

**John Lehmann, Ph.D.; Pharmacologist**  
**Pharmikos Inc**  
12 Soliday Lane  
**Mahaffey PA 15757**  
Telephone: 814 277 6115  
Cell: 484 557 3263  
Email: jlehmann@pharmikos.com

### **Appointments**

**President & Founder**, Pharmikos Inc (previously named DrugIntel 2001-2005)  
Mahaffey & Wayne PA (2001 – present)

**Adjunct Associate Professor**, Queens University  
Kingston ON Canada (2000 – 2002)

**Layton BioScience**, Sunnyvale CA USA  
**Director, Dept Retinal Research** (1999 – 2001)

**GB Therapeutics Inc.**, Kingston ON Canada  
**CEO** (1999 – 2000)

**LifeSpan BioTechnology Medical Devices**, Devon PA  
**CEO** (1995 – 1998)

**Associate Professor** (1990 - 1999)  
**MCP-Hahnemann University School of Medicine**, Philadelphia PA USA  
(previously named **Hahnemann University** and **Allegheny University of the Health Sciences**)  
Department of Neurosurgery (1993 - 1999)  
Department of Mental Health Sciences (1990 - 1993)

**Fondax - Groupe de Recherche Servier** (1988 - 1990)  
Puteaux, France  
Neurobiology Division

**Chef de Projet** (1989 - 1990)  
**Cadre en Recherche Pharmacologique** (1988 - 1989)

**CIBA-GEIGY Corporation**, Summit NJ USA (1983 - 1988)  
Department of Neuroscience/Cardiovascular Research

**Senior Research Scientist** (1985 - 1988)  
**NMDA Project Leader** (1983 - 1987)  
**Senior Scientist** (1983 - 1985)

**The Johns Hopkins University**  
**School of Medicine**, Baltimore MD USA (1984 - 1987)  
Department of Neurology

**Adjunct Assistant Professor** (1984 - 1987)

### **Education & Training**

B.Sc. with Honors in Biology - 1974  
**Caltech**, Pasadena CA USA  
Advisor: **James Olds**

Ph.D. in Neuroscience - 1980  
**University of British Columbia**  
Vancouver BC Canada  
Advisor: **H.C. Fibiger**

### **Postdoctoral Training:**

**Synthelabo L.E.R.S.**  
75013 Paris France  
Supervisor: **S.Z. Langer**  
**1980 - 1982**

**The Johns Hopkins University School of Medicine**  
Department of Psychiatry , Baltimore MD USA  
Supervisor: **J.T. Coyle**  
**1982 - 1983**

### Publications

- Lehmann, J. and Fibiger, H.C.** (1978) Acetylcholinesterase in the substantia nigra and caudate-putamen of the rat: properties and localization in dopaminergic neurons. *Journal of Neurochemistry* 30:615-624.
- Nagy, J.I., Carter, D.A., Lehmann, J. and Fibiger, H.C.** (1978) Evidence for a GABA-containing projection from the entopeduncular nucleus to the lateral habenula in the rat. *Brain Research* 149:546-551.
- Nagy, J.I., Vincent, S.R., Lehmann, J., Fibiger, H.C. and McGeer, E.G.** (1978) The use of kainic acid in the localization of enzymes in the substantia nigra. *Brain Research* 149:431-441.
- Sanberg, P.R., Lehmann, J. and Fibiger, H.C.** (1978) Impaired learning and memory after kainic acid lesions of the striatum: a behavioural model of Huntington's disease. *Brain Research* 149:546-551.
- Lehmann, J. and Fibiger, H.C.** (1979) Acetylcholinesterase and the cholinergic neuron. *Life Sciences* 5:1161-1174.
- Lehmann, J., Fibiger, H.C. and Butcher, L.L.** (1979) The localization of acetylcholinesterase in the corpus striatum and substantia nigra of the rat following kainic acid lesions of the corpus striatum: a biochemical and histochemical study. *Neuroscience* 4:217-225.
- Sanberg, P.R., Lehmann, J. and Fibiger, H.C.** (1979) Sedative effects of apomorphine and an animal model of Huntington's disease. *Archives of Neurology* 36:349-350.
- Lehmann, J., Nagy, J.I., Atmadja, S. and Fibiger, H.C.** (1980) The nucleus basalis magnocellularis: the origin of a cholinergic projection to the neocortex of the rat. *Neuroscience* 5:1161-1174.
- Vincent, S.R., Lehmann, J. and McGeer, E.G.** (1980) The localization of GABA-transaminase in the striato-nigral system. *Life Sciences* 27:595-601.
- Arbilla, S., Langer, S.Z. and Lehmann, J.** (1981) Dopamine autoreceptors inhibiting [3H]dopamine release in the caudate nucleus of the cat: Evidence for a role of endogenously released dopamine. *British Journal of Pharmacology* 74:226P.
- Fibiger, H.C. and Lehmann, J.** Anatomical organization of some cholinergic systems in the mammalian forebrain. In: *Cholinergic Mechanisms*, edited by Pepeu, G. and Ladinsky, H. New York: Plenum Press, 1981, p. 663-672.
- Lehmann, J. and Langer, S.Z.** (1981) Phenoxybenzamine irreversibly blocks dopamine autoreceptors: Implications for multiple dopamine receptor hypotheses. *European Journal of Pharmacology* 75:247-254.
- Lehmann, J., Arbilla, S. and Langer, S.Z.** (1981) Dopamine receptor mediated inhibition by pergolide of electrically-evoked [3H]dopamine release from striatal slices of cat and rat: slight effect of ascorbate. *Naunyn-Schmiedeberg's Archives of Pharmacology* 317:31-35.
- Lehmann, J. and Scatton, B.** (1982) Characterization of the excitatory amino acid receptor mediated release of [3H]acetylcholine from striatal slices of the rat. *Brain Research* 252:77-89.
- Lehmann, J. and Langer, S.Z.** (1982) Dopamine autoreceptors differ pharmacologically from postsynaptic dopamine receptors: effects of (-)N(2-chloroethyl)-norapomorphine. *European Journal of Pharmacology* 77:85-86.
- Lehmann, J. and Langer, S.Z.** The pharmacological distinction between central pre- and postsynaptic dopamine receptors: Implications for the pathology and therapy of schizophrenia. In: *Advances in Dopamine Research*, edited by Kohsaka, M., Shohmori, Y., Tsukuda, Y. and Woodruff, G.N. Oxford: Pergamon Press, 1982, p. 25-39.
- Scatton, B. and Lehmann, J.** (1982) N-Methyl-D-aspartate-type receptors mediate striatal [3H]acetylcholine release evoked by excitatory amino acids. *Nature* 297:422-424.

**Lehmann, J. and Langer, S.Z.** (1983) The striatal cholinergic interneuron: synaptic target of dopaminergic terminals?. *Neuroscience* 10:1105-1120.

**Lehmann, J., Schaeffer, P., Ferkany, J.W. and Coyle, J.T.** (1983) Quinolinic acid evokes [3H]acetylcholine release in striatal slices: mediation by NMDA-type excitatory amino acid receptors. *European Journal of Pharmacology* 96:111-115.

**Lehmann, J., Lee, C.R. and Langer, S.Z.** (1983) Dopamine receptors modulating [3H]acetylcholine release in slices of the cat caudate: effects of (-)N(2-chloroethyl)-norapomorphine. *European Journal of Pharmacology* 90:393-400.

**Lehmann, J., Smith, R.V. and Langer, S.Z.** (1983) Stereoisomers of apomorphine differ in affinity and intrinsic activity at presynaptic dopamine receptors modulating activity [3H]dopamine and [3H]acetylcholine release in slices of cat caudate. *European Journal of Pharmacology* 88:81-88.

**Lehmann, J., Briley, M. and Langer, S.Z.** (1983) Characterization of dopamine autoreceptor and [3H]spiperone binding sites in vitro with classical and novel dopamine receptor agonists. *European Journal of Pharmacology* 88:11-26.

**Lehmann, J., Struble, R.G., Antuono, P.G., Coyle, J.T., Cork, L.C. and Price, D.L.** (1984) Regional heterogeneity of choline acetyltransferase activity in primate neocortex. *Brain Research* 322:361-364.

**Schwartz, R.D., Lehmann, J. and Kellar, K.J.** (1984) Presynaptic nicotinic cholinergic receptors labeled by [3H]acetylcholine on catecholamine and serotonin axons in brain. *Journal of Neurochemistry* 42:1495-1498.

**Lehmann, J., Ferkany, J.W., Schaeffer, P. and Coyle, J.T.** (1985) Dissociation between the excitatory and "excitotoxic" effects of quinolinic acid analogs on the striatal cholinergic interneuron. *Journal of Pharmacology and Experimental Therapeutics* 232:873-882.

**Price, D.L., Cork, L.C., Struble, R.G., et al.** Neuropathological, neurochemical, and behavioral studies of the aging nonhuman primate. In: *Behavior and pathology of aging in rhesus monkeys*, edited by New York: Alan R. Liss, Inc., 1985, p. 113-135.

**Struble, R.G., Lehmann, J., Mitchell, S.J., et al.** Cortical cholinergic innervation: distribution and source in monkeys. In: *Dynamics of cholinergic function*, edited by Hanin, I. New York: Plenum Press, 1985,

**Clark, A.W., White, C.L., Manz, H.J., Parhad, I.M., Curry, B., Whitehouse, P.J., Lehmann, J. and Coyle, J.T.** (1986) Primary degenerative dementia without Alzheimer pathology. *Canadian Journal of Neurological Sciences* 13:462-470.

**Clark, A.W., Manz, H.J., White, C.L., Lehmann, J., Miller, D. and Coyle, J.T.** (1986) Cortical degeneration with swollen chromatolytic neurons: its relationship to Pick's disease. *Journal of Neuropathology and Experimental Neurology* 45:268-284.

**Lehmann, J., McPherson, S.E., Wood, P.L. and Cheney, D.L.** (1986) PCP analogs - site of action at NMDA-type receptor associated ion channels?. *Clinical Neuropharmacology* 9:497-499.

**Loo, P., Braunwalder, A., Lehmann, J. and Williams, M.** (1986) Radioligand binding to central phencyclidine recognition sites is dependent on excitatory amino acid receptor agonists. *European Journal of Pharmacology* 123:467-468.

**Struble, R.G., Lehmann, J., Mitchell, S.J., McKinney, M., Price, D.L., Coyle, J.T. and DeLong, M.R.** (1986) Basal forebrain neurons provide major cholinergic innervation of primate neocortex. *Neuroscience Letters* 66:215-220.

**French-Mullen, J.M.H., Lehmann, J., Bohacek, R. and Fisher, R.S.** (1987) Tiletamine is a potent inhibitor of N-methyl-D-aspartate induced depolarizations in rat hippocampus and striatum. *Journal of Pharmacology and Experimental Therapeutics* 243:915-920.

**Lehmann, J., Schneider, J., McPherson, S., Murphy, D.E., Bernard, P., Tsai, C., Bennett, D.A., Pastor, G., Steel, D.J., Boehm, C., Cheney, D.L., Liebman, J.M., Williams, M. and Wood, P.L.** (1987) CPP, a selective NMDA-type receptor antagonist: characterization in vitro and in vivo. *Journal of Pharmacology and Experimental Therapeutics* 240:737-746.

**Lehmann, J., Schneider, J. and Williams, M.** (1987) Excitatory amino acids and mammalian CNS function. *Annual Reports in Medicinal Chemistry* 22:31-40.

**Lehmann, J., Loo, P., McPherson, S., et al.** NMDA- and PCP-type receptor interactions. In: *Excitatory amino acid transmission*, edited by Hicks, T.P., McLennan, H. and Lodge, D. New York: Alan R. Liss, Inc., 1987, p. 91-98.

**Loo, P.A., Braunwalder, A.F., Lehmann, J., Williams, M. and Sills, M.A.** (1987) Interaction of L-glutamate and magnesium with phencyclidine recognition sites in rat brain: evidence for multiple affinity states of the phencyclidine/N-methyl-D-aspartate receptor complex. *Molecular Pharmacology* 32:820-830.

**Murphy, D.E., Schneider, J., Boehm, C., Lehmann, J. and Williams, M.** (1987) Binding of [3H]3-(2-carboxypiperazin-4-yl)propyl-1-phosphonic acid to rat brain membranes: a selective high-affinity ligand for N-methyl-D-aspartate receptors. *Journal of Pharmacology and Experimental Therapeutics* 240:778-784.

**Tsai, C., Steel, D.J., McPherson, S., Taylor, C.A., Wood, P.L. and Lehmann, J.** PK 26124 is not a competitive antagonist at NMDA-type receptors. In: *Excitatory amino acid transmission*, edited by Hicks, T.P., McLennan, H. and Lodge, D. New York: Alan R. Liss, Inc., 1987, p. 79-82.

**Tsai, C. and Lehmann, J.** Glutamate-sensitive alpha-ketoglutarate uptake into nerve terminals: sodium dependence. In: *Excitatory amino acid transmission*, edited by Hicks, T.P., McLennan, H. and Lodge, D. New York: Alan R. Liss, Inc., 1987, p. 161-164.

**Wood, P.L., Steel, D., McPherson, S.E., Cheney, D.L. and Lehmann, J.** (1987) Antagonism of N-methyl-D-aspartate evoked increases in cerebellar cGMP and striatal ACh release by phencyclidine receptor agonists: evidence for possible allosteric coupling of NMDA and PCP receptors. *Canadian Journal of Physiology and Pharmacology* 65:1923-1927.

**Boast, C.A., Gerhardt, S.C., Pastor, G., Lehmann, J., Etienne, P.E. and Liebman, J.M.** (1988) The N-methyl-D-aspartate antagonists CGS 19755 and CPP reduce ischemic brain damage in gerbils. *Brain Research* 442:345-348.

**Cavalheiro, E., Lehmann, J., Turski, L. and Eds.** *Frontiers in excitatory amino acid research*, New York: Alan R. Liss, Inc., 1988.

**Klockgether, T., Turski, L., Schwarz, M., Sontag, K.-H. and Lehmann, J.** (1988) Paradoxical convulsant action of a novel non-competitive N-methyl-D-aspartate (NMDA) antagonist, tiletamine. *Brain Research* 461:343-348.

**Langer, S.Z. and Lehmann, J.** Presynaptic receptors on catecholamine neurones. In: *Handbook of Experimental Pharmacology*, Vol. 90/1, edited by Trendelenburg, U. and Weiner, N. Heidelberg: Springer-Verlag, 1988, p. 419-507.

**Lehmann, J., Sills, M.A., Tsai, C., Loo, P.S. and Bennett, D.A.** Dextromethorphan modulates the NMDA-type receptor associated ion channel by binding to its closed state. In: *Frontiers in excitatory amino acid research*, edited by Cavalheiro, E., Lehmann, J. and Turski, L. New York: Alan R. Liss, Inc., 1988, p. 571 - 578.

**Lehmann, J., Chapman, A.G., Meldrum, B.S., Hutchison, A., Tsai, C. and Wood, P.L.** (1988) CGS 19755 is a potent and competitive antagonist at NMDA-type receptors in vitro and in vivo. *European Journal of Pharmacology* 154:89-93.

**Lehmann, J., Tsai, C. and Wood, P.L.** (1988) Homocysteic acid as a putative excitatory amino acid neurotransmitter. I. Postsynaptic characteristics at NMDA-type receptors. *Journal of Neurochemistry* 51:1765-1770.

**Lehmann, J. and Wood, P.L.** NMDA- and PCP-type receptor interactions. In: *Sigma and phencyclidine-like compounds as molecular probes in biology*, edited by Domino, E.F. and Kamenka, J.-M. Ann Arbor: NPP Books, 1988, p. 251-258.

**Lehmann, J., Hutchison, A.J., McPherson, S.E., Mondadori, C., Schmutz, M., Sinton, C.M., Tsai, C., Murphy, D.E., Steel, D.J., Williams, M., Cheney, D.L. and Wood, P.L.** (1988) CGS 19755, a selective and competitive NMDA-type excitatory amino acid receptor antagonist. *Journal of Pharmacology and Experimental Therapeutics* 246:65-75.

**Taylor, C.A., Tsai, C. and Lehmann, J.** (1988) Voltage-sensitive sodium channels: differential effects of local anesthetics and anticonvulsant drugs. *Journal of Pharmacology and Experimental Therapeutics* 244:666-673.

**Taylor, C.A., Tsai, C. and Lehmann, J.** (1988) Glycine-evoked release of [3H]acetylcholine from rat striatal slices is independent of the NMDA receptor. *Naunyn-Schmiedeberg's Archives of Pharmacology* 337:552-555.

**Tsai, C., Schneider, J.A. and Lehmann, J.** (1988) trans-2-Carboxy-3-pyrrolidine acetic acid (CPAA), a novel agonist at NMDA-type receptors. *Neuroscience Letters* 92:298-302.

**Cavalheiro, E.A., Lehmann, J. and Turski, L.** (1989) Excitatory amino acids - quo vadis ? . *Brazilian Journal of Medical and Biological Research* 22:1065-1067.

**Cheney, D.L., Lehmann, J., Cosi, C. and Wood, P.L.** Determination of acetylcholine dynamics. In: *Neuromethods, volume 12: Drugs as tools in neurotransmitter research*, edited by Boulton, A.B., Baker, G.B. and Juorio, A.V. Clifton, NJ: The Humana Press, 1989, p. 443-495.

**Lehmann, J.** (1989) Legal laboratory practice. *Trends in Pharmacological Sciences* 10:425-426.

**Lehmann, J., Koenig, E. and Vitou, P.** (1989) The imidazoline-preferring receptor. *Life Sciences* 45:1609-1615.

**Lehmann, J.** (1989) The NMDA Receptor. *Drugs of the Future* 14:1059-1071.

- Rao, T.S., Kim, H.S., Lehmann, J., Martin, L.L. and Wood, P.L.** (1989) Differential effects of phencyclidine (PCP) and ketamine on mesocortical and mesostriatal dopamine release in vivo. *Life Sciences* 45:1065-1072.
- Lehmann, J.** (1990) Antihypertensive pharmacotherapy: modern mechanisms. *Drugs of Today* 26:83-90.
- Lehmann, J.** (1990) Brave new biosensors. *Bio/Technology* 8:729-731.
- Lehmann, J., Randle, J.C.R. and Reynolds, I.J.** (1990) Excitatory amino acid receptors: NMDA modulatory sites, kainate cloned and a new role in AIDS. *Trends in Pharmacological Sciences* 11:1-3.
- Lehmann, J.** (1990) Neuropeptide Y: an overview. *Drug Development Research* 19:329-351.
- Lehmann, J., Colpaert, F. and Canton, H.** (1991) Glutamate and glycine co-activate while polyamines merely modulate the NMDA receptor complex. *Progress in Neuro-Psychopharmacology & Biological Psychiatry* 15:183-190.
- Lehmann, J., Etienne, P.E., Cheney, D.L. and Wood, P.L.** (1991) NMDA receptors and their channels. In: *Neurotransmitters and epilepsy*, edited by Fisher, R.S. and Coyle, J.T. New York: Alan R. Liss, Inc., pp. 147-165.
- Rao, T.S., Kim, H.S., Lehmann, J., Martin, L.L. and Wood, P.L.** (1990) Selective activation of dopaminergic pathways in the mesocortex by compounds that act at phencyclidine (PCP) binding site: tentative evidence for PCP recognition sites not coupled to N-methyl-D-aspartate (NMDA) receptors. *Neuropharmacology* 29:225-230.
- Rao, T.S., Kim, H.S., Lehmann, J., Martin, L.L. and Wood, P.L.** (1990) Selective activation of dopaminergic pathways in the mesocortex by compounds that act at phencyclidine (PCP) binding site: tentative evidence for PCP recognition sites not coupled to N-methyl-D-aspartate (NMDA) receptors. *Neuropharmacology* 29:225-230.
- Lehmann, J.** (1991) Sigma receptors, schizophrenia and cytochrome P-450. *Drug News Persp* 4: 208-210.
- Taylor, C.A. and Lehmann, J.** (1991) Muscarinic receptors on dopaminergic terminals modulating dopamine release. In *Presynaptic regulation of neurotransmitter release*, ed. by J. Feigenbaum and M. Hanani, Freund Publishing House, London, pp. 651-666.
- Mathis, C., Lehmann, J. and Ungerer, A.** (1992) The selective protein kinase C inhibitor, NPC 15437, induces specific deficits in memory retention in mice. *Eur. J. Pharmacology*, 220:107-110.
- Lehmann, J., DeSouza, E.B., Culp, S., and Zaczek, R.** (1992) Regional distribution to recovery of 5HT levels after administration of the "atrophins" MDMA and D,L-Fenfluramine: stereospecificity and comparison with 5,7-dihydroxytryptamine. *Ann. N.Y. Acad. Sci.* 648:291-295.
- Lehmann, J., Robine, V., and Valentino, R.** (1992) Cortical norepinephrine release elicited in situ by N-methyl-D-aspartate (NMDA) receptor stimulation: a microdialysis study. *Brain Res.* 599:171-174.
- Nair, S., Wolfson, E., Lighthall, J., Giannakopoulos, G., Robine, V, Williams, M. and Lehmann, J.** (1992) Contusional head trauma model in rats: I. Uric acid increases reflecting peroxidative injury. *J Neurotrauma* 9: 394.

**Williams J.M., Zigler, L., Nair, S., Wolfson, E., Wahhab, S., Lighthall, J., Mathis, C., Weiss, B., and Lehmann, J.** (1992) Contusional head trauma model in rats: II. Time course of cognitive deficit and pharmacological effects. *J Neurotrauma* 9: 403.

**Lehmann, J.C., Procureur, D., and Wood, P.L.** (1993) 7-Chlorokynurenate prevents NMDA-induced and kainate-induced striatal lesions. *Brain Res.*, 620:1-6.

**Nair, S., Lehmann, J., Williams, J.M. and Weiss, B.** (1993) Traumatic brain injury: an emerging therapeutic indication. *Drug News & Perspective* 6:600-603.

**Lehmann, J.C., and Robine, V.** (1993) Norepinephrine release elicited in cortex via presynaptic NMDA receptors: role of endogenous amino acids. *Naunyn Schmiedeberg's Arch. Pharmacol.*, submitted, 1993.

**Lehmann, J.C., Kapkov, D. and Shank, R.P.** (1993) Kinetics of 2-oxoglutarate uptake by synaptosomes from bovine and rat retina and cerebral cortex and regulation by glutamate and glutamine. *Dev. Neurosci.* 15:330-335.

**Vender JR, Nair SN, Lehmann JC** (1995) Pharmacotherapeutic potential for compounds acting at NMDA receptors: Update 1995. *Exp Opin Invest Drugs* 4: 475-485.

**Hamelin SM and Lehmann JC** (1995) Effects of putative cognition enhancers on the NMDA receptor by [<sup>3</sup>H]MK801 binding, *Eur. J. Pharmacol.* 281: R11-R13.

**Lehmann JC, Jones TR, Mishra PK, Hamelin S, Nair SN** (1996) A novel microdialysis probe designed for clinical use: potential analytical and therapeutic applications. *Acta Neurochir (Wien) [Suppl]* 67:66-69

**Miller RD, Monsul NT, Vender JR, Lehmann JC** (1995) NMDA- and endothelin-1-induced increases in blood-brain barrier permeability quantitated with Lucifer yellow. *J Neurol Sci* 136:37-40.

**Tayag EC, Jeng AY, Savage P, Lehmann JC** (1996) Rat striatum contains pure population of ET<sub>B</sub> receptors. *Eur. J. Pharmacol.* 300:261-265.

**Tayag EC, Nair SN, Wahhab S, Katsetos CD, Lighthall J.W., Lehmann JC,** (1996) Cerebral uric acid increases following experimental traumatic brain injury in rat. *Brain Res* 733:287-291.

**Konobu T, Sessler F, Luo L. and Lehmann JC.** (1998) The hNT human neuronal cell line survives and migrates into rat retina. *Cell Transplantation* 7:549-558.

**Sluck JM, Lin RCS, Katolik LI, Jeng AY, and Lehmann JC** (1999) Endothelin converting enzyme-1-, endothelin-1-, and endothelin-3-like immunoreactivity in the rat brain *Neuroscience* 91:1483-1497.

**Lehmann J.** (2003) Toxicogenomics takes center stage. *Drug News Perspect.* 16:183-186

**Lehmann J. and Kauffman JM** (2005) Statins Including Baycol – Questionable Cholesterol Control, in *Drug Injury: Liability, Analysis and Prevention*, James T. O'Donnell, Ed., Lawyers & Judges Publishing Company, Inc., Tucson (2nd Edition) pp. 469-478.