JANE V. ALDRICH, PH.D.
Curriculum Vitae
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I. EDUCATION

Graduate: University of Michigan
Ph.D., January 1983, Interdepartmental Program in Medicinal Chemistry
Thesis Title: Synthesis and Evaluation of 19-Aza and 19-Amino Androstenedione Analogs as Potential Aromatase Inhibitors
Thesis Advisor: Dr. Raymond E. Counsell

Undergraduate: Michigan State University
B.S., June 1976, Biochemistry/Lyman Briggs College

II. EMPLOYMENT

University of Florida, Gainesville, Florida, Professor, Department of Medicinal Chemistry, February, 2015 - present

University of Kansas, Lawrence, Kansas
Professor, Department of Medicinal Chemistry, September 2001 – February, 2015; Adjunct Professor, February, 2015 - present
Courtesy Professor, Department of Pharmaceutical Chemistry, October 2006 – February, 2015
Associate Member, University of Kansas Cancer Center, August 2007 – February, 2015

Sabbatical: Dr. Vadivel Ganapathy's laboratory, Medical College of Georgia, Department of Biochemistry and Molecular Biology, August – December, 2008. Project: transport of opioid peptides
Dr. Mary Jeanne Kreek's laboratory, laboratory of Biology of Addictive Diseases, Rockefeller University, January – August, 2009. Project: *in vivo* evaluation of opioid peptides

University of Maryland, Baltimore, Baltimore, Maryland

Professor, Department of Pharmaceutical Sciences, School of Pharmacy, July 1999 – September 2001;
Associate Professor, Department of Pharmaceutical Sciences, March 1995 - June 1999;
Associate Director for Peptide Chemistry, Biopolymer Laboratory, Department of Microbiology and Immunology, 1999 - 2001
Department of Microbiology and Immunology (secondary appointment), 1999 - 2001;
Member, Program in Oncology, Greenebaum Cancer Center; 1996 - 2001;
Adjunct Associate Professor, Institute of Human Virology, Medical Biotechnology Institute, University of Maryland, Baltimore; 1996-1997.

Visiting Professor:
Dr. Douglas Barofsky's laboratory, Oregon State University, Environmental Health Sciences Center, Oregon State University, Corvallis, OR, July, 2000. Project: nanospray electrospray ionization mass spectrometry (ESI-MS) and micro-liquid chromatography-ESI-MS
Dr. David Ferguson's laboratory, University of Minnesota, Department of Medicinal Chemistry, College of Pharmacy, Minneapolis, Minnesota, July-September, 1999. Project: computational modeling of opioid receptors

Oregon State University, Corvallis, Oregon
Associate Professor of Medicinal Chemistry, College of Pharmacy; June 1993 - March 1995;
Assistant Professor of Medicinal Chemistry, College of Pharmacy; September 1987 - June 1993;
Affiliated Faculty, The Center for Gene Research and Biotechnology, Fall 1987 - March 1995, and the Molecular and Cellular Biology Graduate Program, November 1990 - March 1995.

California State University, Sacramento, Sacramento, California
Assistant Professor of Chemistry (Area: Biochemistry), Department of Chemistry, January 1986 - August 1987.

University of Minnesota, College of Pharmacy, Minneapolis, Minnesota
National Institutes of Health Postdoctoral Fellow, April 1984 - January 1986;
Research Specialist, February 1983 - April 1984.
Project: Synthesis and evaluation of opioid peptide analogues
Advisor: Dr. Philip S. Portoghese

Honors and Awards

Faculty: Distinguished alumni award, Lyman Briggs College, Michigan State University, May 4, 2013.
Leroy B. Townsend lecturer, Department of Medicinal Chemistry, University of Michigan, May 17, 2012.
Independent Scientist Award, National Institute on Drug Abuse, September 1, 1998 - August 31, 2009.
Nominated for Satoh Memorial International Award by Amy Newman, National Institute on Drug Abuse, 2006 and 2008.

Nominated for duVigneaud Award of the American Peptide Society by Lenore Martin, 2007.
Outstanding Professor, junior class, Oregon State University College of Pharmacy, 1991-1992.

Postdoctoral: National Institutes of Health Postdoctoral Fellowship, 1984-1986.

Graduate: National Institutes of Health Training Grants:
Medicinal Chemistry, 1981-1982, Reproductive Endocrinology, 1980-1981;
Rackham Thesis Grant (chosen for partial funding by Sigma Xi in recognition of proposal's outstanding merit), 1979-1980;
American Foundation for Pharmaceutical Education Fellowship, 1977-1980;
R.C. Gibbs Scholarship (second year fellowship sponsored by Phi Kappa Phi, one awarded nationally), 1977-1978;
Phi Kappa Phi Fellowship, 1976-1977;
Michigan College Fellowship, 1976-1977.

III. PROFESSIONAL ACTIVITIES

A. National Offices Held

American Chemical Society, Medicinal Chemistry Division, Councilor 2014-2016, Past Chair of Division, 2001, Chair of Division 2000,Vice-Chair of Division 1999.
American Peptide Society, Past President 2007-2009, President 2005-2007, President-Elect 2003-2005, Councilor 2001-2007.
American Association of Colleges of Pharmacy, Chemistry Section, Secretary, 1994-1996.

B. Symposia and Meetings Chaired and Organized:

Meeting and symposia organized:
International Narcotic Research Conference, Kansas City, MO, July 15-20, 2012, Program Committee member; "Medicinal Chemistry of Opioid Peptides" symposium, Chair and organizer.
Gordon Research Conference on the Chemistry and Biology of Peptides,
Co-Chair for 2004 meeting,
Co-Vice Chair for 2002 meeting.
Young Investigators Symposium, Chair and organizer, 16th American Peptide Symposium, Minneapolis, MN, June 26, 1999.
"Prodrugs and Drug Targeting," Chair and organizer, symposium, 26th National Medicinal Chemistry Symposium, Richmond, VA, June 17, 1998.
"Cysteine Proteases," Chair and organizer, symposium, 214th American Chemical Society National meeting, Medicinal Chemistry Division, Las Vegas, NV, September 11, 1997.

Sessions chaired:
"Macrocycles," session co-chair, American Peptide Symposium, Orlando, FL, June 20-15, 2015.

Zing Peptide Chemistry conference, Xcaret, Mexico, November 3-6, 2012, session co-chair.

"Peptide Materials Science," session co-chair, 22nd American Peptide Symposium, San Diego, CA, June 25-30, 2011.

Session 19, 5th International Peptide Symposium, Kyoto, Japan, December 4-9, 2010.

"SPPS of Difficult/Complex Peptides," 2nd International Modern Solid Phase Peptide Synthesis and Its Applications Symposium, Gold Coast, Queensland, Australia, October 8-11, 2009.

"Chemical Biology I", session co-chair, 21st American Peptide Symposium, Bloomington, IN, June 7-12, 2009.

20th American Peptide Symposium, Montreal, Quebec, Canada, June 26-30, 2007
Makineni Award Lecture session chair,
"Peptidomics and Proteomics," session co-chair,
"Peptides and Diagnostics, Probes, and Biomarkers," session co-chair.

Predoctoral Award Symposium, presider, 220th American Chemical Society, Washington, DC, August 20-24, 2000.

Predoctoral Award Symposium, presider, 218th American Chemical Society, New Orleans, LA, August 22-26, 1999.

"Combinatorial Approaches to Biology," Co-chair (invited), panel discussion, "Bioengineering: Building the Future of Biology and Medicine," sponsored by NIH Bioengineering Consortium, National Institutes of Health campus, Bethesda, MD, February 28, 1998.

Young Investigators Symposium, Co-Chair, 15th American Peptide Symposium, Nashville, TN, June 14, 1997.

C. Committee Service

Special Grant Review Committees, etc.:

National Institutes of Health Drug Discovery for the Nervous System Study Section (DDNS), member, July 1, 2015 – June 30, 2019

National Institute on Drug Abuse Special Emphasis Panels, P01 review, Pain and Drug Addiction, January 22-23, 2014 and September 16-17, 2014 (internet assisted review);

National Institute of Health-Industry Program, New Therapeutic Uses pre-application review, August 22, 2014 (internet assisted review);

National Institute of Health Chemistry, Biochemistry and Biophysics Fellowship Review Committee, November 14-15, 2013;

National Institute on Drug Abuse Contract Review, March 18, 2013;

National Institutes of Health CSR College of Reviewers, 2010-2012;

National Institutes of Health, Molecular Probes study section, ad hoc member, October 18, 2011;

National Institutes of Health, Biological Chemistry and Macromolecular Biophysics, Member Conflict Panel, August 3, 2011;

NIAAA Neuroscience Review Subcommittee, ad hoc member, March 8, 2011;

National Institutes of Health Special Emphasis Panel, RC4 grants, mail reviewer, May, 2010;

National Institutes of Health Special Emphasis Panel on Biochemistry and Biophysics, mail reviewer, August 20-21, 2009;

Neuroscience Drug Discovery study section, mail reviewer (Challenge grants), June, 2009;
National Institute on Drug Abuse Contract Review, May 28, 2008;
National Institute on Drug Abuse (NIDA) Medications Development (NIDA-L) Study Section, ad hoc member, March 12, 2008;
National Institutes of Health Neuroscience Drug Discovery Study Section, ad hoc member, July 31, 2006;
National Institutes of Health Drug Discovery & Molecular Pharmacology Study Section, ad hoc member, November 1-2, 2005;
National Institute on Drug Abuse Special Emphasis Panel (SEP), Program Project grants, March 17, 2003;
National Institute on Drug Abuse Training and Career Development Special Emphasis Panel, March 8, 2000;
National Institute of Environmental Health Sciences, Board of Scientific Counselors, ad hoc member, review of Laboratory of Computational Biology and Risk Assessment (primary reviewer for Peptide Neurochemistry laboratory, Dr. Lawrence Lazarus PI), Research Triangle Park, NC, October 17-19, 1999;
U.S. Army Materials and Medical Command Breast Cancer Program, ad hoc grant reviewer, September 24, 1998;
Chemistry and Related Sciences Special Emphasis Panel (fellowship applications), National Institutes of Health, March 12, 1997;
U.S. Army Materials and Medical Command Breast Cancer Program, grant review, September 8-10, 1996;
National Institute on Drug Abuse, contract review, "Synthesis and Distribution of Opioid and Related Peptides," May 23, 1996;
Special study section, SBIR grant review, National Institutes of Health, November 13-14, 1995;
Center for AIDS Research, center grant applications, National Institute of Allergy and Infectious Diseases, December 1-3, 1993;
National Institute on Drug Abuse, program project grant application, November 18, 1993;
"Structural Biology as Applied to the Problem of Targeted Drug Design for the Treatment of AIDS," program project grant applications, National Institute of General Medical Sciences, July 9-10, 1992 and January 27, 1993.

Grant reviewer for:
American Chemical Society Petroleum Research Fund (2007, 2005, 1998),
National Science Foundation (1997-1999, 2012),
Medical Research Council of Canada (1997).

Professional Societies:
American Chemical Society, Divisional Activities Committee associate;
Medicinal Chemistry Division:
Executive Committee 2014-2016;
Diversity Committee 2014- present;
Officers Nominating Committee 2003-2004;
2004 Division of Medicinal Chemistry Award Selection Committee;
Graduate Fellowship Committee, Chair 2001, member 2000 and 1996-1998.

Long Range Planning Committee, Chair 1999; member 1995-1997;

American Peptide Society:

International Liaison Committee meeting, American Peptide Society representative, Gdansk, Poland, September 6, 2006; Bloomington, IN, June, 2009; and San Diego, CA, June 27, 2011

Membership Committee Chair, 2003 – 2005;

Peptide Science Editorial Committee member (responsible for identifying a new senior editor for the Society journal *Biopolymers (Peptide Science)*), 2003

Student Affairs Committee, Chair, June 1995 - 1999, Co-chair, June 1993 - June 1995;

Award Selection Committee, member 1999, 2006 and 2011;

Publications Committee, member 1995 - 1999.

Federation of American Societies for Experimental Biology (FASEB), Executive Office Advisory Committee, 2005 – 2007

American Association of Colleges of Pharmacy:

Volwiler Research Achievement Award Selection Committee, member 1999;

Chemistry Section:

Nominations Committee, member 1993-1994 and 1996-1997;

Membership Committee, member 1992-1993.

Other:

Oregon Methadone Advisory Committee, November 1993 - June 1994;

Phi Kappa Phi Honor Society, Public Relations Officer, Oregon State University Chapter, 1993 - 1994.

D. Editorial and Reviewer Activities

Editorial Activities:

Editor, *Letters in Peptide Science*, 1994 - 2004.

Guest editor, special issue, Young Investigators Symposium from the 15th American Peptide Symposium, Letters in Peptide Science, vol. 6, number 1, January, 1999.

Editorial Advisory Board:

Biopolymers: Peptide Science, 2006 – present.

International Journal of Peptide Research and Therapeutics, 2004 – present.

Journal of Medicinal Chemistry, 2000-2004.

Journal of Peptide Research, Editorial Board member, June 1997 - 2004; Transitional Editorial Board member, December 1996 - June 1997.

Reviewer for Scientific Journals:

Reviewer for *Journal of Medicinal Chemistry*, *Biopolymers (Peptide Science), ACS Medicinal Chemistry Letters, ACS Chemical Neurosciences* and *Bioorganic and Medicinal Chemistry Letters* plus other journals (including *Angewandte Chemie*, *Proceedings of the National Academy of Sciences, Chemistry and Biology, Journal of the American Chemical Society, Organic Letters, Journal of Organic Chemistry, Journal of Peptide Research, FASEB Journal, Tetrahedron Letters, European Journal of Medicinal Chemistry, Drug Design and Discovery, Journal*

of Neuroscience, Neuroscience Letters, Molecular Pharmaceutics, and *Trends in Pharmacological Sciences*).
Reviewed proposal for review for *Chemical Reviews*, 2004.

E. Additional Service to Profession

External reviewer for faculty promotion and/or tenure:
University of Nebraska, 2014;
Virginia Commonwealth University, 2014, 2013, 2009;
University of Illinois at Chicago, 2012;
Oregon State University, 2011;
Al-Zaytoonah University of Jordan, 2011;
University of Utah, 2009;
University of Queensland (Australia), 2007;
University of Mississippi, 2006;
University of Iowa, 2006;
University of Maryland Baltimore, 2005;
University of Florida, 2003 and 2007;
Ohio State University, 1999;
University of Nebraska, 1998;
Bucknell University, 1997;
University of Georgia (3 year review), 1994.

American Association of Colleges of Pharmacy, Chemistry Section, Mentoring Program, mentor for young faculty, 1997-1998.

F. Society Memberships

American Chemical Society, Medicinal Chemistry, Organic Chemistry and Biological Chemistry Divisions
American Peptide Society
Phi Kappa Phi Honor Society
Rho Chi Honor Society

G. Consulting

November, 1998, New Venture Advisors, Boston, MA, consulting to British biotechnology company, individual paid consulting.
Expert witness testifying on peptide synthesis in a contract dispute, Eugene, OR, October, 1990.

IV. SCHOLARLY ACTIVITY

A. Publications

Michael J. Ferracane and Jane V. Aldrich, "Opioid Ligand Binding to Opioid Receptors: Insight and Implications for Peptide Design," *Proceedings of the 24th American Peptide Symposium*, Ved Srivastava, Andrei Yudin and Michal Lebl, Eds., American Peptide Society, 2015, submitted.

Solomon Gisemba and Jane V. Aldrich, Peptide Ring Closing Metathesis: Minimizing Side Reactions in Arodyn Analogs," *Proceedings of the 24th American Peptide Symposium*, Ved Srivastava, Andrei Yudin and Michal Lebl, Eds., American Peptide Society, 2015, submitted.

Sanjeewa N. Senadheera and Jane V. Aldrich, "Optimized Method to Generate Synthetically Challenging Macrocyclic Tetrapeptides That Do Not Have a Turn Inducer," *Proceedings of the 24th American Peptide Symposium*, Ved Srivastava, Andrei Yudin and Michal Lebl, Eds., American Peptide Society, 2015, submitted.

Tatyana Yakovleva and Jane V. Aldrich, "Optimizing a Larger Scale Synthesis of Zyklophin, a Highly Selective Peptide Kappa Opioid Receptor Antagonist," *Proceedings of the 24th American Peptide Symposium*, Ved Srivastava, Andrei Yudin and Michal Lebl, Eds., American Peptide Society, 2015, submitted.

J. V. Aldrich, S. N. Senadheera, N. C. Ross, K.A. Reilley, M. L. Ganno, S. E. Eans, T. F. Murray, and J. P. McLaughlin, "Alanine Analogs of [D-Trp]CJ-15,208: Novel Opioid Activity Profiles and Prevention of Drug- and Stress-Induced Reinstatement of Cocaine-Seeking Behavior," *Br. J. Pharmacol.* **2014**, *171*, 3212-3222.

K. M. DiMattio, T. V. Yakovleva, J. V. Aldrich, A. Cowan and L. Y. Liu-Chen, "Zyklophin, a short-acting kappa opioid antagonist, induces scratching in mice," *Neuroscience Lett.* **2014**, 563C, 155-159.

Archana Mukhopadhyay, Kayann Tabanor, Rathnam Chaguturu and Jane V. Aldrich, "Targeting Inhibitor of Protein Phosphatase 2A as a Therapeutic Strategy for Prostate Cancer Treatment," *Cancer Biol. Ther.* **2013**, *14*, 962-972.

Shainnel O. Eans, Michelle L. Ganno, Kate J. Reilley, Kshitij A. Patkar, Sanjeewa N.Senadheera, Jane V. Aldrich and Jay P. McLaughlin, "The macrocyclic tetrapeptide [D-Trp]CJ-15,208 produces short acting κ opioid receptor antagonism in the CNS after oral administration," *Br. J. Pharmacol.* **2013**, *169*, 426-436.

Yan Zhou, Francesco Leri, Stephanie Grella, Jane V. Aldrich, and Mary Jeanne Kreek, "Involvement of dynorphin and kappa opioid receptor in stress-induced reinstatement of heroin seeking in rats," *Synapse* **2013**, *67*, 358-361.

Jane V. Aldrich, Sanjeewa N. Senadheera, Nicolette C. Ross, Michelle L. Ganno, Shainnel O. Eans, and Jay P. McLaughlin, "The macrocyclic peptide natural product CJ-15,208 is orally active and prevents reinstatement of extinguished cocaine seeking behavior," *J. Nat. Prod*. **2013**, *76*, 433-438.

Courtney D. Kuhnline Sloan, Kenneth L. Audus, Jane V. Aldrich, and Susan M. Lunte, "The permeation of dynorphin A 1-6 across the blood brain barrier and its effect on bovine brain microvessel endothelial cell monolayer permeability," *Peptides* **2012**, *38*, 414-417.

Courtney D. Kuhnline Sloan, Pradyot Nandi, Tom Linz, Kenneth L. Audus, Jane V. Aldrich, and Susan M. Lunte, "Analytical and biological methods for probing the blood-brain barrier," *Ann. Rev. Anal. Chem.* **2012**, *5*, 505-531.

Nicolette C. Ross, Kate J. Reilley, Thomas F. Murray, Jane V. Aldrich, and Jay P. McLaughlin, Novel opioid cyclic tetrapeptides: Trp isomers of CJ-15,208 exhibit distinct opioid

receptor agonism and short-acting kappa opioid receptor antagonism, *Br. J. Pharmacol*. **2012**, *165*, 1097-1108.

Jane V. Aldrich and Jay P. McLaughlin, "Opioid Peptides: Potential for Drug Development," *Drug Discovery Today: Technologies* **2012**, *9*, e23-e31 (invited review).

Jane V. Aldrich, Santosh S. Kulkarni, Sanjeewa N. Senadheera, Nicolette C. Ross, Kate J. Reilley, Shainnel Eans, Michelle L. Ganno, Thomas F. Murray, and Jay P. McLaughlin, "Unexpected Opioid Activity Profiles of Analogs of the Novel Peptide Kappa Opioid Receptor Ligand CJ-15,208," *ChemMedChem* **2011**, *6*, 1739–1745.

Anand A. Joshi, Thomas F. Murray, and Jane V. Aldrich, "Structure-Activity Relationships of the Peptide Kappa Opioid Receptor Antagonist Zyklophin," *Peptides. Building Bridges: Proceedings of the American Peptide Symposium*, M. Lebl, Ed., American Peptide Society, 2011, pp 342-343.

Jane V. Aldrich, Santosh S. Kulkarni, Sanjeewa N. Senadheera, Nicolette C. Ross, Kate J. Reilley, Shai O. Eans, Michelle L. Ganno, and Jay P. McLaughlin, "Orally Active Opioid Peptides as Leads for Drug Development," *Peptides. Building Bridges: Proceedings of the American Peptide Symposium*, M. Lebl, Ed., American Peptide Society, 2011, pp 344-345.

Sanjeewa N. Senadheera, Santosh S. Kulkarni, Jay P. McLaughlin, and Jane V. Aldrich, "Improved Synthesis of CJ-15,208 Isomers and Their Pharmacological Activity at Opioid Receptors," *Peptides. Building Bridges: Proceedings of the American Peptide Symposium*, M. Lebl, Ed., American Peptide Society, 2011, pp 346-347.

Wei-Jie Fang and Jane V. Aldrich, "A Convenient Approach to Synthesis of C-terminal N-Alkyl Amides, *Biopolymers (Peptide Sci.),* **2011**, *96*, 715-722.

Lakshmi Kelamangalath, Shashank M. Dravid, Joju George, Jane V. Aldrich, and Thomas F. Murray, "κ-Opioid receptor inhibition of calcium oscillations in spinal cord neurons," *Mol. Pharmacol.* **2011**, *79*, 1061-1071.

Jane V. Aldrich, Jay P. McLaughlin, and Thomas F. Murray, "Development of Systemically Active Peptides and Potential for Drug Development," *Peptide Science 2010, Proceedings of the 5th International Peptide Symposium*, N. Fujii and Y. Kiso, Eds., Japanese Peptide Society, 2011, p 44.

Wei-Jie Fang, Marco A. Bennett, and Jane V. Aldrich, "Deletion of Ac-NMePhe^{1} from [NMePhe^{1}]arodyn under Acidic Conditions: 1. Effects of Cleavage Conditions and N-terminal Functionality," *Biopolymers (Peptide Science)* **2011**, *96*, 97-102.

Wei-Jie Fang, Marco A. Bennett, Thomas F. Murray and Jane V. Aldrich, "Deletion of Ac-NMePhe^{1} from [NMePhe^{1}]arodyn under Acidic Conditions: 2. Effects of Substitution on Pharmacological Activity," *Biopolymers (Peptide Science)* **2011**, *96*, 103-110.

Nicolette C. Ross, Santosh S. Kulkarni, Jay P. McLaughlin and Jane V. Aldrich, "Synthesis of CJ-15,208, a novel κ-opioid receptor antagonist, *Tetrahedron Lett.* **2010**, *51*, 5020-5023.

J. V. Aldrich, Kshitij A. Patkar, and Jay P. McLaughlin, "Zyklophin, a systemically active selective kappa opioid peptide receptor antagonist with short duration of action," *Proc. Natl. Acad. Sci. U. S. A.* **2009**, *106*, 18396-18401.

Bhaswati Sinha, Zhengyu Cao, Thomas F. Murray and Jane V. Aldrich, "Discovery of Dermorphin-Based Affinity Labels with Subnanomolar Affinity for Mu Opioid Receptors, *J. Med. Chem.* **2009**, *52*, 7372–7375.

Kshitij A. Patkar, Thomas F. Murray and Jane V. Aldrich, "The Effects of C-Terminal Modifications on the Opioid Activity of [*N*-BenzylTyr^1]Dynorphin A-(1-11) Analogues," *J. Med. Chem.* **2009**, *52*, 6814-6821.

Wei-Jie Fang, Yanjun Cui, Thomas F. Murray and Jane V. Aldrich," Design, Synthesis, and Pharmacological Activities of Dynorphin A Analogues Cyclized by Ring-Closing Metathesis, *J. Med. Chem.* **2009**, *52*, 5619-5629.

Jane V. Aldrich and Jay P. McLaughlin, "Peptide Kappa Opioid Receptor Ligands: Potential for Drug Development," *AAPS J.* **2009**, *11*, 312-322 (**invited review**).

Jane V. Aldrich, Vivek Kumar, Thomas F. Murray, Wei Guang, and Jia Bei Wang, "Dual Labeled Peptides as Tools to Study Receptors: Nanomolar Affinity Derivatives of TIPP (Tyr-Tic-Phe-Phe) as Probes of δ Opioid Receptors," *Bioconj. Chem*. **2009**, *20*, 201-204.

Kshitij A. Patkar, W. Edward Highsmith, and Jane V. Aldrich, "Solid Phase and Solution Synthesis of NvocLys($CO(CH_2)_5NH$-NDB)OCH_2CN, a Trifunctional Fluorescent Lysine Derivative," *Amino Acids* **2009**, *36*, 203-207.

Jane V. Aldrich, Vivek Kumar, Bhaswati Dattachowdhury, Angela M. Peck, Xin Wang and Thomas F. Murray, "Solid Phase Synthesis and Application of Labeled Peptide Derivatives: Probes of Receptor-Opioid Peptide Interactions," *Int. J. Peptide Res. Ther.* **2008**, *14*, 315-321.

Laksana Charoenchai, Hongyan Wang, Jia Bei Wang, and Jane V. Aldrich, High Affinity Conformationally Constrained Nociceptin/Orphanin FQ(1-13) Amide Analogues, *J. Med. Chem.* **2008**, *51*, 4385-4387.

Jane V. Aldrich, "Opioid Peptides" in *Bioactive Peptides*, J. Howl and S. Jones, Eds., Taylor & Francis, 2008, pp 103-136.

B. Dattachowdhury, T. F. Murray and J. V. Aldrich, "The Synthesis of DAMGO-based Potential Affinity Labels with High Mu Opioid Receptor Affinity and the Formation of Cyclic O-Alkyl Thiocarbamates" in *Peptides for Youth*, E. Escher, W. D. Lubell, and S. Del Valle, Eds., American Peptide Society, *Adv. Exp. Med. Biol.* **2009***, 611*, 265-266.

S. S. Kulkarni, N. C. Ross, J. P. McLaughlin, and J. V. Aldrich, " Synthesis of Cyclic Tetrapeptide CJ 15,208, A Novel Kappa Opioid Receptor Antagonist" in *Peptides for Youth*, E. Escher, W. D. Lubell, and S. Del Valle, Eds., American Peptide Society, *Adv. Exp. Med. Biol.* **2009***, 611*, 269-270.

W.-J. Fang, S. S. Kulkarni, T. F. Murray, and J. V. Aldrich, "Design and Synthesis of Cyclic Arodyn Analogues by Ring-Closing Metathesis (RCM) for Kappa Opioid Receptor (KOP) Antagonists" in *Peptides for Youth*, E. Escher, W. D. Lubell, and S. Del Valle, Eds., American Peptide Society, *Adv. Exp. Med. Biol.* **2009***, 611*, 279-280.

J. V. Aldrich, K. A. Patkar, A. K. Chappa, W. Fang, K. L. Audus, S. M. Lunte, A. N. Carey, and J. P. McLaughlin, "Development of Centrally Acting Peptide Analogs: Structure-Transport Studies and Pharmacological Evaluation of Analogs of the Opioid Peptide

Dynorphin A," in *Proceedings of the 4th International Peptide Symposium,* J. Wilce, Ed., www.peptideoz.org, M 64 (www.peptideoz.org/docs/M_64_Jane_Aldrich.pdf).

A. N. Carey, K. Borozny, J. V. Aldrich and J. P. McLaughlin, "Reinstatement of Cocaine Place-Conditioning Prevented by the Peptide Kappa Opioid Antagonist, Arodyn," *Eur. J. Pharmacol.*, **2007**, *569*, 84-89.

W.-J. Fang, M. A. Bennett, T. F. Murray and J. V. Aldrich, "An Unexpected Side Reaction Involving the Deletion of an Acetylated N-Methyl-Amino Acid from the N-Terminus of Peptides" in *Understanding Biology Using Peptides*, S.E. Blondelle, Ed., American Peptide Society, 2006, pp. 533-534.

A. M. Peck, V. Kumar, T. F. Murray, and J. V. Aldrich, "Synthesis and Pharmacological Evaluation of Dual Labeled Delta Opioid Receptor Peptides" in *Understanding Biology Using Peptides*, S.E. Blondelle, Ed., American Peptide Society, 2006, pp. 525-526.

X. Wang, T. F. Murray, and J. V. Aldrich, "Synthesis and Pharmacological Evaluation of a New Generation of TIPP-Derived Dual-Labeled Ligands for Delta Opioid Receptors" in *Understanding Biology Using Peptides*, S.E. Blondelle, Ed., American Peptide Society, 2006, pp. 523-524.

S. C. Vigil-Cruz, A. M. Peck, and J. V. Aldrich, "Evaluation of Solid Supports and Solvent Conditions for Use with Microwave-Assisted Solid-Phase Peptide Synthesis" in *Understanding Biology Using Peptides*, S.E. Blondelle, Ed., American Peptide Society, 2006, pp. 162-163.

Kshitij A. Patkar, Xiuzhen Yan, Thomas F. Murray, and Jane V. Aldrich, "[N^a-BenzylTyr^1,*cyclo*(D-Asp^5,Dap^8)dynorphin A-(1-11)NH_2 Cyclized in the "Address" Domain is a Novel κ-Opioid Receptor Antagonist," *J. Med. Chem.* **2005**, *48*, 4500-4503.

Zoya Marinova, Vladana Vukojevic, Slavina Surcheva, Tatiana Yakovleva, Gvido Cebers, Natalia Pasikova, Ivan Usynin, Loïc Hugonin, Weijie Fang, Mathias Hallberg, Daniel Hirschberg, Tomas Bergman, Ülo Langel, Kurt F. Hauser, Aaladdin Pramanik, Jane V. Aldrich, Astrid Gräslund, Lars Terenius, and Georgy Bakalkin, "Translocation of Dynorphin Neuropeptides across the Plasma Membrane. A Putative Mechanism of Signal Transmission," *J. Biol. Chem.* **2005**, *280*, 26360-26370.

M. A. Bennett, T. F. Murray, and J. V. Aldrich, "Structure-Activity Relationships of Arodyn, a Novel Acetylated Kappa Opioid Receptor Antagonist," *J. Peptide Res.* **2005**, *65*, 322-332.

K.F. Hauser, J.V. Aldrich, K.J. Anderson, G. Bakalkin, M.J. Christie, E.D. Hall, P.E. Knapp, S.W. Scheff, I.N. Singh, B. Vissel, A.S. Woods, T. Yakovleva, and T.S. Shippenberg, "Pathobiology of Dynorphins in Trauma and Disease," *Front. Biosci.* **2005**, *10*, 216-235.

J. V. Aldrich, H. Choi, and T. F. Murray, "An Affinity Label for δ-Opioid Receptors Derived from [D-Ala^2]Deltorphin I," *J. Peptide Res.* **2004**, *63*, 108-115.

B.S. Vig and J.V. Aldrich, "An Inexpensive, Manually Operated, Solid-Phase, Parallel Synthesizer," *Aldrichchimica Acta* **2004**, *37*, 2.

Balvinder S. Vig, Thomas F. Murray, and Jane V. Aldrich, "Synthesis and Opioid Activity of Side-Chain-to-Side-Chain Cyclic Dynorphin A-(1-11) Amide Analogues Cyclized

between Positions 2 and 5. 1. Substitution in Position 3,"*J. Med. Chem*. **2004**, *47*, 446-455.

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J. V. Aldrich, N. C. Ross, S. S. Kulkarni, J. P. McLaughlin, and T. F. Murray, "Novel Cyclic Tetrapeptides as Kappa Opioid Receptor Ligands," oral presentation, 8thAustralian Peptide Conference, South Stradbroke Island, Qeensland, Australia, October 11-16, 2009.

J. V. Aldrich, K. A. Patkar, K. Dresner, and S. M. Lunte, "Design, Synthesis and Evaluation of Metabolically Stable Peptide Kappa Opioid Receptor Antagonists," **invited** oral presentation, 2nd International Modern Solid Phase Peptide Synthesis and Its Applications Symposium, Gold Coast, Queensland, Australia, October 8-11, 2009.

W. J. Hartsock, M. Del Borgo, D. S. Moore, and J. V. Aldrich. "The Design and Synthesis of a Novel Multifunctional Peptide to Study Delta Opioid Receptors," oral presentation, 2nd International Modern Solid Phase Peptide Synthesis and Its Applications Symposium, Gold Coast, Queensland, Australia, October 8-11, 2009.

J. V. Aldrich, J. P. McLaughlin, K. A. Patkar, and S. M. Lunte, "Peptide Kappa Opioid Receptor Ligands: Potential for Drug Development," **invited** oral presentation, International Narcotic Research Conference, Portland, OR, July 12-16, 2009.

K. A. Patkar, K. Dresner, S. M. Lunte, and J. V. Aldrich, Metabolism of Kappa Opioid Receptor (KOR) Peptides in Rat Brain and Identification of Stable Peptide KOR Antagonists," poster presentation, International Narcotic Research Conference, Portland, OR, July 12-16, 2009.

N. C. Ross, S. S. Kulkarni, J. P. McLaughlin, T. F. Murray, and J. V. Aldrich, Novel Cyclic Tetrapeptides as Kappa Opioid Receptor Ligands," poster presentation, International Narcotic Research Conference, Portland, OR, July 12-16, 2009.

W. J. Hartsock, M. Del Borgo, D. S. Moore, and J. V. Aldrich. "The Design and Synthesis of a Novel Multifunctional Peptide to Study Delta Opioid Receptors," submitted poster, 21st American Peptide Symposium, Bloomington, IN, June 7-12, 2009.

J. V. Aldrich, K. A. Patkar, J. P. McLaughlin, and S. M. Lunte, "Identification of a Systemically Active Peptidic Kappa Opioid Receptor Antagonist and Its Potential Applications," **invited** oral presentation, Winter Conference on Medicinal and Bioorganic Chemistry, Steamboat Springs, CO, January 25-29, 2009.

J. V. Aldrich, S. S. Kulkarni, N. C. Ross, T. F. Murray, and J. P. McLaughlin, "A Novel Tetrapeptide with Analgesic Acitivty at Opioid Receptors, **invited** oral presentation, Winter Conference on Medicinal and Bioorganic Chemistry, Steamboat Springs, CO, January 25-29, 2009.

J. Anand and J. V. Aldrich, "Analogs of Dynorphin B to Study Kappa Opioid Receptor Ligand Interactions," submitted poster, Winter Conference on Medicinal and Bioorganic Chemistry, Steamboat Springs, CO, January 25-29, 2009.

W. J. Hartsock, M. Del Borgo, D. S. Moore, and J. V. Aldrich, "The Design and Synthesis of a Novel Multifunctional Peptidic Ligand to Study Delta Opioid Receptors," submitted poster, Winter Conference on Medicinal and Bioorganic Chemistry, Steamboat Springs, CO, January 25-29, 2009.

K. M. Prevatt-Smith, K. A. Patkar, and J. V. Aldrich, "Metabolic Stability of the Highly Selective, Dynorphin A-based Kappa Opioid Receptor Antagonist Zyklophin," submitted poster, Winter Conference on Medicinal and Bioorganic Chemistry, Steamboat Springs, CO, January 25-29, 2009.

N. C. Ross, S. S. Kulkarni, J. P. McLaughlin, T. F. Murray, and J. V. Aldrich, "Novel Peptide Lignads as Kappa Opioid Receptor Antagonists," submitted poster, Winter Conference on Medicinal and Bioorganic Chemistry, Steamboat Springs, CO, January 25-29, 2009.

B. Sinha, M. Del Borgo, T. F. Murray and J. V. Aldrich, "Multifunctional Affinity Label Derivatives of Dermorphin for Mu Opioid Receptors," submitted poster, Winter Conference on Medicinal and Bioorganic Chemistry, Steamboat Springs, CO, January 25-29, 2009.

K. A. Patkar, K. M. Prevatt, S. M. Lunte, J. P. McLaughlin and J. V. Aldrich, "Metabolism of Arodyn and Zyklophin in Rat Brain and Blood: Toward the Development of Kappa Opioid Receptor (KOR) Antagonists for the Treatment of Cocaine Addiction," American Association of Pharmaceutical Scientists annual meeting, Atlanta, GA, November 16-20, 2008.

J. V. Aldrich, K. A. Patkar, J. P. McLaughlin and S. M. Lunte, "Identification of a Systemically Active Peptide Kappa Opioid Receptor Antagonist," submitted poster, International Narcotic Research Conference, Charleston, SC, July 13-18, 2008.

N. C. Ross, S. S. Kulkarni, J. P. McLaughlin, T. F. Murray, and J. V. Aldrich, "Novel Cyclic Tetrapeptides as Kappa Opioid Receptor Antagonists," submitted poster, International Narcotic Research Conference, Charleston, SC, July 13-18, 2008.

B. Dattachowdhury, T. F. Murray, and J. V. Aldrich, "The Discovery of Dermorphin-Based Affinity Labels with High Affinity for Mu Opioid Receptors (MOR)," submitted poster, International Narcotic Research Conference, Charleston, SC, July 13-18, 2008.

Jane V. Aldrich, "Design and Synthesis of Peptide Ligands for Kappa Opioid Receptors," **invited** oral presentation, Peptide Users Group meeting, Mimotopes, Inc., Melbourne, Australia, October 30, 2007.

Jane V. Aldrich, Kshitij A. Patkar, Arvind Chappa, Kenneth L. Audus, Susan M. Lunte, and Jay P. McLaughlin, "Development of Centrally Acting Peptide Analogs: Structure-Transport Studies and Pharmacological Evaluation of Analogs of the Opioid Peptide Dynorphin A," oral presentation, International Peptide Symposium, Cairns, Queensland, Australia, October 21-25, 2007.

Jane V. Aldrich, Xin Wang, Angie Peck, Bhaswati Dattachowdhury, Thomas F. Murray, Vivek Kumar, and Jia Bei Wang, "Solid Phase Synthesis and Application of Labeled Peptide

Derivatives: Probes of Receptor-Ligand Interactions," **invited** oral presentation, Modern Solid Phase Peptide Synthesis meeting, Port Douglas, Queensland, Australia, October 17-20, 2007.

Jane V. Aldrich, Kshitij A. Patkar, Jay P. McLaughlin, and Susan M. Lunte, "Identification of a Systemically Active Peptdic Kappa Opioid Receptor Antagonist," **invited** oral presentation, Western Regional American Chemical Society Meeting, San Diego, CA, October 10-12, 2007.

B. Dattachowdhury, T. F. Murray, and J. V. Aldrich, "The Synthesis of DAMGO-Based Potential Affinity Labels with High Mu Opioid Receptor Affinity and the Formation of Cyclic O-Thiocarbamates," submitted poster, American Peptide Symposium, Montreal, Quebec, June 26-30, 2007.

W.-J. Fang, T.F. Murray, and J. V. Aldrich, "Design, Synthesis and Biological Activities of Cyclic Arodyn Analogues by Ring-Closing Metathesis (RCM)," submitted poster, American Peptide Symposium, Montreal, Quebec, June 26-30, 2007.

Santosh S. Kulkarni, Nicolette C. Ross, Jay P. McLaughlin, Thomas F. Murray and Jane V. Aldrich," Synthesis of Cyclic Tetrapeptide CJ 15, 208: A Novel Kappa Opioid Receptor Antagonist," submitted poster, American Peptide Symposium, Montreal, Quebec, June 26-30, 2007.

A. K. Chappa, J. V. Aldrich, K. Audus and S. M. Lunte, "Evaluation of Metabolic Stability, Plasma Protein Binding, Blood-Brain Barrier Permeability and Pharmacokinetic Properties of Dynorphin Analogs," submitted poster, Globalization of Pharmaceutics Education Network (GPEN) meeting, Lawrence, KS, October 25-27, 2006.

J. V. Aldrich, J. P. McLaughlin, C. Shay, Z. Weinstein, A. K. Chappa, S. M. Lunte and M. A. Bennett, "Unusual Pharmacological Profile of the Peptide κ Opioid Receptor Antagonist Arodyn," submitted poster, International Narcotic Research Conference, St. Paul, MN, July 9-14, 2006.

Jane V. Aldrich, Jay P. McLaughlin, Arvind K. Chappa, Susun M. Lunte and Marco A. Bennett, "Unusual Pharmacological Profile of the Peptide Kappa Opioid Receptor Antagonist Arodyn," oral presentation, Pain Interest Group meeting, Iowa City, IA, May 19, 2006.

Wei-Jie Fang, Marco A. Bennett, Thomas F. Murray, and Jane V. Aldrich, "Identification and Structure-Activity Relationships of Arodyn Analogs Exhibiting Inverse Agonist Activity at Kappa Opioid Recpetors," Chemistry and Biology of Peptides Gordon Research Conference, Ventura, CA, February 19-23, 2006.

Arvind K. Chappa, Kenneth L. Audus, Jane V. Aldrich, and Susan M. Lunte, "Quantitative Determination of Dynorphin-A Analogs in Rat Plasma using LC-MS/MS," American Association of Pharmaceutical Scientists, November 2005.

Arvind K. Chappa, Kenneth L. Audus, Jane V. Aldrich, and Susan M. Lunte, "Evaluation of the Metabolic Stability and Blood Brain Barrier Permeability of Dynorphin-A Analogs," American Association of Pharmaceutical Scientists, November 2005.

Wei-Jie. Fang, Marco A. Bennett, Thomas F. Murray and Jane V. Aldrich, "An Unexpected Side Reaction Involving the Deletion of an Acetylated N-Methyl-Amino Acid from the N-

Terminus of Peptides," submitted poster, American Peptide Symposium, San Diego, CA, June 18-23, 2005.

A. M. Peck, V. Kumar, T. F. Murray, and J. V. Aldrich, "Synthesis and Pharmacological Evaluation of Dual Labeled Delta Opioid Receptor Peptides," submitted poster, American Peptide Symposium, San Diego, CA, June 18-23, 2005.

S. C. Vigil-Cruz, A. M. Peck, and J. V. Aldrich, "Evaluation of Solid Supports and Solvent Conditions for Use with Microwave-Assisted Solid-Phase Peptide Synthesis," submitted poster, American Peptide Symposium, San Diego, CA, June 18-23, 2005.

X. Wang, T. F. Murray, and J. V. Aldrich, "Synthesis and Pharmacological Evaluation of a New Generation of TIPP-Derived Dual-Labeled Ligands for Delta Opioid Receptors," submitted poster American Peptide Symposium, San Diego, CA, June 18-23, 2005.

Jane V. Aldrich, Sandra C. Vigil-Cruz, and Angela Peck, "Microwave-Assisted Solid Phase Peptide Synthesis," **invited** oral presentation, 3rd International Microwaves in Chemistry Conference, Orlando, FL, March 3-6 2005.

Jane V. Aldrich, Marco A. Bennett, and Thomas F. Murray, "Synthesis and Pharmacological Evaluation of a Focused Combinatorial Library based on teh Kappa Opioid Receptor Antagonist Arodyn (Ac[$Phe^{1,2,3}$,Arg^{4},D-Ala^{8}]dynorphin A-(1-11)NH_2," submitted poster presentation, AAPS-NIDA Symposium Frontiers in Science: Drug Addiction – From Basic Research to Therapies, Bethesda, MD, September 9-11, 2004.

Z. Marinova, V. Vukojevic, S. Surcheva, T. Yakovleva, G. Cebers, L. Hugonin, W. Fang, J. V. Aldrich, A. Gräslund, L. Terenius, and G. Bakalkin, "Internalization of Dynorphins into Cells and Their Accumulation in the Cytoplasm," International Narcotic Research Conferences, Kyoto, Japan, July 18-23, 2004.

Jane V. Aldrich, "Peptide Ligands as Probes for Opioid Receptors," **invited** oral presentation, College on Problems of Drug Dependence 66th annual meeting, San Juan, Puerto Rico, June 12-17, 2004.

Jane V. Aldrich, "A Tale of Two Labels: the Design and Synthesis of Dual Labeled Peptides as Pharmacological Tools," **invited** oral presentation, Chemistry and Biology of Peptides Gordon Research Conference, Ventura, CA, February 15-20, 2004.

J. V. Aldrich, V. Kumar, J. B. Wang, and T. F. Murray, "Dual Labeled Derivatives of TIPP as Tools to Study Delta Opioid Receptors," submitted poster, International Narcotic Research Conference, Perpignan, France, July 6-11, 2003.

M.W. Leighty, T.F. Murray, and J.V. Aldrich, "Structure-Activity Relationships of a Novel Cyclic Dynorphin A Analog with Kappa Opioid Receptor Antagonist Activity," submitted poster, 18th American Peptide Symposium, Boston, MA, July 18-24, 2003.

M. Leighty, T. F. Murray, and J. V. Aldrich, "Conformational Analysis of Cyclic Peptide Analogs of the Opioid Peptide Dynorphin A," submitted poster, Midwest Regional meeting, American Chemical Society, Lawrence, KS, October 23-25, 2002

M. A. Bennett, T. F. Murray, and J. V. Aldrich, "Design, Synthesis and Opioid Activity of Analogs of Arodyn, A Novel Kappa-Selective Antagonist " submitted poster, INRC, Asilomar, CA July 9-14, 2002.

M. A. Bennett, T. F. Murray, and J. V. Aldrich, " Design, Synthesis and Opioid Activity of Analogs of Arodyn, A Novel Kappa-Selective Antagonist," submitted poster, FASEB, New Orleans, March, 2002.

B. Vig, T. F. Murray, and J. V. Aldrich, "Synthesis of Novel N-Terminal Cyclic Dynorphin A Analogues: Strategies and Side Reactions," oral presentation, Young Investigators Symposium, 17th American Peptide Symposium/ 2nd International Peptide Symposium, San Diego, June, 2001.

M. A. Bennett, T. F. Murray, and J. V. Aldrich, "Structure-Activity Relationship Studies of Arodyn, A Novel Dynorphin A-(1-11)) Analog," submitted poster, 17th American Peptide Symposium/ 2nd International Peptide Symposium, San Diego, June, 2001.

K. Patkar, T. F. Murray and J.V. Aldrich, "Design and Synthesis of [N-benzylTyr^1]Dyn A-(1-11) Analogs with C-terminal Modification and Evaluation of Their Opioid Activity," submitted poster, 17th American Peptide Symposium/ 2nd International Peptide Symposium, San Diego, June, 2001.

C. Sasiela, M. A. Bennett, T. F. Murray and J. V. Aldrich, "C-Terminal Structure-Activity Relationships for the Novel Opioid Peptide JVA-901 (Venorphin)," submitted poster, 17th American Peptide Symposium/ 2nd International Peptide Symposium, San Diego, June, 2001.

J. Aldrich, H. Choi and V. Kumar, "Novel Peptide-Based Affinity Labels: The Design and Solid Phase Synthesis of Opioid Peptide Analogues Using Diverse Protection Strategies," **invited** oral presentation, 221st American Chemical Society meeting, San Diego, CA, April 1-5, 2001.

J. Aldrich, Q. Wan, and T. Murray, "Identification of Novel Kappa Opioid Receptor Selective Peptides from a Combinatorial Library," submitted poster, PacificChem, Honolulu, HA, December 14-19, 2000.

B. Vig, J. V. Aldrich and T. F. Murray, "Effect of Substitutions in the "Message" Sequence on the Opioid Activity of Cyclic Dynorphin A Analogs," submitted poster, MEDI 232, 220th American Chemical Society meeting, Washington, D.C., August 20-24, 2000.

V. Kumar, T. F. Murray and J. V. Aldrich, "Solid-phase Synthesis and Pharmacological Evaluation of Labeled TIP(P) Analogs," submitted poster, MEDI 237, 220th American Chemical Society meeting, Washington, D.C., August 20-24, 2000.

V. Kumar and J. V. Aldrich, "Unexpected Fmoc Deprotection Under Alloc Deprotection Conditions During Solid-phase Synthesis," submitted poster, Organic Chemistry Division, 220th American Chemical Society meeting, Washington, D.C., August 20-24, 2000.

L. Charoenchai, H. Y. Wang, J. B. Wang, and J. V. Aldrich, "Synthesis and Pharmacological Activity of Orphanin FQ(1-13)NH_2," submitted poster, MEDI 238, 220th American Chemical Society meeting, Washington, D.C., August 20-24, 2000.

A. Coop, D. Y. Maeda, W. Guang, K. C. Rice, J. V. Aldrich, and J.-B. Wang, "Piperidines and Piperazines as ORL1 Receptor Ligands," submitted poster, 62nd Meeting of the College on Problems of Drug Dependence, San Juan, Puerto Rico, June, 2000.

J. V. Aldrich, Q. Wan, C. Sasiela, M. Bennett and T. F. Murray, "Novel Kappa Opioid Peptides with Unusual Structure-Activity Relationships," **invited** oral presentation, Rational Design of Agents" symposium, 32nd American Chemical Society Central Regional Meeting, Covington, KY, May 16-19, 2000.

V. Kumar, T. F. Murray, and J. V. Aldrich, "Synthesis and Biological Activity of Extended TIPP (Tyr-Tic-Phe-Phe) Analogues," submitted poster, 218th American Chemical Society meeting, New Orleans, LA, August 22-26, 1999. *Abst. Papers Am. Chem. Soc.* **1999**, *218*, U1006.

B. Vig, T. F. Murray, and J. V. Aldrich, "Synthesis and Pharmacological Evaluation of Analogues *cyclo*[D-Asp^2,Dap^5]dynorphin A-(1-11)NH_2 substituted in Positions 1, 3, and 4," submitted oral presentation (B. Vig presenter), Sydney Archer Memorial Symposium on Medicinal Chemistry of Opiates, International Narcotic Research Conference, Sarasota Springs, N.Y., July 10-15, 1999.

J. V. Aldrich, Q. Wan, and T. F. Murray, "Novel Opioid Peptides as Kappa Opioid Receptor Antagonists," submitted oral presentation, 16th American Peptide Symposium, Minneapolis, MN, June 26 - July 1, 1999.

H. Choi, T. F. Murray, and J. V. Aldrich, "Synthesis and Evaluation of Potential Affinity Labels for Opioid Receptors," oral presentation (H. Choi presenter), Young Investigators Minisymposium, 16th American Peptide Symposium, Minneapolis, MN, June 26 - July 1, 1999.

L. Charoenchai, J. B. Wang and J. V. Aldrich, "Design, Synthesis and Evaluation of Orphanin FQ(1-13)NH_2 Analogues," submitted poster, 16th American Peptide Symposium, Minneapolis, MN, June 26 - July 1, 1999.

B. Vig, H. Choi, and J. V. Aldrich, "New Strategies for the Synthesis of Cyclic Dynorphin A Analogues," submitted poster, 16th American Peptide Symposium, Minneapolis, MN, June 26 - July 1, 1999.

B. S. Vig, Q. Zheng, T. F. Murray, and J. V. Aldrich, "Dynorphin A Analogs Containing Phenylalanine Analogs in Position 4," submitted poster, 216th American Chemical Society meeting, Boston, MA, August 23-27, 1998, MEDI 288. *Abstr. Papers Am. Chem. Soc.* **1998**, *216*, 288-MEDI, Part 2.

H. Choi, T. F. Murray, and J. V. Aldrich, "Synthesis and Evaluation of Amphibian Opioid Peptide-based Affinity Labels," submitted poster, 216th American Chemical Society meeting, Boston, MA, August 23-27, 1998, MEDI 289. *Abstr. Papers Am. Chem. Soc.* **1998**, *216*, 289-MEDI, Part 2.

Q. Wan, T. F. Murray, and J. V. Aldrich, "Analogs of a Novel Opioid Peptide with Affinity for κ Opioid Receptors," submitted poster, 216th American Chemical Society meeting, Boston, MA, August 23-27, 1998, MEDI 290. Abstr. Papers Am. Chem. Soc. 1998, 216, 290-MEDI, Part 2.

D. Y. Maeda, F. Berman, T. F. Murray, and J. V. Aldrich, "Synthesis and Evaluation of Affinity Labels Based on the □ Opioid Antagonist, TIPP," submitted poster, 216th American Chemical Society meeting, Boston, MA, August 23-27, 1998, MEDI 291. *Abstr. Papers Am. Chem. Soc.* **1998**, *216*, 291-MEDI, Part 2.

L. Charoenchai, H. Choi, T. F. Murray, and J. V. Aldrich, "Structure-Activity Relationships of a Novel Dynorphin Analog," submitted poster, 216th American Chemical Society meeting, Boston, MA, August 23-27, 1998, MEDI 292. *Abstr. Papers Am. Chem. Soc.* **1998**, *216*, 292-MEDI, Part 2.

J. V. Aldrich, D. Y. Maeda, F. Berman, T. F. Murray, "Synthesis and Evaluation of Affinity Labels Based on the δ Opioid Antagonist, TIPP," submitted poster, 29th International Narcotic Research Conference, Garmisch-Partenkirchen, Germany, July 20-25, 1998.

Sandra C. Vigil-Cruz and Jane V. Aldrich, "Unexpected Aspartimide Formation During Coupling Reactions Using Asp(OAl) in Solid Phase Peptide Synthesis," submitted poster, 15th American Peptide Symposium, Nashville, TN, June 14-19, 1997.

Qiang Wan, Jai Bei Wang, and Jane Aldrich, "A Combinatorial Library Study of the "Message" Sequence of Extacet, a Dynorphin A Analogue," submitted poster, 15th American Peptide Symposium, Nashville, TN, June 14-19, 1997.

Qiang Wan, Jai Bei Wang, and Jane Aldrich, "A Combinatorial Library Study of the "Message" Sequence of Extacet, a Dynorphin A Analogue," submitted oral presentation (Qiang Wan presenter), 31st Middle Atlantic Regional Meeting of the American Chemical Society, Pleasantville, NY, May 27-30, 1997.

Jane V. Aldrich, Qi Zheng, Beth Olenchek, and Thomas F. Murray, "Design, Synthesis and Pharmacological Evaluation of Dynorphin A Analogues Containing Conformational Constraint of Tyr^1 or Phe^4," submitted poster, International Narcotic Research Conference, Long Beach, CA, July 21-26, 1996.

Qi Zheng, Beth Olenchek, Thomas F. Murray, and Jane V. Aldrich, "Design, Synthesis and Pharmacological Evaluation of Dynorphin A Analogues Containing Conformational Constraint of Tyr^1 or Phe4," submitted poster, 25th National Medicinal Chemistry Symposium, University of Michigan, Ann Arbor, MI, June 18-22, 1996.

K. Soderstrom, H. Choi, J. V. Aldrich, and T. F. Murray, "N-Terminal Alkylated Derivatives of [$D\text{-}Pro^{10}$]Dynorphin A-(1-11) are High Affinity Partial κ-Opioid Receptor Agonists," submitted poster, Society for Neuroscience, San Diego, November, 1995.

Jane V. Aldrich, Leena Leelasvatanakij, and Dean Y. Maeda, "Synthetic Strategies for the Preparation of Peptide-Based Affinity Labels," submitted oral presentation, 14th American Peptide Symposium, Columbus, OH, June 18-23, 1995.

Dean Y. Maeda, Thomas F. Murray, and Jane V. Aldrich, "Synthesis of Affinity Labels Based on the Delta Opioid Antagonist, TIPP," submitted poster, 14th American Peptide Symposium, Columbus, OH, June 18-23, 1995.

Leena Leelasvatanakij and Jane V. Aldrich, "Solid Phase Synthetic Strategies for the Preparation of Affinity Label Analogues of Dynorphin A(1-11)NH_2," submitted poster, 14th American Peptide Symposium, Columbus, OH, June 18-23, 1995.

Sandhya N. Kulkarni, Heekyung Choi, Thomas F. Murray, Gary E. DeLander, and Jane V. Aldrich, "The Use of the Message-Address Concept in the Design of Potential Antagonists Based on Dynorphin A," submitted poster, 14th American Peptide Symposium, Columbus, OH, June 18-23, 1995.

O. N. Jensen, S. Kulkarni, J. V. Aldrich, S. E. Bennett, D. W. Mosbaugh, and D. F. Barofsky, "MALDI and ESI MS of Covalent Peptide-Oligonucleotide Hybrids," submitted oral presentation (Ole Jensen presenter), 43rd ASMS Conference on Mass Spectrometry and Allied Topics, Atlanta, GA, May 21-26, 1995.

S. Arttamangkul and J. V. Aldrich, "A Comparison of Uronium Reagents for Side-chain to Side-chain Cyclization of an Opioid Peptide Analog on a Solid Phase Resin," submitted poster, 23rd European Peptide Symposium, Braga, Portugal, September 4-10, 1994.

Dean Y. Maeda, Thomas F. Murray, and J. V. Aldrich, "Synthesis of Enkephalin-based Affinity Labels for Delta Opioid Receptors," invited oral presentation (Dean Maeda presenter), 208th American Chemical Society National meeting, Washington, D.C., August 21-26, 1994, MEDI 12. *Abstr. Papers Am. Chem. Soc.* **1994**, *208*, 12.

Dean Y. Maeda, Thomas F. Murray, and J. V. Aldrich, "Synthesis of Enkephalin-based Affinity Labels for Delta Opioid Receptors," submitted oral presentation (Dean Maeda presenter), International Narcotic Research Conference, North Falmouth, Massachusetts, July 16-21, 1994.

S. Arttamangkul, T. F. Murray, G. E. DeLander, W. C. Johnson, and J. V. Aldrich, "Synthesis and Opioid Activity of Conformationally Constrained Dynorphin A Analogues," submitted poster, International Narcotic Research Conference, North Falmouth, Massachusetts, July 16-21, 1994.

S. Arttamangkul and J. V. Aldrich, "The Synthesis of cyclo[D-Asp^2,Dap^5]Dynorphin A(1-13)NH_2: A Comparison Study of Reagents for Side-Chain to Side-Chain Cyclization on a Solid Phase Resin," submitted poster, 13th American Peptide Symposium, Edmonton, Alberta, Canada, June 20 25, 1993.

S. Arttamangkul, D. Y. Maeda, W. C. Johnson, and J. V. Aldrich, "Conformational Studies of Cyclic 2,5 Dynorphin A(1-13)NH_2 Analogues," submitted poster, 13th American Peptide Symposium, Edmonton, Alberta, Canada, June 20-25, 1993.

L. Leelasvatanakij, S. Arttamangkul and J. V. Aldrich, "Comparison of Chromatographic Conditions for Separations of Cyclic Dynorphin A Analogues from Linear Byproducts," submitted poster, 13th American Peptide Symposium, Edmonton, Alberta, Canada, June 20-25, 1993.

Jane V. Aldrich, Sandra C. Story, Heekyung Choi, Seksiri Arttamangkul, Kristin R. Snyder, Thomas F. Murray, and Gary E. DeLander, "Structure-Activity Relationships of Dynorphin A Analogues Containing Modifications in the "Message" Sequence," **invited** speaker, Alfred Burger Award Symposium, 203rd American Chemical Society National Meeting, San Francisco, CA, April 5-10, 1992, MEDI 204. *Abstr. Papers Am. Chem. Soc.* **1992**, *203*, 204.

Seksiri Arttamangkul, Thomas F. Murray, and Jane V. Aldrich, "Synthesis and Opioid Activity of Conformationally Constrained Dynorphin A Analogs," submitted poster, 203rd American Chemical Society National Meeting, San Francisco, CA, April 5-10, 1992, MEDI 74. *Abstr. Papers Am. Chem. Soc.* **1992**, *203*, 74.

Heekyung Choi, Gary E. DeLander, Thomas F. Murray, and Jane V. Aldrich, "Synthesis and Opioid Activity of [D-Pro^{10}]Dynorphin A-(1-11) Analogs with N-Terminal Alkyl

Substitution," submitted poster, 203rd American Chemical Society National Meeting, San Francisco, CA, April 5-10, 1992, MEDI 73. *Abstr. Papers Am. Chem. Soc.* **1992**, *203*, 73.

Kristin R. Snyder, Thomas F. Murray, and Jane V. Aldrich, "Synthesis and Opioid Activity of Dynorphin A Analogs Containing cis- and trans-4-Aminocylohexanecarboxylic Acid in the Message Sequence," submitted poster, 203rd American Chemical Society National Meeting, San Francisco, CA, April 5-10, 1992, MEDI 72. *Abstr. Papers Am. Chem. Soc.* **1992**, *203*, 72.

Heekyung Choi, Gary E. DeLander, Thomas F. Murray, Sonia Anderson, and Jane V. Aldrich, "Synthesis and Opioid Activity of Dynorphin A-(1-13) Analogues Substituted at Positions 2 and 4," submitted poster, 12th American Peptide Symposium, Cambridge, MA, June 16-21, 1991.

Sandra C. Story, Mia E. Heidt, Gary E. DeLander, Thomas F. Murray and Jane V. Aldrich, "Synthesis and Opioid Activity of Lys(Ac)^{6}- and Lys(Ac)^{9}- Dynorphin A-(1-13) Amide", submitted poster, 22nd National Medicinal Chemistry Symposium, Austin, TX, July 29-August 2, 1990.

Jane V. Aldrich and Sandra C. Story, "Solid Phase Synthetic Strategies for the Preparation of Affinity Labels Derived from Dynorphin A," submitted poster, International Narcotic Research Conference, Noordwijkerhout, the Netherlands, July 8-13, 1990.

Sandra C. Story and Jane V. Aldrich, "Synthesis of Protected Peptide Amides: Comparison of Resins for Solid Phase Peptide Synthesis," submitted poster, Gordon Research Conference on the Chemistry and Biology of Peptides, Ventura, CA, February 4-9, 1990.

S. C. Story, G. E. DeLander, T. F. Murray, and J. Aldrich Lovett*, "Synthesis and Opioid Activity of 2-Substituted Analogues of the Opioid Peptide Dynorphin A-(1-13) Amide," submitted poster, 11th American Peptide Symposium, San Diego, CA, July 9-14, 1989.

Jane Aldrich Lovett*, "Opioid Peptide Analogues to Study Opioid Receptors," **invited** lecture, Dimensions in Bioresearch, Milligen/Biosearch Fall Symposium Series, Seattle, WA, October 28, 1988.

Jane Aldrich Lovett and Philip S. Portoghese, "δ Opioid Receptor Antagonism of a Series of N,N Dialkyl Leucine Enkephalins," submitted poster, American Chemical Society meeting, Anaheim, CA, September 7-12, 1986, MEDI 73. *Abstr. Papers Am. Chem. Soc.* **1986**, *192*, 73.

Jane Aldrich Lovett and Philip S. Portoghese, "Melphalan-Containing N,N-Dialkyl-enkephalin Analogs as Potential Irreversible Antagonists of the δ Opioid Receptor," submitted poster, International Narcotic Research Conference, San Francisco, CA, July 6-11, 1986.

Jane Aldrich Lovett, Michael V. Darby, and Raymond E. Counsell, "Synthesis and Evaluation of a 19-Aza Analog of Androstenedione as a Potential Aromatase Inhibitor," submitted poster, Conference on Aromatase: New Perspectives for Breast Cancer, Key Biscayne, FL, December 6-9, 1981.

* Former name

D. Invited lectures (1995 - present)**:**

"Novel Opioid Peptides: New Approaches for an Old Target," Department of Medicinal Chemistry, Purdue University, May 5, 2014.

"Novel Opioid Peptides: Potential for Drug Development," Department of Medicinal Chemistry, University of Florida, April 22, 2014.

"Novel Opioid Peptides: New Approaches for an Old Target," the Fourth Annual Wanabe Symposium in Chemical Biotechnology, Department of Chemistry, Indiana University, October 12, 2013.

"Peptidic Ligands for Kappa Opioid Receptors: Potential for Drug Development," Department of Drug Discovery and Biomedical Sciences, Medical University of South Carolina, February 5, 2013.

"Peptidic Ligands for Kappa Opioid Receptors: Potential for Drug Development," Center for Substance Abuse Research, Temple University, August 23, 2012.

"Peptidic Ligands for Kappa Opioid Receptors: Potential for Drug Development," 7th Leroy B. Townsend lecture, Department of Medicinal Chemistry, University of Michigan, May 17, 2012.

"Peptidic Ligands for Kappa Opioid Receptors: Potential for Drug Development," University of Colorado School of Medicine, Denver, April 13, 2011.

"Peptide Kappa Opioid Receptor Ligands: Pharmacological Tools and Potential for Drug Development," McLean Hospital, Boston, MA, April 5, 2010.

"Peptide Kappa Opioid Receptor Ligands: Pharmacological Tools and Potential for Drug Development," Department of Pharmaceutical and Biomedical Sciences, University of Georgia, February 22, 2010.

"Peptide Opioid Receptor Ligands: Pharmacological Tools and Potential for Drug Development," Department of Medicinal Chemistry, University of Minnesota, February 2, 2010.

"Peptide Kappa Opioid Receptor Ligands: Pharmacological Tools and Potential for Drug Development," Higuchi Bioscience Center Science Talks, University of Kansas, October 30, 2009.

"Peptide Kappa Opioid Receptor Ligands: Pharmacological Tools and Potential for Drug Development," Adolor Corporation, Exton, PA, September 1, 2009.

"Peptide Opioid Receptor Ligands: Pharmacological Tools and Potential for Drug Development," Center of Substance Abuse Research, Temple University School of Medicine, Philadelphia, PA, August 31, 2009.

"Peptide Opioid Receptor Ligands: Pharmacological Tools and Potential for Pharmacological Development," Molecular Pharmacology and Chemistry, Memorial Sloan Kettering Cancer Center, August 4, 2009

"Peptide Kappa Opioid Receptor Ligands: Pharmacological Tools and Potential for Pharmacological Development," Laboratory of Biology of Addictive Diseases, Rockefeller University, New York, NY, April 7, 2009.

"Development of Centrally Acting Opioid Peptide Analogs," Abbott Laboratories, Abbott Park, IL, April 8, 2008.

"Design and Pharmacological Activity of Peptidic Ligands for Kappa Opioid Receptors," Creighton University School of Medicine, Department of Pharmacology, Omaha, NE, November 30, 2007.

"Peptide Analogs as Tools to Study Receptors: a Tale of Two Labels, Three Receptors and Many More Questions," Higuchi Bioscience Center Science Talks, University of Kansas, November 30, 2006.

"Design, Synthesis and Evaluation of Peptidic Ligands for Kappa Opioid Receptors," Department of medicinal Chemistry, School of Pharmacy, University of Mississippi, Oxford, MS, November 7, 2006.

"Design, Synthesis and Evaluation of Peptidic Ligands for Kappa Opioid Receptors, Department of Pharmacology and Physiology, School of Veterinary Medicine, University of Georgia, Athens, GA, March 27, 2006.

"The Design, Synthesis and Pharmacological Evaluation of Opioid Peptide Analogs as Tools to Study Opioid Receptors" Department of Chemistry, Hamline University, St. Paul, MN, June 6, 2005.

"Novel Dynorphin A Analogs as Kappa Opioid Receptor Ligands," Department of Pharmacology, Temple University, Philadelphia, PA, August 24, 2004.

"A Tale of Two Labels: the Design and Synthesis of Dual Labeled Peptides as Pharmacological Tools," Department of Physiology and Pharmacology, Oregon Health Sciences University, Portland, OR, April 7, 2004.

"Design of Opioid Peptide Analogs to Study Opioid Receptors," University of Michigan, September 6, 2002.

"Design and Synthesis of Novel Labeled Opioid Peptide Derivatives for Opioid Receptors: a Tale of Two Labels," University of Minnesota, Symposium in Honor of Philip S. Portoghese, August, 2001.

"Design and Synthesis of Dynorphin A Analogues as Ligands for Kappa Opioid Receptors," University of Kansas, Department of Medicinal Chemistry, College of Pharmacy, Lawrence, KS, September, 2000.

"Design and Synthesis of Dynorphin A Analogues as Ligands for Kappa Opioid Receptors," University of Iowa, Division of Medicinal and Natural Product Chemistry, College of Pharmacy, Iowa City, IA, September, 2000.

"Design and Synthesis of Dynorphin A Analogues as Ligands for Kappa Opioid Receptors," Interdepartmental Program in Medicinal Chemistry, University of Michigan, Ann Arbor, MI, September, 2000.

"Design and Synthesis of Dynorphin A Analogues as Ligands for Kappa Opioid Receptors," National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health, Bethesda, MD, June 1, 2000.

"Design and Synthesis of Dynorphin A Analogues as Ligands for Kappa Opioid Receptors," University of Connecticut, Department of Pharmaceutical Sciences, School of Pharmacy, October 25, 1999.

"Design and Synthesis of Peptide-based Affinity Labels for Opioid Receptors," Guilford Pharmaceuticals, Baltimore, MD, December 8, 1998.

"Design and Synthesis of Peptide-based Affinity Labels for Opioid Receptors," North Carolina State University, Chemistry Department, Raleigh, NC, October 13, 1998.

"Design and Synthesis of Peptide-based Affinity Labels for Opioid Receptors," Research Triangle Institute, Research Triangle Park, NC, October 12, 1998.

"Design and Synthesis of Peptide-based Affinity Labels for Opioid Receptors," University of Maryland, Department of Microbiology and Immunology, Baltimore, MD, April 8, 1998.

"Design and Synthesis of Peptide-based Affinity Labels for Opioid Receptors," University of Kansas, Department of Medicinal Chemistry, College of Pharmacy, Lawrence, KS, January 15, 1998.

"Design and Synthesis of Opioid Peptide Analogues," National Institute of Dental Research, Bethesda, MD, May 1, 1997.

"Peptide-Based Affinity Labels for Opioid Receptors," University of Minnesota, Department of Medicinal Chemistry, College of Pharmacy, Minneapolis, MN, January 14, 1997.

"Design and Synthesis of Biologically Active Peptides and Peptidomimetics," University of Maryland, Institute of Human Virology, Baltimore, MD, September 16, 1996.

"Synthesis of Opioid Peptide Derivatives as Potential Affinity Labels for Opioid Receptors," Wayne State University, School of Pharmacy, Detroit, MI, April 18, 1996.

V. GRANTS AND CONTRACTS

Present Support:

Source: National Institute on Drug Abuse
Title: Peptidic Ligands for κ Opioid Receptors, R01 DA18832-08
Principal Investigator: Jane V. Aldrich (6.25% effort)
Co-Investigators: Thomas F. Murray (Creighton University, 5% effort), Jay P. McLaughlin (Torrey Pines Institute for Molecular Studies, 5% effort)
Amount: $284,991 current year, $1,496,881 total costs ($242,435 current year, $1,262,522 total direct costs)
Period: March 1, 2012 – February 28, 2017

Source: National Institute on Drug Abuse, R01 DA023924-06A1
Title: Peptidic Kappa Opioid Receptor Ligands as Potential Treatments for Drug Addiction
Principal Investigator: Jane V. Aldrich (12% effort)
Co-investigators: Susan M. Lunte (4% effort), Thomas F. Murray (10% effort, Creighton University), and Jay P. McLaughlin (20% effort, Torrey Pines Institute for Molecular Studies)

Amount: $692,957 first year costs, $3,334,414 total costs ($560,522 first year, $2,771,799 total direct costs)
Period: June 15, 2014 – March 31, 2019

Source: National Institute on Drug Abuse, R01 DA032928-03
Title: Development of Novel Opioid Peptides for Cocaine Abuse
Principal Investigator: Jane V. Aldrich (11.25% effort)
Co-Investigators: Thomas F. Murray (Creighton University, 5% effort), Susan L. Lunte (6.25% effort), Jay P. McLaughlin (Torrey Pines Institute for Molecular Studies, 20% effort), Mary Jeanne Kreek (Rockefeller University, 5% effort)
Amount: $672,975 current year, $2,052,902 total costs ($582,186 current year, $1,748,917 total direct costs)
Period: March 1, 2012 - February 28, 2016 (no cost extension)

Source: Department of Defense, PC130736
Title: A Novel Strategy for Prostate Cancer Therapy Targeting the c-Myc Oncoprotein
Principal Investigator: Jane V. Aldrich (10% effort)
Co-investigators: Archana Mukhopadhyay (60% effort), Benyi Li (5% effort, University of Kansas Medical Center)
Amount: $183,039 first year, $562,500 total costs ($122,026 first year, $375,000 total direct costs)
Period: August 18, 2014 – August 17, 2017

Pending support:

Source: Department of Defense, PR141230
Title: Novel Peptide Antagonists as Treatments for Substance Abuse
Principal Investigator: Jane V. Aldrich (15% effort)
Co-investigator: Guenther Hochhaus (5% effort)
Amount: $351,106 first year, $1,075,141 total costs ($234,071 first year, $716,761 total direct costs)
Period: September 30, 2015 – September 29, 2018

Past support:

Source: University of Kansas J. R. & Inez Jay Fund
Title: Novel Compounds with Anticancer Activity
Principal Investigator: Jane V. Aldrich
Co-investigator: Benyi Li (University of Kansas Medical Center)
Amount: $30,000
Period: July 1, 2013 – June 30, 2014, extended to February 28, 2015

Source: National Institute of Neurological Disorders and Stroke, R01 NS04929-08
Title: Analytical Methods for Investigating Peptide Transport
Principal Investigator: Susan M. Lunte
Role on project: Co-investigator (5% effort)
Amount: $257,500 current year, $1,250,000 total direct costs
Period: July 1, 2008 – June 30, 2013 (extended to June 30, 2014)

Source: National Institute on Drug Abuse, R01 DA023924-(01-05)
Title: Peptidic Kappa Opioid Receptor Ligands as Potential Treatments for Drug Addiction
Principal Investigator: Jane V. Aldrich (12% effort)
Co-investigators: Susan M. Lunte (5% effort), Thomas F. Murray (10% effort, Creighton University) and Jay P. McLaughlin (10%, Torrey Pines Institute for Molecular Studies)
Amount: $2,158,278 total costs ($1,758,783 total direct costs)
Period: September 15, 2007 – August 31, 2012 (extended to August 31, 2013)

Source: National Institute on Drug Abuse, R01 DA010035-(10-11)
Title: Affinity Labels for Opioid Receptors
Principal Investigator: Jane V. Aldrich (8.3% effort)
Co-investigator: Thomas F. Murray (Creighton University, 8.3% effort)
Amount: $622,810 total costs ($486,834 total direct costs)
Period: August 1, 2009 – July 31, 2011 (extended to July 31, 2012)

Source: University of Kansas Cancer Center
Title: A Novel Strategy for Delivery of Anticancer Agents to the Brain
Principal Investigator: Jane V. Aldrich (10% effort)
Co-investigators: Susan M. Lunte (5% effort), and Kenneth Audus (2% effort)
Amount: $35,000
Period: January 1 – December 31, 2009 (extended to June 30, 2011)

Source: University of Kansas Institute for Advancing Medical Innovation
Title: A Novel Strategy for Brain Drug Delivery
Principal Investigator: Jane V. Aldrich (8.3% effort)
Co-investigators: Susan M. Lunte (4% effort), Mary Lou Michaelis (4% effort), and Kenneth Audus (2% effort)
Amount: $77,005
Period: September 15, 2009 – March 31, 2011

Source: National Institute on Drug Abuse, R01 DA18832-05
Title: Peptidic Ligands for κ Opioid Receptors
Principal Investigator: Jane V. Aldrich (16.7% effort)
Co-Investigators: Gerald Lushington (3% effort)
Thomas F. Murray (Creighton University, 10% effort)
Amount: $1,387,205 total costs ($1,055,295 total direct costs)
Period: February 15, 2005 - February 14, 2010 (extended to February 14, 2011)

Source: National Institute on Drug Abuse, R01 DA18832-03S1
Title: Minority Supplement: Peptidic Ligands for κ Opioid Receptors
Principal Investigator: Jane V. Aldrich
Amount: $170,020 total costs ($118,070 total direct costs)
Period: August 15, 2007 - February 14, 2010 (extended to February 14, 2011)

Source: National Institute on Drug Abuse, K02 DA00393-(06-11) (Independent Scientist Award)

Title: Opioid Peptide Analogs as Probes of Opioid Receptors
Principal Investigator: Jane V. Aldrich †
Amount: $650,919 total costs ($602,704 total direct costs)
Period: September 1, 2004 - August 31, 2009 (extended to August 31, 2010)

Source: National Institute on Drug Abuse, R01 DA023924-02S1
Title: Supplement to Peptidic Kappa Opioid Receptor Ligands as Potential Treatments for Drug Addiction
Principal Investigator: Jane V. Aldrich (12% effort)
Amount: $36,500 total costs ($25,000 direct costs)
Period: September 1, 2008 – August 31, 2009 (extended to August 31, 2010)

Source: National Institute on Drug Abuse, R01 DA10035-(05-09)
Title: Affinity Labels for Opioid Receptors
Principal Investigator: Jane V. Aldrich (25% effort)
Co-Investigator: Thomas F. Murray (Creighton University, 10% effort)
Amount: $1,155,989 total costs ($875,000 total direct costs)
Period: April 1, 2003 – March 31, 2008 (extended to March 31, 2009)

Source: National Institute on Drug Abuse, R01 DA10035-07S1
Title: Minority Supplement: Affinity Labels for Opioid Receptors
Principal Investigator: Jane V. Aldrich
Amount: $185,623 total costs ($129,905 total direct costs)
Period: August 1, 2005 – March 31, 2008 (extended to March 31, 2009)

Source: National Institute of Neurological Disorders and Stroke, R56 NS042929-06
Title**:** Analytical Methods for Investigating Peptide Transport
Principal Investigator: Susan M. Lunte
Role: Co-Investigator
Amount: $250,000 direct costs
Period: July 1, 2007 –June 30, 2008

Source: University of Kansas General Research Fund
Title: Blood-Brain Barrier Transport of Basic Opioid Peptides
Principal Investigator: Jane V. Aldrich
Co-Investigators: Kenneth Audus, Susan M. Lunte
Amount: $7,000 total/direct costs
Period: July 1, 2004 – June 30, 2005

Source: National Institute on Drug Abuse, R01 DA05195-(08-11)
Title: Dynorphin Analogues as κ Opioid Receptor Antagonists
Principal Investigator: Jane V. Aldrich (33% effort)
Co-Investigators: Ronald Guiles (5% effort), Alexander McKerell (5%), Jia Bei Wang (5%)
University of Georgia: Thomas F. Murray (10% effort)

† This career development award covered 75% of the awardee's salary so that the awardee could devote at least 75% of her time to research.

Amount: $806,725 total costs ($606,062 total direct costs)
Period: August 20, 1997 - June 30, 2001 (extended to July 31, 2002)

Source: National Institute on Drug Abuse, R01 DA10035-(01-04)
Title: Affinity Labels for Opioid Receptors
Principal Investigator: Jane V. Aldrich (25% effort)
Co-Investigators: Thomas F. Murray (10% effort), Jai Bei Wang (5% effort)
Amount: $696,245 total costs ($405,314 total direct costs)
Period: September 1, 1996 - July 31, 2000 (extended to July 31, 2001)

Source: University of Maryland School of Pharmacy Designated Research Initiative Funds
Title: Design, Synthesis and Pharmacological Evaluation of Orphanin FQ Analogues as Ligands for the ORL1 Receptor
Principal Investigator: Jane V. Aldrich (10% effort)
Co-Investigator: Jia Bei Wang (5%)
Amount: $25,250
Period: July 1, 1998 - January 31, 2000

Source: National Institute on Drug Abuse
Title: Supplement to Dynorphin Analogues as κ Opioid Receptor Antagonists (R01 DA05195)
Principal Investigator: Jane V. Aldrich
Amount requested: $37,920 total costs ($33,500 total direct costs)
Period: April 15, 1999 - June 30, 1999

Source: U. S. Army Medical Research and Material Command, Breast Cancer Research Program
Title: Novel Irreversible Inhibitors of Cathepsin D
Principal Investigator: Jane V. Aldrich (10% effort)
Amount: $149,916 total costs ($107,425 total direct costs)
Period: July 1, 1996 - June 30, 1998 (extended to June 30, 1999)

Source: UMAB School of Pharmacy DRIF
Title: Novel Dynorphin Analogues as Kappa Opioid Receptor Ligands
Principal Investigator: Jane V. Aldrich (10% effort)
Co-Investigator: Jia Bei Wang (5%)
Amount: $10,000
Period: July 1, 1996 - June 30, 1997

Source: National Institute on Drug Abuse, R01 DA05195-(04-07)
Title: Dynorphin Analogues as κ Opioid Receptor Antagonists
Principal Investigator: Jane V. Aldrich (40% effort)
Co-Investigators: Gary E. DeLander (10% effort), Thomas F. Murray (10% effort)
Amount: $570,099 total costs ($409,363 total direct costs)
Period: August 1, 1993 - June 30, 1996 (extended to June 30, 1997)

Source: National Science Foundation, Neuroscience Program, IBN-9023149
Title: Affinity Labels for Kappa Opioid Receptors
Principal Investigator: Jane V. Aldrich (25% effort)

Co-Investigators: Thomas F. Murray (10% effort), Gary E. DeLander (5% effort)
Amount: $190,018 total costs ($138,529 total direct costs)
Period: March 15, 1991 - August 31, 1995

Source: National Institute on Drug Abuse, R01 DA05195 (-01 to -03)
Title: Dynorphin Analogs as κ Opioid Receptor Antagonists
Principal Investigator: Jane V. Aldrich (50% effort)
Co-Investigators: Gary E. DeLander (10% effort), Thomas F. Murray (10% effort)
Amount: $460,398 total costs ($343,530 total direct costs)
Period: September 30, 1989 - August 31, 1993

Source: Alcohol, Drug Abuse, and Mental Health Administration, Small Instrumentation Program
Title: ASIP - Oregon State University
Principal investigator: Thomas F. Murray
Co- Investigator: Jane V. Aldrich
Amount: $26,618
Period: September 1, 1992 - August 31, 1993
Equipment grant

Source: Oregon State University Research Office
Title: Release Time for Proposal Development
Recipient: Jane V. Aldrich
Amount: $5,500
Period: Winter quarter, 1993

Source: Oregon State University Research Council
Title: Synthesis and Evaluation of Constrained Dynorphin A Analogues
Principal Investigator: Jane V. Aldrich (10% effort)
Co-Investigators: Gary E. DeLander (5% effort), Thomas F. Murray (5% effort)
Amount: $8,000
Period: November 18, 1992 - June 30, 1993

Source: National Science Foundation, Research Experience for Undergraduates Supplement
Title: Affinity Labels for Kappa Opioid Receptors
Principal Investigator: Jane V. Aldrich
Amount: $3,660
Period: January 1, 1992 - August 31, 1992

Source: American Association of Colleges of Pharmacy Grant Program for Young Investigators
Title: Irreversible Antagonists of the Delta Opioid Receptor
Principal Investigator: Jane V. Aldrich (10% effort)
Amount: $5,000
Period: November 3, 1987 - October 31, 1991

Source: Pharmaceutical Manufacturers Association Foundation Research Starter Grants
Title: Pharmacological Probes of Kappa Opioid Receptor Subtype Function

Principal Investigator: Jane V. Aldrich (15% effort)
Co-Investigators: Gary E. DeLander (5% effort), Thomas F. Murray (5% effort)
Amount: $20,000
Period: January 1, 1988 - December 30, 1990

Source: Medical Research Foundation of Oregon
Title: N-Alkylated Dynorphin Analogs as Kappa Opioid Receptor Antagonists
Principal Investigator: Jane Aldrich Lovett‡ (15% effort)
Amount: $11,830
Period: December 1, 1987 - November 30, 1989

Source: Oregon State University Research Council
Title: Dynorphin Analogs as Kappa Opioid Receptor Ligands
Principal Investigator: Jane Aldrich Lovett (10% effort)
Co-Investigator: Gary E. DeLander (5% effort)
Amount: $8,000
Period: September 28, 1987 - September 28, 1988

Source: National Institutes of Health Individual Research Service Award
Title: Opioid Peptide Analogs as K Opiate Receptor Antagonists
Awardee: Jane Aldrich Lovett (100% effort)
Amount: $37,233
Period: April 1984 - January 1986
Postdoctoral Fellowship

Selected grants submitted but not funded (1995 - present):

Source: National Institute on Drug Abuse
Title: Synthesis and Distribution of Opioid and Related Peptides (contract)
Principal Investigators: Bruce Diel (MRI Global) and Jane V. Aldrich (16.3% effort), Co-PI's
Amount (KU): $189,728 first year, $948,640 total costs requested ($129,067 first year, $645,335 total direct costs)
Period: August 1, 2011 – July 30, 2016

Source: National Institute on Drug Abuse
Title: Technologies in Molecular Medicine (T90)
Principal Investigator: Paul F. Terranova (KU Medical Center)
Role on project: KU Lawrence campus coordinator
Amount requested: $306,443 first year direct costs
Period: September 1, 2006 – August 31, 2010

Source: National Cancer Institute
Title: Novel Combinatorial Peptidomimetic Anticancer Agents (Program Project grant)
Principal Investigator: Jane V. Aldrich (10% effort as PI of overall program)

‡ Former name

Amount requested: $949,832 first year, $4,988,635 total costs ($698,310 first year, $3,664,331 total direct costs)
Period: July 1, 1998 - June 30, 2003

Project 1: Development of Novel Peptides with Anticancer Activity
Project Leader: Jane V. Aldrich (20% effort)
Co-Investigators: Ronald Guiles (8% effort), Alexander McKerell (8%), Sandra Vigil-Cruz (10%)
Amount requested: $251,866 first year, $1,290,619 total costs ($172,327 first year, $871,813 total direct costs)
Period: July 1, 1998 - June 30, 2003

Source: National Institute on Drug Abuse
Title: Synthetic Peptides as Structural Probes for Preclinical and Medication Development (contract)
Principal Investigator: Jane V. Aldrich (15% effort)
Co-Investigator: Nicholas Ambulos (15% effort), Biopolymer Core Facility
Amount requested: $350,196 first year, $3,501959 total costs ($282,644 first year, $2,826,440 total direct costs)
Period: April 1, 1998 - March 31, 2008

RESEARCH PERSONNEL

A. Master and Doctoral Students Supervised

1. Degrees Completed

University of Kansas

Anand Joshi, "Synthesis and Biological Evaluation of Dynorphin Analogs, and Caco-2 Permeability of Opioid Macrocyclic Tetrapeptides," Ph.D., May 17, 2013
Current position: Postdoctoral Associate, Virginia Commonwealth University

Wendy J. Hartsock, "The Design, Synthesis and Evaluation of Peptide Ligands to Study Opioid Receptors," Ph.D., July 22, 2010
Current position: Peptide Applications Specialist, Biotage

Bhaswati Sinha, "Design, Synthesis and Evaluation of Peptide-Based Affinity Labels for Mu Opioid Receptors," Ph.D., July 9, 2009
Current position: Biochemist, Monsanto

Kendra Desner, "Design, Synthesis and Metabolism of Arodyn Analogs," M.S., January 20, 2009.

Weijie Fang, "Design and Synthesis of Novel Linear and Cyclic Peptide Ligands for Kappa Opioid Receptors," Ph.D., August 28, 2008
Current position: Head, Biopharmaceutical Formulation, Hisun Pharmaceuticals, China

Angela Peck, "Dual Labeled TIPP (Tyr-Tic-Phe-Phe, Tic = 1,2,3,4-tetrahydroisoquinoline-3-carboxylic acid) Peptides as Pharmacological Tools to Study Delta Opioid Receptors," M.S. June 7, 2007.

Xin Wang, "Progress Towards Affinity Labeling of δ Opioid Receptors," Ph.D., September 21, 2007.

University of Maryland Baltimore

Marco Bennett, "Synthesis and Evaluation of Opioid Activity of Novel Dynorphin A-(1-11) Analogues using Classic and Combinatorial Library Approaches," Ph.D., June 2003
Current position: Regulatory Review Officer, Food and Drug Administration

Chris Sasiela, Ph.D., April, 2002.
Current position: Regulatory Affairs Officer, National Institute of Allergy and Infectious Diseases

Kshitij Patkar, "Design and Synthesis of [N^{α}-BenzylTyr^{1}]Dynorphin A-(1-11) Analogs with C-terminal Modifications, Evaluation of Their Opioid Activity and Blood-Brain Barrier Transport Ph.D. November, 2002.
Current position: Regulatory Review Officer, Food and Drug Administration

Balvinder Vig, "Synthesis and Pharmacological Evaluation of Dynorphin A Analogs Constrained in the "Message" Sequence," Ph.D, September 2001.
Current position: Research investigator, Bristol Myers Squibb

Laksana Charoenchai, "Design, Synthesis and Evaluation of Orphanin FQ-(1-13)NH_2 Analogs," Ph.D., July 2001.
Current position: Rangsit University, Thailand

Tianxin Wang, "Synthesis and Biological Evaluation of Novel Ligands for Opioid Receptors," M.S., May 2001.
Current position: Quest Medicine, Inc.

Oregon State University

Dean Maeda, "Synthesis and Evaluation of Affinity Labels Based on Peptide Antagonists for Delta Opioid Receptors," Ph.D., November 1997.
Current position: Senior Research Scientist, Syntrix Biochip

Leena (Leelasvatanakij) Suntornsuk, "Synthetic Strategies for the Preparation of Affinity Label Dynorphin A(1-11)NH_2 Analogues," Ph.D., April 1996.
Current position: Professor, Pharmaceutical Chemistry Department, Pharmacy Faculty, Mahidol University, Bankok, Thailand

Sandhya Kulkarni, "Synthesis and Opioid Activity of Dynorphin Analogues with the Modifications in the Message Sequence," M.S., June, 1995.

Seksiri Arttamangkul, "Synthesis and Evaluation of Conformationally Constrained Analogues of Dynorphin A," Ph.D., January 1995.
Current position: Research Assistant Professor, Department of Physiology and Pharmacology, School of Medicine, Oregon Health Sciences University

Heekyung Choi, "Synthesis and Biological Evaluation of Dynorphin Analogues as Pharmacological Probes of Opioid Receptors," Ph.D., January 1995.

Leena Leelasvatanakij, "Comparison and Optimization of Chromatographic Conditions for the Separation of Cyclic Dynorphin A Analogues from Linear Byproducts," M.S., August 1993.

Kristin Snyder, "Synthesis of Dynorphin A Analogues with Modifications in the "Message" and "Address" Sequences," M.S. (Biochemistry and Biophysics, Oregon State University), May 1993.

Sandra Vigil-Cruz Bartlett (Sandra Story[§]), "Solid Phase Synthesis of Dynorphin Analogues as Probes of Kappa Opioid Receptors," Ph.D., May 1990.
Current position: Associate Professor, Husson University School of Pharmacy

Awards received by students:

Christianna Reedy, NIGMS Biotechnology Training Grant trainee, 2013 – 2014
Wendy Hartsock, American Foundation for Pharmaceutical Education Fellowship, 2007 – 2009
Bhaswati DattaChowdhury, finalist in poster competition, 20th American Peptide Symposium, Montreal, Canada, June 26-30, 2007.
Christy Sasiela:
- National Institute on Drug Abuse, Individual National Research Service Award (predoctoral fellowship), "Antiproliferative Activity of Opioid Analogues," June 1, 2000 - May 30, 2002.
- American Foundation for Pharmaceutical Education Fellowship, 1999 - 2000.

Marco Bennett:
- National Institute on Drug Abuse, Individual National Research Service Award (minority predoctoral fellowship), "Synthesis and Activity of Novel Kappa Opioid Peptides," October 1, 2001 – September 30, 2003
- Graduate Program Enrichment Fellowship, University of Maryland Baltimore, 2000 - 2001.

Travel grant awards received by the following students:
- Anand Joshi to present his research at the 22nd American Peptide Sympsoium, San Diego, CA, June, 2011.
- Wendy Hartsock to present her research at the 2nd International Modern Solid Phase Peptide Synthesis and Its Applications Symposium, Gold Coast, Queensland, Australia, October 8-11, 2009.
- Wendy Hartsock to present her research at the 21st American Peptide Symposium, Bloomington, IN, June, 2009.
- Bhaswhati DattaChowdhury to present her research at the International Narcotic Research Conference, Charleston, S.C., July 13-18, 2008.
- Bhaswhati DattaChowdhury, Weijie Fang, and Nicolette Ross to present their research at the 20th American Peptide Symposium, Montreal, Quebec, Canada, June 26-30, 2007
- Weijie Fang to present his research at the Chemistry and Biology Gordon Research Conference, February 2006.
- Xin Wang, Weijie Fang and Angela Peck to present their research at the 19th American Peptide Symposium/ 2nd International Peptide Symposium, San Diego, June 2005.
- Matthew Leighty to present his research at the 18th American Peptide Symposium/ 2nd International Peptide Symposium, Boston, June 2003.
- Marco Bennett, Kshitij Patkar, Christy Sasiela, and Balvinder Vig to present their research at the 17th American Peptide Symposium/ 2nd International Peptide Symposium, San Diego, June 2001.

[§] Former name

Laksana Charoenchai and Balvinder Vig to present their research at the 16th American Peptide Symposium, Minneapolis, MN, June 26-July 1, 1999.

Balvinder Vig to present his research at the International Narcotic Research Conference, Sarasota Springs, N.Y., July 10-15, 1999.

Balvinder Vig (first place) and Laksana Charoenchai (second place), Chemistry II section, poster competition at the 21st Annual Graduate Student Research Day, University of Maryland, Baltimore, April 21, 1999.

Kshitij Patkar (first place) and Laksana Charoenchai (second place), chemistry poster session, 22nd Annual Graduate Student Research Conference (GRC), University of Maryland, Baltimore County, April 19, 2000.

Other students supervised (1995 – present)**:**

University of Kansas (2001 – 2015):

Katherine Prevatt, 2007 – 2009
Yuping Yu, 2006 – 2007
Matthew Leighty, 2001 – 2005
Priyanka Chaudry, Fall 2003

Rotation students:
Fall, 2004 – Gagandeep Somal, Haleib Woldeab, and Bhaswati DattaChowdhury
Fall, 2005 – Karen Beckman, Chad Schroeder, and Yuping Yu
Fall, 2006 – Gary Brandt, Syed Wasimul Haque, Karrie Prevatt, and Angelica Meyer
Fall, 2007 – Chris Kimmel, Anand Joshi, Kyle Bailey, Linda Blake
Fall, 2010 – Euna Yoo
Fall, 2011 – Solomon Gisemba, Kayann Tabanor (Chemistry student)
Summer, 2012 – Vince Crowley, Christianna Reedy
Fall, 2013 – Doug Orsi

University of Maryland Baltimore

Oscar Garcia-Lopez, visiting graduate student for three months from the University of Barcelona, Spain, 2000
Qiang Wan, degree not completed, advisor, 1995-1999
Faye Rogers, Ph.D. student, temporary advisor, 1997-1998
Chrissie Dubois, rotation student, 1996

2. Current Students:

Solomon Gisemba, 2012 – present
Christianna Reedy, 2013 – present

Co-advisor with Susan Lunte for Benjamin Mann (Celerion), masters thesis

3. Service on Thesis and Examining Committees

National/International

Mengie Liu, M.S., Monash University (Australia), external thesis examiner, 2012;
Cecil Cros, Ph.D., University of Queensland (Australia), external thesis assessor, 2009.

University of Kansas (2001 – 2015):
Alex Salyer, Medicinal Chemistry, Ph.D. oral candidacy exam, November 5, 2014
David Hymel, Medicinal Chemistry, PhD., thesis defense, July 11, 2014
Sara (Logan) Thomas, Chemistry, Ph.D. candidate, oral candidacy exam May 6, 2008; thesis defense January 23, 2014
Cameron Ng, Medicinal Chemistry, Ph.D. oral candidacy exam, November 21, 2013
Kayan Tabanor, Chemistry, Ph.D. oral candidacy exam, June 3 and October 31, 2013
Molly Lee, Medicinal Chemistry, Ph.D. oral candidacy exam, June 19, 2013
Derek White, Pharmaceutical Chemistry, Ph.D. oral candidacy exam, May 23, 2013
Abdullah Al-Hossaini, Pharmaceutical Chemistry, Ph.D. oral candidacy exam, May 20, 2103
Yunan Wang, Chemistry, Ph.D. oral candidacy exam, February 14, 2013, oral research proposal November 12, 2012
Sean Willis, Chemistry, M.S. thesis defense, December 13, 2012
Elyse Petrunak, Medicinal Chemistry, Ph.D. oral candidacy exam, June 29, 2012
Linda Blake, Ph.D., oral candidacy exam March 10, 2010; thesis defense, April 3, 2012
Courtney Kuhnline Sloan, Ph.D., Pharmaceutical Chemistry, thesis defense February 11, 2011
Erin Hirt, Medicinal Chemistry, PhD., oral candidacy exam June 16, 2006: thesis defense August 28, 2009
Michael Szostack, Medicinal Chemistry, Ph.D. candidate, oral candidacy exam May 30, 2007
Arvind Chappa, Pharmaceutical Chemistry, Ph.D., oral candidacy exam; thesis defense March 8, 2007
Huijong Han, Medicinal Chemistry, PhD. candidate, oral candidacy exam August 23, 2006
Jin Liu, Medicinal Chemistry, Ph.D., thesis defense 2005
Anthony Romero, Medicinal Chemistry, Ph.D., thesis defense August 11, 2004
Kevin Poon, Chemistry, Ph.D., oral candidacy exam July 17, 2002; thesis defense July 28, 2004

University of Maryland Baltimore (1995 – 2001):
Chun-hua Yan, thesis committee, Ph.D. (Biomedicinal Chemistry), May 1997
Bindi Dangi, thesis committee, Ph.D. (Biomedicinal Chemistry), April, 1999
Hong Bing Deng, thesis committee, Ph.D. (Pharmacology), June, 1999
I-Jen Chen, advisory committee, Ph.D. (Drug Design)
Nazim Shazad, advisory committee, Ph.D. candidate (Drug Design)
Hun Yen, advisory committee, Ph.D. candidate (Pharmacology)

D. Postdoctoral Associates and Research Associates Supervised

Current:
Dr. Michael Ferracane October, 2014 - present
Dr. Tatyana Yakovleva April, 2009 - present
Research Associate 2004 – February 2007 (supervised jointly by Dr. Sandra Vigil Cruz Bartlett and myself)

Dr. Dmitry Yakolev April, 2010 – present
Research Associate
Dr. Archana Mukhopadhyay October, 2010 - present
Postdoctoral Associate, January, 2010 – October, 2011
Research Associate, November, 2011 - present
Dr. Tanvir Khaliq December, 2010 – present
Postdoctoral Associate, December, 2010 – October, 2013
Research Associate, November, 2013 – present

Previous
Dr. Sanjeewa Senadheera January, 2010 – March, 2015
Postdoctoral Associate, January, 2010 – December, 2013
Research Associate, December, 2013 – March, 2015
Dr. Kshitij Patkar February, 2006 – July, 2010
Dr. Sandra Vigil-Cruz Bartlett September 1990 - September 1992, June 1995 – August 1997
Research Asst. Prof,/ Senior Research Associate, July, 2001 – June, 2010
Dr. Nicolette Ross January, 2007 – August, 2009
Dr. Mark Del Borgo March, 2007 – July, 2008
Dr. Santosh Kulkarni December, 2005 – October, 2007
Research Associate
Dr. Heekyung Choi April 1997 – January 2003
Dr. Vivek Kumar September 1997 – May 2001
Dr. Praveen Marapaka March 1999 - July, 2000
Dr. Dean Maeda January 1998 - July 1999
Dr. Qi Zheng December 1993 - January 1997
Dr. Nishith Chatervedi October 1990 - September, 1991

Michael Ferracane, Bert Schram Young Investigator Award, American Peptide Symposium, Orlando, FL, June 20-25, 2015.
Travel award to postdoctoral associate to present his research at the 24th American Peptide Symposium, Orlando, FL, June 20-25, 2015.
Travel award to research associate Tanvir Khaliq to present his research at the 248th American Chemical Society National Meeting, San Francisco, CA, August 10-13, 2014.
Sanjeewa Senadheera, *ACS Medicinal Chemistry Letters* poster award, 246th American Chemical Society National Meeting, Indianapolis, IN, September 8-12, 2013.
Travel award to postdoctoral associate Sanjeewa Senadheera to present his research at the 246th American Chemical Society National Meeting, Indianapolis, IN, September 8-12, 2013.
Travel award to postdoctoral associate Sanjeewa Senadheera to present his research at the 22nd American Peptide Symposium, San Diego, CA, June 25-30, 2011.
Travel award to postdoctoral associate Nicolette Ross to present her research at the International Narcotic Research Conference, Charleston, SC, July 13-18, 2008.
Awards received by postdoctoral associate Heekyung Choi:
Selected as one of twelve presenters (from 50+ applicants) in the Young Investigator Symposium at the 16th American Peptide Symposium, Minneapolis, MN, June 26, 1999.
Received a travel grant to present her research at the 16th American Peptide Symposium, Minneapolis, MN, June 26-July 1, 1999

E. Undergraduate Students, etc. Supervised (1995 - present):

Undergraduate research students:
Jonathan Latham, Darren Klotz
High school student:
Olamide Fakunle, NIH Minority Research Apprenticeship Program, summer 1996.

VI. TEACHING
Courses Taught 1995 - present*

University of Kansas (2001 – February, 2015):[1]

Course Number	Course Name (no. of credits)	Semester	Course-coordinator?	No. contact hrs.
Pharm.D. courses:				
MDCM 601	Medicinal Biochemistry	Fall, 2009		30 lectures/exams
		Fall, 2010		30 " / "
		Fall, 2011		35 " / "
		Fall, 2012		30 " / "
		Fall, 2013	Yes	27 " / "
		Fall, 22014		26 " / "
MDCM 603	Medicinal Biochemistry	Spring, 2010		5 lectures
		Spring, 2011		5 "
MDCM 626	Medicinal Chemistry II (3)	Spring, 2006	Yes	–
PTX 645	Neurological Basis of Addiction	Fall, 2014		1 lecture
		Fall, 2013		1 "
		Fall, 2012		1 "
		Spring, 2012		1 "
		Spring, 2011 (online)		1 "
		Spring, 2010		1 "
Graduate courses:				
MDCM 721	Intro. Med. Chem.	Fall, 2007		2 lectures
MDCM 775	Chemistry of the Nervous System (3)	Spring, 2014		3 hours
		Spring, 2012		3 hours
		Spring, 2010		3 hours
		Spring, 2008		6 hours
		Spring, 2006		3 hours
		Fall 2003		
MDCM 790	Drug Design (3)	Spring, 2014		10 lectures
		Spring, 2013		10 lectures
		Spring, 2012		9 lectures
		Spring, 2002 – 2011		8 lectures
MDCM 799	Seminar (1)	Spring, 2008	Yes	
		Fall, 2007		
		Spring, 2003		
		Fall, 2002		
MDCM 801	Issues of Scientific Integrity (1)	Fall 2005		1 lecture
		Fall 2003		
MDCM 804/ GS 804	Interdiscip. Seminar on Ethics In Science	Fall, 2007		2 hours

* Does not include courses granting credit for research (i.e. MDCM 895, 899, and 999)

	and Engineering (1-3)		
GS800	Preparing Future Faculty	2002	1 lecture (ethical issues encountered by faculty members)

[1]2001 – Spring, 2009, Teaching only in graduate courses because of Independent Scientist Award from NIDA.

Participated in 5-day workshop on Ethics Education in Science and Engineering, January 16-18, 2007, March 1, 2007 and May 11, 2007.

University of Maryland Baltimore (1995-2001):

Course Number	Course Name (no. of credits)	Semester	Course-master?	No. contact hrs.
Pharm.D. courses:				
PHAR 511	Biochemistry I (2)	Fall, 1998	Yes	24 hours lab
		Fall, 1997	Yes	17 hours + 10 hours lab
PHAR 544	Medicinal Chem. (3)	Spring, 1998		31 hours
		Spring, 1997		21 hours
		Spring, 1996		12 hours
PHAR 529	Special Topics/ Adv. Med. Chem. (1)	Spring, 1998	Yes	9 hours
		Spring, 1996	Yes	8 hours
PHAR 529	Antibiotics Transition Course (2)[1]	Fall, 1998		5 hours
PHAR 516	Science-Pharmacy Integration Work-shop (3)	Fall, 1998		1 hour
		Fall, 1997		1 hour
PHAR 516	Science-Pharmacy Integration Work shop (3) – cont.	Fall, 1996		2 hours
		Fall, 1995		2 hours
PHAR 554	Integrated Science and Therapeutics I (4)	Fall, 1997		5 hours
		Fall, 1996		2 hours
PHAR 556	Integrated Science and Therapeutics III (3)	Spring, 1995		2 hours
PHAR 531	Pharmaceutical Chem. (2)	Fall, 1997		1 hour
		Fall, 1996		1 hour

Fall, 1995 1 hour

Course Number	Course Name (no. of credits)	Semester	Course-master?	No. contact hrs.
Graduate courses:				
PHAR 751	Drug Design (3)[2]	Spring, 2000		4 hours
		Spring, 1998		8 hours
BMCH 750	Drug Design I (3)	Fall, 1996		4 hours
		Fall, 1995		4 hours
BMCH 751	Drug Design II (3)	Spring, 1996		4 hours
PHAR 600	Prin. of Drug Design & Development (4)	Fall, 2000		1 hour
		Fall, 1999		1 hour
PHAR 600	Prin. of Drug Design & Development (4) – cont.	Fall, 1998		3 hours
		Fall, 1997		3 hours
		Fall, 1996		1 hour
PHAR 628	Bioanalytical Separation Techniques (3)	Fall, 1999		2 hours
		Fall, 1997	Yes	2 hours
		Fall, 1995		3 hours
PHAR 707	Protein and Peptide Delivery Systems (3)[3]	Spring, 1999		6 hours
		Spring, 1997		5 hours
	Chemistry Journal Club (noncredit course)[4]	Fall, 1999	[4]	6 hours
		Spring, 2000	[4]	6 hours

[1] New course offered for the first time in 1998.
[2] PHAR 751, Drug Design became a one semester course in 1997/1998 and replaced BMCH 750 and 751.
[3] New course offered for the first time in 1997.
[4] Noncredit course begun Fall, 1999. Course was run jointly by Dr. Andrew Coop and myself.

Invited guest lectures:

"Mass Spectrometry of Peptides," Pharmacy 318 (graduate course), 2 hours, Department of Pharmaceutical Sciences, School of Pharmacy, University of Connecticut, October 25, 1999.

"Combinatorial Chemistry," Pharmacy 301, Drug Design (graduate course), 2 hours, Department of Pharmaceutical Sciences, School of Pharmacy, University of Connecticut, November 13, 1998.

VII. UNIVERSITY SERVICE

A. Committee Service

University of Florida (2015 – present)
College of Pharmacy:
Research Strategic Planning Taskforce, 2015 - present

University of Kansas (2001 – 2015)

University Committees and Service:

Animal Care Advisory Council, 2014 - 2015
HBC Emergency Preparedness Team, 2012 - 2015
KU internal grant review, Edward Mallinckrodt, Jr. Foundation grant submission, 2012
Five Year Review Committee for Pharmaceutical Chemistry Department Chair Dr. Christian Schoeneich, 2009-2010
Graduate School:
Graduate Council 2003 -2007
Executive Committee of the Graduate Council, 2004-2006, 2006-2007
Standing Committee on Faculty Appointments and Authorization, 2004
Ph.D. Completion Study, 2007
Recruiting Committee, 2005
Pew Scholar Selection Committee, 2004
Scholarship and Research Committee, 2004-2005
Five Year Review Committee for Higuchi Biosciences Center Director Dr. Eli Michaelis, 2006-2007

School and Department Committees and Service

School of Pharmacy:
PharmD curriculum revision subcommittee, 2013 – 2014
Curriculum committee, 2013 – 2014
Graduate Affairs committee, 2013 – 2014
Admissions committee, 2011-2013
New pharmacy building dedication committee, 2010
Graduate Affairs Committee, 2003-2007
Pharmacy Building Committee, 2004-2005
Executive Committee, 2001-2003
Subcommittee for GRF review, 2003
Financial Aid Awards Committee, 2002-2003

Department:
Co-organizer, Fall Retreat symposium "The optimization of drug physicochemical properties in early drug discovery," Departments of Pharmaceutical Chemistry and Medicinal Chemistry, October 8, 2012.

Director of Graduate Studies, 2003 – August 2007
- Developed and implemented two tracks (organic synthesis and biochemistry) for graduate students in the Medicinal Chemistry graduate program, 2006
- Implemented research rotations for new graduate students in the Medicinal Chemistry graduate program, 2004
- Submitted applications for graduate student funding:
  - Nominated graduate applicants for Self Graduate Fellowships
    - Three Self Graduate fellowships awarded to medicinal chemistry graduate students, 2006; one Self Graduate Fellowship awarded, 2007
  - Received 3-year supplemental scholarships for an incoming graduate student, 2005, 2006 and 2007
  - Submitted nominations of graduate applicants for several other university fellowships (Chancellor's/Honors Fellowship, Melki Graduate Fellowship), 2004 and 2006
- Graduate recruiting at national meetings:
  - Graduate Recruiting Breakfasts at national American Chemical Society meetings: August 25 – September 1, 2005, Washington, D.C.
    March 26 – 30, 2006, Atlanta, GA
  - Attended Society for the Advancement of Chicano and Native American Scientists (SACNAS) meeting, September 2005, Denver, CO to recruit minority students

Graduate Admissions Committee, Chair 2003 – 2007; member 2007 – 2008, 2011 – 2014
Betty and Les Mitscher Prize for Excellence in Medicinal Chemistry Selection Committee, chair, 2012 and 2013
Strategic Plan Committee, member 2008
Center for Teaching Excellence Ambassador, 2002-2003
Faculty liaison, NIH remodeling grant for synthetic laboratories in old Malott Hall, 2003-2004
Safety officer, 2002-2003
Seminar coordinator, 2002-2003
Search committee, Assistant/Associate Professor, 2010-2011
Search committee, medicinal biochemistry laboratory instructor, 2011
Search committee, Professor/Associate Professor and Assistant/Associate Professor, 2006-2007
Search committee, Department Chair, 2002-2005
Search committee, Assistant/Associate Professor, 2002-2003
Search committee, teaching postdoctoral associate, chair, 2006-2007
Search committee, Graduate Student Recruiter, 2005-2006

Community Service

Presentation to Lawrence Welcome Club, "Designing New Drugs to Treat Disease," September 19, 2012.

University of Maryland Baltimore (1995 – 2001)

University Committees and Service:

Graduate Council, University of Maryland, member (presidential appointment) 1998-1999;
Long Range Planning and New Programs Committee member,
Grievance Committee (ad hoc) member.
Judge, 21st Annual Graduate Student Research Day, University of Maryland, Baltimore, April 21, 1999

School and Department Committees and Service:

Department of Pharmaceutical Sciences:
Faculty mentor to young faculty (reviewing grants, etc.):
Dr. Andrew Coop, Assistant Professor, Department of Pharmaceutical Sciences, School of Pharmacy, University of Maryland, Baltimore (1999 - 2001).
Dr. Sandra Vigil-Cruz, Assistant Professor, Department of Pharmaceutical Sciences, School of Pharmacy, University of Connecticut, Storrs, CT (1997 - 2001).
In charge of researching and coordinating purchase of Finnigan LCQ electrospray mass spectrometer 1998-1999 (delivered March 1999);
Chair, Drug Design Research Focus Group, 1997-1998;
Graduate Admissions Committee, member 1997-1998;
Steering Committee (search committee for six faculty positions), member 1997-1998;
Chair, Safety Committee, December 1997 - 1998;
Pharmaceutical Sciences Department Chair Search Committee, Chair 1996, member 1995.

School of Pharmacy:
Faculty Advisor, Lambda Kappa Sigma, University of Maryland chapter, 1996 - 2001;
Curriculum Committee, member 1995-1996;
Health Sciences Facility II Planning Committee member - assisted in analysis of laboratory design;
Participated in School Phonathon, 1995-1997.