner since taking 3rd prize at the Wayne State University wide Graduate Exhibition in March.

Runner-Up Poster: **Annalise Rahman-Filiak** for *The Effect of Personality Traits on*



Student research runner-up Annalise Rahman-Filiak explains her research on the “oldest old” to Director Lichtenberg.

Cognitive Functioning and Functional Status in the Oldest Old. Higher conscientiousness and lower agreeableness indicated better neuropsychological and functional performance in octogenarians. Lower neuroticism predicted better cognition and function in centenarians.

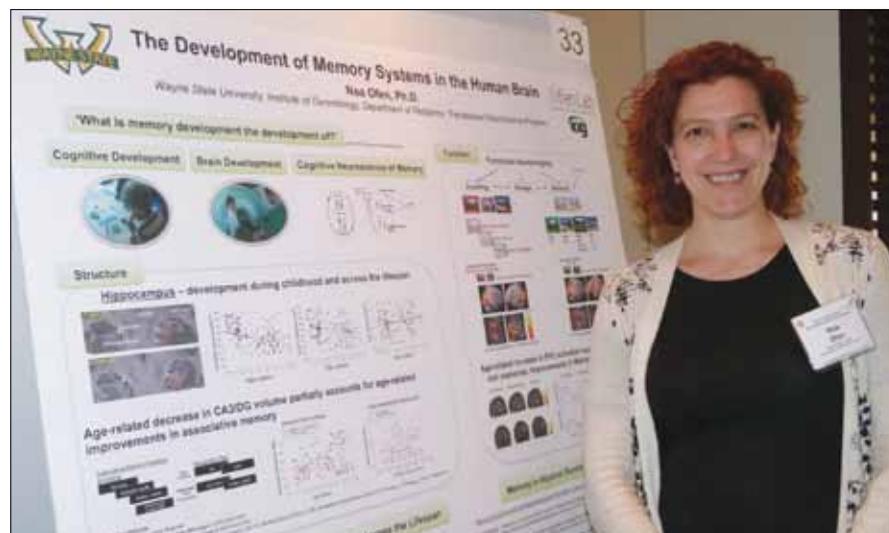
Dr. Ofen Honored as a Fellow at Kavli Frontiers of Science

The IOG's Lifespan Cognitive Neuroscience researcher, Dr. Noa Ofen, will discuss her work on the *Development of Memory Systems in the Human Brain*, at April's Kavli Symposium in Irvine, California. Dr. Ofen was chosen to be a fellow by a National Academy of Sciences committee from a select group of young researchers who have already made recognized contributions to science. These outstanding scientists discuss advances across a broad range of disciplines to learn about cutting-edge research in other fields and build new ties between the nation's future scientific leaders. More than 150 presenters at Kavli have gone on to become Academy members and 10 have been awarded Nobel Prizes.

Dr. Ofen investigates the structure and function of brain development across a wide age

range of typically developing children and adults. In particular, she has worked to explore the hippocampus, a crucial brain structure for learning and memory that is altered in several psychiatric disorders that have a neurodevelopmental basis. She also heads the Ofen Lab for Cognitive and Brain Development (www.ofenlab.wayne.edu).

"I was highly honored to be invited to present at Kavli," Dr. Ofen said. "It



is a unique opportunity and a transformative and interesting experience."



Members of the IOG's Baltes International Conference: front left is Dr. Boris Baltes, son of the conference's namesakes and acting chair of the WSU Psychology Department; front center is the Director of the IOG's Lifespan Cognitive Neuroscience Program Dr. Naftali Raz.

International from page 1

- The stability of experience-induced brain changes;
- Specificity of training effects of the brain and cognition, and especially the issue of far transfer, i.e., the extent to which specific training affects skills and activities that bear only limited resemblance to the practiced tasks. Elucidating cellular and vascular mechanisms that may underlie changes in brain structure, function and metabolisms, and the cell or artery changes that might have prompted them;

- Increased study of brain areas beyond the cerebral cortex, and;
- Illuminating the "dark" side of brain plasticity, i.e. elucidating the ways in which experiences such as trauma or chronic stress act to induce undesirable changes in the brain.

The goal of the Baltes Conference was to address the "largely unanswered questions of when, how and why the brain changes," said Dr. Raz, "and how those changes affect the way we think and behave." The work of the conference's namesakes, German scientists Margret and Paul Baltes, shaped modern gerontology. Their obser-



Dr. Raz giving colleague Dr. Gerd Kemperman good-natured ribbing via PowerPoint.

vations of older adults (from the 1980s to the late 2000s) spurred interest in the malleability of human behavior and cognition throughout the lifespan. The generosity of the Baltes Foundation in funding ongoing conferences makes sure the effort inspired by the Baltes continues. After all, as Drs. Raz and Lindenberger conclude, "The inquiry into brain plasticity, its lifespan trajectories and its role in shaping cognition – from cradle to grave – has just begun."

Providing Needed Help at Every Level

One of the IOG's newest partners has created two organizations to help seniors and their families cope better with the challenges of aging.

Helping Our Parents (www.helpingourparentsmi.com) provides free in-home assessments throughout southeastern Michigan to accurately determine the level of need. As case manager Marcia Richards explained, it can be difficult for family members to clearly see the capabilities of their loved one. "We meet the family face-to-face to provide a deep, tailored, community-based overview of needs and resources," she said. "And we never refer anyone to a place we haven't personally evaluated."

Senior Care Network (www.miseniorcare.com) gives trusted, no-fee referrals to address simple issues, while also providing fee-based private case management to navigate the often complex selection of health



services, medical reimbursements, veteran's benefits, and legal and financial decisions.

This two-pronged approach means that the staff of both organizations is in touch

with hundreds of older adults each year. "Sometimes we meet a senior whose life could truly be changed by providing a small service, aid or experience," Richards said. To make those wishes real, they partnered with *A Life Celebrated* (created by Bridgepointe, a Detroit non-profit charitable organization). One client rode in a convertible for the first time. Another received a new mattress and a better night's sleep. Others have enjoyed a special movie night or a gift of art supplies.

"These may seem small," Richards said, "but the small, thoughtful act can make a very big difference." From spa days to motorcycle rides, *A Life Celebrated* creates special memories for loved ones, no matter the challenge, and could make even more wishes come true with help from the community. Visit www.alifecelbrated.org to donate to this special cause.

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Promoting Successful Aging in Detroit and Beyond

UPCOMING EVENTS

May 12 & 13, 7:30 am - 4 pm

12 CE Professional Conference

Issues in Aging

DAY 1: *Facts and Realities : Alzheimer's & Dementia Care*

DAY 2: *Innovative Approaches to Frailty Care*

Dearborn Inn, Conference Center
20301 Oakwood Blvd, Dearborn, MI 48124

June 10 7:30 am - 2 pm

\$5 Registration Fee

Senior & Caregiver Event

Healthier Black Elders Health Reception

What's Your Number? Diabetes from Head to Toe

Health Screenings • Speakers • Lunch • Fitness • Humor

Greater Grace Conference Center
23500 W. 7 Mile Rd. Detroit, MI 48219

Visit www.iog.wayne.edu for details and registration,
or contact Donna MacDonald at 313-664-2605

Outreach

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would automate this processing, and learned how to run and apply advanced statistical methods for evaluating longitudinal change to these data.

I have been trained to study complex interactions among these different factors, and I see that as essential to understanding neurocognitive aging. There are few places in the world that I would have been able to do this kind of work, and few researchers under whom such training would have been possible. Furthermore, because of the interdisciplinary nature of the IOG, I have had exposure to numerous other areas of work, from elder abuse to economics of aging that have broadened my understanding of aging and provides a unique, holistic perspective that continues to inform my work.

It just goes to show -you never know what you're capable of until you try, but it helps to have good mentors and cheerleaders. The support and encouragement of Drs. Raz, Lysack, and Lichtenberg and the entire IOG family has been exceptional.

In addition, the professional connections I developed over my time at Wayne State University and the IOG have been immensely beneficial. I am now on the job market for a longer-term position as a postdoctoral research scientist, and this professional network has been remarkable in helping identify prospective positions. Ultimately, I would like to continue this work as a tenure track faculty member in a major research university. Although obtaining such a position in today's academic job market is uncertain, I believe my training at the IOG gives me a great deal of additional perspective that I hope will give me an edge. It has certainly influenced how I think about aging.