

CURRICULUM VITAE
Kristen Ann Keefe

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Toxicology
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Salt Lake City, Utah 84117
(801) 278-2620

Citizenship U.S.A.

EDUCATION

- University of Vermont, Burlington, Vermont, 1980 – 1982
- Case Western Reserve University, Cleveland, Ohio, 1982 - 1984, B.A.,
Communication Sciences and Psychology, Summa Cum Laude with honors in
Communication Sciences, 1984
- University of Pittsburgh, Pittsburgh, Pennsylvania, 1984 - 1986, M.A., Speech-
Language Pathology, 1986
- University of Pittsburgh, Pittsburgh, Pennsylvania, 1987 - 1992, M.S., Behavioral
Neuroscience, 1989; Ph.D., Behavioral Neuroscience, 1992.
- Cold Spring Harbor Course, "Molecular and Cellular Biology of Addiction"; Aug.,
2001.

APPOINTMENTS

- Director, Interdepartmental Graduate Program in Neuroscience, University of Utah,
2011-2016.
- Professor, Department of Pharmacology and Toxicology, College of Pharmacy and
Program in Neuroscience, University of Utah, 2008-present.
- Associate Professor, Department of Pharmacology and Toxicology, College of
Pharmacy and Program in Neuroscience, University of Utah, 2002-2008
- Assistant Professor, Department of Pharmacology and Toxicology, College of
Pharmacy, and Program in Neuroscience, University of Utah, 1995 – 2002

- Associate faculty member, Center for Peptide Neuropharmacology, University of Utah, 2000-present
- Intramural Postdoctoral Training Award Postdoctoral Fellow, Laboratory of Neurophysiology, NIMH, Section of Neuroanatomy; Chief, Dr. Charles R. Gerfen, 1992-1995
- NIMH NRSA Predoctoral Fellowship, University of Pittsburgh, Dept. of Behavioral Neuroscience, laboratories of Drs. Michael J. Zigmond and Elizabeth D. Abercrombie, 1990 - 1992
- NIMH training grant awardee, Center for Neuroscience, University of Pittsburgh, 1988 - 1990
- Research Speech Pathologist, Dept. of Neurology, University of Pittsburgh, 1986 - 1987
- Research Consultant, Child Development Unit, Children's Hospital of Pittsburgh, 1985 - 1987
- Andrew Mellon Predoctoral Fellow, Dept. of Communication Disorders, University of Pittsburgh, 1984-1986

AWARDS

- Nominated, P2 Teacher of the Year Award, College of Pharmacy, University of Utah, 2012.
- Graduate Student and Postdoctoral Scholar Distinguished Mentor Award, University of Utah, 2012.
- Nominated, Graduate Student and Postdoctoral Scholar Distinguished Mentor Award, University of Utah, 2011.
- Nominated, The Linda K. Amos Award for Distinguished Service to Women, University of Utah, 2011.
- Nominated, Distinguished Teaching Award, University of Utah, 2009.
- Nominated, P2 Teacher of the Year Award, College of Pharmacy, University of Utah, 2009.
- Nominated, Teacher of the Year Award, College of Pharmacy, University of Utah, 2007.

- Intramural Postdoctoral Training Award Postdoctoral Fellow, Laboratory of Neurophysiology, NIMH, Section of Neuroanatomy; Chief, Dr. Charles R. Gerfen, 1992-1995
- NIMH NRSA Predoctoral Fellowship, University of Pittsburgh, Dept. of Behavioral Neuroscience, laboratories of Drs. Michael J. Zigmond and Elizabeth D. Abercrombie, 1990 - 1992
- Recipient, Chiodo Award for Excellence in Behavioral Neuroscience, Dept. of Behavioral Neuroscience, University of Pittsburgh, 1992
- NIMH training grant awardee, Center for Neuroscience, University of Pittsburgh, 1988 - 1990
- Lisa Levey Award for Outstanding Graduate Student, Dept. of Communication Disorders, University of Pittsburgh, 1986.
- Andrew Mellon Predoctoral Fellowship, Dept. of Communication Disorders, University of Pittsburgh, 1984-1986
- American Speech-Language and Hearing Association Honor Student Award, Dept. of Communication Sciences, Case Western Reserve University, 1984.

PROFESSIONAL SOCIETIES

Society for Neuroscience
 American Society for Pharmacology and Experimental Therapeutics
 International Basal Ganglia Society
 National Directors of Graduate Studies in Pharmacology
 Committee on Neuroscience Departments and Programs of the Society for Neuroscience

TEACHING

Pharmacology I (PHTX 5211), Pharm.D. Professional Curriculum, College of Pharmacy, University of Utah

Co-Coursemaster, 2009-present

Lecturer, 1995-present

Introduction to the Autonomic Nervous System (2 hr)

Sympathomimetics and Catecholamines (2 hr)

Anti-adrenergic agents (2 hr)

Pharmacotherapy of Parkinson's Disease (1 hr)

Skeletal Muscle Relaxants" (1 hr)

Headache Medications (2 hr; no longer as of 2007).

Biological Basis of Disease (PHTX 5121), Professional Curriculum, College of Pharmacy, University of Utah

Lecturer, 2004-present

Organization of the Autonomic Nervous System (2 hr).

Pharmacologic Basis of Therapeutics II (1995-2009) / Brain and Behavior (2010-present) (PHTX 6030), M.D. Professional Curriculum, School of Medicine, University of Utah

Lecturer, 1995-present

Introduction to the Autonomic Nervous System (2 hr)

Sympathomimetics and Catecholamines (2 hr)

Anti-adrenergic agents (1 hr)

Physiology of the Basal Ganglia (1 hr; 2007-2008)

Pharmacotherapy of Parkinson's Disease (1 hr)

Skeletal Muscle Relaxants (1 hr/directed study)

Headache Medications (1 hr; no longer as of 2006)

Multiple medication counseling small groups and Medication Counseling exam grading sessions.

Fundamentals of Pharmaceutical Sciences (PHARM 7113), College of Pharmacy Graduate Programs Curriculum, College of Pharmacy, Univ. of Utah

Lecturer, 2004-2011

Receptor Theory / Receptors (2 hr)

Receptor Regulation (1 hr)

Pharmacology Essentials (PHTX 7113), Dept. of Pharmacology and Toxicology, College of Pharmacy, Univ. of Utah

Lecturer, 2012-

Receptor Theory / Receptors (2 hr)

Receptor Regulation (2 hr)

Cellular and Molecular Neuroscience (NEUSC 6040), Interdepartmental Neuroscience Program Curriculum, University of Utah

Cousemaster, 2002-2004

Lecturer, 2005-present

Neurotransmitter Synthesis and Metabolism (3 hr)

Introduction to Receptors (1.5 hr; through 2007)

Ionotropic glutamate receptors (1.5 hr; through 2007)

Systems Neuroscience: Functioning of the Nervous System (NEUSC 6050), Interdepartmental Neuroscience Program Curriculum, University of Utah

Lecturer, 1997-2011

Basal Ganglia (2 hr).

Biochemical Basis of Neuropharmacology (PHTX 7270), Dept. of Pharmacology and Toxicology and other Graduate Programs, College of Pharmacy, University of Utah

Cousemaster (1999-present)

Lecturer (1997-present)

Functional Neuroanatomy (2 hr)
Excitatory Amino Acids (2 hr)
Inhibitory Amino Acids (2 hr)
Serotonin, Histamine, Melatonin (2 hr)
Catecholamines (2 hr)
Acetylcholine (2 hr)
Non-traditional Neurotransmitters (2 hr)
Neuropharmacology of Movement Disorders (2 hr)
Neuropharmacology of Drug Addiction (2 hr)
Neuropharmacology of Schizophrenia/psychosis (2 hr)
Neuropharmacology of Affective Disorders (2 hr)

Professional Skills Development (PHTX 7690), Dept. of Pharmacology and Toxicology and other Graduate Programs, College of Pharmacy, University of Utah
Coursemaster, 2006-present
Lecturer 1998-2006

Your Role as a Graduate Student / Career Planning (2 hr)
Technical writing (3 hr)
Oral presentations (1 hr)
Job-Seeking Skills (1 hr)
Small group facilitation of grant reviews

Methods in Pharmacology (PHTX 6600), Dept. of Pharmacology and Toxicology Graduate Program, College of Pharmacy, University of Utah
Lecturer, 1997- present
In situ Hybridization Histochemistry and Immunohistochemistry (3 hr).

Developments in Neuropharmacology (PHTX 6720) Journal Club, Dept. of Pharmacology and Toxicology Graduate Program, College of Pharmacy, University of Utah
Coursemaster, 1998-1999.

Principles of Pharmacology and Toxicology (PHTX 6610), Dept. of Pharmacology and Toxicology Graduate Program, College of Pharmacy, University of Utah
Lecturer, 1998-2004
Pharmacodynamics (2 hr)
Antagonism (1 hr)
Spare Receptors (1 hr)

Advances in Neuropharmacology (PHTX 7280), Dept. of Pharmacology and Toxicology Graduate Program, College of Pharmacy, University of Utah
Lecturer, 1996
Molecular Biology of NMDA receptors (3 hr)
Dopamine Receptors and Psychiatric Disorders (3 hr).

Drugs and Behavior, University of Pittsburgh, Teaching Assistant, 1990

Experimental Methods in Psychology, University of Pittsburgh, Teaching Assistant, 1987 - 1988.

PROFESSIONAL SERVICE

Department

- Graduate Training Committee, Dept. of Pharmacology and Toxicology, College of Pharmacy, Univ. of Utah. Member, 1996-present; Chair 2002-2011
- Teaching and Curriculum Committee, Dept. of Pharmacology and Toxicology, College of Pharmacy, Univ. of Utah. Member, 1996-2000; Chair, 1998-2000.

College

- Head, PharmD Curricular Revision Task Force, 2012.
- Task Force for Curriculum Revision for Professional PharmD program, 2010-2011.
- Strategic planning committee for College of Pharmacy 2007 accreditation process, Curriculum Task Force member, 2006-2007
- Curriculum Committee, College of Pharmacy, Univ. of Utah, Member, 2005-2012.
- Learning and Teaching Committee, College of Pharmacy, Univ. of Utah. Member, 1997-2005.
- Women's Focus Group, College of Pharmacy, Univ. of Utah. Member, 1997-1998.
- Recruitment and Affirmative Action Committee, College of Pharmacy, Univ. of Utah. Member, 1995-1997.

University

- Director, Interdepartmental Program in Neuroscience, 2011-2016; Directorate, member, 2006-2011.
- Local Organizing Committee, The Brain Institute 2nd Annual Spring Symposium Series, *Drug Discovery for Mental Illness*, March 18, 2011.
- Member, University Promotion and Tenure Advisory Committee, Univ. of Utah, Member, 2003-2006.
- Member, Scientific Advisory Group, Genetics of Addiction Project, Genetic Science Learning Center, Univ. of Utah, 2001-2004.
- Admissions Committee, Interdepartmental Neuroscience Program, Univ. of Utah. Member, 1995-2006.
- Library Policy Advisory Committee, Univ. of Utah. Member, 2001-2004.
- Academic Senate, Univ. of Utah. Member, 1999-2002.
- Personnel and Elections Committee, Univ. of Utah. Member, 1999-2002.
- Institutional Animal Care and Use Committee, Univ. of Utah. Member, 1996-1999.
- Women in Medicine Planning Committee, Health Sciences Center, Univ. of Utah. Member, 1996.

National / International

- Manuscript reviewer for numerous journals including: *Brain Research*, *European Journal of Neuroscience*, *Journal of Neuroscience Research*, *Journal of Pharmacology and Experimental Therapeutics*, *Neuropsychopharmacology*,

Neuroscience, Neuroscience Letters, Neurotoxicity Research, Psychopharmacology, The International Journal of Neuropsychopharmacology.

- Editorial Board, *Neurotoxicity Research*, 1998-present.
- Member, Society for Neuroscience Committee on Neuroscience Departments and Programs (CNDP), 2011-2014.
- *Ad Hoc* grant reviewer, CSR IAM meeting 2012/01 ZRG1 IFCN-H (02) M and NIDA CEBRA Review, Fall 2011.
- Regular member, Neurobiology of Motivated Behavior Study Section (NMB), Center for Scientific Review, NIH, 2007-2011.
- Local Organizing Committee, 10th Triennial Meeting of the International Basal Ganglia Society, June 20-24, 2010.
- Local Organizing Committee, National Meeting of Directors of Graduate Training in Pharmacology, Salt Lake City, UT, July 25-28, 2007.
- Facilities Chair, Winter Conference on Brain Research, 2006-2008.
- Executive Committee, Winter Conference on Brain Research, 2006-2008.
- *Ad hoc* grant reviewer, Center for Scientific Review, NIH, Neurobiology of Motivated Behavior (NMB), 2006.
- *Ad hoc* grant reviewer, Center for Scientific Review, NIH, ZRG1 IFCN-A(02) (Member Conflict: Psychopharmacology), 2006.
- *Ad Hoc* grant reviewer, CSR/NIH, ZRG1 MDCN-K (90) Special Emphasis Panel, (Neurogenetics and Neurogenomics), 2006.
- *Ad hoc* grant reviewer, Center for Scientific Review, NIH, ZRG1 F02A-A 20 (Fellowships: Behavioral Neuroscience), 2006.
- *Ad Hoc* grant reviewer, CSR/NIH, ZRG1 MDCN-K (90) Special Emphasis Panel, (Neurogenetics and Neurogenomics), 2005.
- *Ad Hoc* grant reviewer, NSF, RIG-CAA (Research Initiation Grants /Career Advancement Awards), 2005.
- Facilities Chair-Elect, Winter Conference on Brain Research, 2004-2005
- *Ad hoc* grant reviewer, CSR/NINDS, ZNS1 SRB-M(10) Udall Centers of Excellence in Parkinson's Disease grant reviews, 2004
- *Ad hoc* grant reviewer, CSR, NIH, ZRG1 FO2A(20) IFCN Fellowship Review Panel, 2003-2006.
- *Ad hoc* grant reviewer, NINDS Special Emphasis Panel ZNS1 SRB-H, 2002.
- Program Committee, Winter Conference on Brain Research, 2001-2004.
- *Ad hoc* grant reviewer, Center for Scientific Review, NIH, IFCN-1, 2000-2001.
- Society for Neuroscience, Social Issues Committee, 2000-2002.
- Organizer, Town Meeting on the Neurobiology of Learning Disabilities, sponsored by the Winter Conference on Brain Research, Breckenridge, CO, January, 2000.
- *Ad hoc* grant reviewer, NIMH Special Emphasis Panel ZMH1-S(01), 1999.
- Member, Board of Directors, Winter Conference on Brain Research, 1999-2002.
- Organizer, Town Meeting on the Neurobiology of Mental Illness, sponsored by the Winter Conference on Brain Research, Aspen, CO, January, 1999.
- Organizer, Town Meeting on Drug Abuse, sponsored by the Winter Conference on Brain Research, Salt Lake City, UT, January, 1998.
- *Ad hoc* grant reviewer, Dept. of Defense (Army) Neurotoxin Exposure Treatment Research Program, 1997, 2002, 2004.

- *Ad hoc* grant reviewer, Veterans' Affairs Medical Service, 1996

Community Service

- Volunteer for school science outreach and other Brain Awareness Week activities at Salt Lake City area schools and at the Salt Lake Public Library
- Interfaith Hospitality Network / Family Promise volunteer helping to house and provide for homeless families in area churches in Salt Lake City. Provide food and serve as overnight and breakfast host for families.

STUDENT COMMITTEES

Postdoctoral advisor:

Dr. Ashely Fricks-Gleason, 2010-July 2013 (8/13 will start tenure-track, Assistant Professor position, Dept. of Psychology, Regis University, Denver CO)

Dr. Jong-Hyun Son, 2009-present

Dr. Ping Chen, 2008-2009. JD, Smart-Biggar/Featherstonhaugh, Ottawa, Ontario, CAN

Dr. Roy Smeal, 2003-2007. Currently, Research Assistant Professor, Dept. of Pharmacology and Toxicology, Univ. of Utah.

Dr. K. Ashley Horner, 2002-2006 Associate Professor (Tenured), Dept. of Basic Medical Sciences, Mercer University School of Medicine, GA.

Doctoral Dissertation Advisor:

Danielle Friend, 2009-5/2012, Program in Neuroscience, Univ. of Utah.

Elissa Pastuzyn, 2009-8/2012, Program in Neuroscience, Univ. of Utah.

Melissa Barker, 2009-3/2012, Dept. of Pharmacology and Toxicology, Univ. of Utah; Senior Research Analyst, Anticonvulsant Drug Development Program, Univ. of Utah

Matt Riedy, 2004-2009, Program in Neuroscience, Univ. of Utah.

Currently, post-doctoral fellow with Dr. Gary Aston-Jones, Dept. of Physiology and Pharmacology, Medical University of South Carolina.

Renee Gaspar, 2004-2006, Program in Neuroscience, Univ. of Utah. Graduated with MPhil in 2006.

Currently, Staff Biologist, Alzheimer's Division, Neuroscience Department for Basic Research, Merck, Inc.

Kathleen Davis, 2004-2006, Program in Neuroscience, Univ. of Utah.

Currently, Associate Attorney; Ritter, Robinson, McCready & James; Toledo, OH.

David Daberkow, 2001-2006, Program in Neuroscience, Univ. of Utah.

Currently, Assistant Professor (Tenure Track), Dept. of Biology, Eastern Washington University.

David E. Chapman, 1998-2003, Dept. of Pharmacology and Toxicology, Univ. of Utah.

Currently: CNS Medical Science Liaison, UCB, Inc.

David A. Adams, 1998-2002, Dept. of Pharmacology and Toxicology, Univ. of Utah.

Currently: Clinical Research Scientist, Eli Lilly and Company, Indianapolis, IN.

Amy C. Adams, 1996-2000, Program in Neuroscience, Univ. of Utah.

Currently: Raising tomorrow's scientists Caroline and Ava

Anindita Ganguly, 1995-2000, Dept. of Pharmacology and Toxicology, Univ. of Utah.
Currently: Senior Scientist, Research and Development, Acorda Therapeutics,
Hawthorne, NY

Qualifying Examination / Doctoral Dissertation Committees

Krystal Minear, 2011-2012, qualifying exam committee member, Dept. of Biology, Univ. of Utah.

Andrew Kraft Haack, 2011-, qualifying exam and dissertation committee member, Program in Neuroscience, Univ. of Utah.

Lingyan Xing, 2010-, qualifying exam and dissertation committee member, Program in Neuroscience, Univ. of Utah.

Andrea Leigh Schwager, 2010-, qualifying exam and dissertation committee member, Program in Neuroscience, Univ. of Utah.

Christopher Howard, 2009-, qualifying exam and dissertation committee member, Dept. of Biological Sciences, Illinois State University.

Patrick Gordon, 2009-2010, qualifying exam committee member, Program in Neuroscience, Univ. of Utah.

Adam McPherson, 2009-2010, qualifying exam committee member, Program in Neuroscience, Univ. of Utah.

Christina Rossi, 2009-, qualifying exam and dissertation committee member, Program in Neuroscience, Univ. of Utah.

Matthew Hearing, 2008-2010, Dissertation committee member, Dept. of Neurosciences, Medical University of South Carolina

Vernon Twede, 2008-present, qualifying exam and dissertation committee member, Program in Neuroscience, Univ. of Utah.

Sean Patrick Flynn, 2008-2012, qualifying exam and dissertation committee member, Program in Neuroscience, Univ. of Utah.

Andrea Brushfield Morris, 2008-2011, qualifying exam and dissertation committee member, Dept. of Psychology, Univ. of Utah.

John Arik Hone, 2007-2012, qualifying exam and dissertation committee member, Program in Neuroscience, Univ. of Utah.

Karla Mark, Dept. of Pharmacology, Boston University School of Medicine, External examiner on PhD dissertation defense, February 16, 2007.

Katherine Zukor, 2006-2010, qualifying exam and dissertation committee member, Program in Neuroscience, Univ. of Utah.

Purba Marik, 2004, thesis committee, Dept. of Pharmacology and Toxicology, Univ. of Utah.

David Vago, 2003-2005, qualifying exam and dissertation committee member, Dept. of Psychology, Univ. of Utah.

Jason Rogers, 2003-2005, qualifying exam and dissertation committee member, Dept. of Psychology, Univ. of Utah.

Jim Otto, 2002-2006, dissertation committee member, Dept. of Pharmacology and Toxicology, Univ. of Utah.

Heidi Bartholomeusz, 2001, qualifying exam and dissertation committee member, Program in Neuroscience, Univ. of Utah.

Mary Logan, 2000-2005, qualifying exam and dissertation committee member, Program in Neuroscience, Univ. of Utah.

Peter West, 2000-2004, qualifying exam / dissertation committee member, Program in Neuroscience, Univ. of Utah.

Inah Lee, 2000-2002, qualifying exam and dissertation committee member, Program in Neuroscience, Univ. of Utah.

Bryan Klein, 1999-2002, dissertation committee member, Dept. of Pharmacology and Toxicology, Univ. of Utah.

Matt Barton, 1999-2002, dissertation committee member, Dept. of Pharmacology and Toxicology, Univ. of Utah.

Tim Simeone, 1999-2002, dissertation committee member, Program in Neuroscience, Univ. of Utah.

Paul Gilbert, 1999-2002, dissertation committee member, Dept. of Psychology, Univ. of Utah.

Joseph Yeh, 1997-2002, dissertation committee member, Dept. of Pharmacology and Toxicology, Univ. of Utah.

Wayne Pratt, 1997-2002, qualifying exam / dissertation committee member, Dept. of Psychology, Univ. of Utah.

Deanna Hubbard, 1997-2001, dissertation committee member, Dept. of Pharmacology and Toxicology, Univ. of Utah.

Stefan Leutgeb, 1997-2000, qualifying exam and dissertation committee member, Program in Neuroscience, Univ. of Utah.

Ryan Metzger, 1997-2000, dissertation committee member, Dept. of Pharmacology and Toxicology, Univ. of Utah.

Heather Haughey, 1997-2000, dissertation committee member, Dept. of Pharmacology and Toxicology, Univ. of Utah.

Jeff Brown, 1997-1998, laboratory rotation mentor. 1999-present, dissertation committee member, Dept. of Pharmacology and Toxicology, Univ. of Utah.

Scot C. Westwood, 1997-1999, laboratory rotation mentor. 1999-2001, dissertation committee member, Dept. of Pharmacology and Toxicology, Univ. of Utah.

Jennifer Kulak, 1996-2000, qualifying exam and dissertation committee member, Dept. of Biology, Univ. of Utah.

Shana Skradski, 1996-2000, dissertation committee member, Dept. of Pharmacology and Toxicology, Univ. of Utah.

Gricelly Vargas, 1996-1999, dissertation committee member, Dept. of Pharmacology and Toxicology, Univ. of Utah.

Jerry Kokoshka, 1996-1998, dissertation committee member, Dept. of Pharmacology and Toxicology, Univ. of Utah.

Research Rotation Mentor

Jaycie Loewen, 2012, Program in Neuroscience, University of Utah

Sarah Redmon, 2012, Program in Neuroscience, University of Utah

Chandni Sheth, 2011, Dept. of Pharmacology and Toxicology, University of Utah

Elissa Pastuzyn, 2008, Program in Neuroscience, Univ. of Utah

Danielle Friend, 2008, Program in Neuroscience, Univ. of Utah

Melissa Barker, 2008, Dept. of Pharmacology and Toxicology, Univ. of Utah

Killian Zimmerman, 2008, Dept. of Pharmacology and Toxicology, Univ. of Utah
Morten Thomsen, 2008, Department of Pharmacology and Neuroscience, University of Copenhagen, Denmark (visiting student)
Jonathan Constance, 2007, Dept. of Pharmacology and Toxicology, Univ. of Utah
Eli Iacob, 2007, Program in Neuroscience, Univ. of Utah
Andrea Schwager, 2007, Program in Neuroscience, Univ. of Utah
Michael Rog, 2007, Dept. of Pharmacology and Toxicology, Univ. of Utah
Sean Flynn, 2007, Program in Neuroscience, Univ. of Utah
Gretchen Carr, 2006, Program in Neuroscience, Univ. of Utah
Andrew Zayachivsky, 2006, Program in Neuroscience, Univ. of Utah
Cameron Metcalf, 2005, Dept. of Pharmacology and Toxicology, Univ. of Utah
Matthew Reidy, 2003, Program in Neuroscience, Univ. of Utah
Kathleen Davis, 2003, Program in Neuroscience, Univ. of Utah
Renee Esser, 2003, Program in Neuroscience, Univ. of Utah
Ashwini Sabnis, 2003, Dept. of Pharmacology and Toxicology, Univ. of Utah
Prachee Avasthi, 2001, Program in Neuroscience, Univ. of Utah.
David Daberkow, 2001, Program in Neuroscience, Univ. of Utah.
Kamisha Johnson-Davis, 2001-2002, Dept. of Pharmacology and Toxicology, Univ. of Utah.
Jannine Truong, 2000-2001, Dept. of Pharmacology and Toxicology, Univ. of Utah.
Aaron Rowland, 1999-2000, Dept. of Pharmacology and Toxicology, Univ. of Utah.
Jeff Brown, 1997-1998, Dept. of Pharmacology and Toxicology, Univ. of Utah.
Scot Westwood, 1997-1999, Dept. of Pharmacology and Toxicology, Univ. of Utah.
Peter West, 1997, Program in Neuroscience, Univ. of Utah .
Michael Brekke, 1996, Program in Neuroscience, Univ. of Utah.
Robert Renden, 1996, Program in Neuroscience, Univ. of Utah.

Visiting Scholars

Katharina Oldenburger, Visiting Pharmacy Student/Master's Thesis candidate, Philipps-Universität Marburg, Germany, GPEN Program, May-November, 2011.

Clinical Fellow Committees

Michelle Schober, M.D., Dept. of Pediatrics (Children's Health Research Center Fellow)
Member, Scholarly Oversight Committee, 2004-2010.

Undergraduate Students

Lee Leavitt (University of Utah), Dept of Biology, Neuroscience Undergraduate Research Program Fellow, 2012-present.
Aaron Carver (University of Utah), Dept. of Biology, 2012.
Crystal Chau (University of Utah), ACCESS Program Fellow, Summer, 2012.
James Kuhn (Westminster College), ASPET Summer Undergraduate Research Fellow, 2011.
Christine Garcia (married fall, 2010; married name now Latimer) (Westminster College), ASPET Summer Undergraduate Research Fellow, 2009. Advisor for senior Honors thesis, Westminster College, Dept. of Psychology, 2009-2010; Currently employed Pharmaceuticals Department, Nelson Laboratories.

Ariel Burns (Kansas State University), ASPET Summer Undergraduate Research Fellow, 2008. Currently, PhD Student in Neuroscience, University of Nebraska Medical Center.

Mikaela Martineau (Larson) (Smith College), ASPET Summer Undergraduate Research Fellow, Summer, 2006; Univ. of Utah Undergraduate Research Opportunity Program (UROP) Fellow, Fall, 2006; Currently, Clinical Research Coordinator, High-risk clinical research, Huntsman Cancer Institute, University of Utah.

John Ryan Rigby (Westminster College), ASPET Summer Undergraduate Research Fellow, 2005; Currently, Research Assistant, Univ. of Utah.

Trever Rushton (Univ. of Utah) ASPET Summer Undergraduate Research Fellow, 2005; Sales, Industrial Supply Company, Salt Lake City, UT

Jonathan Newman (Westminster College), Research Internship and ASPET Summer Undergraduate Research Fellow, 2003; PharmD, University of Montana, 2007. Currently, Pharmacist, Salt Lake City, UT.

Nathan Poulsen (Westminster College), Research Internship and ASPET Summer Undergraduate Research Fellow, 2002; MA in Pharmacology Columbia University 2005; MBA Cornell University School of Management, 2006; JD Fordham University School of Law, 2011; Currently, Associate, Chadbourne and Parke, LLP (Corporate and Securities Law Firm, New York City).

Kelly Reihl (Univ. of Utah), ASPET Summer Undergraduate Research Fellow, 2001

High School Students

Olivia Cella, Juan Diego Catholic High School Summer Science Internship in College of Pharmacy, Univ. of Utah, 2012.

Crystal Chau, Juan Diego Catholic High School Summer Science Internship in College of Pharmacy, Univ. of Utah, 2011.

Spencer Durfey, Juan Diego Catholic High School Summer Science Internship in College of Pharmacy, Univ. of Utah, 2009.

RESEARCH SUPPORT

Previous

1996-1997, "Effects of NMDA receptor antagonists on the function of striatal efferent neurons", Univ. of Utah Research Grant, \$5,800.

1996-1997, "Effects of dopamine-depleting brain lesions on NMDA receptor subunit expression", Univ. of Utah College of Pharmacy Research Support Grant, \$4,750.

1997-1998, "Anti-Parkinsonian potential of conantokins", Cognetix, Inc., \$11,021.

1998-1999, "Anti-Parkinsonian potential of NPS compounds", \$3,402.

1998-2000 R43NS37995 (Layer, R.T., P.I.) Conantokins for the Treatment of Parkinson's Disease \$75,000

1999-2000 (Wilcox, K.S., P.I.; Keefe, K.A., Co-I, 5% effort) "Functional differences in NMDA receptors of spiny efferent neurons in the medial vs. lateral striatum", Univ. of Utah, College of Pharmacy, \$3,950 total cost.

1996-2002 R29NS35579 (Keefe, K.A., P.I.) "Regulation of striatal neurons by NMDA receptor subtypes", NIH/NINDS, \$350,000.

1998-2003 R01DA09407 (Hanson, GR, PI; Keefe, K.A., P.I. during Dr. Hanson's tenure at as acting Director of NIDA) "Role of Neurotensin in Methamphetamine Effects", NIH/NIDA, \$200,000 yearly direct costs.

8/1/04 – 7/31/05 (Keefe, K.A., PI) "Cued Drug-seeking Behavior and Synaptic Plasticity in Striatal Efferent Neurons", Univ. of Utah Research Foundation. \$29,000 yearly total costs

09/01-08/06 PO1DA13367 (Keefe, K.A., PI, Project 3). "Neuropeptides and Neurotoxicity" in Program Project grant application entitled "Differential Effects of Methamphetamine and Cocaine", NIDA/NIH, \$100,000 yearly direct.

7/02 - 6/07 NS41673 (Keefe, K.A., PI) "Regulation of striatal neurons by NMDA receptor subtypes", NIH/NINDS, \$190,00 yearly direct.

07/07-06/10 R21DA022447 (Keefe, K.A., P.I.) "Neural Substrates of Stimulus-Induced Drug Seeking", NIDA/NIH \$275,000 total direct costs.

Active

PO1DA13367A2 (Keefe, K.A., PI, Project 3) 05/01/08-2/28/13 2.4
calendar
NIH/NIDA In no cost extension

Differential Effects of Methamphetamine and Cocaine: Lersion-Induced Refractoriness in Adults. This is the competitive renewal of the PO1 listed above. This renewal focuses on the characteristics underlying the resistance of monoamine neurons surviving an initial insult by METH to a subsequent neurotoxin exposure. In particular, the focus of the grant is to determine the pre- and post-synaptic alterations occurring in the presence of a partial monoamine loss that prevents further neurotoxicity. This is the competitive renewal of the first grant listed above.

RO1DA024036 (Keefe, K.A., P.I.) 10/15/08 – 05/31/13 2.4 calendar
NIH/NIDA \$283,897

Long-Term Consequences of Methamphetamine Toxicity. The goal of this project is to further determine the impact of METH-induced neurotoxicity on basal ganglia function and basal ganglia-mediated learning and memory processes and to assess whether changes in phasic dopamine neurotransmission underlie the long-term effects of METH on basal ganglia function and behavior.

R21 DA031408-A1 (Keefe, K.A., Co-PI; Kesner, Raymond P, PI). 03/15/12-02/28/14
NIH NIDA, \$150,000 yr 1; \$125,000 yr 2

Hippocampus and Relapse Associated with Drug Addiction. The goal of this project is to examine the role of hippocampal subregions and pattern-completion processes in cue-induced cocaine-conditioned place preference.

Educational Resource Development Council (ERDC) Grant Awarded 4/6/2012
for purchase of small animal anesthesia machine. \$3,411.50.

F32DA031523 (Fricks-Gleason, PI; Keefe, Sponsor) 04/01/11-03/31/14
NIH/NIDA \$48,281
nNOS-containing striatal interneurons and methamphetamine-induced neurotoxicity.
This is a post-doctoral NRSA Training Fellowship for Dr. Ashley Fricks-Gleason.

F31DA032502 (Pastuzyn, PI; Keefe, Sponsor) 10/1/11-09/30/14 NIH/NIDA \$29,907.
Arc, Phasic Dopamine, and Methamphetamine-Induced Striatal Learning Deficits. This is a pre-doctoral NRSA Training Fellowship for Ms. Elissa Pastuzyn.

T32NS076067-08 (Keefe, K.A. PI) 07/01/06-06/30/2016
NIH/NINDS \$199,692
Predoctoral Interdepartmental Training Program in Neuroscience. This is the Institutional Training grant for the Interdepartmental Training Program in Neuroscience at the Univ. of Utah.

Univ. of Utah Research Instrumentation Fund Grant (Keefe, K.A., PI) *HPLC System with Electrochemical Detector for Analysis of Central Neurotransmitters*
January 4, 2013 \$38,000.00

Pending

RO1DA024036 (NIH/NIDA, Keefe, K.A., P.I.) *Long-Term Consequences of Methamphetamine Toxicity (competitive renewal).*
09/1/13-8/31/18 \$349,500 (direct)

INVITED PRESENTATIONS

Dept. of Molecular Pharmacology, Rosalind Franklin University of Medicine and Science. Invited seminar speaker, "What a METH: Long-term consequences of METH-induced partial DA loss on phasic DA neurotransmission and basal ganglia-mediated learning and memory processes", Sept. 27, 2012.

Dept. of Neurosciences, College of Medicine, The University of Toledo. Invited seminar speaker, "What a METH: Long-term consequences of METH-induced partial DA loss on phasic DA neurotransmission and basal ganglia-mediated learning and memory processes", August 15, 2012.

Dept. of Physiology and Developmental Biology, Brigham Young University. Invited seminar speaker, "Consequences of Methamphetamine-Induced Neurotoxicity on Molecular and Behavioral Functions of the Basal Ganglia". Sept. 15, 2011.

2011 Gordon Research Conference on Catecholamines, Invited speaker in session on Catecholamines in Neuropsychiatric/Neurological Disorders. August 7-12, 2011.

- 44th Winter Conference on Brain Research, invited presented in session entitled "Becoming addicted: The transition to dorsal striatum mediated drug-seeking behavior", Keystone, CO, January 22-27, 2011.
- Translational Research in Methamphetamine Addiction meeting. Session Chair (Pharmacology and Toxicology of Methamphetamine) and invited presentation entitled "Methamphetamine and basal ganglia dysregulation". July 19-21, 2010, Chico Hot Springs and Day Spa, Pray, Montana.
- Dept. of Pharmacology and Toxicology Seminar Series, University of Utah, "Long-term consequences of methamphetamine-induced neurotoxicity on cellular, systems, and behavioral function of the basal ganglia", March 15, 2010.
- 2010 Society of Toxicology Meeting, "How to Identify your skills and passions". Invited presentation in panel entitled "Where do I go now? Rational career development planning for early-career scientists". March 9, Salt Lake City, UT.
- 2009 National Meeting of Directors of Graduate Study in Pharmacology, "Selecting for Success in Graduate School and Beyond", April 22-24, New Orleans, LA.
- 42nd Winter Conference on Brain Research. Organizer and presenter in workshop entitled "One Model Doesn't Fit All—Partial DA Loss and Striatal Function", Copper Mtn, CO, January 24-30, 2009.
- Neurology Residents Lecture Series, University of Utah, "Introduction to the Autonomic Nervous System I and II", December 11 and 18, 2008.
- 2008 Bioscience Symposium, University of Utah, "Long-term consequences of methamphetamine-induced neurotoxicity on cellular, systems, and behavioral function of the dorsal striatum", September 23, 2008.
- Dept. of Neuroscience, Medical University of South Carolina, "Long-term consequences of methamphetamine-induced neurotoxicity on cellular, systems, and behavioral function of the dorsal striatum", May 1, 2008.
- 23rd Annual Spring Meeting, Center for Neurobiology of Learning and Memory, University of California, Irvine. "Long-term consequences of methamphetamine-induced neurotoxicity on cellular, systems, and behavioral function of the dorsal striatum", April 17-18, 2008
- 41st Winter Conference on Brain Research, invited presenter in scientific panel entitled "Learning and Plasticity: What's Arc Got To Do with It?", Snowbird, UT, January 26-February 1, 2008.
- 40th Winter Conference on Brain Research, invited presenter in scientific panel entitled "Skating on Thin "Ice": Neurobiological and Behavioral Consequences of High Dose Methamphetamine." Snowmass, CO, January, 2007.
- 40th Winter Conference on Brain Research, organizer and presenter in scientific panel entitled "The glass ski boot: Fitting thalamic afferents into striatal anatomy and function." Snowmass, CO, January, 2007.
- Dept. of Molecular Pharmacology, Finch College of Health Sciences, The Chicago Medical School, "Long-term consequences of methamphetamine toxicity on basal ganglia function", April, 2004.
- US-Spain Binational Workshop on Drug Abuse and Addiction, National Institute on Drug Abuse (USA) and National Institute of Drug Research and Training (Spain). "Psychostimulant effects on basal ganglia function". October 22-24, 2003, Washington, D.C..

Program in Neuroscience, University of Utah, "NMDA receptor diversity in the striatum: Subtypes and interactions". October 7, 2003.

Dept. of Psychology, University of Utah, NMDA receptor diversity in the striatum: Subtypes and interactions. April 4, 2003.

36th Winter Conference on Brain Research, Organizer and presenter in workshop entitled "Just because you believe it, doesn't make it so: Indices of neuronal function". Snowbird, UT January, 2003.

Professional Skills Workshop, Society for Neuroscience Annual Meeting. "Getting Into Graduate School", San Diego, CA, Nov. 9, 2001; Orlando Florida, 2002.

College on Problems of Drug Dependence, Neuropeptidergic responses to psychostimulant drugs of abuse: Strategies for drug development: Neuropeptide mRNA Responses to Psychostimulants, Quebec City, Canada, June, 2002.

35th Winter Conference on Brain Research, Organizer and presenter on panel entitled "2002 Census Report on NMDA Receptor Subtypes in Striatum: More Than One", Snowmass, CO Jan 26-Feb. 2, 2002.

9th- International Conference on *In Vivo* Methods: Monitoring Molecules in Neuroscience. Invited speaker: "The theology of amino acid microdialysis: The mystery of origin and meaning", Dublin, Ireland, June 16-19, 2001.

Professional Skills Workshop, Society for Neuroscience Annual Meeting. Invited presenter and ethics discussant, New Orleans, LA, November 4, 2000.

University of Pittsburgh Survival Skills and Ethics Program course on Teaching Survival Skills and Ethics to Emerging Researchers. Invited ethics discussant and focus group leader, Vail, CO., June 10-14, 2000.

Motivational Neuronal Network Meeting; 'The Role of the Ventral Striatum in Plasticity and Learning', Gene Expression Focus Group invited participant, Seabrook Island Resort, April 15-17, 2000.

8th International Conference on *In Vivo* Methods: Monitoring Molecules in Neuroscience, "Analyzing dopamine regulation of basal ganglia circuitry with in vivo microdialysis", Stony Brook, NY, June 19-23, 1999.

Endocrine Society Meeting Career Development Workshop, "Moving On..." (keynote address), San Diego, CA, June 11, 1999.

Dept. of Psychology, Univ. of Utah, Cognitive Neuroscience Symposium Series, "Conditional dependence of dopamine-mediated effects in striatal neurons on NMDA receptor activation", Salt Lake City, UT, Nov. 20, 1998.

NPS Pharmaceuticals, Inc., "Conditional Dependence of Dopamine-Mediated Effects in Striatal Neurons on NMDA Receptor Activation", Salt Lake City, UT, Sept. 27, 1998

Intermountain Chapter of the Society for Neuroscience, "Dopamine-Glutamate Interactions in the Regulation of Striatal Efferent Neurons", Salt Lake City, UT, Oct. 20, 1997.

University of Pittsburgh Survival Skills and Ethics Program course on Teaching Survival Skills and Ethics to Emerging Researchers. "Helping Trainees Make the Transition", Charleston, W.Va., June 7-11, 1997.

American Thoracic Society / American Lung Association 1997 International Conference, Post-graduate Course in Basic Science Techniques and Methods in

Neurobiology. "Analysis of Neurotransmitters (HPLC, RIA, Radioenzymatic Assays)", San Francisco, CA, May 17, 1997.
Dept. of Neuroscience, University of Pittsburgh, "Regulation of Striatal Neuron Function by Excitatory Afferents", June 1, 1996.

PUBLICATIONS (FROM OLDEST TO MOST RECENT)

Book Chapters

- Gerfen, C.R., **Keefe, K.A.**, and Steiner H. D1 and D2 dopamine receptor-mediated gene regulation in the striatum. In: Pharmacological Regulation of Gene Expression in the CNS (K. Merchant, Ed.), CRC Press, Boca Rotan, FL, pp. 3-24, 1996.
- Zigmond, M.J. and **Keefe, K.A.** 6-Hydroxydopamine as a tool for studying catecholamines in adult animals: Lessons from the neostriatum. In: Highly Selective Neurotoxins: Basic and Clinical Applications (R. Kostrzewa, Ed.), Humana Press, 1997, pp. 75-107.
- Keefe, K.A.** Sympathomimetic drugs (Chapter 70). In: Remington: The Science and Practice of Pharmacy (A.R. Gennaro, et al., Eds.), Mack Publishing Co., 2000/2003, pp. 1305-1313.
- Keefe, K.A.** and Horner, K.A. Neurotransmitter Regulation of Basal Ganglia Gene Expression (Chapter 27). In Handbook of Basal Ganglia Structure and Function, a Decade of Progress (H. Steiner and K.Y. Tseng, Eds.), Elsevier, Inc., 2010, pp 461-490.

Research Articles

- Keefe, K.A.** Motor and cognitive interference effects on unimanual tapping rates. Brain and Cognition, 4, 165-170, 1985.
- Feldman, H., Holland, A.H., and **Keefe, K.A.** Language abilities after left hemisphere brain injury: A case study of twins. Topics in Early Childhood Special Education, 9, 32-47, 1989.
- Keefe, K.A.**, Feldman, H., and Holland, A.H. Lexical learning and language abilities in preschoolers with perinatal brain damage. Journal of Speech and Hearing Disorders, 54, 395-402, 1989.
- Abercrombie, E.D., **Keefe, K.A.**, DiFrischia, D.S., and Zigmond, M.J. Differential effects of stress on in vivo dopamine release in striatum, nucleus accumbens, and medial frontal cortex. The Journal of Neurochemistry, 52, 1655-1658, 1989.
- Keefe, K.A.**, Salamone, J.D., Zigmond, M.J., and Stricker, E.M. Paradoxical kinesia in Parkinsonism is not mediated by dopamine: Studies in an animal model. Archives of Neurology, 46, 1070-1075, 1989.
- Keefe, K.A.**, Stricker, E.M., Zigmond, M.J., and Abercrombie, E.D. Environmental stress increases extracellular dopamine in striatum of 6-hydroxydopamine-treated rats: In vivo microdialysis studies. Brain Research, 527, 350-353, 1990.
- Keefe, K.A.**, Zigmond, M.J., and Abercrombie, E.D. Extracellular dopamine in striatum: Influence of nerve impulse activity in medial forebrain bundle and local glutamatergic control. Neuroscience, 47, 325-332, 1992.

- Keefe, K.A.**, Sved, A.F., Zigmond, M.J., and Abercrombie, E.D. Stress-induced dopamine release in the neostriatum: Evaluation of the role of action potentials in nigrostriatal dopamine neurons or local initiation by endogenous excitatory amino acids. Journal of Neurochemistry, 61, 1943-1952, 1993.
- Keefe, K.A.**, Zigmond, M.J., and Abercrombie, E.D. In vivo regulation of extracellular dopamine in the neostriatum: Influence of impulse activity and local excitatory amino acids. Journal of Neural Transmission [Gen Sect], 91, 223-240, 1993.
- Gerfen, C.R. and **Keefe, K.A.** Neostriatal dopamine receptors (letter). Trends in Neurosciences, 17, 2-3, 1994.
- Keefe, K.A.** and Gerfen, C.R. D1-D2 dopamine receptor synergy in striatum: Effects of intrastriatal infusions of dopamine agonists and antagonists on immediate early gene expression. Neuroscience, 66, 903-913, 1995.
- Gerfen, C. R., **Keefe, K.A.** and Gauda, E. B. D1 and D2 dopamine receptor function in the striatum: Co-stimulation of D1- and D2-dopamine receptors on separate populations of neurons results in potentiated immediate early gene response in D1-containing neurons. The Journal of Neuroscience, 15, 8167-8176, 1995
- Keefe, K.A.** Applying basic neuroscience to aphasia therapy: What the animals are telling us. Clinical Aphasiology Conference Proceedings, American Journal of Speech-Language Pathology, 4(4), 88-93, 1995.
- Keefe, K.A.** and Gerfen, C.R. D1 dopamine receptor-mediated induction of *zif268* and *c-fos* in the dopamine-depleted striatum: Differential regulation and independence from NMDA receptors. The Journal of Comparative Neurology, 367, 165-176, 1996.
- Zigmond, M.J., Castro, S.L., **Keefe, K.A.**, Abercrombie, E.D., and Sved, A.F. Role of excitatory amino acids in the regulation of dopamine synthesis and release in the neostriatum. Amino Acids, 14, 57-62, 1998.
- Gerfen, C.R., **Keefe, K.A.**, and Steiner, H. Dopamine mediated gene regulation in the striatum. Proceedings of the Eighth International Catecholamine Symposium, Pacific Grove, CA, October 13-18, 1996, Advances in Pharmacology, "Catecholamines: Bridging Basic Science with Clinical Medicine", 1998, 670-673.
- Keefe, K.A.** and Ganguly, A. Effects of NMDA receptor antagonists on D1 dopamine receptor-mediated changes in striatal immediate early gene expression: Evidence for involvement of pharmacologically distinct NMDA receptors? Developmental Neuroscience, 20, 216-228, 1998.
- Keefe, K.A.** and Adams, A.C. Differential effects of NMDA receptor blockade on eticlopride-induced immediate early gene expression in the medial and lateral striatum. The Journal of Pharmacology and Experimental Therapeutics, 287, 1076-1083, 1998.
- Keefe, K.A.** and Gerfen, C.R. Local infusion of the (+/-)-alpha-amino-3-hydroxy-5-methylisoxazole-4-propionate/kainate receptor antagonist 6-cyano-7-nitroquinoxaline-2,3-dione does not block D1 dopamine receptor-mediated increases in immediate early gene expression in the dopamine-depleted striatum.. Neuroscience, 89, 491-504, 1999.

- Hanson, G.R. and **Keefe, K.A.** Dopamine D-1 regulation of caudate neurotensin mRNA in the presence or absence of the nigrostriatal dopamine pathway. Molecular Brain Research, 66, 111-121, 1999.
- Adams, A.C. and **Keefe, K.A.** Buprenorphine potentiates L-Dopa-induced contralateral rotation in 6-hydroxydopamine-treated rats. Neuroscience Letters, 274, 25-28, 1999.
- Ganguly, A. and **Keefe, K.A.** Effects of MK-801 on D1 dopamine receptor-mediated immediate early gene expression in the dopamine-depleted striatum. Brain Research, 871, 156-159, 2000.
- Adams, D.H., Hanson, G.R., and **Keefe, K.A.** Cocaine and methamphetamine differentially affect opioid peptide mRNA expression in the striatum. The Journal of Neurochemistry, 75, 2061-2070, 2000.
- Adams, A.C. and **Keefe, K.A.** Effects of conantokins on L-dopa-induced behavioral and striatal immediate early gene expression. European Journal of Pharmacology, 404, 303-313, 2000.
- Adams, A.C. and **Keefe, K.A.** Degree of immediate early gene induction in striatum by eticlopride determines sensitivity to N-methyl-D-aspartate receptor blockade. Brain Research, 885, 201-207, 2000.
- Adams, D.H. Hanson, G.R., and **Keefe, K.A.** Differential effects of cocaine and methamphetamine on neurotensin/neuromedin N and preprotachykinin mRNA expression in unique regions of the striatum. Neuroscience, 102, 843-851, 2001.
- Chapman, D.E., Hanson, G.R., Kesner, R.P., and **Keefe, K.A.** Long-term changes in basal ganglia function after a neurotoxic regimen of methamphetamine. The Journal of Pharmacology and Experimental Therapeutics, 296, 520-527, 2001.
- Alburses, M.E., **Keefe, K.A.**, and Hanson, G.R. Contrasting responses by extrapyramidal met-enkephalin systems to low and high doses of methamphetamine. The Journal of Neurochemistry, 76, 721-729, 2001.
- Ganguly, A. and **Keefe, K.A.** Unilateral dopamine depletion increases expression of the NR2A subunit of the NMDA receptor in enkephalin-positive and enkephalin-negative striatal neurons. Neuroscience, 103, 405-412, 2001.
- Adams, A.C. and **Keefe, K.A.** Examination of the involvement of protein kinase A in D2 dopamine receptor antagonist-induced immediate early gene expression. Journal of Neurochemistry, 77, 326-335, 2001.
- Alburses, M.E., **Keefe, K.A.**, and Hanson, G.R. Unique responses of limbic met-enkephalin systems to low and high doses of methamphetamine. Brain Research, 905, 120-1266, 2001.
- Hanson, G.R., Bush, L., **Keefe, K.A.**, and Alburses, M.E. Distinct responses of basal ganglia substance P systems to low and high doses of methamphetamine. The Journal of Neurochemistry, 82, 1171-1178, 2002.
- Johnson-Davis, K.L., Hanson, G.R., and **Keefe, K.A.** Long-term post-synaptic consequences of methamphetamine on preprotachykinin mRNA expression. The Journal of Neurochemistry, 82, 1472-1479, 2002.
- Chapman, D.E., **Keefe, K.A.** and Wilcox, K.S. Evidence for functionally distinct synaptic NMDA receptors in ventromedial versus dorsolateral striatum. Journal of Neurophysiology, 89, 69-80, 2003.

- Adams, D.H., Hanson, G.R., and **Keefe, K.A.** Distinct effects of methamphetamine and cocaine on preprodynorphin messenger RNA in rat striatal patch and matrix. The Journal of Neurochemistry, 84, 87-93, 2003.
- Johnson-Davis, K.L., Hanson, G.R., and **Keefe, K.A.** Lack of effect of k-opioid receptor agonism on long-term methamphetamine-induced neurotoxicity in rats. Neurotoxicity Research, 5, 273-282, 2003.
- Adams, D.H., Hanson, G.R., and **Keefe, K.A.** 3,4-Methylenedioxymethamphetamine increases neuropeptide messenger RNA expression in rat striatum. Molecular Brain Research, 133, 131-142, 2005.
- Horner, K.A., Adams, D.H., Hanson, G.R., and **Keefe, K.A.** Blockade of stimulant-induced preprodynorphin messenger RNA expression in the striatal matrix by serotonin depletion. Neuroscience, 131, 67-77, 2005.
- Crowley, W.R., Ramoz, G., **Keefe, K.A.**, Torto, R., Kalra, S.P. and Hanson, G.R. Differential effects of methamphetamine on expression of neuropeptide Y mRNA in hypothalamus and on serum leptin and ghrelin concentrations in *ad libitum* fed and scheduled fed rats. Neuroscience, 132, 167-173, 2005.
- Daberkow, D.P., Kesner, R.P., and **Keefe, K.A.** Relation of methamphetamine-induced monoamine loss to basal ganglia-dependent learning. Pharmacology, Biochemistry, and Behavior, 81, 198—204, 2005.
- Frankel, P.S., Hoonakker, A.J., Hanson, G.R., Bush, L., **Keefe, K.A.**, and Alburges, M. Differential neurotensin responses to low and high doses of methamphetamine in the terminal regions of striatal efferents. European Journal of Pharmacology, 522, 47-54, 2005.
- Horner, K.A. and **Keefe, K.A.** Regulation of psychostimulant-induced preprodynorphin, c-fos, and zif/268 messenger RNA expression in the rat dorsal striatum by mu opioid receptor blockade. European Journal of Pharmacology, 532, 61-73, 2006.
- Horner, K.A., Westwood, S.C., Hanson, G.R., and **Keefe, K.A.** Multiple, high doses of methamphetamine increase the number of preproneuropeptide Y mRNA-expressing neurons in the striatum of rat via a dopamine D1 receptor-dependent mechanism. Journal of Pharmacology and Experimental Therapeutics, 319: 414-421, 2006.
- Smeal, R.M., Gaspar, R.C., **Keefe, K.A.**, Wilcox, K.S. A rat brain slice preparation for characterizing both thalamostriatal and corticostriatal afferents. Journal of Neuroscience Methods, 159, 224-235, 2007.
- Crowley, W.R., Ramoz, G., Torto, R., **Keefe, K.A.**, Wang, J.J., Kalra, S.P. Neuroendocrine actions and regulation of hypothalamic neuropeptide Y during lactation. Peptides, 28, 447-452, 2007.
- Daberkow, D.P., Riedy, M.D., Kesner, R.P., and **Keefe, K.A.** Arc mRNA induction in striatal efferent neurons associated with response learning. European Journal of Neuroscience, 26, 228-241, 2007.
- Daberkow, D.P., Riedy, M.D., Kesner, R.P., and **Keefe, K.A.** Effect of methamphetamine neurotoxicity on learning-induced arc mRNA expression in identified striatal efferent neurons. Neurotoxicity Research, 14(4): 307-315, 2008.
- Smeal, R.M., **Keefe, K.A.**, and Wilcox, K.S. Differences in excitatory transmission between thalamic and cortical afferent pathways to single spiny efferent neurons of dorsal striatum. European Journal of Neuroscience, 28(10): 2041-2052, 2008.

- Hanson, J.E., Birdsall, E., Seferian, K.S., Crosby, M.A., **Keefe, K.A.**, Gibb, J.W., Hanson, G.R., and Fleckenstein, A.E. Methamphetamine-induced dopaminergic deficits and refractoriness to subsequent treatment. European Journal of Pharmacology, 607(1-3): 68-73, 2009.
- Riedy, M.D., Kesner, R.P., Hanson, G.R., and **Keefe K.A.** Discriminative stimulus- vs. conditioned reinforcer-induced reinstatement of drug-seeking behavior and arc mRNA expression in dorsolateral striatum. The Basal Ganglia IX: Advances in Behavioral Biology. H. J. Groenewegen. New York, Springer. **58**: 269-284, 2009.
- Howard, C.D., **Keefe, K.A.**, Garris, P.A., and Daberkow, D.P. Methamphetamine-induced neurotoxicity decreases phasic, but not tonic, dopaminergic signaling in the rat striatum. The Journal of Neurochemistry, Aug;118(4):668-676, 2011.
- Son, J-H, Latimer, C., and **Keefe, K.A.** Impaired formation of stimulus-response, but not action-outcome, associations in rats with methamphetamine-induced neurotoxicity. Neuropsychopharmacology, Nov;36(12):2441-2451, 2011.
- Pastuzyn, E.D. and **Keefe, K.A.**, Altered Arc-regulated striatal learning in rats pretreated with a neurotoxic regimen of methamphetamine. Neuropsychopharmacology, 37(4): 885-895, 2012.
- Barker-Haliski, M.L., Pastuzyn, E.D., **Keefe, K.A.** Expression of the core exon-junction complex factor eIF4A3 is increased during behavioral activation and striatally mediated learning. Neuroscience, 226:51-61, 2012.
- Barker-Haliski, M.L., Oldenberger, K., **Keefe, K.A.** Impaired Arc/Arg 3.1 mRNA expression in striatal efferent neurons following partial monoamine loss induced by methamphetamine. The Journal of Neurochemistry, 123(5):845-855, 2012.
- Son, J-H, Kuhn, J., and **Keefe, K.A.** Perseverative behavior in rats with methamphetamine-induced neurotoxicity. Neuropharmacology, 67:95-103, 2013.
- Friend, D.A., **Keefe, K.A.**, Fricks-Gleason, A.N. Nitric oxide synthase isoforms in methamphetamine-induced striatal dopamine toxicity. The Journal of Pharmacology and Experimental Therapeutics. 344(2):511-21, 2013.
- Friend, D.M. and **Keefe, K.A.** Glial Reactivity in Resistance to Methamphetamine-Induced Neurotoxicity. The Journal of Neurochemistry, Feb 16. doi: 10.1111/jnc.12201. [Epub ahead of print].
- Howard, C.D., Pastuzyn, E.P., Barker-Haliski, M.L., Garris, P.A., **Keefe, K.A.** Striatal gene expression is augmented following phasic-like stimulation of the medial forebrain bundle despite methamphetamine-induced partial dopamine denervation. The Journal of Neurochemistry, Mar 9. doi: 10.1111/jnc.12234. [Epub ahead of print].
- Howard, C.D., Keefe, K.A., Daberkow, D.P., Ramsson, E., Garris, P.A. Methamphetamine-induced neurotoxicity disrupts naturally occurring phasic dopamine transient activity in the striatum of freely moving rats. European Journal of Neuroscience, Apr 11. doi: 10.1111/ejn.12209.
- Fricks-Gleason, A.N., **Keefe, K.A.** Evaluating the role of neuronal nitric oxide synthase-containing striatal interneurons in methamphetamine-induced dopamine neurotoxicity. Neurotoxicity Research, 2013, Apr 11. [Epub ahead of print]

Manuscripts in Submission/Preparation

- Riedy, M.D., Kesner, R.P., Hanson, G.R., and **Keefe, K.A.** Cellular analysis of temporal activity by fluorescent *in situ* hybridization (CatFISH) determination of immediate early gene expression during reinstatement of cocaine-seeking behavior in rats trained in a novel self-administration paradigm. In submission to PLOS One.
- Robinson, J.D., Howard, C.D., Pastuzyn, E.D., Byers, D.L., **Keefe, K.A.**, and Garris, P.A. Methamphetamine-induced neurotoxicity disrupts pharmacologically evoked dopamine transients in the dorsomedial and dorsolateral striatum. In preparation for Neurotoxicity Research.
- Friend, D.M., Chau, C.C., Strathmann, F.G., and **Keefe, K.A.** Striatal glial proliferation following repeated methamphetamine exposure. In preparation for Neuroscience.
- Pastuzyn, E.P. and **Keefe, K.A.** Differences in activity-induced cytoplasmic mRNA localization in striatonigral efferent neurons. In preparation for *The Journal of Neuroscience*.
- Barker-Haliski M.L. and **Keefe, K.A.** Differences in activity-induced cytoplasmic mRNA localization in striatonigral efferent neurons. In preparation for *The Journal of Neuroscience*.

Abstracts and Presentations

- Keefe, K.A.** Motor and cognitive interference effects on unimanual tapping rates. The Annual Meeting of the American Speech-Language-and-Hearing Association, Cincinnati, OH, 1983.
- Keefe, K.A.**, Feldman, H., and Holland, A.H. Early developmental consequences of unilateral left cerebral brain damage. The Annual Meeting of the American Speech-Language-and-Hearing Association, Detroit, MI, 1986.
- Keefe, K.A.**, Feldman, H., and Holland, A.H. Lexical learning abilities of children with perinatal brain damage. The Annual Meeting of the American Speech-Language-and-Hearing Association, New Orleans, LA, 1987.
- Keefe, K.A.**, Salamone, J.D., Zigmond, M.J., and Stricker, E.M. Paradoxical kinesia in rats with dopamine (DA)-depleting brain lesions is not mediated by dopamine. Soc. Neurosci. Abstr., 14, 967, 1988.
- Abercrombie, E.D., **Keefe, K.A.**, and Zigmond, M.J. Evidence that nerve terminal density is an important contributor to apparent differences in the activation of central dopamine systems. International Workshop on the Mesolimbic Dopamine System: From Motivation to Behavior, Malta, September 25-29. Behavioral Pharmacology, 1(suppl. 1), 26, 1989.
- Abercrombie, E.D., **Keefe, K.A.**, and Zigmond, M.J. Adaptation of catecholaminergic systems to partial injury. 4th Meeting on Electrochemical Detection, HPLC, and In Vivo Monitoring in the Biosciences, Nottingham, UK, September 19-21. J. Neurosci. Meth., 29, 277, 1989.
- Keefe, K.A.**, Stricker, E.M., Zigmond, M.J., and Abercrombie, E.D. Stress-induced dopamine release and motor impairments in 6-hydroxydopamine-treated rats. Soc. Neurosci. Abstr., 15, 558, 1989.
- Zigmond, M.J., Abercrombie, E.D., Snyder, G.L., **Keefe, K.A.**, and Stricker, E.M. Response of nigrostriatal bundle neurons to injury and stress: Basic and clinical

- implications. Third triennial meeting of the International Basal Ganglia Society, Cagliari, Italy, June 10-13, 1989.
- Keefe, K.A.**, Stricker, E.M., Zigmond, M.J., and Abercrombie, E.D. Compensation of nigrostriatal dopamine neurons after partial injury and stress. The Gordon Research Conference on Neural Plasticity, New Hampshire, July 17-21, 1989.
- Keefe, K.A.**, Zigmond, M.J., and Abercrombie, E.D. NMDA receptor involvement in the regulation of striatal extracellular dopamine. Neurobiology of the NMDA Receptor: From Chemistry to Clinic, Pittsburgh, PA, October 27-28, 1989.
- Keefe, K.A.**, Zigmond, M.J., and Abercrombie, E.D. Excitatory amino acid receptor involvement in the regulation of striatal extracellular dopamine. Annals of the New York Academy of Sciences, **604**, 614-616, 1990.
- Oleyar, K.S., Doyle, P.J., **Keefe, K.A.**, and Goldstein, H. The effects of a time delay procedure on comprehension of verb-noun commands in severe aphasia. Clinical Aphasiology Conference Proceedings, T.E. Prescott (Ed.), Boston: Little, Brown, and Co., 1990.
- Keefe, K.A.**, Zigmond, M.J., and Abercrombie, E.D. In vivo microdialysis examination of interactions between excitatory amino acids and dopamine in rat striatum. The Gordon Research Conference on Catecholamines, New Hampshire, July 30-August 3, 1990.
- Keefe, K.A.**, Zigmond, M.J., and Abercrombie, E.D. In vivo evidence that basal dopamine efflux in striatum is not regulated by endogenous excitatory amino acids. Soc. Neurosci. Abstr., **16**, 522, 1990.
- Zigmond, M.J., **Keefe, K.A.**, Stricker, E.M., and Abercrombie, E.D. Compensations in an animal model of parkinsonism: Implications for behavior under basal conditions and in response to stress. XIth International Congress of Pharmacology, Amsterdam, The Netherlands, July 1-6, 1990.
- Zigmond, M.J., **Keefe, K.A.**, Snyder, G.L., Stricker, E.M., and Abercrombie, E.D. The impact of stress and injury on central dopaminergic activity. 17th Congress of Collegium Internationale Neuropsychopharmacologicum, Kyoto, Japan, September 10-14, 1990, New York: Raven Press, Clin. Neuropharmacol., Vol. 13 (suppl. 2), 382-383, 1990.
- Keefe, K.A.**, Zigmond, M.J., and Abercrombie, E.D. Role of impulse activity and excitatory amino acids in determining resting levels of extracellular dopamine in striatum. Third IBRO World Congress of Neuroscience, Montreal, Canada, August 4-9, 1991.
- Keefe, K.A.**, Zigmond, M.J., and Abercrombie, E.D. Impulse activity versus local glutamatergic input in determining basal and stress-induced levels of extracellular dopamine in striatum. 7th International Catecholamine Symposium, Amsterdam, The Netherlands, June 22-26, 1992.
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