



MidBrains 2011
**The 5th Annual Undergraduate
Neuroscience Conference of the
Upper Midwest**

Saturday, April 30, 2011

St. Olaf College
Northfield, MN



Regents Hall of Natural Sciences

Welcome to **MidBrains** 2011!

MidBrains 2011 Program Committee

Shelly Dickinson, St. Olaf College (Convener)
Gary Muir, St. Olaf College
Jeremy Loebach, St. Olaf College
Kevin Crisp, St. Olaf College
Bonnie Sherman, St. Olaf College
Eric Wiertelak, Macalester College
Clark Ohnesorge, Macalester College
Julie Nieworth, Carleton College
Larry Wichlinski, Carleton College
Roxanne Prichard, University of St. Thomas
Barbara Curchack, Inver Hills Community College

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University of Minnesota
University of Iowa
University of Wisconsin-Madison
Mayo Graduate School
St. Olaf College
Macalester College
Council on Undergraduate Research

Special thanks to

At St. Olaf College:
Darla Frandrup
Neuroscience Program
Neuro Club
Informational and Instructional Technologies
Faculty for Undergraduate Neuroscience

SCHEDULE OF EVENTS

8:00 AM – CHECK-IN/REGISTRATION

3rd floor Regents Hall of Natural Science

9:00-10:00 AM – KEYNOTE ADDRESS

“Reading Science and Educational Practice: A Disconnection Syndrome?”

Mark Seidenberg, University of Wisconsin-Madison

Regents Hall 150

Scientific studies of reading have yielded great advances in understanding reading and its brain bases. Yet about 30% of the American population reads at a "basic" or "below-basic" level. The personal and societal consequences of reading failure are enormous. The talk will address a basic question: if the science of reading is so advanced, why are so many people poor readers? I'll examine whether a new science of "neuroeducation" is possible, or desirable.

10:20-11:30 AM – GRADUATE SCHOOLS PRESENTATION

Faculty from the University of Minnesota, University of Iowa, University of Wisconsin-Madison, and the Mayo Graduate School will describe their graduate programs in the neurosciences.

Information will be provided regarding program goals, research opportunities, admissions procedures and financial aid.

Regents Hall 310

10:20-11:30 AM – FACULTY WORKSHOP

Undergraduate and graduate faculty are invited to a workshop to discuss curricular issues, best practices for undergraduate research, timing of future MidBrains meetings and how to prepare students for graduate school.

Regents Hall 210

11:40 AM-12:25 PM – FACULTY RESEARCH TALKS, SESSION I (concurrent talks)

"Critical period mechanisms: Lessons from a songbird"

Teresa Nick, Ph.D., University of Minnesota

Regents Hall 210

"Asymmetric signals and rapid membrane retrieval mechanisms guide nerve growth"

John Henley, Ph.D., Mayo Graduate School

Regents Hall 310

12:25-1:30 PM – LUNCH (Pick up box lunches by registration table)

* Undergraduate and graduate students will take their lunches to the Black Ballroom (in Buntrock Commons) to learn about the grad school experience from those currently living it.

* Faculty are invited to take their lunches to Regents Hall 356

1:30-2:15 PM – FACULTY RESEARCH TALKS, SESSION II (concurrent talks)

"Using fruit flies to understand how synapses maintain stable levels of function"

C. Andrew Frank, Ph.D., University of Iowa

Regents Hall 210

"Multimodal interactions in primary auditory cortex: The conscious brain as an active sensor"

Matt Banks, Ph.D., University of Wisconsin-Madison

Regents Hall 310

2:25-3:10 PM – GRADUATE STUDENT TALKS (concurrent 10 min. talks)

Regents Hall 210

2:25 – 2:35 "Age-Related Differences in Discounting the Future"

Kameko Halfmann, University of Iowa

2:40 – 2:50 "Reward Contingency Modulates Hippocampal Place Cell Variability"

Andrew Wikenheiser, University of Minnesota

2:55 – 3:05 "Dynamic remodeling of nerve growth cone adhesions during chemotropic stimulation"

Lucas Carlstrom, Mayo Graduate School

Regents Hall 310

2:25 – 2:35 "Investigating DYT1 Dystonia: Exploring Pathways of TorsinA Degradation"

Kara Gordon, University of Iowa

2:40 – 2:50 "Investigating Dendritic Spines of Striatal Neurons"

Rachel Penrod, University of Minnesota

2:55 – 3:05 "Kallikrein 6: A Mediator of Oligodendrocyte Function and Dysfunction"

Josh Burda, Mayo Graduate School

3:20-4:05 PM – STUDENT RESEARCH TALKS (concurrent sessions)

Regents Hall 310

The first presentation in this session will be 12 minutes, followed by 3 minutes for questions. The second presentation will be 20 minutes with 5 minutes for questions.

3:20-3:35 Priming Stigmatized Groups to Change Intellectual Ability.

Geoffrey Williams, *Carleton College*.

3:40-4:05 Reward Processing Differences of Dependents and Non-Dependents During Video Game Play Using EEG

Rachel Doty, Christopher O'Leary, and Denny McDonald, Dr. Richard Tafalla, *University of Wisconsin-Stout*.

Regents Hall 410

Presentations will be 12 minutes, followed by 3 minutes for questions.

3:20-3:35 Investigating the Neuroanatomical Pathology of Schizophrenia using Correlate Models of Dreaming and Drug-induced Psychosis.

Victor Ramirez, *Carleton College*.

3:35-3:50 The Engram Found: It's in the Astrocytes?

Michael Fitzgerald, *Winona State University*.

3:50-4:05 The Norepinephrine Precursor L-threo-DOPS Does Not Attenuate Cognitive Deficits in a Rat Model of Alzheimer's Disease.

Jeffrey Maneval, Dr. Lawrence Wichlinski, *Carleton College*.

4:15-5:45 PM – POSTER SESSION & SOCIAL

Regents Hall 4th Floor Atrium

All poster presenters should be at their posters from 5:15-5:45 PM and for an additional 15 minutes according to the following schedule:

Schedule A 4:15-4:30

Schedule B 4:30-4:45

Schedule C 4:45-5:00

Schedule D 5:00-5:15

Position-Schedule & Title

- 1-A **Decision-making in the brain: Algorithms and personality** David Collins & Adam Johnson, Ph.D., *Bethel University*
- 2-B **Exploring novelty: Visual recognition of places and objects in the rat.** Alyssa Shilling, *Bethel University*
- 3-C **Electrophysiological correlates of musical dissonance and harmonic complexity: Preliminary findings.** Jonathon Carlson, Morgan Wilkinson, & Peter Wiese, *Augustana College (ILL)*
- 4-D **Language and pain: Investigations of swearing as a hypoalgesic effect and interoceptive cue as a hyperalgesic effect.** Sharon Hwee, *Macalester College*
- 5-A **Response competition and grapheme-color synesthesia: A case study.** Ian Doyle Olson, *Macalester College*
- 6-B **Pupillometry and memory in synesthesia.** Jordan Bleth, Margaret Christner, Scott Krepsky, Amanda Kreun, & Katie Udenberg, *St. Olaf College*
- 7-C **Context and lip-reading.** Daniel Mork, *St. Olaf College*
- 8-D **Lip reading ability in normal hearing listeners.** Brianna Sennott, Ian Strahley, Daniel Mork, Renaud Coppalle, & Jeremy Loebach, *St. Olaf College*
- 9-A **Conditioned place aversion in mice with ethanol and caffeine.** Lauren Bahls & Elise Vreede, *St. Olaf College*
- 10-B **False cognate detection: Examining bilingual lexical systems.** Kathleen Lee, Joanna Bovee, Frances Daniel, & Gary Raney, Ph.D., *University of Illinois at Chicago*
- 11-C **Neural responses to aggressive images.** Caitlin Dresler, *University of Wisconsin-Stout*

- 12-D **Digital phantoms: The effects of electronic media on sleep.** Sika Lawson, Rose Nash & Taylor Reff, *University of St. Thomas*
- 13-A **The effects of sleep on prefrontal cortex functioning.** Teresa Borgen, Cristin Murray, Nyajouk Wur, & Karlie Miller, *University of St. Thomas.*
- 14-B **“Flow Memory” in Musical Selections: An EEG Pilot Study.** Carmen Weaver, *University of St. Thomas.*
- 15-C **A tail of two litters.** Andrew Amundson, Samuel Glynn, Amanda Halvorson, Ryan Jorgensen, Alexandra Spreigl, & Dianna Tran, *University of St. Thomas*
- 16-D **Anxiety levels in early adolescent rats reared in an enriched environment versus non-enriched environment.** Jazmine Olson, Alex Martynech, Laura Skallerud, & Kevin Gause, *University of St. Thomas*
- 17-A **Influence of environmental enrichment on playfulness in the adolescent rat.** Nick Bussa, Danielle Durham, Alex Frank, Miranda Mulligan, & Cailin Timm, *University of St. Thomas*
- 18-B **Effects of CMS on hippocampal function.** Samantha Shapiro, *Macalester College*
- 19-C **Activation of GABA_B receptors enhances calcium influx through voltage dependent channels.** Kelly Culhane, *St. Olaf College*
- 20-D **Age-related changes in dopamine receptor expression in olfactory cortical areas.** Anna K. Zimmerman & Dr. Kurt R. Illig, *University of St. Thomas*
- 21-A **Induction of acute analgesia by Yan Hu Suo (Rhizoma Corydalis).** Austin Delmond, *Macalester College*
- 22-B **Environmental lithium’s influence on activity, depression, and aggression in C57BL/6J male mice: Implications for behavioral effects on populations native to regions dominated by lithium deposits.** Brittany M. Krzyzanowski, *Winona State University*
- 23-C **Stress exacerbates the symptoms of autism.** Natalie Glavinovich, *Winona State University*
- 24-D **Can D-Penicillamine induce Myasthenia Gravis?** Aaron Kramer, *Winona State University*
- 25-A **The neuroprotective effects of Coenzyme Q10 on the prevention of oxidative stress in the hippocampus.** Katie Bur, *Winona State University*
- 26-B **Nicotine and endocannabinoids: Effects on short term learning and memory.** Lara Silverman, *Carleton College*
- 27-C **The effects of MSG on short-term memory and attention.** Deborah Rupert, *Carleton College*
- 28-D **The effects of enriched environments on spatial learning performance in adolescent rats assessed by the Morris water maze.** Samantha Lane, Kirsten Freiborg, Vanessa Engelmann, Courtney Hoff, & Mindy Mallinger, *University of St. Thomas*

- 29-A **The role of head direction cells in reorientation and navigational behavior.** Tim Buff, Patrick Boland, Blake Hedstrom, & Gary Muir, *St. Olaf College*
- 30-B **Isoflurane anesthesia disrupts head direction cell activity in freely-moving rats.** Patrick Boland, Courtney Payne, Timothy Buff, Alicia Osterman, & Gary Muir, *St. Olaf College*
- 31-C **Effects of pentobarbital in rats trained to discriminate between 2 and 22 hr food deprivation.** E.M. Anderson, A. J. Collura, J. E. Dobbe, J. M. Emch, K. S. Hughes, A. M. Koll, B. A. Kron, J. K. Ryan, & D. C. Jewett, *University of Wisconsin-Eau Claire*
- 32-D **Behavioral effects of the synthetic cannabinoid JWH018 found in designer marijuana (spice) herbal incenses.** Alexander B. Walczak, Jason J. Srnec, & Richard A. Slivicki, *Winona State University*
- 33-A **The nociceptive impact of perceived control and expected consequences: Examining the effect of expected non-negative consequences on the nociceptive impact of compulsory tactile stimulation** Alora Rando, *Macalester College*
- 34-B **The effect of varying dim light on non-photoclock shifts.** Kaitlin Snider, *University of Wisconsin-Eau Claire*
- 35-C **Role of beta-arrestin 1 and 2 in intrinsically photosensitive retinal ganglion cell (ipRGC) activity.** James Clark, *St. Olaf College*
- 36-D **Methamphetamine Induced Circadian Clock Resetting in Mice.** Sophia Ruff-Berganza, *University of Wisconsin-Eau Claire*
- 37-A **Ionic current interactions orchestrate repetitive firing properties in model neuron.** Andrea Dittmann, Kyle Biesecker, Bogdan Conrad, Michelle Frank, James Jaffe, Stefan Lemke, Alicia Osterman, & Kevin Crisp, *St. Olaf College*
- 38-B **Cognitive mapping through fMRI and functionalist theories of mind.** Nicholas Delacey, *Macalester College*
- 39-C **Neuropsychological implications of institutionalization on early child development: An integrative analysis.** Jillian Wright & Lauren Daugherty, *University of St. Thomas*
- 40-D **Psychoneuroimmunoendocrinology(PNIE) is the unity therapy.** Saba Khalilpour, *Tarbiat Moallem-University of Iran*
- 41-A **Reconsidering Quine's naturalized epistemology.** Evan Oelschlaeger, *Macalester College*
- 42-B **Expanding the extended mind.** James Noble, *Macalester College*