

Ilan A. Kerman, Ph.D., M.D.

Address

205 Zina Pitcher Place
Molecular and Behavioral
Neuroscience Institute, Room 2052
University of Michigan
Ann Arbor, MI 48109

Phone: (734) 936-3651

Fax: (734) 647-4130

E-mail: kerman@umich.edu

Web: www.umich.edu/~kerman/

Professional Experience

- 2008- Research Investigator
Molecular and Behavioral Neuroscience Institute
University of Michigan
Ann Arbor, MI
- 2003-2008 Research Fellow
Laboratory of Dr. Stanley J. Watson
Molecular and Behavioral Neuroscience Institute
University of Michigan
Ann Arbor, MI
- 2002 Resident Physician, Research Track Residency
Department of Psychiatry, University of Michigan
Ann Arbor, MI
- 1998 Visiting Researcher
Laboratory of Dr. Robin M. McAllen
Howard Florey Institute of Experimental Physiology and Medicine
University of Melbourne, Melbourne, Victoria, Australia
- 1993-1994 Research Assistant
Laboratory of Dr. John I. Simpson
Department of Physiology and Neuroscience
New York University School of Medicine
New York, NY
- 1993 Research Assistant
Laboratory of Dr. Victor J. Wilson
Laboratory of Neurophysiology
The Rockefeller University, New York, NY

Education

- 1994-2002 Medical Scientist Training Program (MSTP)
University of Pittsburgh School of Medicine
Pittsburgh, PA
- 2002 M.D.
University of Pittsburgh School of Medicine
Pittsburgh, PA
- 1999 Ph.D.
Department of Neuroscience
University of Pittsburgh, Pittsburgh, PA
- 1998 M.S.
Department of Neuroscience
University of Pittsburgh, Pittsburgh, PA
- 1993 B.A.
College of Arts and Science
New York University, New York, NY

Funding

- 08/01/2008 – 07/31/2013 NIH Pathway to Independence K99/R00 (5K99MH081927-02)
Total Costs: \$908,178
Title: *“Neural Substrates of Somatomotor and Autonomic Disturbances in Major Depression”*
- 07/01/2007 – 6/30/2009 NARSAD Young Investigator Award
(no-cost extension to 12/31/2009) Total Costs: \$60,000
Title: *“Genome-wide Gene Expression Studies in Raphe Nuclei in Major Depression and Bipolar Disorder”*
- 11/01/2006 – 12/31/2007 University of Michigan Pilot Innovations Grants Program
Total Costs: \$25,000
Title: *“Gene Expression Alterations in the Monoaminergic Circuits of Depressed and Bipolar Subjects”*

Honors and Awards

- 2008 Scholar, Career Development Institute (CDI) in Psychiatry,
University of Pittsburgh and Stanford University
- 2007 Young Investigator Memorial Travel Award, American College of
Neuropsychopharmacology (ACNP)

1999	Nominee for the Van Harreveld Memorial Award, Central Nervous System Section, American Physiological Society
1998	Travel Award, Center for Neuroscience, University of Pittsburgh
1997-1999	Graduate Student Researchers Program Fellowship, NASA
1997	Mellon Pre-doctoral Fellowship (declined), University of Pittsburgh
1993	<i>cum laude</i> graduating honors, New York University
1993	Student-Athlete Academic Achievement Award, New York University
1992	Summer Undergraduate Research Fellowship, Rockefeller University
1992	Science and Engineering Research Semester, Lawrence Berkeley National Laboratory, U.S. Department of Energy
1991-1993	Dean's List, College of Arts and Science, New York University
1991	Howard Hughes Research Fellowship, New York University
1989-93	Dean's Circle Scholar, College of Arts and Science, New York University

Teaching Experience

2009	Research Mentor, Summer Research Opportunity Program (SROP) Rackham Graduate School, University of Michigan
2002-	Research Mentor, Undergraduate Research Opportunity Program (UROP) University of Michigan
1997-2000	Human Physiology Faculty of Arts and Science, University of Pittsburgh
1998	Medical Neuroscience University of Pittsburgh School of Medicine

Mentorship

James Spiropoulos – undergraduate student at the University of Pittsburgh
Tina Mathur – undergraduate student at the University of Pittsburgh
Ben Emanuel ^{*#} – undergraduate student at the University of Pittsburgh
Quan Kyle Zhu – undergraduate student at the University of Michigan
Bradley J. Buck ^{*#} – undergraduate student at the University of Michigan
Cyrus Shabrang ^{*#} – undergraduate student at the University of Michigan
Devin Rosenthal ^{*} – summer student prior to graduate studies at Johns Hopkins University
Antony Abraham ^{*#} – undergraduate student at the University of Michigan; co-mentored with Dr. Sarah Clinton
Naome Muzamhindo – undergraduate student at the University of Michigan
Nina Vachhani – undergraduate student at the University of Michigan
Lyndsy Brenner – undergraduate student at the University of Michigan
Tracy Bedrosian ^{*#} – undergraduate student at the University of Michigan; co-mentored with Dr. Sarah Clinton
Amber Morykwas – undergraduate student at the University of Michigan

Nina Amilinen[#] – undergraduate student at the University of Michigan

Alex Ku – undergraduate student at the University of Michigan

Danita Wynes – undergraduate student at San Diego State University

Najmul Shah – undergraduate student at the University of Michigan; co-mentored with Dr. Sarah Clinton

* - co-authored papers

- presented posters at national meetings

Professional Society

Society for Neuroscience

Journal Reviewer

Analytical Biochemistry

Brain Research

Brain Research Bulletin

Experimental Brain Research

Journal of Comparative Neurology

Journal of Neuroendocrinology

Journal of Neuroscience

Journal of Physiology

Journal of Vestibular Research

Molecular Psychiatry

Neuropsychiatric Disease and Treatment

Neuroscience

Neuroscience Letters

Progress in Neuro-Psychopharmacology & Biological Psychiatry

Bibliography

Publications — Peer-Reviewed Manuscripts

1. Yates, B. J., Goto, T., **Kerman, I. A.**, Bolton, P. S. Responses of caudal medullary raphe neurons to natural vestibular stimulation. *Journal of Neurophysiology* 70:938-946, 1993. PMID: 8229180
2. Yates, B. J., Grélot, L., **Kerman, I. A.**, Balaban, C. D., Jakuš, J., Miller, A. D. Organization of vestibular inputs to nucleus tractus solitarius and adjacent structures in cat brainstem. *American Journal of Physiology* 267:R974-R983, 1994. PMID: 7524372
3. Leonard, C. S., **Kerman, I.**, Blaha, G., Taveras, E., Taylor, B. Interdigitation of nitric oxide synthase-, tyrosine hydroxylase- and serotonin- containing neurons in and around the laterodorsal and pedunculopontine tegmental nuclei of the guinea pig. *Journal of Comparative Neurology* 362:411-432, 1995. PMID: 8576448
4. **Kerman, I. A.** and Yates, B. J. Regional and functional differences in the distribution of vestibulosympathetic reflexes. *American Journal of Physiology* 275:R824-R835, 1998. PMID: 9728081

5. Yates, B. J. and **Kerman, I. A.** Post-spaceflight orthostatic intolerance: possible relationship to microgravity-induced plasticity in the vestibular system. *Brain Research Reviews* 28:73-82, 1998. PMID: 9795146
6. Bolton, P.S., **Kerman, I. A.**, Woodring, S.F., Yates, B. J. Influences of neck afferents on sympathetic and respiratory nerve activity. *Brain Research Bulletin* 47: 413-419, 1998. PMID: 10052569
7. **Kerman, I. A.** and Yates, B. J. Patterning of somatosympathetic reflexes. *American Journal of Physiology* 277: R716-R724, 1999. PMID: 10484488
8. **Kerman, I. A.**, Yates, B. J., McAllen, R. M. Anatomical patterning of vestibulosympathetic reflexes. *American Journal of Physiology* 279:R109-R117, 2000. PMID: 10896871
9. **Kerman, I. A.**, Emanuel, B. A., Yates, B. J. Vestibular stimulation leads to distinct hemodynamic patterning. *American Journal of Physiology* 279: R118-R125, 2000. PMID: 10896872
10. **Kerman, I. A.**, McAllen, R. M., Yates, B. J. Patterning of the sympathetic nerve activity in response to vestibular activation. *Brain Research Bulletin* 53:11-16, 2000. PMID: 11033203
11. Cameron, W. E., Núñez-Abades, P. A., **Kerman, I. A.**, Hodgson, T. M. Role of potassium conductances in determining input resistance of developing brain stem motoneurons. *Journal of Neurophysiology* 84: 2330-2339, 2000. PMID: 11067976
12. Biegon, A. and **Kerman, I. A.** Autoradiographic study of pre- and postnatal distribution of cannabinoid receptors in human brain. *Neuroimage* 14:1463-1468, 2001. PMID: 11707102
13. **Kerman, I. A.**, Enquist, L. W., Watson, S. J. Yates, B. J. Brainstem substrates of sympatho-motor circuitry identified using transsynaptic tracing with pseudorabies virus recombinants. *Journal of Neuroscience* 23:4657-4666, 2003. PMID: 12805305
14. **Kerman, I. A.**, Buck, B. J., Evans, S. J., Akil, H. Watson, S. J. Combining laser capture microdissection with quantitative real-time PCR: effects of tissue manipulation on RNA quality and gene expression. *Journal of Neuroscience Methods* 153:71-85, 2006, Epub December 5th, 2005. PMID: 16337273
One of Top 25 Hottest Articles – *Journal of Neuroscience Methods*, January – March 2006:
http://top25.sciencedirect.com/index.php?subject_area_id=18&journal_id=01650270&cat_id=7
15. **Kerman, I. A.**, Akil, H., Watson, S. J. Rostral elements of sympatho-motor circuitry: a virally-mediated transsynaptic tracing study. *Journal of Neuroscience* 26:3423-3433, 2006. PMID: 16571749
16. **Kerman, I. A.**, Shabrang, C., Taylor, L., Akil, H., Watson, S. J. Relationship of presympathetic-premotor neurons to the serotonergic transmitter system in the rat brainstem.

Journal of Comparative Neurology 499:882-896, 2006, Epub October 27th, 2006. PMID: 17072838

17. Buck, B. J.*, **Kerman, I. A.***, Burghardt, P. R., Koch, L. G., Britton, S. L., Akil, H., Watson, S. J. Upregulation of GAD65 mRNA in the medulla of the rat model of metabolic syndrome. *Neuroscience Letters* 419:178-183, 2007, Epub April 25th, 2007. PMID: 17490814
* - equal contributors
18. **Kerman, I. A.**, Bernard, R., Rosenthal, D., Beals, J., Akil, H., Watson, S. J. Distinct populations of presympathetic-premotor neurons express orexin or melanin-concentrating hormone in the rat lateral hypothalamus. *Journal of Comparative Neurology* 505:586-601, 2007, Epub October 9th, 2007. PMID: 17924541
Selected by Faculty of 1000 Biology:
<http://www.f1000biology.com/article/id/1092424/evaluation>
19. **Kerman, I. A.** Organization of brain somatomotor-sympathetic circuits. *Experimental Brain Research* 187:1-16, 2009. Epub March 28th, 2008. PMID: 18369609
One of Top 10 downloaded papers – *Experimental Brain Research*, January – June 2009
20. Bernard, R.*, **Kerman, I. A.***, Meng, F., Evans, S. J., Amrein, I., Jones, E. G., Bunney, Jr., W. E., Akil, H., Watson, S. J., Thompson, R. C. Gene expression profiling of neurochemically-defined regions of the human brain by in situ hybridization-guided laser capture microdissection. *Journal of Neuroscience Methods* 178:46-54, 2009. Epub November 25th, 2008. PMID: 19070632
* - equal contributors
21. Sonmez, K., Zaveri, N. T., **Kerman, I. A.**, Burke, S., Neal, C. R., Watson, S. J., Toll, L. Evolutionary sequence modeling for discovery of peptide hormones. *PLoS Computational Biology* 5:e1000258, 2009. PMID: 19132080
Top featured Research Selection – *PLoS Computational Biology*, December 2008
22. Rice, C. D., Lois, J. H., **Kerman, I. A.**, Yates, B. J. Localization of serotonergic neurons that participate in regulating diaphragm activity in the cat. *Brain Research* 1279:71-81, 2009. Epub May 9th, 2009. PMID: 19433074

Publications — Book Chapters

1. Yates, B. J., Bolton, P. S., Goto, T., **Kerman, I. A.**, Miller, A. D. The role of the ventral brainstem in vestibulospinal and vestibulorespiratory reflexes. Ventral Brainstem Mechanisms and Control of Respiration and Blood Function, Ed.: C. O. Trueth, R. M. Millis, H. Kiwull-Shöne, M. E. Schläfke. Marcel-Dekker, New York, NY, 1995, pp. 181-191
2. Biegon, A. and **Kerman, I.** Quantitative autoradiography and cannabinoid receptors in the human brain post-mortem. Sites of Drug Action in the Human Brain, Ed.: A. Biegon and N.D. Volkow. CRC Press, Boca Raton, FL, 1995, pp. 65-74

3. Yates, B. J., Holmes, M. J., Jian, B. J., **Kerman, I. A.** Vestibular influences on cardiovascular control during movement. Textbook of Audiological Medicine, Ed.: L. M. Luxon. Taylor and Francis, London,UK, 2003, pp. 691-700

Publications — Under Review and In Preparation

1. Bernard, R., **Kerman, I. A.**, Thompson, R. C., Jones, E. G., Bunney, W. E., Barchas, J. D., Schatzberg, A. F., Myers, R. M., Akil, H., Watson, S. J. Altered expression of glutamate signaling, growth factor, and glia genes in the locus coeruleus of patients with major depression. Under review at *Molecular Psychiatry*.
2. **Kerman, I. A.**, Bernard, R., Thompson, R. C., Jones, E. G., Bunney, W. E., Akil, H., Watson, S. J. Monoamine gene expression in the postmortem human brainstem: effects of age, mood disorders, and suicidality. *In preparation*.
3. **Kerman, I. A.***, Clinton, S. M.*, Bedrosian T. A.*, Abraham A. Akil, H., Watson, S. J. High novelty-seeking rats exhibit exaggerated aggression and distinct activation of serotonergic circuits following a novel social encounter. *In preparation*.
* - equal contributors

Publications — Recent Abstracts (selected from a total of 52)

Bernard, R., **Kerman, I. A.**, Thompson, R.C., Jones, E.G., Bunney, W.E., Akil, H., Watson, S.J. Monoamine gene expression in the postmortem human brainstem: Effects of age, mood disorders, and suicidality. 843.13. *Abstract Viewer/Itinerary Planner*. Washington, DC: *Society for Neuroscience*, 2008. Online.

Faouzi, M., **Kerman, I. A.**, Louis, G., Leshan, R., Leininger, G. M., Jones, J. C., Watson S. J., Rhodes, C. J., Münzberg, H. Leptin receptor neurons in the dorsomedial hypothalamus as important regulators of preautonomic and neuroendocrine function in the paraventricular nucleus. 284.14. *Abstract Viewer/Itinerary Planner*. Washington, DC: *Society for Neuroscience*, 2008. Online.

Kerman, I. A., Clinton, S.M., Burghardt, P.R. Muzamhindo, H., Vachhani, N., Shabring, C., Beals, J., Akil, H., Watson, S.J. Altered wiring of emotional-somatomotor, but not limbic-autonomic, circuits in rat models of depression. 283.19. *Abstract Viewer/Itinerary Planner*. Washington, DC: *Society for Neuroscience*, 2008. Online.

Rice, C. D., Lois, J. H., **Kerman, I. A.**, Yates, B. J. Mapping of serotonergic and nonserotonergic connections from the medullary midline to diaphragm motoneurons in the cat. *Experimental Biology Meeting*, New Orleans, LA, 2009

Stedenfeld, K. A., Clinton, S. M., **Kerman, I. A.**, Akil, H., Watson, S. J., Sved, A. F. Individual differences in rat novelty-seeking behavior predicts vulnerability to depression and associated changes in cardiovascular function. *Society of Biological Psychiatry 64th Annual Scientific Convention & Meeting*, Vancouver, Canada, 2009

Amilineni, N, **Kerman, I. A.**, Jones, E. G., Bunney, W. E., Akil, H., Watson, S. J. Is the organization of serotonergic cell groups in the lower brainstem altered in major depression? *Society for Neuroscience Meeting*, Chicago, IL, 2009

Bedrosian, T. A., **Kerman, I. A.**, Clinton, S. M., Orr, H. R., Abraham, A. D., Watson, S. J., Akil, H. High novelty-seeking rats show exaggerated aggression and distinct activation of serotonergic circuits following an aggressive encounter. *Society for Neuroscience Meeting*, Chicago, IL, 2009

Kerman, I. A., Clinton, S. M., Bedrosian, T. A., Bernard R., Watson, S. J., Akil, H. Circadian dysregulation in the High Responder model of inborn differences in emotionality. *Society for Neuroscience Meeting*, Chicago, IL, 2009

Orr, H. R., Bedrosian, T. A., Clinton, S. M., **Kerman, I. A.**, Abraham, A. D., Watson, S. J., Akil, H. High Novelty-seeking rats show exaggerated aggression and distinct activation of forebrain limbic circuits following an aggressive encounter. *Society for Neuroscience Meeting*, Chicago, IL, 2009

Talks and Invited Presentations

1998 – University of Pittsburgh, Pittsburgh, PA, title: “*Vestibular Influences on Different Outflow Limbs of the Sympathetic Nervous System*”

1998 – University of Newcastle, Newcastle, NSW, Australia, title: “*Are Vestibulosympathetic Reflexes Autonomically Patterned?*”

1999 – University of Pittsburgh, Pittsburgh, PA, title: “*Regional and Functional Patterning in the Expression of Vestibulosympathetic Reflexes*”

1999 – Opio, France, Programming Autonomic Function for Action conference, talk title: “*Patterns of Changes in Sympathetic Nervous System Activity During Vestibular Stimulation*”

1999 – University College of London, London, England, title: “*Patterns of Changes in Sympathetic Nervous System Activity During Vestibular Stimulation*”

2001 – University of Michigan, Ann Arbor, MI, title: “*Central Control of Sympathetic Function: Feedforward Regulatory Mechanisms & Possible Clinical Implications*”

2005 – New York Medical College, Valhalla, NY, title: “*Anatomy of Sympatho-Motor Circuits: Trans-Synaptic Tracing Studies with Recombinant Strains of the Pseudorabies Virus*”

2006 – University of Michigan, Ann Arbor, MI, Pritzker Neuropsychiatric Disorders Research Consortium, Ann Arbor, MI, title: “*Progress Report on Brainstem and Hypothalamus Study*”

2007 – University of Michigan, Ann Arbor, MI, Undergraduate Research Opportunity Program (UROP), title: “*Use of Electronic Resources in Literature Research*”

- 2007 – University of Michigan, Ann Arbor, MI, Depression Center, title: “*Gene Expression Alterations in the Monoaminergic Circuits of Depressed and Bipolar Subjects*”
- 2007 – American College of Neuropsychopharmacology 46th Annual Meeting, Boca Raton, FL, title: “*Evidence for Transcriptional Dysregulation in the Dorsal Raphe in Major Depressive Disorder*”
- 2008 – Career Development Institute in Psychiatry, Pittsburgh, PA, title: “*Neural Substrates of Somatomotor and Autonomic Disturbances in Major Depression*”
- 2008 – University of Michigan, Ann Arbor, MI, Laboratory of Dr. Martin Myers, Metabolism, Endocrinology, and Diabetes (MEND), Department of Internal Medicine, title: “*Organization of Central Circuits Regulating Somatomotor and Sympathetic Functions*”
- 2008 – University of Michigan, Ann Arbor, MI, Pritzker Neuropsychiatric Disorders Research Consortium, Ann Arbor, MI, title: “*Brainstem and Hypothalamic Systems in Mood Disorders: LCM and Gene Expression Studies*”
- 2009 – University of Colorado, Boulder, CO, Department of Integrative Physiology, title: “*Neural Circuits Integrating Autonomic, Motor and Behavioral Responses: Relevance to Stress*”
- 2009 – University of Alabama, Birmingham, AL, Department of Psychiatry, title: “*Subcortical Circuits Regulating Mood and Homeostasis: Relevance to Mood Disorders*”
- 2009 – University of Michigan, Ann Arbor, MI, University of Michigan Postdoctoral Association, Career Development Panel: “*Academic Job Searches: A View from the Trenches.*”
- 2009 – University of Michigan, Ann Arbor, MI, University of Michigan Postdoctoral Association, Career Development Panel: “*NIH K99/R00 Grants: Views from Reviewers, Applicants and Awardees*”