“Our Mission: To advance discoveries in neuroscience to improve the lives of those suffering from neurological disorders”

GROUND BREAKING CEREMONY

CENTER FOR TRANSLATIONAL RESEARCH AND EDUCATION

CONGRATULATIONS NRSI Member St. Albert’s Day Winners!
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Greetings to members and friends of the Neuroscience Research Institute!

This fall issue of the Neurotransmitter highlights the groundbreaking ceremony for the new Center for Translational Research and Education held on August 16th. On a brilliant summer day our University and Hospital leaders, led by Father Garanzini, gave inspiring speeches and video previews of our new building - everybody grabbed a shovel!

The featured NSRI faculty member for this edition is Dr. Bill Ashley, Assistant Professor in the Department of Neurosurgery. As a practicing neurosurgeon with a strong interest in cerebrovascular disease, Dr. Ashley’s further expertise in basic mechanisms underlying vasospasm position him perfectly to address important questions to improve patient outcomes from this devastating neurologic problem. Our featured Neuroscience Graduate student is Dan Shepherd, a member of the combined MD/PhD program, starting his second year in the PhD portion of his studies (Kartje lab) and determining how endogenous adult neural stem cells may improve functional recovery after stroke.

I would like to extend a special thanks to our summer research students, who joined our labs this past summer as undergraduates from various college campuses as well as STAR students from Loyola medical school. As always, we appreciate your excitement and enthusiasm for neuroscience research, and wish you the best for your continued success.
Loyola University Chicago Health Science Division officially broke ground for the new 137 million dollar medical research building scheduled to open in April, 2016. This new building will house over 500 scientists, trainees, and staff dedicated to the scientific research mission at Loyola. This includes wet lab scientists, as well as researchers engaged in public health, health services, nursing, bioinformatics, and epidemiology. Construction progress is well underway and highly visible around the Maywood campus. We are all excited to see the completed building and are thrilled for the new collaborative opportunities this consolidation of talent will provide.
Dr. Bill Ashley joined the faculty of the Department of Neurological Surgery as an Assistant Professor. His surgical expertise includes aneurysms, brain hemorrhage, carotid stenosis, endovascular therapy, and stroke. His research area relates to his clinical practice and his aim is to better understand the mechanisms underlying vasospasm. Recently, I had the opportunity to talk with Bill about his background and his plans for future research at Loyola. Bill told me that he can sum up his philosophy about science and research with the following “Be true to yourself and to the science. Be fully immersed in what you do, only then will you be prepared for the unexpected. Finally, it is a pleasure to work hard at something you love.”

TP: Did you always know that you wanted to be a physician and/or scientist?
BA: Both my parents are physicians so I was always very keen on becoming a doctor. And as a child I was very interested in animals and nature. I loved taking things apart, figuring them out and then putting them back together again. I made the formal decision to become a neurosurgeon in 5th grade after giving a presentation on brain tumors. After that-I was hooked. I decided to become involved in basic science after my early research experiences in college.

TP: Where did you do your undergraduate studies? Did you participate in any research activities as an undergraduate?
BA: I went to Stanford University. I was a biology major and was also a part of the humanities special honors program. As an undergrad, I was fortunate to have the opportunity to work in a lab in the Department of Physiology and Biophysics at the University of Illinois at Chicago. I utilized modern cell and molecular biological techniques to help determine the pattern of changes in contractile protein isoform expression in skeletal muscle at the cellular level. I worked closely with an MD/PhD candidate, Dr. Jamil Jacobs-El and my mentor was Dr. Brenda Russell.

TP: Who did you do your graduate work with and why did you choose them as a mentor? What did you focus on during your PhD work?
BA: I continued my early research work as an MD/PhD candidate in the Dept. of Physiology and Biophysics at UIC. Dr. Brenda Russell was my mentor. She is a friend and colleague. She was an excellent mentor. She has uncanny scientific intuition and was a very critical thinker. More importantly she had a very practical and straightforward approach to experimental design and interpretation. The science should drive the experimental technique and not the other way around. My thesis was focused on understanding the role of the mRNA 3’-untranslated region in skeletal muscle adaptation. It was entitled “Molecular Mechanisms of Skeletal Muscle Adaptation.”

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**TP:** What is the main focus of your research and how you integrate that with your clinical responsibilities?

**BA:** As a neurosurgeon my primary clinical focus is the treatment of complex cerebrovascular disease using both open surgical and endovascular techniques. This includes treatment of brain aneurysms, arteriovenous malformations, carotid disease, and strokes. I am particularly interested in aneurysmal subarachnoid hemorrhage (aSAH). Aneurysm rupture itself can be devastating. In those patients that survive the initial hemorrhage, many are faced with a dangerous transient narrowing of intracranial blood vessels that can be associated to neurologic deterioration. Vasospasm is a significant source of morbidity and mortality following aSAH. Despite significant research, clear molecular mechanisms have yet to be elucidated. In part due to poor understanding of the mechanism, diagnosis and treatment can be inconsistent and/or ineffective. My overall goal is to better understand the molecular mechanisms underlying vasospasm related to aSAH in order to facilitate rational development of effective and reliable diagnostic and treatment paradigms. There are both translational and basic science elements of my work which includes Clinical CSF neuroproteomics and CSF Microparticle Biomarker analysis as well Laboratory investigation of putative molecular signals in the vasospasm pathway using rodent models of cerebral vasospasm and hypoxia/ischemia.

**TP:** Are you planning to train graduate students in your lab and, if so, when do you think you will be accepting students for rotations?

**WA:** Absolutely - I look forward to it. Training graduate students is one of the pleasures of having a lab. I hope to be able to accept student rotations by 7/2014 or so.

**TP:** What do you believe is the most important quality in a mentor?

**BA:** Integrity. This quality must be pervasive. It informs the way experiments are designed, carried out, interpreted and presented. It informs the mentor’s expectations. It informs the way the mentor deals with students, post-docs, techs, colleagues and co-workers. Most importantly it informs the underlying vision that is the motivation for being involved in scientific research in the first place.

**TP:** Where do you see your research taking you in the next 5 years?

**BA:** I plan to be at Loyola with a funded lab fully engaged in cerebrovascular research and actively engaged in training graduate students, post-docs, residents, fellows other others. By then I hope to define a set of biomarkers that reliably predict vasospasm and may lead to improvement in clinical care. I hope to better understand the molecular signals that lead to vasospasm and/or ischemic damage following SAH. I hope to begin understanding why aneurysms rupture and how to predict it in patients using molecular-based testing.
My name is Dan Shepherd, and I'm in my fourth year in Loyola's combined MD/PhD program. I grew up in Massachusetts, graduated from Trinity College in Hartford, CT, and worked as a research technician at the University of Maryland, Baltimore before moving to Chicago. Last summer I joined the Neuroscience program and currently work in Dr. Wendy Kartje's lab at the Hines, VA. My research focuses on the neural stem cell response to brain injury in adults, including a potential role for our favorite protein, Nogo-A.

My overall career goal is to be active in both clinical practice and translational research. I'm thankful for the guidance and mentoring I've received at Loyola from both within and outside my lab, and am looking forward to continuing to grow as a scientist in the neuroscience program.

In my free time, I enjoy photography, playing and writing music, and making homemade pizza.
The junior faculty and postdoctoral fellows from the Hines Brain Trust have been productive. Dr. Amy Herrold received a one year Merit Switzer Research Fellowship award from the National Institute on Disability and Rehabilitation Research entitled, “Treatment development for alcohol craving and rehabilitation among individuals with co-occurring mild traumatic brain injury, post-traumatic stress disorder, and alcohol use disorder.” Dr. Cynthia Pervan Von-Zee (Co-PI) along with Dr. Evan Stubbs received a one year grant award from the Midwest Eye Banks.

Dr. Kelly Langert published a paper in the Journal of the American Society for Neurochemistry entitled “Tumor necrosis factor α enhances CCL2 and ICAM-1 expression in peripheral nerve microvascular endoneurial endothelial cells”. Dr. Eileen Foecking published two papers in Restorative Neurology and Neuroscience entitled “Androgen treatment and recovery of function following recurrent laryngeal nerve injury in the rat” and “Electrical Stimulation and Testosterone Enhance Recovery from Recurrent Laryngeal Nerve Injuries”.

In March 2013, we also welcomed a new PhD fellow, Dr. Sandra Kletzel, to the Hines Brain Trust. Dr. Kletzel completed her PhD at Loyola University Chicago, in the Graduate Program in Neuroscience where her research primarily focused on the development of an animal model to study medication induced risk-taking behavior in an animal model of Parkinson’s disease. Her primary mentor is Dr. Theresa Pape and her secondary mentor is Dr. Fran Weaver. Dr. Kletzel is currently developing a training plan to study mild cognitive impairment in Veterans with Parkinson’s disease.

If you wish to be included in any future Hines Brain Trust meetings, please email Amy Herrold at Amy.Herrold@va.gov
During last spring semester, the Interdisciplinary Neuroscience Minor brought in five speakers to give colloquia to the Neuroscience Seminar. On January 29th, Dr. T. Celeste Napier of the Department of Pharmacology, Director Center for Compulsive Behavior and Addiction, Rush University, gave a colloquium entitled "Methamphetamine Abuse: Vulnerability for Parkinson's disease." On February 5th, Dr. Paul R. Vezina of the Department of Psychiatry and Behavioral Neuroscience, University of Chicago, gave a colloquium entitled "Dopamine glutamate signaling regulates the expression of stimulant sensitization."

On February 12th, Dr. Beverly Wright of Northwestern University's Department of Communication Sciences and Disorders delivered "Acquisition and consolidation of perceptual learning." Dr. Leah H. Rubin of the Department of Psychiatry, Women's Mental Health Research Program, University of Illinois at Chicago, gave a colloquium to the Neuroscience Seminar on "Effects of sex hormones on cognition and symptoms in schizophrenia" on March 12th. Dr. Roy A. Wise from the National Institutes on Drug Abuse gave a talk entitled "The Roles of Dopaminergic Systems in Reward and Addiction" on April 2nd. After each of these talks, a small group of faculty and students goes to dinner at a local eatery, where students have the opportunity to ask questions about the research and to get career advice from leading researchers in neuroscience.

In addition, the Gannon Center for Women and Leadership hosted a luncheon with Dr. Pauline Maki, Professor of Psychiatry and Psychology and Director, Women's Mental Health Research, University of Illinois at Chicago on March 21st, celebrating Women Leaders in the STEM Disciplines in Piper Hall on the Lake Shore Campus. Many Interdisciplinary Neuroscience Minors and faculty attended this event, and they enjoyed Dr. Maki's presentation and the opportunity for informal conversation with her and faculty affiliated with the Gannon Center.
The local SfN chapter held its annual meeting this year at the Northwestern Memorial Hospital Conference Center, March 07, 2013.

The Presidential symposium, Stem Cell Therapy: Advances and Challenges was chaired by Dean Hartley, Ph.D. The symposium was immediately followed by Keynote speaker, Dr. Rudolf Jaenisch, Professor of Biology, Massachusetts Institute of Technology. Dr. Jaenisch presented an excellent talk entitled “Stem Cells, Pluripotency, and Nuclear Programming”.

Loyola faculty and students were well represented throughout the meeting. Yathindar Rao, Senior Biochemistry Program Graduate Student in Dr. Pak’s lab was the Loyola representative for the Graduate Student oral competition for his project entitled “Differential Regulation of MicroRNAs by 17β-Estradiol in the Ventral Hippocampus of aged Female Rats”. The afternoon Symposium 1 “Hormone Regulation of Nervous System Function” was co-chaired by Drs. Fargo and Gentile from the Department of Molecular Pharmacology and Therapeutics and featured a talk by Dr. DonCarlos entitled “Sexual Differences of Developing Brain: New Rules?”.

**List of abstracts:**

- **Differential Regulation Of MicroRNAs By 17β-estradiol In The Ventral Hippocampus Of Aged Female Rats**
  Y.S. Rao$, N.N. Matt$, W.C. Chung$, T.R. Pak$. $Department of Molecular and Cellular Physiology, Stritch School of Medicine, Loyola University Chicago, Maywood, IL; $Department of Biological Sciences, Kent State University, OH

- **Alpha-synuclein Induces The Rupture Of Endosomes/Lysosomes, Leading To The Generation Of Reactive Oxygen Species In Cells**
  D. Freeman$, A. Rana$, E. Campbell$, $Department of Cell Biology, Neurobiology and Anatomy; $Department of Pharmacology, Stritch School of Medicine, Loyola University Chicago, Maywood, IL

- **Age And Hormone Dependent Nuclear Protein Accompaniment Of Estrogen Receptor Beta (ERB) In The Rodent Brain**
  N.N. Matt, Y.S. Rao, S.A. Prins, E. Pinceti, C. Shults, T.R. Pak. Department of Molecular and Cellular Physiology, Stritch School of Medicine, Loyola University Chicago, Maywood, IL

- **Functional Implications Of Estrogen Receptorβ Posttranslational Modifications In Neurons**
  E. Pinceti, N.N. Matt, Y.S. Rao, T.R. Pak. Department of Molecular and Cellular Physiology, Stritch School of Medicine, Loyola University Chicago, Maywood, IL

- **Peripubertal Binge Alcohol Exposure Alters Normal Developmental MicroRNA Expression Patterns**
  S.A. Prins, T.R. Pak. Department of Molecular and Cellular Physiology, Stritch School of Medicine, Loyola University Chicago, Maywood, IL

- **17β-estradiol Regulates Expression Of The Neuronal Alternative Splicing Factor NOVA-I**
  C. Shults, Y.S. Rao, T.R. Pak. Department of Molecular and Cellular Physiology, Stritch School of Medicine, Loyola University Chicago, Maywood, IL

- **Neuroimaging Responses In Relation To Alcohol Craving And Alcohol Use Assessments In Veterans With Mild Traumatic Brain Injury And Mental Health Disorders**
  A. A. Herrold$, J. Babcock-Parziale$, W. M. High$, B. Smith$, C. Evans$, A. Urban$, K. Noblett$, B. Hartford, T. L-B. Pape$. $Edward Hines Jr., VA Hospital, Hines, IL; $Southern Arizona VA Health Care System, Tucson, AZ; $Lexington VAMC, Lexington, KY; $Loyola University Chicago, Maywood, IL; $Northwestern University, Chicago, IL; $Chicago Association for Research and Education in Science, Hines, IL; $Marianjoy Rehabilitation Hospital, Wheaton, IL

Loyola cSfN Representatives:

- Toni R. Pak, PhD – Treasurer
- Amy Herrold, PhD – Postdoctoral Councilor
- Lydia DonCarlos, PhD - Councilor

**Save the Date!**

Next cSfN Meeting

April 4, 2013
In the News.....

SUMMER RESEARCH

We were very fortunate this year to have several summer students participating in neuroscience laboratory research through various outreach programs. These students learned a lot about research, attended seminars, networked with graduate students, postdocs and faculty and also had a great time!

Andrea Blitzer, 2nd Year Medical Student, STAR program student
Host: Stubbs Lab

Rebecca Ruthberg, Albion College, MI
Host: Pak Lab

Marjorie Yassen, Purdue University
Host: Pak Lab

Morgan Hartz, Loyola University Chicago
Host: Han Lab

Katherine Sonnefeldt, University of Wisconsin Madison
Host: Han Lab

Mark Tancredi, 2nd Year Medical Student, STAR program student
Host: Collins Lab
NEW GRANT AWARDS

- **NIH R01** Neuromolecular consequences of adolescent binge drinking, **PI: Dr. Toni Pak**
- **NIH R01** Admin. Supplement Ligand independent signaling of estrogen receptor beta and the aging brain, **PI: Dr. Toni Pak**
- **NIH R01** Molecular and Cellular Functions of Ano5 in Heart **PI: Dr. Renzhi Han**
- **NIH R01** Mechanisms of Muscle Inflammation in Muscular Dystrophy, **PI: Dr. Renzhi Han**
- **NIH R01** Oncogenic MLK3-Pak1 Signaling in ER Negative Breast Cancer, **PI: Dr. A.J. Rana**
- **NIH R21** Exploring the role of microtubules in HIV-1 uncoating, **PI: Dr. Ed Campbell**
- **NIH R21** The Effects of Binge Ethanol on Neuroinflammation and Functional Recovery after TBI, **PI: Dr. Wendy Kartje**
- **Michael J. Fox Foundation** The Role of phosphorylation and oligomerization on alpha-synuclein induced vesicle rupture, **PI: Dr. Ed Campbell**
- **CDA-I** Limiting Leukocyte Trafficking Attenuates Experimental Autoimmune Neuritis, **PI: Dr. Kelly Langert (Dr. Stubbs lab)**
- **CDA II** Brain Targets for Alcohol craving in Veterans with mTBI, **PI: Dr. Amy Herrold (Dr. Pape’s lab)**

NOTEWORTHY

Dr. Toni Pak: Associate Professor, Cell and Molecular Physiology, will be replacing Dr. Stephen Lipsius as the Course Director for the Function of the Human Body Course. Dr. Lipsius will continue to teach in the FHB course and is the MSMP (Masters in Medical Physiology) Program Director in the Department of Cell and Molecular Physiology.

Dr. Keith Fargo: Research Assistant Professor, Hines VA, Department of Molecular Pharmacology and Therapeutics has accepted a new position as Director of Scientific Programs and Outreach at the Alzheimer’s Association. We wish Keith all the best in his new position!

Dr. Charles Webber: Professor, Department of Cell and Molecular Physiology has retired from Loyola after 38 years of service and is embarking on a new career. Dr. Webber will now be pursuing biblical Hebrew studies at Northern Baptist Theological Seminary in Lombard. He will also be starting a 2 year commitment to the Spiritual Direction Training Program of the Chiara Center in Springfield grounded in the spirituality of Saints Francis and Clare of Assisi. Dr. Webber has also been hired as a part-time Instructor in the Marcella Niehoff School of Nursing where he will continue teaching physiology and pathophysiology to seasoned nurses working toward their certification as nurse practitioners.

A study by Drs. Collins and Neafsey found that fish oil might protect against dementia in alcohol abusers. This work continues to receive media coverage including in Medscape, Toronto Star, Discovery Fitness and Health Blog, Digital Journal, International Business Times, RTT News, the Star and Fish Information and Services.

The Hines VAH/Lovell FHCC Research Day took place on May 14, 2013 at Hines VA Hospital. Participating institutions included Edward Hines Jr. VA Hospital, James A Lovell, Federal Health Care Center, Loyola University Chicago, and Rosalind Franklin University.
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<th>Date</th>
<th>Speaker(s)</th>
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<tr>
<td>November 26</td>
<td>Magdalena Szymanska, Ph.D. (Research Associate, Dept. of Physiology, Loyola University Chicago)</td>
<td>Trans-Generational Effects of Binge Alcohol Consumption during Puberty in the Development of the Hypothalamo-Pituitary-Adrenal Axis</td>
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<td>December 3</td>
<td>Suresh Babu Rangasamy, Ph.D. (Postdoctoral fellow, Department of Neurological Sciences, Rush University Medical Center)</td>
<td>Behavioral Analysis of Functional Recovery and Efficacy of Some Therapeutic Measures after Spinal Cord Injury in Bonnet Monkeys</td>
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<td>December 10</td>
<td>Kim Nixon, Ph.D. (Associate Professor of Pharmaceutical Sciences University of Kentucky)</td>
<td>Gliosis in models of alcoholism: Roles in neuro degeneration regeneration</td>
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<td>January 14</td>
<td>Son Ton, B.S. (Third Year Ph.D. Student)</td>
<td>Research in Progress Report</td>
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<td>January 21</td>
<td>Jonathan Lautz, B.S. (Third Year Ph.D. Student)</td>
<td>Research in Progress Report</td>
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<td>January 28</td>
<td>Jim Cheverud, Ph.D., (Professor and Chair, Department of Biology, Loyola University Chicago)</td>
<td>Video Conference with Lake Shore Campus</td>
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<td>February 4</td>
<td>Daniel Shepherd, B.S. (Second Research Year M.D., Ph.D. Student)</td>
<td>Research in Progress Report</td>
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<td>February 11</td>
<td>Brian Popko, Ph.D. (Professor, Neurological Disorders, Dept. of Neuroscience, The University of Chicago)</td>
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<td>February 18</td>
<td>Vincent Borkowski, B.S. (Second year Ph.D. Student)</td>
<td>Research in Progress Report</td>
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<td>February 25</td>
<td>Miriam Domowicz, PhD (Research Associate (Associate Professor) Kennedy Center for Mental Retardation, University of Chicago)</td>
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<tr>
<td>March 4</td>
<td>Audrey Torcaso, B.A. (Second Year Ph.D. Student)</td>
<td>Research in Progress Report</td>
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<td>March 11</td>
<td>Seminar TBA</td>
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<td>March 18</td>
<td>Lauren Cronk, B.S. (First Year Masters Student)</td>
<td>Research in Progress Report</td>
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<td>March 25</td>
<td>Ned H. Kalin, M.D. (Hedberg Professor and Chair, Department of Psychiatry, University of Wisconsin School of Medicine and Public Health)</td>
<td>Video Conference with Lake Shore Campus</td>
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<td>April 1</td>
<td>Michael Winek, B.S. (First Year Masters Student)</td>
<td>Research in Progress Report</td>
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<td>Seminar TBA</td>
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<td>April 15</td>
<td>Andie Asimes, B.S. (First year IPBS Students)</td>
<td>Research Rotation Reports</td>
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<td>April 22</td>
<td>David Calkins, Ph.D. (The Denis M. O’Day Professor of Ophthalmology and Visual Sciences, Vice-Chairman and Director for Research, The Vanderbilt Eye Institute, Vanderbilt University Medical Center)</td>
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<td>April 29</td>
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