

C. Brock Kirwan, Ph.D.

Postdoctoral Fellow
Memory Research Laboratory
Institute for Neural Computation
Postdoctoral Mentor: Larry Squire
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EDUCATION

Ph.D.	Johns Hopkins University: Psychological and Brain Sciences	2006
M.A.	Johns Hopkins University: Psychology	2004
B.S.	University of Utah: Psychology, <i>cum laude</i>	2001
B.S.	University of Utah: Philosophy, <i>cum laude</i>	2001

RESEARCH EXPERIENCE

<i>Postdoctoral Research:</i> Institute for Neural Computation, University of California, San Diego (Research Adviser: Dr. Larry Squire).	2006-present
<i>Doctoral Research:</i> Department of Psychological and Brain Sciences, Johns Hopkins University (Doctoral Adviser: Dr. Craig Stark)	2002-2006
<i>Undergraduate Honors Research:</i> Department of Psychology, University of Utah (Honors Thesis Advisor: Dr. Raymond Kesner)	1999-2001

PUBLICATIONS

Kirwan, C.B., Wixted, J.T., & Squire, L.R., (Submitted). Activity in the medial temporal lobe predicts memory strength, whereas activity in the prefrontal cortex predicts recollection.

Shrager, Y., **Kirwan, C.B.**, & Squire, L.R. (In Press). The neural basis of the cognitive map: path integration does not require hippocampus or entorhinal cortex. *Proceedings of the National Academy of Sciences*.

Shrager, Y., **Kirwan, C.B.**, & Squire, L.R. (In Press). Activity in both hippocampus and perirhinal cortex predicts the memory strength of subsequently remembered information. *Neuron*.

Bakker, A., **Kirwan, C.B.**, Miller, M.I., & Stark, C.E.L. (2008). Pattern Separation in the human hippocampal CA3 and dentate gyrus subfields. *Science*. 319(5870):1640-1642.

Kirwan, C.B., Galvan, V.V., Bayley, P.B., & Squire, L.R. (2008). Detailed Recollection of Remote Autobiographical Memory After Damage to the Medial Temporal Lobe. *Proceedings of the National Academy of Sciences*. 105(7):2676-2680.

Kirwan, C.B., Jones, C.K., Miller, M.I., & Stark, C.E.L. (2007). High-Resolution fMRI Investigation of the Medial Temporal Lobe. *Human Brain Mapping* 28(10):959-966.

Kirwan, C.B., & Stark, C.E.L. (2007). Pattern separation processes in the human medial temporal lobe: an fMRI investigation. *Learning and Memory* 14:625-633.

Kirwan, C.B., Gilbert, P.E., & Kesner, R.P. (2005). The role of the hippocampus in spatial location retrieval. *Neurobiology of Learning and Memory* 83(1):65-71.

Kirwan, C.B., & Stark, C.E.L. (2004). Medial temporal lobe activation during encoding and retrieval of novel face-name pairs. *Hippocampus* 14:919-930.

INVITED PRESENTATIONS

“High-resolution fMRI Investigation of Pattern Completion & Pattern Separation in the Medial Temporal Lobe” Invited talk presented at Stanford University 4/16/08.

“A Method for Achieving Greater Cross-Participant Alignment for MTL Structures” Invited talk presented at San Diego State University 3/14/08.

“The Effect of Memory Strength Manipulations in the Medial Temporal Lobe” Invited talk presented at Pázmány Péter Katolikus Egyetem (Pázmány Péter Catholic University), Budapest, Hungary, 2/22/08.

“Memory and Amnesia” Invited lecture to the Brain Myths course of the Discover Hopkins Pre-College Summer Program at Johns Hopkins University, 7/9/07.

“Overcoming interference: Pattern separation processes in the medial temporal lobe” Invited talk presented at San Diego State University 11/17/06.

ABSTRACTS, AND CONFERENCE TALKS

Kirwan, C.B. and Squire, L.R. (2008). The medial temporal lobe responds to memory strength but not recollection and familiarity. Poster presentation at the Annual Inter-Science of Learning Center Student and Post-Doc Conference, Pittsburgh, PA, February 2008.

Kirwan, C.B., Shrager, Y., & Squire, L.R. (2007). Medial temporal lobe activity varies with strength of subsequent recognition memory. *Society for Neuroscience Abstracts*, vol. 33, Program No. 526.10.

Bakker, A., **Kirwan, C.B.**, Miller, M.I., & Stark, C.E.L. (2007). Pattern separation in the human hippocampal CA3 and dentate gyrus subfields. Society for Neuroscience Abstracts, vol 33, Program No. 667.2.

Kirwan, C.B., Stark, S., Goodrich-Hunsaker, N., Gordon, B., Hopkins, R., & Stark, C.E.L. (2007). Pattern separation processes in the human medial temporal lobe. Poster presentation at the Cognitive Neuroscience Society 14th Annual Meeting, New York, May 2007.

Kirwan, C.B., & Stark, C.E.L. (2006). High-resolution fMRI investigation of pattern completion and pattern separation in the medial temporal lobe: Evidence of dissociation. Society for Neuroscience Abstracts, vol. 32, Program No. 777.10.

Kirwan, C.B., Flanery, M.A., Jones, C.K., Pekar, J., & Stark, C.E.L. (2005). High-resolution fMRI investigation of the medial temporal lobe. Society for Neuroscience Abstracts, vol. 31, Program No. 315.11.

Kirwan, C.B., & Stark, C.E.L. Medial temporal lobe activation in a cued recall fMRI paradigm. Poster presentation at the Cognitive Neuroscience Society 11th Annual Meeting, San Francisco, April 2004.

Kirwan, C.B., & Stark, C.E.L. Medial temporal lobe activation in encoding and retrieval of novel face-name pairs. Poster presentation at the International Neuropsychological Society 32nd Annual Meeting, Baltimore, Feb. 2004.

Kirwan, C.B., & Stark, C.E.L. (2003). Medial temporal lobe activation in encoding and retrieval of novel face-name pairs. Society for Neuroscience Abstracts, vol. 29, Program No. 514.7.

Kirwan, C.B., Gilbert, P.E., and Kesner, R.P. (2001). The role of the hippocampus in spatial pattern completion. Society for Neuroscience Abstracts, vol. 27, Program No. 315.3.

Kirwan, C.B., Gilbert, P.E., & Kesner, R.P. The role of the hippocampus in spatial pattern completion. Poster presentation at the Intermountain Chapter of the Society for Neuroscience Fall Meeting, Lehi, UT, Oct. 2001.

AWARDS AND HONORS

Institutional National Research Service Award, Institute for Neural Computation Training Grant, University of California, San Diego	2006-2008
National Science Foundation Graduate Research Fellowship Honorable Mention	2004
Faculty for Undergraduate Neuroscience Travel Award	2001
National Science Foundation Research for Undergraduate Education (RUE) supplemental award	2000
National Merit Scholar, University of Utah	1995-2000

COURSES TAUGHT

(Evaluations available upon request):

Cognitive Psychology Summer 2008
San Diego State University Spring 2008
Fall 2006

- In this large, upper-division survey course, I cover a number of topics related to cognitive psychology and cognitive neuroscience, including sensation, perception, memory, attention, motor control, and decision making.

Statistical Methods in Psychology Fall 2007
San Diego State University Spring 2007

- I have taught this requirement for the psychology major at SDSU for two semesters.
- I designed the syllabus to integrate with a separate lab section
- To engage students in this admittedly dense topic, I use a number of techniques, including small group activities, video demonstrations, and in-class experiments.

Brain Myths: Neuroscience in Popular Culture and the Media Intersession 2006
Johns Hopkins University Intersession 2005

- I developed this course as a short introduction to Cognitive Neuroscience using various media (movies, magazine articles, online forums) as a gateway to the scientific literature.
- I conceived and proposed the course, wrote the syllabus, wrote and delivered lectures, and performed all grading duties.

Laboratory in the Analysis of Psychological Data Spring 2005
Johns Hopkins University

- This is research methods and statistics course required for all Psychology majors at Johns Hopkins.
- I functioned as primary instructor for one of four sections.
- My duties included collaborating with other section leaders to write exams and weekly quizzes as well as organize in-class labs, writing and delivering lectures, advising students on their required research projects, and all grading.

TEACHING ASSISTANT EXPERIENCE

Johns Hopkins University:

<u>Cognitive Neuroscience of Memory</u>	Dr. Craig Stark	Spring 2006
<u>History of Psychology</u>	Dr. Paul Hofer	Fall 2005
<u>Mental Models & Mental Logic</u>	Dr. Justin Halberda	Fall 2004
<u>Functional Human Neuroanatomy</u>	Dr. Susan Courtney	Spring 2004
<u>Introduction to Psychology</u>	Dr. Steven Drigotas	Fall 2003
<u>Behavioral Medicine</u>	Dr. Jennifer Haythornthwaite	Spring 2003
<u>Physiological Psychology</u>	Dr. Linda Gorman	Fall 2002

University of Utah:

Brain and Behavior
Brain and Behavior

David Vago, M.S.
Paul Gilbert, M.S.

Fall 2001
Spring 2001

OTHER TEACHING EXPERIENCE

Supplemental Instruction Leader for Introduction to Psychology
at the University of Utah

Fall 2001
Spring 2002

- Supplemental Instruction (SI) is a program offered through the Tutoring Center at the University of Utah whereby students can gain access to additional help in selected courses.
- SI leaders are advanced undergraduates selected through a competitive application and interview process.
- Duties included attending course lectures, organizing and conducting several weekly review sessions.

PROFESSIONAL AFFILIATIONS

Society for Neuroscience
Cognitive Neuroscience Society

2003-present
2003-present

UNIVERSITY & COMMUNITY SERVICE

UCSD fMRI Users Group Meeting Organizing Committee

2007-2008

Organizer, Institute for Neural Computation Fellows' Colloquium, USD

2007-2008

Brain Awareness Presentation at Show Low High School, Show Low, AZ

2007

Brain Awareness Week presentation at Baltimore Polytechnic High School,
Baltimore, MD

2004-2006

Department Representative to the Graduate Representative Organization, Johns
Hopkins University

2003-2004

Volunteer Assistant to the Hungarian National Olympic Committee at the 2002
Salt Lake Winter Olympic Games

Feb. 2002

AD-HOC REVIEWER

Brain, Brain Research, Hippocampus