

## CURRICULUM VITAE

### Michael Joseph Kuhar

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#### Education:

1965, B.S., University of Scranton,  
Scranton, Pennsylvania, Departments of  
Physics and Philosophy, Magna cum Laude

1970, Ph.D., The Johns Hopkins University,  
Baltimore, Maryland, Departments of Biophysics  
and Pharmacology

#### Present Positions:

November 1995-present,  
Charles Howard Candler Professor  
Georgia Research Alliance Eminent Scholar  
Center for Ethics  
Division of Neuropharmacology and Neurologic Disease  
Yerkes National Primate Research Center of Emory University,  
Department of Pharmacology, Emory University School of Medicine

#### Previous Positions:

July 1985-November 1995  
Chief, Neuroscience Branch,  
Addiction Research Center  
National Institute on Drug Abuse

Professor, Part-time, The Johns Hopkins  
University School of Medicine, Departments of  
Neuroscience, Pharmacology and Psychiatry

July 1981, Professor, The Johns Hopkins University  
School of Medicine, Departments of Neuroscience,  
Pharmacology and Psychiatry

July 1980, Associate Professor, The Johns Hopkins  
University School of Medicine, Departments of  
Neuroscience, Pharmacology and Psychiatry

July 1976, Associate Professor, The Johns Hopkins  
University School of Medicine, Departments of  
Pharmacology and Psychiatry

**Previous Positions (continued):**

October 1972, Assistant Professor, The Johns Hopkins University School of Medicine, Departments of Pharmacology and Psychiatry

October 1970, Postdoctoral Fellow, Yale University School of Medicine, Department of Psychiatry and Basic Biological Sciences

**Societies:**

American Association for the Advancement of Science (1969-present)

Society for Neuroscience (1973-present; Nominating Committee, 1984-1987; Presidential Symposium Speaker, 1990; Public Information Committee, 1996-1999; Social Issues Committee, 2003-2006; President, Atlanta Chapter, 2003-2004)

American Society for Neurochemistry (1973-1983; Program Committee, 1978; Organizer of Symposium on Neural Peptides, 1978)

American Society for Pharmacology and Experimental Therapeutics (1974-present; Symposium Organizer at International Meeting, 1984; Selection Committee for Otto Kraye Award, 1993, 1997, 2002; and Neuropharmacology Division Executive Committee, 2002-2005, and Chair, 2003-2004; John Jacob Abel Award Committee, 2004-2007; Program Committee, 2006-2008; Neuropharmacology Division Nominating Committee, 2007)

Mid-Atlantic Acetylcholine Discussion Group (1973-1978; Co-Chairman, 1975)

American College of Neuropsychopharmacology (Scientific Associate, 1978; Member, 1980; Fellow, 1986-present; Member of Education and Training Committee, 1984-1987; Program Committee, 1988-1990; Ethics Committee, 1991-1993; Credentials Committee, 1993-1995; Animals in Research Committee, 2001-2004)

International Brain Research Organization (IBRO) (1979-present)

International Drug Abuse Research Society (IDARS) (Member 2004; President, 2004-2008)

College on Problems of Drug Dependence, Inc. (Member, 1994; Board of Directors, 1994-1998; Executive Committee, 1999-2001; President, 1999-2000; Nominating Committee, 1994-1995; Publications Committee, 1994-1995; Media Relations Committee, Chair, 1994-1997; Long-Range Planning Committee, 2001-2004; Media Committee, 2001-2007; ONDCP Task Force, 2001-2003)

Neuroethics Society (2007 – present)

**Professional Honors and Other Experience:**

Phi Beta Kappa (1970)

National Institute of Mental Health Research Career Development Award, Type II (3/1/75 - renewed 3/1/80 and 3/1/85)

National Institute of Mental Health Small Grants Committee (9/1/77-8/31/81)

Distinguished Young Scientist in Maryland Award (1977; The Maryland Academy of Sciences)

Visiting Scientist, National Institute for Medical Research, Mill Hill, London (Summer 1978; Molecular Pharmacology Unit, A.S.V. Burgen, Director)

Consultant, Pharmacology Department, Hoffman-La Roche, 1980-1985

Grass Traveling Scientist, Spring 1981, to Halifax, Nova Scotia

Listed among "1,000 Contemporary Scientists Most Cited 1965-1978", Current Contents 24, 5, 1981

Daniel H. Efron Award (1984, from the American College of Neuropsychopharmacology)

Mathilde Solowey Award for Research in Neuroscience, (1985 from the Foundation for Advanced Education in the Sciences)

First Ariens Lecture (1985, The Dutch Pharmacological Society; DUPHAR)

Family Therapy Institute of Washington, DC, Part-time Family Therapy Training, 1983-1985.

Jay Haley and Cloe Madanes, Supervisors. 276 individual and group supervision hours.

Graduate Certificate in Substance Abuse Counseling, 1988, Loyola University

Sterling Lecture (1987, Tufts Univ. School of Medicine; 1988, University of Kentucky Medical School)  
Gold Lecture on Substance Abuse (1988, University of Florida Medical School at Gainesville)  
Senior Executive Service Appointment (November 20, 1988, Dept. of Health & Human Services)  
Administrator's Award for Meritorious Achievement (1989, ADAMHA)  
Upjohn Lecture (1989, Uniformed Services University of the Health Sciences)  
Thomas L. O'Donohue Memorial Lecture (1989, Howard University)  
A. Ross McIntyre Award (1990, University of Nebraska Medical Center)  
Presidential Symposium Lecturer (1990, Society for Neuroscience)  
First Ivan F.W. Davidson Memorial Lecture (1990, Bowman Gray School of Medicine)  
Distinguished Lecturer (1992, Stritch School of Medicine)  
Otto Kraye Award (1992, American Society for Pharmacology and Experimental Therapeutics)  
Harry Williams Lectureship Award (1992, Emory University School of Medicine)  
Grass Lecture (1993, University of Kansas, MO)  
Boots Distinguished Neuroscientist Lecture (1993, Louisiana State University Medical Center)  
Visiting Committee, Medical Department (1993-1997), Brookhaven National Laboratory.  
Consultant, Guilford Pharmaceuticals (1995)  
Charles Howard Candler Professor (1995, Emory University)  
Distinguished Lecturer (1996, University of South Alabama)  
Eminent Scholar Award (1996, State of Georgia and Emory University)  
The Dana Alliance, Member (1997-present)  
Advisory Board, Addiction Studies Institute, Wale Forest University (1999-present)  
President, College on Problems of Drug Dependence, Inc. (1999-2000)  
Scientific Advisory Board, Amethyst Technologies (1999-2000)  
Scientific Advisory Board, Addiction Therapies, Inc. (1999-2003)  
NIDA K05 Senior Scientist Award (1999-2004; 2004-2009)  
NIDA Special Emphasis Panels (member or chair, 1999-2008)  
Listed (by ISI) among the 250 most cited scientists in Neuroscience from 1981-2000 (rank 23rd)  
Scientific Advisory Board, Center for Psychiatric Neuroscience, University of Mississippi Medical School (2000-2005)  
Director, Institutional Training Program in Drug Abuse, Emory University (2003-present)  
NIDA K Study Section (*Ad hoc*, 2003-2004; regular member, 2004-2008)  
NIDA study sections, ad hoc member (2008 – present).  
Board of Directors, Aptotec, Inc. (2004-present)  
International Drug Abuse Research Society (IDARS) [First President (2004-2008)]  
External Advisory Board, Center of Research Excellence in Natural Products Neuroscience, University of Mississippi at Oxford (2006-2010)  
Wendy and Stanley Marsh Lecture in Substance Abuse and Addictive Disorders, Texas Tech University Health Sciences Center, 2007  
Citations “h” index = 103, “m” index = 2.71 (in 2007).  
Fulbright Award for Chile, South America (2008).  
Nathan B Eddy Award (for lifetime achievement, 2011, College on Problems of Drug Dependence).  
Journal of Drug and Alcohol Research, Ashdin Press, first Editor-in-Chief, 2012.

**Editorial Boards (past and present):**

Biochemical Pharmacology	(2004-present)
Brain Research	(1980-1989)
Current Molecular Pharmacology	(2008- present)
Current Opinion in Central and Peripheral Nervous Systems	(1998-2000)
Current Protocols in Pharmacology	(1996-2001)
Drug and Alcohol Dependence	(1995-2001)
Experimental and Clinical Psychopharmacology	(1992-2000)
International Journal of Molecular Medicine	(1997-present)
Journal of Chemical Neuroanatomy	(1987-2000)
Journal of Drug and Alcohol Research, Editor-in-Chief	(2012-present)

Journal of Neurochemistry	(1980-1985)
Journal of Neuroscience	(1983-1989)
Journal of Pharmacology and Experimental Therapeutics	(1993-2006)
Life Sciences	(2003-2011)
Medical Hypotheses and Research	(2003-present)
Molecular and Cellular Neuroscience	(1990-1995)
Neurobiology of Aging	(1980-1985)
NeuroImage	(1991-1995)
Neuropeptides	(1980- present)
Neuropharmacology	(1980-1992)
Neuropsychopharmacology	(1991-1995)
Neuroscience-Net	(1996- present)
Peptide Research	(1989-1994)
Peptides	(2007- 2011)
Research Communications in Substances of Abuse	(1991-1995)
Substance and Alcohol Misuse	(1980-1985)
Synapse	(1992-2008)
Trends in Neuroscience	(1982-1994)
The Open Ethics Journal	(2007- 2011)
Substance Abuse: Research and Treatment	(2007- present)

**Seminar and Symposia invitations:**

Dr Kuhar has presented more than 300 seminars, symposia lectures, and special and keynote lectures since 1972 when he became an Assistant Professor.

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**BOOKS AND VOLUMES (Edited)**

1. Yamamura, H.I., Enna, S.J., and Kuhar, M.J. (Eds.). Neurotransmitter Receptor Binding. Raven Press, New York, 1978.
2. Pepeu, G.C., Kuhar, M.J., and Enna, S.J. (Eds.). Receptors for Neurotransmitters and Peptide Hormones. Adv. Biochem. Psychopharm., Vol. 21 (E. Costa and P. Greengard, Series Eds.). Raven Press, New York, 1980.
3. Kuhar, M.J. and Pasternak, G.W. (Eds.). Analgesics: Pharmacological and Clinical Perspectives, Part of set in Neuropharmacology (S.J. Enna, Set Ed.). Raven Press, New York, 1984.
4. Yamamura, H.I., Enna, S.J., and Kuhar, M.J. (Eds.). Neurotransmitter Receptor Binding, 2<sup>nd</sup> Edition. Raven Press, New York, 1985.
5. Bjorklund, A., Hokfelt, T., and Kuhar, M.J. (Eds.). Handbook of Chemical Neuroanatomy, Vol. 3, Classical Transmitters and Transmitter Receptors in the CNS Part II. Elsevier North-Holland Biomedical Press, Amsterdam, 1985.
6. Yamamura, H.I., Enna, S.J., and Kuhar, M.J. (Eds.). Methods in Neurotransmitter Receptor Analysis. Raven Press, New York, 1990.
7. Bjorklund, A., Hokfelt, T., and Kuhar, M.J. (Eds.). Handbook of Chemical Neuroanatomy, Vol. 9, Neuropeptides in the CNS Part II. Elsevier Press, Amsterdam, 1990.
8. Rapaka, R.S., Makriyannis, A., and Kuhar, M.J. (Eds.). Emerging Technologies and New Directions in Drug Abuse Research, NIDA Research Monograph Series 112. U.S. Government Printing Office, Washington, DC, 1991.
9. Bjorklund, A., Hokfelt, T., and Kuhar, M.J. (Eds.). Handbook of Chemical Neuroanatomy, Vol. 11, Neuropeptide Receptors in the CNS. Elsevier Press, Amsterdam, 1992.
10. Jaffe, J.H., Anthony, J.C., Johanson, C.-E., Kuhar, M.J., Moore, M.H., and E.M. Sellers (Eds.). Encyclopedia of Drugs and Alcohol. Simon & Schuster Macmillan, New York, 1995.
11. Schuster, C.R. and Kuhar, M.J. (Eds.). Pharmacological Aspects of Drug Dependence, Vol. 118, Handbook of Experimental Pharmacology. Springer-Verlag, New York, 1996.
12. Carson-DeWitt, R., Carroll, K.M., Fagan, J., Kranzler, H.R., and Kuhar, M.J. (Eds.). Encyclopedia of Drugs, Alcohol and Addictive Behavior, 2<sup>nd</sup> Edition. Macmillan Reference USA, New York, 2001.
13. Kuhar, M.J. and Pogun, S. (Eds.). Special Supplement Issue: Mathematical Modeling Mental Disorders and Processes. Neuropsychopharmacology 28(Suppl. 1): 2003.
14. Kuhar, M.J. (Editor of Special Issue on CART Peptides). Peptides, Vol. 27, August. 2006.
15. Sibley, D.R., Hanin, I., Kuhar, M., and Skolnick, P. (Eds.). Handbook of Contemporary Neuropharmacology, Vols. 1-3. John Wiley & Sons, Hoboken, NJ, 2007.
16. Ali, S.F. and Kuhar, M.J. (Eds.). Drug Addiction: Research Frontiers and Treatment Advances, Ann N Y Acad Sci, Vol 1139, 2008.
17. Kranzler, HR and Korsmeyer, P (Eds). Kuhar MJ et al., (Assoc Eds.). Encyclopedia of Drugs, Alcohol, and

- Addictive Behavior, 3<sup>rd</sup> Edition. MacMillan Reference USA, New York, 2009.
18. Kuhar, MJ. The Addicted Brain: why we abuse drugs, alcohol and nicotine. FT Press, Upper Saddle River, NJ, 2011. ISBN-10: 0-13-254250-1.

**PATENTS**

1. Carroll, F.I., Lewin, A.H., Abraham, P., Kuhar, M.J., and Boja, J.W. Cocaine Receptor Binding Ligands. Patent Number: 5,128,118. July 7, 1992.
2. Uhl, G.R., Kuhar, M.J., Shimada, S., Kitayama, S., Patel, A., Lin, C.L. cDNA Encoding a Dopamine Transporter and Protein Encoded Thereby. Patent Number: 5,312,734. May 17, 1994.
3. Kuhar, M.J., Boja, J.W., Carroll, F.I., Lewin, A.H., and Abraham, P. Cocaine Receptor Binding Ligands. Patent Number: 5,380,848. January 10, 1995.
4. Kuhar, M.J., Carroll, F.I., Boja, J.W., Lewin, A.H., and Abraham, P. Cocaine Receptor Binding Ligands. Patent Number: 5,413,779. May 9, 1995.
5. Kuhar, M.J., Carroll, F.I., Boja, J.W., Lewin, A.H., and Abraham, P. Cocaine Receptor Binding Ligands. Patent Number: 5,496,953. March 5, 1996.
6. Kuhar, M.J., Carroll, F.I., Boja, J.W., Lewin, A.H., and Abraham, P. Methods for Controlling Invertebrate Pests Using Cocaine Receptor Binding Ligands. Patent Number: 5,935,953. August 10, 1999.
7. Carroll, F.I., Kuhar, M.J., Boja, J.W., Lewin, A.H., and Abraham, P. Cocaine Receptor Binding Ligands. Patent Number: 6,329,520. December 11, 2001.
8. Kuhar, M.J., Carroll, F.I., Boja, J.W., Lewin, A.H., and Abraham, P. Dopamine Transporter Imaging Ligand. Patent Number: 6,358,492. March 19, 2002.
9. Carroll, F.I., Kuhar, M.J., Boja, J.W., Lewin, A.H., and Abraham, P. Cocaine Receptor Binding Ligands. Patent Number: 6,531,483. March 11, 2003.
10. Carroll, F.I., Kuhar, M.J., Boja, J.W., Lewin, A.H., and Abraham, P. Cocaine Receptor Binding Ligands. Patent Number 6,706,880 B2. March 16, 2004.
11. Kuhar, M.J., Carroll, F.I., Boja, J.W., Lewin, A.H., and Abraham, P. Cocaine Receptor Binding Ligands. Patent Number 7,011,813. March 14, 2006.



**JOURNAL ARTICLES**

1. Kuhar, M.J. and Snyder, S.H. The Subcellular Distribution of Free <sup>3</sup>H-Glutamic Acid in Rat Cerebral Cortical Slices. *J. Pharmacol. Exp. Ther.* 171: 141-152, 1970.
2. Kuhar, M.J., Green, A.I., Snyder, S.H., and Gfeller, E. Separation of Synaptosomes Storing Catecholamines and Gamma-Aminobutyric Acid in Rat Corpus Striatum. *Brain Res.* 21: 405-417, 1970.
3. Kuhar, M.J., Shaskan, E.G., and Snyder, S.H. The Subcellular Distribution of Endogenous and Exogenous Serotonin in Brain Tissue: Comparison of Synaptosomes Storing Serotonin, Norepinephrine, and Gamma-Aminobutyric Acid. *J. Neurochem.* 18: 333-343, 1971.
4. Kuhar, M.J., Taylor, K.N., Snyder, S.H. The Subcellular Localization of Histamine and Histamine Methyltransferase in Rat Brain. *J. Neurochem.* 18: 1515-1527, 1971.
5. Gfeller, E., Kuhar, M.J., and Snyder, S.H. Neurotransmitter-Specific Synaptosomes in Rat Corpus Striatum: Morphological Variations. *Proc. Natl. Acad. Sci. (USA)* 68: 155-159, 1971.
6. Wofsey, A.R., Kuhar, M.J., and Snyder, S.H. A Unique Synaptosomal Fraction, Which Accumulates Glutamic and Aspartic Acids in Brain Tissue. *Proc. Natl. Acad. Sci. (USA)* 68: 1102-1106, 1971.
7. Kuhar, M.J. A Possible Mechanism for the Pathogenic Action of Monosodium Glutamate. *Res. Comm. Chem. Pathol. Pharmacol.* 2: 95-97, 1971.
8. Kuhar, M.J., Roth, R.H., and Aghajanian, G.K. Selective Reduction of Tryptophan Hydroxylase Activity in Rat Forebrain after Midbrain Raphe Lesions. *Brain Res.* 35: 167-176, 1971.
9. Kuhar, M.J., Roth, R.H., and Aghajanian, G.K. Synaptosomes from Forebrains of Rats with Midbrain Raphe Lesions: Selective Reduction of Serotonin Uptake. *J. Pharmacol. Exp. Ther.* 181: 36-45, 1972.
10. Kuhar, M.J., Aghajanian, G.K., and Roth, R.H. Tryptophan Hydroxylase Activity and Synaptosomal Uptake of Serotonin in Discrete Brain Regions after Midbrain Raphe Lesions: Correlations with Serotonin Levels and Histochemical Fluorescence. *Brain Res.* 44: 165-176, 1972.
11. Kuhar, M.J., Roth, R.H., and Aghajanian, G.K. Synthesis of Catecholamines in the Locus Coeruleus from <sup>3</sup>H-Tyrosine *in vivo*. *Biochem. Pharmacol.* 21: 2280-2282, 1972.
12. Bustos, G., Kuhar, M.J., and Roth, R.H. Effect of Gamma-Hydroxybutyrate on Dopamine Synthesis and Uptake by Rat Striatum. *Biochem. Pharmacol.* 21: 2649-2652, 1972.
13. Aghajanian, G.K., Kuhar, M.J., and Roth, R.H. Serotonin-Containing Neuronal Perikarya and Terminals: Differential Effects of *p*-Chlorophenylalanine. *Brain Res.* 54: 85-101, 1973.
14. Kuhar, M.J. and Aghajanian, G.K. Selective Accumulation of <sup>3</sup>H-Serotonin by Nerve Terminals of Raphe Neurones: An autoradiographic Study. *Nature* 241: 187-189, 1973.
15. Kuhar, M.J., Sethy, V.H., Roth, R.H., and Aghajanian, G.K. Choline: Selective Accumulation by Central Cholinergic Neurons. *J. Neurochem.* 20: 581-593, 1973.
16. Kuhar, M.J., Pert, C.B., and Snyder, S.H. Regional Distribution of Opiate Receptor Binding in Monkey and Human Brain. *Nature* 245: 447-450, 1973.

17. Sethy, V.H., Roth, R.H., Kuhar, M.J., and Van Woert, M.H. Choline and Acetylcholine: Regional Distribution and Effect of Degeneration of Cholinergic Nerve Terminals in the Rat Hippocampus. *Neuropharmacology* 12: 819-823, 1973.
18. Sethy, V.H., Kuhar, M.J., Roth, R.H., Van Woert, M.H., and Aghajanian, G.K. Cholinergic Neurons: Effect of Acute Septal Lesion on Acetylcholine and Choline Content of Rat Hippocampus. *Brain Res.* 55: 481-484, 1973.
19. Coyle, J.T. and Kuhar, M.J. Subcellular Localization of Dopamine Beta-Hydroxylase and Endogenous Norepinephrine in the Rat Hypothalamus. *Brain Res.* 65: 475-487, 1974.
20. Yamamura, H.I., Kuhar, M.J., Greenberg, D., and Snyder, S.H. Muscarinic Cholinergic Receptor Binding: Regional Distribution in Monkey Brain. *Brain Res.* 66: 541-546, 1974.
21. Kuhar, M.J. and Simon, J.R. Acetylcholine Uptake: Lack of Association with Cholinergic Neurons. *J. Neurochem.* 22: 1135-1137, 1974.
22. Mulder, A.H., Yamamura, H.K., Kuhar, M.J., and Snyder, S.H. Release of Acetylcholine from Hippocampal Slices by Potassium Depolarization: Dependence on High Affinity Choline Uptake. *Brain Res.* 70: 372-376, 1974.
23. Kuhar, M.J. and Rommelspacher, H. Acetylcholinesterase-Staining Synaptosomes from Rat Hippocampus: Relative Frequency and Tentative Estimation of Internal Concentration of Free or "Labile Bound" Acetylcholine. *Brain Res.* 77: 85-96, 1974.
24. Snyder, S.H., Brown, B., and Kuhar, M.J. The Subsynaptosomal Localization of Histamine, Histidine Decarboxylase and Histamine Methyltransferase in Rat Hypothalamus. *J. Neurochem.* 23: 37-45, 1974.
25. Dismukes, K., Kuhar, M.J., and Snyder, S.H. Brain Histamine Alterations After Hypothalamic Isolation. *Brain Res.* 78: 144-151, 1974.
26. Rommelspacher, H. and Kuhar, M.J. Effects of Electrical Stimulation on Acetylcholine Levels in Central Cholinergic Nerve Terminals. *Brain Res.* 81: 243-251, 1974.
27. Rommelspacher, H., Goldberg, A.M., and Kuhar, M.J. Action of Hemicholinium-3 on Cholinergic Nerve Terminals After Alteration of Neuronal Impulse Flow. *Neuropharmacology* 13: 1015-1023, 1974.
28. Owellen, R.J., Donigian, D.W., Hartke, C.A., Dickerson, R.M., and Kuhar, M.J. The Binding of Vinblastine to Tubulin and to Participate Fractions of Mammalian Brain. *Cancer Res.* 34: 3180-3186, 1974.
29. Yamamura, H.I., Kuhar, M.J., and Snyder, S.H. *In vivo* Identification of Muscarinic Cholinergic Receptor Binding in Rat Brain. *Brain Res.* 80: 170-176, 1974.
30. Rommelspacher, H. and Kuhar, M.J. Effects of Dopaminergic Drugs and Acute Medial Forebrain Bundle Lesions on Striatal Acetylcholine Levels. *Life Sci.* 16: 65-70, 1975.
31. Tamir, H. and Kuhar, M.J. Association of Serotonin-Binding Protein with Projections of the Midbrain Raphe Nuclei. *Brain Res.* 83: 169-172, 1975.
32. Simon, J.R., Mittag, T.W., and Kuhar, M.J. Inhibition of Synaptosomal Uptake of Choline by Various Choline Analogs. *Biochem. Pharmacol.* 24: 1139-1142, 1975.

33. Snyder, S.H., Chang, K.J., Yamamura H.I., and Kuhar, M.J. Biochemical Identification of the Mammalian Muscarinic Cholinergic Receptor. *Fed. Proc.* 34: 1915-1921, 1975.
34. Kuhar, M.J. and Yamamura, H.I. Light Autoradiographic Localization of Cholinergic Muscarinic Receptors in Rat Brain by Specific Binding of a Potent Antagonist. *Nature* 253: 560-561, 1975.
35. Simon, J.R. and Kuhar, M.J. Impulse-Flow Regulation of High Affinity Choline Uptake in Brain Cholinergic Nerve Terminals. *Nature (London.)* 255: 162-163, 1975.
36. Pert, C.B., Kuhar, M.J., and Snyder, S.H. Autoradiographic Localization of the Opiate Receptor in Rat Brain. *Life Sci.* 16: 1849-1854, 1975.
37. Enna, S.J., Kuhar, M.J., and Snyder, S.H. Regional Distribution of Postsynaptic Receptor Binding for Gamma-Aminobutyric Acid (GABA) in Monkey Brain. *Brain Res.* 93: 168-174, 1975.
38. Bunney, B.S., Walters, J.R., Kuhar, M.J., Roth R.H., and Aghajanian, G.K. D & L Amphetamine Stereoisomers: Comparative Potencies in Affecting the Firing of Central Dopaminergic and Noradrenergic Neurons. *Psychopharmacol. Comm.* 1: 177-190, 1975.
39. Kuhar, M.J., DeHaven, R.N., Yamamura, H.I., Rommelspacher, H., and Simon, J.R. Further Evidence for Cholinergic Habenulo-Interpeduncular Neurons: Pharmacologic and Functional Characteristics. *Brain Res.* 97: 265-276, 1975.
40. Kuhar, M.J., Simon, J.R., and Taylor, N. Serotonergic Synaptosomes from Rat Hippocampus: Lack of Acetylcholinesterase. *Brain Res.* 99: 415-418, 1975.
41. Rommelspacher, H. and Kuhar, M.J. Effects of Drugs and Axotomy on Acetylcholine Levels in Central Cholinergic Neurons. *Naunyn-Schmiedeberg's Arch. Pharmacol.* 291: 17-21, 1975.
42. Atweh, S., Simon, J.R., and Kuhar, M.J. Utilization of Sodium-Dependent High Affinity Choline Uptake *in vitro* as a Measure of the Activity of Cholinergic Neurons *in vivo*. *Life Sci.* 17: 1535-1544, 1975.
43. Simon, M.R., Contrera, J.F., and Kuhar, M.J. Binding of [<sup>3</sup>H] Kainic Acid, an Analogue of L-Glutamate, to Brain Membranes. *J. Neurochem.* 26: 141-147, 1975.
44. Simantov, R., Kuhar, M.J., Pasternak, G.W., and Snyder, S.H. The Regional Distribution of a Morphine-like Factor Enkephalin in Monkey Brain. *Brain Res.* 106: 189-197, 1976.
45. Simon, J.R., Atweh, S., and Kuhar, M.J. Sodium-Dependent High Affinity Choline Uptake: A Regulatory Step in the Synthesis of Acetylcholine. *J. Neurochem.* 26: 909-922, 1976.
46. Kuhar, M.J. and Yamamura, H.I. Localization of Cholinergic Muscarinic Receptors in Rat Brain by Light Microscopic Radioautography. *Brain Res.* 110: 229-243, 1976.
47. Simon, J.R. and Kuhar, M.J. High Affinity Choline Uptake: Ionic and Energy Requirements. *J. Neurochem.* 27: 93-99, 1976.
48. Atweh, S.F. and Kuhar, M.J. Effects of Anesthetics and Septal Lesions and Stimulation of <sup>3</sup>H-Acetylcholine Formation in Rat Hippocampus. *Eur. J. Pharmacol.* 37: 311-319, 1976.
49. Pert, C.B., Kuhar, M.J., and Snyder, S.H. Opiate Receptor: Autoradiographic Localization in Rat Brain. *Proc. Natl. Acad. Sci. (USA)* 73: 3729-3733, 1976.

50. Murrin, L.C. and Kuhar, M.J. Activation of High Affinity Choline Uptake *in vitro* by Depolarizing Agents. *Mol. Pharmacol.* 12: 1082-1090, 1976.
51. Bird, S.J. and Kuhar, M.J. Iontophoretic Application of Opiates to the Locus Coeruleus. *Brain Res.* 122: 523-533, 1977.
52. Atweh, S.F. and Kuhar, M.J. Autoradiographic Localization of Opiate Receptors in Rat. Brain. I. Spinal Cord and Lower Medulla. *Brain Res.* 124: 53-67, 1977.
53. Simantov, R., Kuhar, M.J., Uhl, G.R., and Snyder, S.H. Opioid Peptide Enkephalin: Immunohistochemical Mapping in Rat Central Nervous System. *Proc. Natl. Acad. Sci. (USA)* 74: 2167-2171, 1977.
54. Atweh, S.F. and Kuhar, M.J. Autoradiographic Localizatin of Opiate Receptors in Rat Brain. II. The Brain Stem. *Brain Res.* 129: 1-12, 1977.
55. Young, W.S., III, Bird, S.J., and Kuhar, M.J. Iontophoresis of Methionine Enkephalin in the Locus Coeruleus Area. *Brain Res.* 129: 366-370, 1977.
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ABSTRACTS

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364. Moffett, M.C. and Kuhar, M.J. Modulatory Role of CART Peptide in the Nucleus Accumbens on Dopaminergic Function. Program No. 611.8. 2007 Neuroscience Meeting Planner. Society for Neuroscience, San Diego, CA, 2007. Online.
365. Rogge, G.A., Moffett, M., Jones, D., and Kuhar, M. CART Gene Regulation, a Role for CREB. Program No. 912.23. 2007 Neuroscience Meeting Planner. Society for Neuroscience, San Diego, CA, 2007. Online.
366. Hubert, G.W. and Kuhar, M.J. CART Peptide Projections Originating in the Nucleus Accumbens Shell Terminate in the Ventral Pallidum. Program No. 915.11. 2007 Neuroscience Meeting Planner. Society for Neuroscience, San Diego, CA, 2007. Online.
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368. Hubert, G.W. and Kuhar, M.J. Cocaine- and amphetamine-regulated transcript (CART) peptide injected into the ventral pallidum (VP) inhibits cocaine-induced locomotion. Program 564.25 2008 Neuroscience Meeting Planner. Society for Neuroscience, Washington D.C., 2008. Online.

369. Jones, D.C. and Kuhar, M.J. The effect of Bisphenol A on the rat dopamine system and cocaine-induced behaviors. Program No. 564.11. 2008 Neuroscience Meeting Planner. Society for Neuroscience, Washington D.C., 2008. Online.
370. Lima, F.B., Henderson, J.A., Reddy, A.P., Hubert, G.W., Tokuyama, Y., Kuhar, M.J., and Bethea, C.L. Unique responses of midbrain CART neurons in macaques to ovarian steroids. Program No. 82.3. 2008 Neuroscience Meeting Planner. Society for Neuroscience, Washington D.C., 2008. Online.
371. Rogge, G.A., Jones, D.C., Green, T., Nestler, E.J. and Kuhar, M.J. CREB over expression in the rat nucleus accumbens increases CART peptide levels in vivo. Program No. 661.17. 2008 Neuroscience Meeting Planner. Society for Neuroscience, Washington D.C., 2008. Online.

This section on Listing of Abstracts has been ended.

**STUDENTS, FELLOWS AND VISITORS**

Name; Degree, Place and Date of Degree;  
Dates and Position in Dr. Kuhar's Laboratory;  
Present Position.

Stephanie Dall Vechia Adams; Ph.D., Emory University, 2001;  
1996-2001, Graduate Student  
Patent agent, King & Spaulding, Atlanta, Georgia

Samir F. Atweh; M.D., American University of Beirut, 1974;  
August 1974 - June 1977, Postdoctoral Fellow;  
Professor and Head of Neurology,  
Faculty of Medicine, American University of Beirut School of Medicine, New York, New York

Burcu Balkan; M.D., Ph.D., Ege University, 1994, 2000  
August 2001 – August 2002, Visiting Scientist  
Assistant Professor, Ege University, Izmir, Turkey

Stephanie J. Bird; Ph.D., Yale University, 1975;  
June 1975 - July 1976, Postdoctoral Fellow;  
Special Assistant to the Provost, MIT, Boston, Massachusetts

Bruce E. Blough; Ph.D. University of South Carolina, 1990;  
April 1993 - April 1994, Postdoctoral Fellow  
Research Scientist, Research Triangle Institute, Research Triangle Park, North Carolina

John W. Boja; Ph.D., Northeastern Ohio Universities College of Medicine, 1988;  
April 1988 - August 1994, Senior Staff Fellow  
Pharmacologist, U.S. Consumer Product Safety Commission

Catherine Cerruti; Ph.D., University of Sciences and Techniques of Languedoc, 1991;  
November 1992 - December 1994, Visiting Fellow  
Research Scientist, INSERM, Paris, France

Elizabeth Cline; Ph.D., University of Wyoming, 1990;  
July 1, 1990 - May 8, 1992, PRAT Fellow;  
Postdoctoral Fellow, University of Colorado, Denver, Colorado

Joseph Contrera; Ph.D., New York University, 1966;  
January 1975 - August 1975, Visiting Scientist;  
Supervisory Pharmacologist, F.D.A., Washington, DC

Pastor Couceyro; Ph.D., Vollum Institute, 1994;  
Postdoctoral Fellow and Assistant Research Professor, 1993-1998  
Assistant Professor, Finch University of the Health Sciences, Chicago Medical School, Chicago, Illinois

Errol B. De Souza; Ph.D., University of Toronto, 1982;  
January 1983 - January 1985, Postdoctoral Fellow;  
President and CEO, Bidel, Inc.

Geraldina Dominguez; Ph.D., Georgia State University, 1991  
February 2000 –September 2002, Research Associate  
Program Director, Office of AIDS Malignancy Program, National Institutes of Health, Rockville, MD

Annette Fleckenstein, Ph.D., Michigan State University, 1994;  
May 1994 - March 1995, Postdoctoral Fellow  
Professor, University of Utah, Salt Lake City, Utah

J. James Frost; M.D., Ph.D., Washington University, St. Louis, 19  
July 1980 - June 1981, Postdoctoral Fellow;  
Director, PET Program, Yale University, New Haven, Connecticut

Bridgette E. Garrett; Ph.D., Emory University, 1995;  
1997-1998, Research Associate (faculty);  
Behavioral Pharmacologist, CDC, Atlanta, Georgia

Nicholas E. Goeders; Ph.D., Louisiana State Univ. Medical Center, 1984;  
July 1984 - September 1985; Postdoctoral Fellow;  
Professor and Chair, Department of Pharmacology, Louisiana State University, Shreveport, Louisiana

Ariel Gomez; Ph.D., University of Chile, 1970;  
October 1980 - November 1980, Visiting Scientist;  
Professor of Neurology, University of Chile, Santiago, Chile (deceased)

Wenhe Gong; Ph.D., Emory University, 1995;  
1998-1999, Research Associate;  
Position in computer industry, Atlanta, GA

G. Walton Hubert; Ph.D., Emory University, 2003  
2004-2010, Postdoctoral Fellow  
Postdoctoral Fellow, Lab of E.C. Muly, Emory University

Richard Hunter; Ph.D., Emory University, 2004;  
1999-2004, Graduate Student;  
Postdoctoral Fellow, Lab of B. McEwan, Rockefeller University

Thomas R. Insel; M.D., Boston University Medical School, 1974;  
January 1984 - April 1984, Visiting Scientist;  
Director, National Institute of Mental Health, Bethesda, Maryland

Jason Jaworski; Ph.D., University of Texas at Austin, 2001;  
2001-2004, Postdoctoral Fellow;  
Science Administrator, Oregon Health Sciences Institute, Portland, Oregon

Douglas Jones; Ph.D., University of Texas, 2004  
2004-2010, Postdoctoral Fellow  
Assistant Professor of Pharmacology and Toxicology, Arizona School of Osteopathic Medicine

Heather L. Kimmel; Ph.D., Emory University, 1997  
1997-2001, Postdoctoral Fellow  
Assistant Research Professor, Yerkes National Primate Research Center, Emory University

Nikolai Klemm; Ph.D., University of Mainz, 1965;  
June 1977 - July 1978, Postdoctoral Fellow;  
Assistant Professor, University of Constance, Constance, G.F.R.

Marie A. Kozel; B.S., Emory University, 2003  
2001-2003, Honors Undergraduate Student  
MD PhD student, Washington Univ St Louis Med Sch.

Ersin O. Koylu; M.D., Ph.D., Anadolu Medical School, Turkey, 1987, 1994;  
1995-1997, Postdoctoral Fellow;  
Associate Professor, Ege University, Izmir, Turkey

Anita Lakatos; M.D., Medical University, Pecs, Hungary, 1995;  
1999-2001, Postdoctoral Fellow; 2003-2005, Research Associate  
Research Associate, University of California at Irvine

Philip Lambert; Ph.D., Royal Postgraduate Medical School, London, 1994;  
1996-1998, Senior Postdoctoral Fellow and Assistant Research Professor;  
Team Leader, Regeneron, Inc., Tarrytown, New York

Herbert Lepor; M.D., Johns Hopkins University, 1979;  
October 1982 - October 1983; Postdoctoral Fellow;  
Professor and Director of Uro-Oncology, New York University  
Medical Center, New York, New York. 1 646 825 6327.

Robert Lew; Ph.D., University of Melbourne, 1987;  
April 1988 - August 1991; Visiting Foreign Fellow  
Research Associate, University of Chicago, Chicago, Illinois

Richard Mauer; Ph.D., University of Bern, 1970;  
August 1980 - September 1980, Visiting Scientist;  
Marketing Division, Sandoz, Ltd., Basel, Switzerland

Ilan McNamara; Ph.D., Stony Brook University, 2009  
2009-2010, Postdoctoral Fellow  
Consultant, Accenture

Mark Moffett; Ph.D., LSU, 2004;  
July 2004 - January 2008, Postdoctoral Fellow;  
Scientist Contractor, US Army. Aberdeen MD.

Charles Murrin; Ph.D., Yale University, 1975;  
August 1975 - August 1978, Postdoctoral Fellow;  
Professor of Pharmacology,  
University of Nebraska School of Medicine, Omaha, Nebraska

Debra L. Niehoff; Ph.D., Johns Hopkins University, 1983;  
September 1978 - January 1983, Graduate Student;  
President, Biotext Inc. New Hope, Pennsylvania; Author

Luis Orensanz; Ph.D., Universidad Complutense de Madrid, 1976;

July 1981 - October 15, 1981, Visiting Scientist;  
Research Scientist, Universidad Complutense de Madrid, Spain

Jose M. Palacios; Ph.D., Universidad Autonoma de Barcelona, 1976;  
August 1978 - July 1981, Postdoctoral Fellow;  
Director of Research, Laboratorios Almirall, S.A., Barcelona, Spain

Amrat Patel; Ph.D., University of Oklahoma, Oklahoma City, 1986;  
December 1990 - October 1995, Senior Staff Fellow;  
Director of Opioid Program, National Institute on Drug Abuse, NIH, Bethesda, Maryland

Kelly B. Philpot; Ph.D., University of Georgia, 2000;  
2001 – May, 2006, Predoctoral Fellow;  
Clinical Trials Specialist

Nancy Pilotte; Ph.D., Florida State University, Tallahassee, 1977;  
June 1987 - March 1994, Staff Fellow;  
Branch Chief, National Institute on Drug Abuse, NIH, Bethesda, Maryland

Sakire Pöğün; Ph.D., Ege University, Izmir, Turkey, 1977;  
August 1992 - August 1993, Visiting Scientist;  
Professor of Physiology, Ege University School of Medicine, Izmir, Turkey

Mary C. Ritz; Ph.D., University of Minnesota, 1985;  
January 1987 - January 1989, Postdoctoral Fellow;  
Scientist, University of New Mexico, Albuquerque, New Mexico;  
President and CEO, Amethyst Technologies

George Rogge, PhD; B.S., Beloit College, 1999  
2004-2010, Graduate Student  
Postdoctoral Fellow, University of California Irvine

Hans Rommelspacher; M.D., University of Berlin, 1968;  
May 1973 - September 1974, Postdoctoral Fellow;  
Professor and Director, Clinical Neurobiology  
University of Berlin, Berlin, Germany

John Sharkey; Ph.D., University of Glasgow, 1986;  
January 1987 - May 1988, Postdoctoral Fellow;  
Fellow, Dent University, United Kingdom

Elias Shaya; M.D., American University of Beirut, 1984;  
October 1990 - November 1993, Visiting Scientist;  
Private Practice

Rabi Simantov; Ph.D., The Weizmann Institute of Science, Israel, 1974;  
June 1989 - April 1991, Visiting Scientist;  
Professor, The Weizmann Institute of Science, Israel

Jay R. Simon; Ph.D., University of Maryland, 1973;  
August 1973 - October 1975, Postdoctoral Fellow;  
Professor of Medical Neurobiology

Indiana University School of Medicine, Indianapolis, Indiana

Lisa Stanek; Ph.D., Emory University, 2005;  
July 1, 2005 – March 31, 2006, Postdoctoral  
Postdoctoral Fellow, Harvard University

Roger Summers; Ph.D., University of London, 1968;  
May 1982 - September 1982, Visiting Scientist;  
Professor and Associate Dean, Monash University, Australia

Milt Titeler; Ph.D., University of Toronto, 1978;  
1984, Visiting Scientist;  
Professor of Pharmacology, Albany Medical College, Albany, New York

James R. Unnerstall; Ph.D., Johns Hopkins University, 1984;  
September 1979 - October 1984, Graduate Student;  
Associate Professor, Department of Anatomy and Cell Biology  
University of Illinois at Chicago, Chicago, Illinois

Roxanne Vaughan; Ph.D., Virginia Polytechnic Institute, 1985;  
1990-1996, Senior Staff Fellow;  
Professor University of North Dakota, Grand Forks, North Dakota

Aleksandra Vicentic; Ph.D., Loyola University, 2000;  
1997-1999, Graduate Student; 2002-2005, Postdoctoral Fellow  
Program Director, NIMH, NIH

James K. Wamsley; Ph.D., University of Iowa, 1978;  
December 1978 - July 1981, Postdoctoral Fellow;  
Medical Director, Targacept, Inc., Winston-Salem, NC

Peter J. Whitehouse; M.D., Ph.D., Johns Hopkins University  
(M.D., 1975; Ph.D., 1977);  
June 1981 - June 1982, Postdoctoral Fellow;  
Director, Alzheimers Center, University Hospital of Cleveland, Ohio

W. Scott Young, III; M.D., Ph.D., Johns Hopkins University  
(M.D., 1977; Ph.D., 1980);  
September 1977 - April 1980, Graduate Student;  
Research Scientist, National Institutes of Health, Bethesda, Maryland

Marco A. Zarbin; M.D., Ph.D., Johns Hopkins University  
(M.D., Ph.D., 1984);  
March 1980 - April 1984, Graduate Student;  
Chair, Department of Ophthalmology, New Jersey Medical School

### **In Current Training**

Martin Job; Ph.D., University of Texas, 2009  
Postdoctoral Fellow



Joanna Perry, DVM, Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, VA  
Postdoctoral Fellow

## **TEACHING CONTRIBUTIONS**

Teaching Contributions at Emory University (January 1995 to present) as of January 2007

I am involved in teaching and training: Graduate students in the Neuroscience Program and in the Molecular and Systems Pharmacology Program, medical students in the psychiatry and pharmacology courses, post-doctoral fellows and PGY IV residents in the Addictions Psychiatry Program.

Molecular and Systems Pharmacology Graduate Program:

1. Executive Committee for 3 years.
2. Director of student qualifying exams, 2 years.
3. Director of IBS 531, the main Pharmacology course for incoming graduate students, for 3 years.
4. Lectures in IBS 531.
5. Involvement in new student interviewing and recruiting.
6. Mentor for 5 graduate students, the first graduated in 4.3 years. Successful NRSA grants for all 5 students.
7. Thesis committees for 15 students.

Neuroscience Graduate Program:

1. Mentored rotation students, about 2 per year.
2. Chair of Nominating Committee for new program directors and committee members, for 6 years.
3. Thesis committees for 8 students.
4. Involvement in new student interviewing and recruiting.
5. Course Director for Frontiers in Neuroscience, a required seminar course for 2 years.
6. Lectures in Systems Neuroscience Course and in Frontiers of Neuroscience Series.
7. Executive Committee, 3 years.

Medical Students:

1. Lectures on antidepressant, antipsychotic and Alzheimer's drugs in the Pharmacology Course.
2. Lectures on psychostimulants in the Behavioral Neuroscience and Psychiatry Course.

PGY IV Addictions Psychiatry Program:

1. Advisor to Program Director since inception of the program.
2. Lectures on psychostimulants and buprenorphine to residents and Fellows in Addiction Psychiatry.

Postdoctoral Fellows:

1. Mentor to 15 fellows.
2. Most obtain individual NRSA grants and travel awards.
3. All have moved forward in their careers in a timely fashion.

Other:

In the role of Senior Scientist and Chief of the Neuroscience Division at Yerkes, I both formally (in "K Awards for developing young faculty) and informally mentor young faculty.

Lectures in Grants Workshop for Emory faculty and fellows and students.

Director of the Institutional NIDA Training Program, "The Neurobiology of Drug Abuse", which provides 10 training slots to our training faculty.

Ethics lectures on Authorship

**CURRENT GRANT SUPPORT .**

DA015040 (a T32) National Institutes of Health, NIDA <i>Training Program in Neurobiology of Drug Abuse</i>	(P.I.: M.J. Kuhar)	07/07/03 – 06/30/13 \$460,000 /year T.C.
RO1 DA015162 (RO1) National Institutes of Health, NIDA <i>Promoter Characterization of the CART gene (no cost extension to 8/12)</i>	(PI: M. J. Kuhar)	09/30/07 – 08/31/11 \$1,364,820 T.C

**INDIVIDUAL NRSA SUPPORT WITHIN DR KUHAR'S LAB SINCE '99**

F32 DA005935 National Institutes of Health, NIDA <i>Cocaine-Induced Changes in the Dopamine Transporter</i>	(P.I.: H.L. Kimmel)	08/01/99 - 07/31/02 \$38,772/year D.C.
F31 DA06044 National Institutes of Health, NIDA <i>CART Peptide Localization in Accumbal and Nigral Pathways</i>	(P.I.: S.E. DallVechia)	09/01/00 - 08/31/02 \$33,702/year D.C.
F31 DA017433 National Institutes of Health, NIDA <i>Characterization of CART-Containing Neurons in the Lateral Hypothalamus</i>	(P.I.: K Philpot)	11/01/03 – 10/31/05 \$24,418/year D.C.
F32 DA15593-01 National Institutes of Health, NIDA <i>Identification of Cocaine-Regulated Gene</i>	(P.I.: A. Vicentic)	05/28/02 - 05/27/05 \$44,212/year D.C.
F31 DA15277-01A1 National Institutes of Health, NIDA <i>CART and the Dopamine System in the Nucleus Accumbens</i>	(P.I.: R.G. Hunter)	10/01/02 - 09/30/04 \$22,606/year D.C.
F32 DA15279-01A1 National Institutes of Health, NIDA <i>Psychostimulant-Like Effects of CART Neuropeptides</i>	(P.I.: J.N. Jaworski)	10/01/02 – 09/30/05 \$43,854/year D.C.
F32 DA020312 National Institutes of Health, NIDA <i>CART regulation in vivo in the rat Nucleus Accumbens</i>	(P.I.: D Jones)	9/1/05 – 8/31/08 \$43,976/year T.C.
F32 DA National Institutes of Health, NIDA <i>CART peptide containing pathways in the Nucleus Accumbens.</i>	(P.I.: W Hubert)	11/01/06 – 10-31/08 \$43,976/year T.C.
F31 DA021970 National Institutes of Health, NIDA	(P.I.: G Rogge)	10/31/06 – 09 \$28,152/year T. C.

*Regulation of the CART gene by promoter cis-elements.*

**PREVIOUS Grant Support for MJ Kuhar**

MH25078 National Institutes of Health <i>Regulation of Acetylcholine Synthesis</i>	(P.I.: M.J. Kuhar)	10/01/73 - 09/30/74 \$5,000/year D.C.
DA00266 National Institutes of Health <i>Morphological and Neurophysiological Studies of Central Cholinergic Neurons and Interactions with Opiates</i>	(P.I.: S.H. Snyder) to M.J. Kuhar	07/01/72 - 06/10/77 \$45,000/year D.C.
MH25951 National Institutes of Health <i>Psychotropic Drugs and Central Cholinergic Mechanisms</i>	(P.I.: M.J. Kuhar)	09/01/74 - 08/31/77 \$40,000/year D.C.
MH00053 National Institutes of Health; RCDA Type II Award \$30,000/year <i>Central Cholinergic Neurons and Psychotropic Drugs</i>	(P.I.: M.J. Kuhar)	03/01/75 - 02/28/80 Salary up to
MH25951 National Institutes of Health D.C. <i>Psychotropic Drugs and Central Cholinergic Mechanisms</i>	(P.I.: M.J. Kuhar)	09/01/77 - 08/31/81 \$51,000-57,000/year
DA00266 National Institutes of Health D.C. <i>Anatomical Aspects of Opiate Receptors and Opioid Peptides</i>	(P.I.: S.H. Snyder) to M.J. Kuhar	06/01/77 - 05/31/82 \$45,000-60,000/year
GM07626 <i>Pharmacology Training Grant</i>	(P.I.: T. August)	07/01/78 - 06/30/83
NS15080 National Science Foundation <i>Study of Neuroreceptor Binding in Man</i>	(P.I.: H. Wagner) to M.J. Kuhar	09/01/79 - 08/31/84 \$9,000/year D.C.
MH25951 National Institutes of Health <i>Psychotropic Drugs and Central Cholinergic Mechanisms</i>	(P.I.: M.J. Kuhar)	09/01/81 - 08/31/84 \$70,000/year D.C.
MH00053 National Institutes of Health; RCDA Type II Award \$30,000/year	(P.I.: M.J. Kuhar)	03/01/80 - 02/28/85 Salary up to

*Central Cholinergic Neurons and Psychotropic Drugs*

NS16375 National Science Foundation <i>Huntington's Disease Center without Walls</i>	(P.I.: M. Folstein)	07/01/80 - 06/30/85 \$1,000/year D.C. to M.J. Kuhar
MH15330 National Institutes of Health <i>Interdisciplinary Training Program in Neuroscience</i>	(P.I.: J. Coyle/R.G. Robinson)	07/01/78 - 06/30/86
DA00266 National Institutes of Health <i>Johns Hopkins Drug Abuse Center</i>	(P.I.: S.H. Snyder)	06/01/82 - 05/31/87 \$63,000/year D.C. to M.J. Kuhar
GMO7445 <i>Biochemistry Cellular and Molecular Biology Program Training Grant</i>	(P.I.: W.J. Lennarz)	07/01/82 - 06/30/87
CTR-4502 Tobacco Research Council <i>Nicotinic Receptor Compounds as Ligands and Medications</i>	(P.I.: M.J. Kuhar)	01/01/97 - 12/31/99 \$55,000/year D.C.
Georgia Research Alliance <i>Eminent Scholar Award (equipment only)</i> years	(P.I.: M.J. Kuhar)	07/01/96 - 06/30/00 \$2,400,000 over 4
DA11178 National Institutes of Health Cocaine Sensitive Dopamine Transporter Synthesis and Degradation	(P.I.: M.J. Kuhar)	07/01/97 - 06/30/00 \$90,000/year D.C.
DA11178 Minority Supplement National Institutes of Health Supplement to <i>Cocaine Sensitive Dopamine Transporter Synthesis and Degradation</i>	(P.I.: M.J. Kuhar)	11/01/97 - 06/30/00 \$50,000/year D.C.
DA05477 Research Triangle Institute (Subcontract of NIH Grant to Dr. F.I. Carroll) <i>Cocaine: A Study of the Biochemical Mechanisms of Action</i>	(P.I.: M.J. Kuhar)	09/27/96 - 06/30/01 \$22,000/year D.C.
Georgia Research Alliance <i>Confocal Microscope Upgrade</i>	(P.I.: M.J. Kuhar)	2002-2003 \$50,000
OND6069 Counterdrug Technology Assessment Center / Office of Drug Control Policy <i>Medications for Drug Abusers</i>	(P.I.: M.J. Kuhar)	10/26/96 - 03/13/03 \$190,000/year D.C. \$500,000 equipment, \$125,000 seed funds
Venture grant on gene profiling Yerkes Center Base Grant	(P.I.: M.J. Kuhar)	06/01 - 05/03 \$50,000/year D.C.

Venture grant on CART peptides Center for Behavioral Neuroscience	(P.I.: M.J. Kuhar)	06/01 - 11/02 \$13,000 D.C.
Georgia Research Alliance <i>New Gene Discovery</i> (equipment only) years	(Co-P.I.: M.J. Kuhar)	07/01/00 - 06/31/03 \$2,400,000 over 3
K05 DA00418-01 - 05 National Institutes of Health, NIDA <i>Mechanisms of Drugs of Abuse</i>	(P.I.: M. J. Kuhar)	04/01/99 - 03/31/04 \$117,000/year T.C.
DA10732 (supplement) National Institutes of Health, NIDA <i>Theoretical Modeling of Drug Dependence</i>	(P.I.: M.J. Kuhar)	01/15/98 - 04/30/03 \$56,000/year T.C.
DA10732 (supplement) National Institutes of Health, NIDA <i>CART and the Stress Response</i>	(P.I.: M.J. Kuhar)	09/27/02 – 04/30/04 \$60,000/year T.C.
DA10732 National Institutes of Health, NIDA <i>CART: A Novel Cocaine Regulated Neurochemical</i>	(P.I.: M.J. Kuhar)	01/15/98 - 07/14/07. \$320,000/year T.C.
MH58922 National Institutes of Health, NIMH <i>Monoaminergic Receptors and Maternal Separation</i>	(P.I.: C. Nemeroff)	09/30/99 - 08/31/04 \$100,000/year T.C.
Georgia Research Alliance <i>Adipose Tissue Apoptosis in the Treatment of Obesity</i>	(Co-P.I.: M.J. Kuhar)	07/01/03 – 06/30/04 \$10,000/year T.C.
R01 DA15162 National Institutes of Health, NIDA Promoter Characterization of the CART Gene	(P.I.: M.J. Kuhar)	05/01/02 - 03/31/05 \$240,000/year T.C.
K05 DA00418 National Institutes of Health, NIDA <i>Mechanisms of Drugs of Abuse</i>	(P.I.: M.J. Kuhar)	04/01/04 - 03/31/09 \$117,000/year T.C.
Contract # 639245PFIZER Pfizer <i>The CART Receptor</i>	(PI: M.J. Kuhar)	12/01/07 – 12/31/08 \$300,000 Total Costs
RO1 NS055015 (RO1) National Institutes of Health <i>CART Regulation of Wakefulness</i>	(Co-PI: M.J. Kuhar)	12/01/06 – 11/30/11 \$20,000/ year D.C.

INTRAMURAL FUNDING (1985-1995): During the 10-year period, Dr. Kuhar was Chief of the Neuroscience Branch at NIDA where the budget varied from (personnel and consumables) approximately \$1,000,000 to \$5,000,000 per year. Dr. Kuhar's personal research group, which was a section within the Branch, had a budget of, for example in 1995, \$1,168,000 for personnel, equipment, overhead and supplies

**PRIVATE FUNDING**

Pfizer <i>CART Receptor</i>	\$300,000.
Hoffmann-La Roche <i>Light Microscopic Autoradiographic Localization of Drugs</i>	\$970
Lederle Laboratory <i>Anxiolytics and Localizing Benzodiazepine Receptors in Brain at Microscopic Levels</i>	\$2,599.71
McKnight Foundation <i>Neurotransmitter Disposition and Basic Mechanisms Underlying Learning and Memory</i>	\$26,393.23
McKnight Foundation <i>Neurotransmitter Disposition and Basic Mechanisms Underlying Learning and Memory</i>	\$17,448.84
The Upjohn Company <i>The Neurochemistry of Benzodiazepines</i>	\$2,609
Huntington's Disease Fund, Estate of Lena Marcus	\$2,000
Solvay Pharmaceuticals <i>Lithium Effects on Brain Metabolism</i>	\$18,000

(over 14 million brought into Emory as of Feb 2007)