

# Stephen Joseph Peroutka, MD, PhD

Experienced neurologist and pharmacologist specializing in the clinical development of neurology and psychiatry therapeutics. Skilled in providing expert witness testimony for patent litigation, with a proven ability to analyze complex scientific and medical data, deliver clear insights, and contribute to successful legal outcomes. Recognized for expertise in drug development, clinical trials, and regulatory processes in neurological and psychiatric fields. Fractional opportunities are acceptable.

## CONTACT:

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## EDUCATION:

A.B. Cornell University

M.D. Johns Hopkins University School of Medicine

Ph.D. Johns Hopkins University School of Medicine  
Department of Pharmacology and Experimental Therapeutics

## POSTGRADUATE TRAINING:

Intern, Stanford University Hospital, Department of Internal Medicine,

Resident and Fellow, The Johns Hopkins Hospital, Department of Neurology,

## PROFESSIONAL APPOINTMENTS:

2024-present Independent Neuroscience Consultant

2017-2014 Vice President and  
Global Therapeutic Area Head  
Neurosciences  
PPD, Inc., part of Thermo Fisher Scientific

Led the Neuroscience Medical and Strategy team at one of the largest global CROs. Responsible for developing the corporate Neuroscience strategy and innovation initiatives. Involved in managing interactions with both operational and business development team members in order to expand Neuroscience revenues and capabilities.

2016-2017                      Vice President, Global Therapeutic Head  
Neurosciences and Pain  
Medical and Scientific Affairs  
InVentiv Health

Responsible for developing the corporate CNS strategy as well as extensive interactions with both operational and business development team members in order to expand business activities. Primary goals are to increase corporate income via new projects and to manage global network of Neuroscience Medical Monitors.

2013-2016                      Consultant Drug Development

Extensive experience in the creation and management of all Clinical, Regulatory and Medical Affairs activities, including FDA interactions, for start-up Companies focused on neuropsychiatric disorders.

2013-2015                      Chief Medical Officer  
Semnur Pharmaceuticals, Inc.

Responsible for the creation and management of all Clinical, Regulatory, Medical Affairs and Preclinical R&D activities, including extensive FDA interactions for a start-up Company focused on non-opioid treatments for lumbar radicular pain. Second employee of the Company.

2011-2013                      Chief Medical Officer and Executive Vice President  
NeurogesX, Inc

Responsible for management of all Clinical, Regulatory, Medical Affairs and Preclinical R&D activities, including extensive FDA interactions for both a marketed product (Qutenza) and a development product (NGX-1998). Member and then Chair of the Joint Steering Committee with our corporate partner, Astellas.

2008-2011                      Vice President ,Neurosciences  
PRA International

Responsible for developing the corporate CNS strategy as well as extensive interactions with both operational and business development team members in order to expand business activities. Led CNS group to #1 most active and successful group within the Company. Member of Executive Operating Committee of major corporate partnership within the field of pain.

2007-2008                      Chief Medical Officer  
    Zogenix, Inc.

Responsible for management of all Clinical Development activities, including NDA application for Sumavel DosePro and end of phase 2 FDA interactions and development of Phase 3 development program for extended release hydrocodone (Zohydro).

2005-2007                      Johnson & Johnson, Inc.

Franchise Development Leader for Pain (2005-2007)  
Titusville, NJ

Medical and Business Strategy Leader (2007)  
Alza Corporation; Mountain View, CA

Responsible for developing a global strategy within the field of pain for the 200+ companies that comprise J&J. Performed due diligence on ~100 potential in-license opportunities over the course of 2 years.

2002-2005                      Founder, CEO and President  
    Synergia Pharma, Inc.

Founded and led a venture-backed (MPM Capital) virtual development company that studied the effect of droxidopa (also called L-DOPS) in migraine and allergic rhinitis. Patent rights were licensed to Chelsea Therapeutics.

1999-2002                      Consultant:

3-Dimensional Pharmaceuticals  
Applied Analytical Industries, Inc.  
Berkeley HeartLabs, Inc.  
Collabra Pharma  
Deltagen, Inc.  
ePocrates, Inc.  
Gene Logic, Inc.  
Omerus Pharmaceuticals  
Scios, Inc.

1993-1999            Founder, CEO and President  
Spectra Biomedical, Inc.  
(acquired by Glaxo Wellcome in 1997)

Successful start-up Company focused on the identifications of genes associated with migraine. Company acquired by GW in 1997 and an 18-month transition period was used to complete a genetic database with familial migraine DNA.

1990-1993            Director, Department of Neuroscience  
Genentech, Inc.

First Director of Neuroscience. Led the Phase 3 program for r-TPA in acute stroke and the Phase 1 and 3 program for human nerve growth factor.

1988-1990            Chief, Neurology Service  
Palo Alto Veteran's Administration Hospital

1984-1990            Assistant Professor  
Departments of Neurology and Pharmacology,  
Stanford University

## AWARDS AND HONORS:

- 1972 College Scholar in the Cornell School of Arts and Sciences
- 1975 Phi Beta Kappa
- 1977 Recipient of a Medical Scientist Training Grant from the National Institutes of Health for combined MD-PhD. study
- 1979 Sandoz Award for excellence in the field of Pharmacology
- 1985 Alfred P. Sloan Fellowship
- 1985 John A. and George L. Hartford Fellowship
- 1986 Diplomate of the American Board of Psychiatry and Neurology
- 1986 McKnight Foundation Scholar Award
- 1986 Panel of Examiners, Scientific American Medicine
- 1987 Elected to the International Nomenclature Committee for the Classification of Serotonin Receptors
- 1987 Japan Society for the Promotion of Science Fellowship
- 1988 ARCS Foundation Awardee
- 1988 Education Committee, American Association for the Study of Headache
- 1988 Medical Advisory Board Member, International Tremor Foundation
- 1989 Elected to the American College of Neuropsychopharmacology
- 1989 Stanley Foundation Fellowship
- 1990 First Irvine H. Page Lecturer
- 1991 Scientific Advisory Board; Palo Alto Institute for Molecular Medicine
- 1993 Syntex Award for Receptor Pharmacology
- 1993 Elected into the Calvert Hall College High School Hall of Fame
- 1993 Harold G. Wolff Award from the American Association for the Study of Headache for the best headache research paper of 1993
- 1993 Elected to Scientific Committee of the International Headache Society
- 1993 Daniel H. Efron Award from the American College of Neuropsychopharmacology for excellence in basic neuropharmacology research
- 1994 Max Hamilton Memorial Prize for significant contributions to the field of Psychopharmacology from the Collegium Internationale Neuro-Pychopharmacologicum
- 1995 Elected to The Society of Scholars of the Johns Hopkins University
- 1996 Elected to the Board of Directors of the American Association for the Study of Headache
- 2000 Elected to the Board of Directors of the American Headache Society and the Governing Body of the American Council for Headache Education
- 2002 Elected Secretary of the American Headache Society
- 2003 Selected as a Fellow of the American Headache Society
- 2007 Standard of Excellence Award (Johnson & Johnson)

## SELECTED INVITED LECTURES:

New York, New York	New York Academy of Sciences, "Serotonin receptor subtypes", October, 1982
Birmingham, England	British Pharmacological Society, "Functional correlates of 5-HT <sub>1</sub> receptors", April, 1984
Kapalua Bay, Hawaii	MacArthur Foundation, "Recent developments in 5-HT receptor pharmacology", December, 1985
Sydney, Australia	The Prince Henry Hospital, Neurology Grand Rounds, "5-HT and migraine", August, 1987
Heron Island, Australia	International Serotonin Meeting, "Characterization of 5-HT <sub>1</sub> binding sites using <sup>3</sup> H-5-HT", September, 1987
Rotterdam, Netherlands	Dutch Pharmacological Society, "Classification of 5-HT receptors", March, 1988
Rome, Italy	World Health Organization, "Non-GABAergic mechanisms in anxiety", July, 1988
London, England	The Migraine Trust, "Serotonin in Migraine", September, 1988
Hiroshima, Japan	Japanese Society for the Promotion of Science, "Clinical relevance of serotonin receptor subtypes", September, 1988
San Francisco, CA	American Association for the Advancement of Science Annual Meeting, "MDMA: 'Ecstasy' and/or human neurotoxin?", January, 1989
Florence, Italy	Lorenzini Foundation Conference on Serotonin, "5-HT <sub>1</sub> receptor subtypes", March, 1989
New York, New York	New York Academy of Sciences, "Overview of serotonin receptor subtypes", July, 1989
Sydney, Australia	International Headache Society Meeting, "The pharmacology of novel anti-migraine drugs", October, 1989
Washington, DC	International Movement Disorders Society, "The basic pharmacology of anti-essential tremor drugs", April, 1990
Bannf, Canada	Canadian Congress of Neuropsychopharmacology, Plenary Lecture, "Serotonergic mechanisms in migraine", June, 1990
Basel, Switzerland	First Irvine H. Page Lectureship, International Serotonin Symposium, July, 1990
Cambridge, England	The Fourth Cambridge Symposium of Anxiety, "Molecular modeling of 5-HT <sub>3</sub> ligands", September, 1990
Birmingham, England	International Serotonin Symposium, "The molecular biology of 5-HT receptor subtypes", July, 1991
Noordwijkerhout, Netherlands	9th Noordwijkerhout-Camerino Symposium: Trends in Drug Research, "Pharmacochemistry of 5-HT Compounds", May, 1993
Paris, France	VIth International Headache Congress, "Anti-migraine drug interactions with human 5-HT <sub>1</sub> receptors", August, 1993

Agno, Switzerland	Swiss Academy of Medical Sciences, "Serotonergic receptor interactions of LSD", October, 1993
Leiden, Netherlands	Dutch-Belgian Boerhaave Society for Clinical Neurochemistry, "Evolution of 5-HT receptors and clinical relevance", May, 1994
Copenhagen, Denmark	7th Congress of the Association of European Psychiatrists, "5-HT receptors and clinical relevance", September, 1994
Vienna, Austria	Vienna International Society for Medical Education and Preventative Medicine, "Mechanisms underlying migraine and therapeutic consequences", September, 1994
Copenhagen, Denmark	Fifth International Headache Research Meeting, "Future approaches to the development of novel headache therapeutics", November, 1994
Leeds Castle, United Kingdom	30th Anniversary Meeting of The Migraine Trust, "The Genetic Basis of Migraine: The Future is Now", June, 1995
Vancouver, Canada	The Fourth International Nature Genetics Conference: Genetic Susceptibility & Complex Traits, "A Novel Clinical Mapping Strategy", April, 1996
Monte Carlo, Monaco	Cambridge Healthtech Genomics Conference, "Multi-phenotypic Allelic Profiling", May, 1997
Copenhagen, Denmark	8th International Headache Research Meeting, "Genetic analysis of complex disorders"; November, 1997
Osaka Japan	5 <sup>th</sup> Aditus International Symposium "The role of dopamine in migraine"; April, 1999
London, United Kingdom	Headache 2000 International Conference "Media Medicine: Educating the 21 <sup>st</sup> Century Headache Patient"; September, 2000
Bern, Switzerland	Swiss Headache Society "A Sympathetic Look at Migraine" August, 2004
Kyoto, Japan	XIII <sup>th</sup> International Headache Congress, "The Biological Basis of Migraine"; October, 2005
London, England	6 <sup>th</sup> Annual Pain Management Conference; "Migraine pain: What have we learned to date?" October, 2009
Boston, MA	Massachusetts General Hospital Placebo Symposium "Historical Overview of The Placebo 'Problem' in CNS Drug Trials"; June 2018

## **BOOKS:**

Ecstasy: The Clinical, Pharmacological and Neurotoxicological Effects of the Drug MDMA  
(Editor: Peroutka SJ) Kluwer Academic Publishers, Boston, MA, 244 pages,  
1990.(ISBN: 978-0-7923-0305-3)

The Neuropharmacology of Serotonin  
(Editors: Whitaker-Azmitia PM, Peroutka SJ) Annals of the New York Academy of Sciences Volume 400, The New York Academy of Sciences Press, New York, New York, 718 pages, 1990.

Serotonin Receptor Subtypes: Basic and Clinical Aspects  
(Editor: Peroutka SJ) John Wiley & Sons, Inc., New York, 236 pages, 1991.

Handbook of Receptors and Channels: G Protein-coupled Receptors  
(Series Editor-in Chief and Volume 1 Editor), CRC Press, Boca Raton, FL, 335 pages,  
1994.

## PUBLICATIONS

### Articles:

1. Peroutka SJ, U'Prichard DC, Greenberg DA, Snyder SH: Neuroleptic drug interactions with norepinephrine alpha-receptor binding sites in rat brain. Neuropharmacology 16: 549-556, 1977.
2. Peroutka SJ, Greenberg DA, U'Prichard DC, Snyder SH: Regional variations in alpha-receptor interactions of <sup>3</sup>H-dihydro-ergokryptine in calf brain: Implications for a two site model of alpha-receptor function. Molecular Pharmacology 14: 403-412, 1978.
3. Peroutka SJ, Snyder SH: Multiple serotonin receptors: Differential binding of <sup>3</sup>H-5-hydroxytryptamine, <sup>3</sup>H-lysergic acid diethylamide and <sup>3</sup>H-spiroperidol. Molecular Pharmacology 16: 687-699, 1979.
4. Peroutka, SJ, Lebovitz RM, Snyder SH: Serotonin receptor binding affected differentially by guanine nucleotides. Molecular Pharmacology 16: 700-708, 1979.
5. Peroutka SJ, Moskowitz MA, Reinhard JF, Snyder SH: Neurotransmitter receptor binding in bovine cerebral microvessels. Science 208: 610-612, 1980.
6. Peroutka SJ, Snyder SH: Long-term antidepressant treatment decreases spiroperidol-labeled serotonin receptor binding. Science 210: 88-90, 1980.
7. Peroutka, SJ, Snyder SH: Relationship of neuroleptic drug effects at brain dopamine, serotonin, alpha-adrenergic and histamine receptors to clinical potency. American Journal of Psychiatry 137: 1518-1522, 1980.
8. Peroutka SJ, Snyder SH: Regulation of serotonin (5-HT<sub>2</sub>) receptors labeled with <sup>3</sup>H-spiroperidol by chronic treatment with the antidepressant amitriptyline. Journal of Pharmacology and Experimental Therapeutics 215: 582-587, 1980.
9. Peroutka SJ, Snyder SH: <sup>3</sup>H-Mianserin: Differential labeling of serotonin<sub>2</sub> and histamine<sub>1</sub> receptors in rat brain. Journal of Pharmacology and Experimental Therapeutics 216: 142-148, 1981.

10. Peroutka SJ, Snyder SH: Two distinct serotonin receptors: Regional variations in receptor binding in mammalian brain. Brain Research 208: 339-347, 1981.
11. Peroutka SJ, Lebovitz RM, Snyder SH: Two distinct central serotonin receptors with different physiological functions. Science 212: 827-829, 1981.
12. Peroutka SJ: Serotonin in brain receptors. Biomedicine 35: 206, 1981.
13. Peroutka SJ, Snyder SH: Recognition of multiple serotonin receptor binding sites. Advances in Biochemical Psychopharmacology 34: 155-172, 1982.
14. Snyder SH, Peroutka SJ: A possible role of serotonin receptors in antidepressant drug action. Pharmacopsychiatry 15: 131-134, 1982.
15. Peroutka SJ, Snyder SH: Anti-emetics: Neurotransmitter receptor binding predicts therapeutic actions. Lancet 1: 658-659, 1982.
16. Peroutka SJ: Combination antiemetics. Cancer Treatment Reports 66: 1449, 1982.
17. Peroutka, SJ, Ullrich CG, Fisher RS, Suss RA, Brooks BR: Transient areflexia and quadriplegia following metrizamide myelography. Annals of Neurology 12: 406-407, 1982.
18. Peroutka SJ, Sohmer BH, Kumar AJ, Folstein M, Robinson RG: Hallucinations and delusions following a right temporo-parietal infarction. Johns Hopkins Medical Journal 151: 181-185, 1982.
19. Peroutka SJ, Noguchi M, Tolner D, Allen GS: Serotonin induced contraction of canine basilar artery: Mediation by 5-HT<sub>1</sub> receptors. Brain Research 259: 327-331, 1983.
20. Peroutka SJ, Snyder SH: Multiple serotonin receptors and their physiological significance. Federation Proceedings 42: 213-217, 1983.
21. Peroutka SJ, Allen GS: Calcium channel antagonist binding sites labeled by <sup>3</sup>H-nimodipine in human brain. Journal of Neurosurgery 59: 933-937, 1983.
22. Peroutka SJ: The pharmacology of calcium channel antagonists: A novel class of anti-migraine agents? Headache 23: 278-283, 1983.
23. Peroutka SJ, Allen GS: Calcium antagonist properties of cyproheptadine: Implications for anti-migraine actions. Neurology 34: 304-309, 1984.
24. Peroutka SJ, Banghart SB, Allen GS: Relative potency and selectivity of calcium channel antagonists used in the treatment of migraine. Headache 24: 55-58, 1984.

25. Peroutka SJ, Peroutka LA: Autosomal dominant transmission of the "Photic Sneeze Reflex". New England Journal of Medicine 310: 599-600, 1984.
26. Peroutka SJ: Vascular serotonin receptors: Correlation with 5-HT<sub>1</sub> and 5-HT<sub>2</sub> binding sites. Biochemical Pharmacology 33: 2349-2353, 1984.
27. Peroutka SJ, Kuhar MJ: Autoradiographic localization of 5-HT<sub>1</sub> receptors on human and canine basilar arteries. Brain Research 310: 193-196, 1984.
28. Peroutka SJ: 5-HT<sub>1</sub> receptor sites and functional correlates. Neuropharmacology 23: 1487-1492, 1984.
29. Baraban JM, Gould RJ, Peroutka SJ, Snyder SH: Phorbol ester effects on neurotransmission: Interaction with neurotransmitters and calcium in smooth muscle. Proceedings of the National Academy of Sciences, USA 82: 604-607, 1985.
30. Peroutka SJ, Banghart SB, Allen GS: Calcium channel antagonism by pizotifen. Journal of Neurology, Neurosurgery and Psychiatry 48: 381-383, 1985.
31. Peroutka SJ, DeLanney L, Irwin I, Ison PJ, Ricaurte G, Schlegel JR, Langston JW: 1-Methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP) induced dopamine D<sub>2</sub> receptor hypersensitivity in the mouse is transient. Research Communications in Chemical Pathology and Pharmacology 48: 183-195, 1985.
32. Peroutka SJ: Selective interaction of novel anxiolytics with 5-hydroxytryptamine<sub>1A</sub> receptors. Biological Psychiatry 20: 971-979, 1985.
33. Peroutka SJ: Selective labeling of 5-HT<sub>1A</sub> and 5-HT<sub>1B</sub> binding sites in bovine brain. Brain Research 344: 167-171, 1985.
34. Clark JT, Peroutka SJ, Ciaranello RD, Smith ER, Davidson JM: Central effects of RDS-127: Sexual behavior after intra-cerebroventricular administration and in vitro receptor binding sites. Behavioral Brain Research 18: 251-260, 1985.
35. Heuring RE, Schlegel JR, Peroutka SJ: Species variations in 5-HT<sub>1B</sub> and 5-HT<sub>1C</sub> binding sites defined by RU 24969 competition studies. European Journal of Pharmacology 122: 279-282, 1986.
36. Hiner BC, Roth H, Peroutka SJ: Antimigraine drug interactions with 5-hydroxytryptamine<sub>1A</sub> receptors. Annals of Neurology 19: 511-513, 1986.
37. Ison PJ, Peroutka SJ: Neurotransmitter receptor binding studies predict antiemetic efficacy and side effects. Cancer Treatment Reports 70: 637-641, 1986.

38. Peroutka SJ, Ison PJ, Liu DU, Barrett, RL: Artfactual high-affinity and saturable binding of <sup>3</sup>H-5-hydroxytryptamine induced by radioligand oxidation. Journal of Neurochemistry 47: 38-45, 1986.
39. Schlegel JR, Peroutka SJ: Nucleotide interactions with 5-HT<sub>1A</sub> binding sites directly labeled with [<sup>3</sup>H]-8-hydroxy-2-(di-n-propylamino)tetralin ([<sup>3</sup>H]-8-OH-DPAT). Biochemical Pharmacology 35: 1943-1949, 1986.
40. Peroutka SJ, Huang S, Allen GS: Canine basilar artery contractions mediated by 5-hydroxytryptamine<sub>1A</sub> receptors. Journal of Pharmacology and Experimental Therapeutics 237: 901-906, 1986.
41. Smith LM, Peroutka SJ: Differential effects of 5-hydroxy-tryptamine<sub>1A</sub> selective drugs on the 5-HT behavioral syndrome. Pharmacology Biochemistry and Behavior 24: 1513-1519, 1986.
42. Ricaurte GA, Langston JW, DeLanney LE, Irwin I, Peroutka SJ, Forno LS: Fate of nigrostriatal neurons in the mouse after 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine administration: A neurochemical and morphological reassessment. Brain Research 376: 117-124, 1986.
43. Peroutka SJ: Pharmacologic differentiation and characterization of 5-HT<sub>1A</sub>, 5-HT<sub>1B</sub> and 5-HT<sub>1C</sub> binding sites in rat frontal cortex. Journal of Neurochemistry 47: 529-540, 1986.
44. Tecott LH, Kwong LK, Uhr S, Peroutka SJ: Differential modulation of dopamine D<sub>2</sub> receptors by haloperidol, nitrendipine and pimoziide. Biological Psychiatry 21: 1114-1122, 1986.
45. Peroutka SJ, Demopoulos CM: <sup>3</sup>H-8-OH-DPAT "specifically" labels glass fiber filter papers. European Journal of Pharmacology 129: 199-200, 1986.
46. Kwong LB, Smith ER, Davidson JM, Peroutka SJ: Differential interactions of prosexual drugs with 5-hydroxytryptamine<sub>1A</sub> and alpha-adrenergic<sub>2</sub> receptors. Behavioral Neuroscience 100: 664-668, 1986.
47. Peroutka SJ, Heuring RE, Mauk MD, Kocsis JD: Analysis of 5-HT<sub>1</sub> binding sites and potential functional correlates. Psychopharmacology Bulletin 22: 813-817, 1986.
48. Lerman JA, Kaitin KI, Dement WC, Peroutka SJ: The effect of buspirone on sleep in the rat. Neuroscience Letters 72: 64-68, 1986.
49. Heuring RE, Peroutka SJ: Characterization of a novel <sup>3</sup>H-5-hydroxytryptamine binding site subtype in bovine brain membranes. The Journal of Neuroscience 7: 894-903, 1987.

50. Peroutka SJ, Mauk MD, Kocsis JD: Modulation of hippocampal activity by 5-hydroxytryptamine and 5-hydroxytryptamine<sub>1A</sub> selective drugs. Neuropharmacology 26: 139-146, 1987.
51. Peroutka SJ: Chemotherapeutic agents do not interact with neurotransmitter receptors. Cancer Chemotherapy and Pharmacology 19: 131-132, 1987.
52. Demopulos CM, Peroutka SJ: "Specific" <sup>3</sup>H-8-OH-DPAT binding to glass fiber filter paper: Implications for the analysis of serotonin binding sites subtypes. Neurochemistry International 10: 371-376, 1987.
53. Peroutka SJ, Gonzales DA, Shapiro M: Modulation of post-decapitation convulsions in rats by alpha-adrenergic and 5-hydroxytryptamine<sub>1A</sub> agents. Experimental Neurology 96: 344-351, 1987.
54. Peroutka SJ, Kitamura K, Lim M, Steinman L: Treatment of lethal pertussis vaccine reaction with histamine H<sub>1</sub> antagonists. Neurology 37: 1068-1072, 1987.
55. Wang SW, Ricaurte GA, Peroutka SJ: <sup>3</sup>H-Methylene-dioxymethamphetamine (MDMA) interactions with brain membranes and glass fiber filter paper. European Journal of Pharmacology 138: 439-443, 1987.
56. Davies MF, Deisz R, Prince DA, Peroutka SJ: Two distinct responses to 5-hydroxytryptamine on cortical neurons. Brain Research 423: 347-352, 1987.
57. Peroutka SJ: Incidence of the recreational use of 3,4-methylene-dimethoxymethamphetamine (MDMA; Ecstasy) on an undergraduate campus. New England Journal of Medicine 317: 1543-1544, 1987.
58. Huang J, Peroutka SJ: Identification of 5-HT<sub>1</sub> binding site subtypes in rat spinal cord. Brain Research 436: 173-176, 1987.
59. Peroutka SJ, Pascoe N, Faull K: Monoamine metabolites in the cerebrospinal fluid of recreational users of 3,4-methylenedimethoxymethamphetamine (MDMA; Ecstasy). Research Communications in Substances of Abuse 8: 124-138, 1987.
60. Peroutka SJ: Patient management problem: A 42 year old male with headache. Scientific American Medicine 71: 1-11, 1987.
61. McCarthy BG, Peroutka SJ: Differentiation of muscarinic receptor subtypes in human cortex and pons: Implications for anti-motion sickness therapy. Aviation, Space and Environmental Medicine 59: 63-66, 1988.
62. Mauk MD, Peroutka SJ, Kocsis JD: Buspirone attenuates synaptic transmission of hippocampal pyramidal cells. The Journal of Neuroscience 8: 1-11, 1988.

63. Peroutka SJ: 5-Hydroxytryptamine receptor subtypes. Annual Review of Neuroscience 11: 45-60, 1988.
64. Peroutka SJ: About the so-called specific binding of  $^3\text{H}$ -8-OH-DPAT to glass fiber filter. Neurochemistry International 12: 101-102, 1988.
65. Wang SSH, Mathis CA, Peroutka SJ: R(-)- $^{77}\text{Br}$ -2,5-Dimethoxy-4-bromoamphetamine ( $^{77}\text{Br}$ -DOB): A novel radioligand which labels a 5-hydroxytryptamine binding site subtype. Psychopharmacology 94: 431-432, 1988.
66. Peroutka SJ: Serotonin receptor subtypes. ISI Atlas of Science: Pharmacology 2: 1-4, 1988.
67. Peroutka SJ, Hamik AH:  $^3\text{H}$ -Quipazine labels 5-HT<sub>3</sub> recognition sites in rat cortical membranes. European Journal of Pharmacology 148: 297-299, 1988.
68. Finnegan KT, Ricaurte GA, Ritchie LD, Irwin I, Peroutka SJ, Langston JW: Orally administered MDMA causes a long-term depletion of serotonin in rat brain. Brain Research 447: 141-144, 1988.
69. Hyde TM, Gibbs M, Peroutka SJ: Distribution of muscarinic cholinergic receptors in the dorsal vagal complex and other selected nuclei of the human medulla. Brain Research 447: 287-292, 1988.
70. Peroutka SJ: Anti-migraine drug interactions with serotonin receptor subtypes in human brain. Annals of Neurology 23: 500-504, 1988.
71. Peroutka SJ: Review of Neurotoxins and their Pharmacological Implications. The FASEB Journal 2: 2524, 1988.
72. Harrington MA, Oksenberg D, Peroutka SJ: Evidence for a direct linkage of 5-HT<sub>1A</sub> receptors to a G<sub>i</sub> protein in rat hippocampus. European Journal of Pharmacology 154: 95-98, 1988.
73. Oksenberg D, Peroutka SJ: Antagonism of 5-HT<sub>1A</sub> receptor-mediated inhibition of adenylate cyclase activity by pindolol and propranolol isomers. Biochemical Pharmacology 37: 3429-3433, 1988.
74. Peroutka SJ: 5-Hydroxytryptamine receptor subtypes: Molecular, biochemical and physiological characterization. Trends in Neuroscience 11: 496-500, 1988.
75. Hiner BJ, Mauk MD, Peroutka SJ, Kocsis JD: Buspirone, 8-OH-DPAT and isapirone: Effects on hippocampal, cerebellar and sciatic fiber excitability. Brain Research 461: 1-9, 1988.

76. Peroutka SJ, Hamik A, Harrington MA, Hoffman AJ, Mathis CA, Nichols DE, Pierce PA, Wang SSH: R(-)2,5-dimethoxy-4-<sup>77</sup>Br-R(-) DOB] labels a novel 5-hydroxytryptamine binding site in brain membranes. Molecular Pharmacology 34: 537-542, 1988.
77. Peroutka SJ: Patient management problem: A 72 year old female with altered mental status. Scientific American Medicine 75:1-12, 1988.
78. Peroutka SJ, Newman H, Harris H: Subjective effects of 3,4-methylenedimethoxymethamphetamine (MDMA; "Ecstasy") in recreational users. Neuropsychopharmacology 1: 273-277, 1988.
79. Peroutka SJ: Relative insensitivity of mice to 3,4-methylenedioxyamphetamine (MDMA) neurotoxicity. Research Communications in Substances of Abuse 9: 193-206, 1988.
80. Peroutka SJ: Addendum: Monoamine metabolites in the cerebrospinal fluid of recreational users of 3,4-methylenedioxyamphetamine (MDMA; "Ecstasy"). Research Communications in Substances of Abuse 9: 243, 1988.
81. Peroutka SJ: Species variations in 5-HT<sub>3</sub> binding sites labeled by <sup>3</sup>H-quipazine in the central nervous system. NaunynSchmiedeberg's Archives of Pharmacology 338: 472-475, 1988.
82. Pierce PA, Peroutka SJ: Antagonism of 5-HT<sub>2</sub> receptor mediated phosphatidylinositol turnover by d-lysergic acid diethylamide. Journal of Pharmacology and Experimental Therapeutics 247: 918-925, 1988.
83. Pierce PA, Peroutka SJ: Ring-substituted amphetamine interactions with neurotransmitter receptor binding sites in human cortex. Neuroscience Letters 95: 208-212, 1988.
84. Pierce PA, Peroutka SJ: Hallucinogenic drug interactions with neurotransmitter receptor binding sites in human cortex. Psychopharmacology 97: 118-122, 1989.
85. Pierce PA, Peroutka, SJ: Evidence for distinct 5-HT<sub>2</sub> binding site subtypes in cortical membrane preparations. Journal of Neurochemistry 52: 656-658, 1989.
86. McArthur JC, Marek K, Pestronk A, McArthur J, Peroutka SJ: Nifedipine prophylaxis of classic migraine. Neurology 39: 284-286, 1989.
87. Peroutka SJ, Switzer JA, Hamik A: Identification of 5-hydroxytryptamine<sub>1D</sub> binding sites in human brain membranes. Synapse 3: 61-66, 1989.
88. Peroutka SJ: "Ecstasy": A human neurotoxin? Archives of General Psychiatry 46: 191, 1989.

89. Hamik A, Peroutka SJ: 1-(m-Chlorophenyl)piperazine (mCPP) interactions with neurotransmitter receptors in human brain. Biological Psychiatry 25: 569-575, 1989.
90. Peroutka SJ: Anxiety and tremor. International Tremor Foundation Newsletter 2: 5, 1989.
91. Albers GA, Simon LT, Peroutka SJ: Nifedipine intolerance supports autonomic dysfunction in migraine patients. Headache 29: 214-217, 1989.
92. Peroutka SJ, McCarthy BG: Sumatriptan (GR 43175) selectively interacts with 5-HT<sub>1B</sub> and 5-HT<sub>1D</sub> binding sites. European Journal of Pharmacology 163: 133-136, 1989.
93. Milburn CM, Peroutka SJ: Characterization of <sup>3</sup>H-quipazine binding to 5-hydroxytryptamine<sub>3</sub> receptors in rat brain membranes. Journal of Neurochemistry 52: 1787-1792, 1989.
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## Chapters

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