

CURRICULUM VITAE

NAME: Robert B. Innis, MD, PhD
ADDRESS: 13016 Mimosa Farm Court, Rockville, MD 20850. Tel: 240-453-0776
BORN: June 6, 1952; Newburgh, New York
EDUCATION: B.S., Yale College, 1974, Molec. Biophysics & Biochemistry (1970 - 1974)
M.D., Johns Hopkins School of Medicine, 1978 (1974 - 1978)
Ph.D., Pharmacology, Johns Hopkins School of Medicine, 1981 (1976 - 1980)

CAREER:

- 1980-84 Resident, Dept. of Psychiatry, Yale University (1980 - 1984)
- 1984-90 Assistant Professor, Dept. of Psychiatry, Yale University
- 1988-01 Director of Psychiatric Research, West Haven VAMC
- 1989-01 Director of Neurochemical Brain Imaging Program (Dept. Psychiatry)
- 1990-94 Associate Professor, Yale Dept. Psychiatry
- 1994-01 Appointment with tenure, Yale University
- 1995-96 Associate Professor (secondary), Yale Dept. of Pharmacology
- 1996-01 Professor of Psychiatry (primary) and Pharmacology (secondary), Yale University
- 1999-01 Scientific Director, Yale/VA PET Center
- 2001- Chief, Molecular Imaging Branch, NIMH
- 2008 - Acting Director, Mood and Anxiety Disorders Program, NIMH
- 2008 - Member NIMH Scientific Director's Steering Committee

PROFESSIONAL HONORS:

- 1970 Valedictorian of public high school class, Newburgh Free Academy
- 1974 Phi Beta Kappa, summa cum laude graduate of Yale College
- 1975-80 Recipient of MD/PhD stipend from the Insurance Medical Scientist Scholarship Training Fund
- 1983 Winner of Lustman Research Award, Yale Department of Psychiatry
- 1983 Winner of the Mead Johnson Travel Award to attend American College of Neuropsychopharmacology (ACNP) Meeting in San Juan, Puerto Rico.
- 1985 Diplomat in psychiatry, certified by the American Board of Psychiatry and Neurology, November, 1985 (certificate #27409).
- 1986 Winner of Alfred P. Sloan Research Fellowship
- 1992 Keynote Lecture at Johns Hopkins Conference on PET and SPECT Imaging
- 1994 Co-inventor "Iodinated neuroprobe for mapping monoamine reuptake sites." Patents #5,310,912 and 5,439,666
- 1995 Completed NRC training for Authorized User of radiopharmaceuticals in human subjects (CFR 10, part 35, subpart J)
- 1995 Keynote Lecture on Imaging the Dopamine Transporter, meeting organized by Niels Lassen, MD, PhD; Copenhagen, Denmark
- 1995 Organize Teaching Day on Neuroimaging at American College of Neuropsychopharmacology (ACNP) Meeting in San Juan, Puerto Rico
- 1996 Keynote Lecture at both Fukui Conference (Fukui, Japan) and Brain Function Imaging Conference (Nagoya, Japan)
- 1996- Scientific Advisory Board, National Alliance for Research on Schizophrenia and Depression
- 1997- Deputy Editor of *Biological Psychiatry*
- 1999 Finalist, Frank Berry Award for US government scientists
- 1999 Invited Plenary Lecture on neuroreceptor imaging to joint meeting of the Japanese Societies of Nuclear Medicine and Cerebral Blood Flow & Metabolism
- 2003 Co-inventor "Neuroprobes for mapping monoamine reuptake sites." Patent #6,537,522
- 2003-2006 Adjunct Professor in the Brain Sciences, Swinburne University, Victoria, Australia

- 2003 Janssen Distinguished Professor in Psychiatry for the University of Texas Health Science Center at San Antonio, Texas. September 8-10, 2003.
- 2003 Keynote Lecture, Center of Excellence Symposium on Future of Biomedical Imaging, Tohoku University, Sendai, Japan. November 4-6, 2003.
- 2005 NIH Director's Merit Award for establishing and directing the joint PhD program in neuroscience with the Karolinska Institutet
- 2005 Marie Curie Award for best paper at the European Association of Nuclear Medicine meeting in Istanbul, Turkey (October 2005). See publication #207.
- 2006 Keynote lecture at inauguration of Japan's Molecular Imaging Program (RIKEN & NIRS), March 13, 2006, Tokyo, Japan.
- 2007 FDA Visiting Professor Lecture Series, Jan. 11, 2007 on "PET Radioligand Development for CNS and Oncology"
- 2007 Co-inventor "Radioligands to image amyloid," submitted.
- 2008 Co-inventor "Radioligands to image the function of Permeability-glycoprotein (P-gp)," submitted.
- 2008 Co-director of proposal to evaluate PET imaging of the peripheral benzodiazepine receptor as a cellular marker of inflammation in Alzheimer's disease and atherosclerosis. Biomarkers Consortium of NIH, industry, and FDA.

INSTITUTIONAL ACTIVITIES:

Yale University

- Chairman, Visiting Lectureship Committee, Department of Psychiatry (1987 - 2001)
- PGY-II Curriculum Evaluation Committee (1988-90)
- Yale Animal Care and Use Committee (1990 - 1993)
- Yale-New Haven Hospital Radiation Safety Committee (1991 - 2001)
- Yale Radioactive Drug Research Committee (1991 - 2001)
- VA Animal Care Committee (1990 - 2001)
- VA Radioactive Drug Research Committee (consultant 1991 - 2001)

National Institutes of Health

- Co-Director, NIH / Karolinska Institutet Joint PhD Program in Neuroscience (2001 -)
- NIMH Intramural Science Advisory Committee to Scientific Director (2002 - 2004)
- NIMH IRP Scientist Tenure & Promotion Committee (member 2002-2004 and Chair 2004 -)
- NIH Mouse Imaging Facility Steering Committee (member 2001 -)
- NIH Roadmap Intramural Probe Development Core (2003 -)
- NIMH Technology Advisory Committee (2004 -)
- NIH Radiation Safety Committee (2004 -)
- NIH Advisory Committee to the Office of Research Services (2006)
- NIMH Scientific Director's Steering Committee (2008 -)

OTHER PROFESSIONAL ACTIVITIES:

- Society for Neuroscience since 1976
- Society of Nuclear Medicine since 1990
- American College of Neuropsychopharmacology, member since 1992
- Society of Biological Psychiatry since 1997
- Society of Nuclear Imaging in Drug Development (SNIDD) 1998 - 2006
- National Alliance for Research on Schizophrenia & Depression (NARSAD), Scientific Advisory Board since 1996

EDITORIAL BOARDS

Synapse; 1992 - present

European Journal Nuclear Medicine; 1993 - 2004

Journal of Nuclear Medicine; 1995 - 2003

Psychiatry Research: Neuroimaging, 1996 - 2007

Biological Psychiatry (Deputy Editor) 1997 – 2007; Editorial Board 2008 -

GRANT REVIEW COMMITTEES

NIMH "Clinical Neuroscience and Biological Psychopathology" Member 1995 - 1996.

Ad hoc member of several NIH and VA committees

ORIGINAL ARTICLES:

1. **R.B. Innis**, D.B. Bylund and S.H. Snyder. A simple, sensitive, and specific radioreceptor assay for β -adrenergic antagonist drugs. *Life Sci.*, 23: 2031-2038, 1978.
2. **R.B. Innis** and H. Moses. Thallium poisoning. *Johns Hopkins Medical Journal*, 142: 27-31, 1978.
3. **R.B. Innis**, F.M.A. Correa, G.R. Uhl, B. Schneider, and S.H. Snyder. Cholecystokinin octapeptide-like immunoreactivity: histochemical localization in rat brain. *Proc. Natl. Acad. Sci. USA*, 76: 521-525, 1979.
4. F.M.A. Correa, **R.B. Innis**, G.R. Uhl, and S.H. Snyder. Bradykinin-like immunoreactive neuronal systems localized histochemically in rat brain. *Proc. Natl. Acad. Sci. USA*, 76: 1489-1493, 1979.
5. K.A. Freedberg, **R.B. Innis**, I. Creese, and S.H. Snyder. Antischizophrenic drugs: differential plasma protein binding and therapeutic activity. *Life Sci.*, 24: 2467-2474, 1979.
6. **R.B. Innis**, F.M.A. Correa, and S.H. Snyder. Carazolol, an extremely potent β -adrenergic blocker. *Life Sci.*, 24: 2255-2264, 1979.
7. **R.B. Innis**, L. Tune, R. Rock, R. DePaulo, D.C. U'Prichard, and S.H. Snyder. Tricyclic antidepressant radioreceptor assay. *Eur. J. Pharmacol.*, 58: 473-477, 1979.
8. F.M.A. Correa, **R.B. Innis**, B. Rouot, G.W. Pasternak, and S.H. Snyder. Fluorescent probes of α - and β -adrenergic and opiate receptors: biochemical and histochemical evaluation. *Neurosci. Lett.*, 16: 47-53, 1980.
9. S.H. Snyder, R.F. Bruns, J.W. Daly, and **R.B. Innis**. Multiple neurotransmitter receptors in brain: amines, adenosine and cholecystokinin. *Fed. Proceed.*, 40: 142-146, 1981.
10. **R.B. Innis**, and S.H. Snyder. Cholecystokinin receptor binding in brain and pancreas: regulation by cyclic and acyclic guanine nucleotides. *Eur. J. Pharmacol.*, 65: 123-124, 1980.
11. **R.B. Innis**, and S.H. Snyder. Distinct cholecystokinin receptors in brain and pancreas. *Proc. Natl. Acad. Sci. USA*, 77: 6917-6921, 1980.
12. F.M.A. Correa, **R.B. Innis**, L.D. Hester, and S.H. Snyder. Diffuse enkephalinergic innervation from caudate to globus pallidus. *Neurosci. Lett.*, 25: 63-68, 1981.
13. **R.B. Innis**, D.C. Manning, J.M. Stewart, and S.H. Snyder. ^3H -Bradykinin receptor binding in mammalian tissue membranes. *Proc. Natl. Acad. Sci. USA*, 78: 236-2634, 1981.
14. M.A. Zarbin, J.K. Wamsley, **R.B. Innis**, and M.J. Kuhar. Cholecystokinin receptors: presence and axonal flow in the rat vagus nerve. *Life Sci.*, 29: 697-705, 1981.
15. M.A. Zarbin, **R.B. Innis**, J.K. Wamsley, S.H. Snyder, and M.J. Kuhar. Autoradiographic localization of CCK receptors in guinea pig brain. *Eur. J. Pharmacol.*, 71: 349-350, 1981.
16. M.A. Zarbin, **R.B. Innis**, J.K. Wamsley, S.H. Snyder, and M.J. Kuhar. Autoradiographic localization of cholecystokinin receptors in rodent brain. *J. Neurosci.*, 3: 877-906, 1983.
17. **R.B. Innis**, R. Andrade, and G.K. Aghajanian. Substance K excites dopaminergic and non-dopaminergic neurons in rat substantia nigra. *Brain Res.*, 335: 381-383, 1985.
18. **R.B. Innis**, and G.K. Aghajanian. CCK-containing and nociceptive neurons in rat Edinger-Westphal nucleus. *Brain Res.*, 363: 230-238, 1986.
19. **R.B. Innis**, B.S. Bunney, D.S. Charney, L. Price, W. Glazer, W.G. Sternberg, L. Rubin, and G.R. Heninger. Does the cholecystokinin antagonist proglumide possess antipsychotic activity? *Psychiatry Res.*, 18: 1-7, 1986.
20. **R.B. Innis**, and G.K. Aghajanian. Pertussis toxin blocks autoreceptor-mediated inhibition of dopaminergic neurons in rat substantia nigra. *Brain Res.*, 411: 139-143, 1987.
21. **R.B. Innis**, D.S. Charney, G.R. Heninger. Differential ^3H -imipramine platelet binding in patients with panic disorder and depression. *Psychiatry Res.*, 21: 33-41, 1987.

22. M.F. Kritzer, **R.B. Innis**, and P.S. Goldman-Rakic. Regional distribution of cholecystokinin receptors in primate cerebral cortex determined by in vitro receptor autoradiography. *J. Comp. Neurol.*, 263: 418-435, 1987.
23. **R.B. Innis**, and G.K. Aghajanian. Pertussis toxin blocks 5HT_{1A} and GABA_B receptor-mediated inhibition of serotonergic neurons. *Eur. J. Pharmacol.*, 143: 195-204, 1987.
24. **R.B. Innis**, E.J. Nestler, and G.K. Aghajanian. Evidence for G-protein mediation of serotonin- and GABA_B-induced hyperpolarization of rat dorsal raphe neurons. *Brain Res.*, 459: 27-36, 1988.
25. M.F. Kritzer, **R.B. Innis**, and P.S. Goldman-Rakic. Regional distribution of cholecystokinin receptors in macaque medial temporal lobe determined by in vitro receptor autoradiography. *J. Comp. Neurol.*, 276: 219-230, 1988.
26. D.S. Charney, **R.B. Innis**, R.S. Duman, S.W. Woods, and G.R. Heninger. Platelet alpha-2 receptor binding and adenylate cyclase activity in panic disorder. *Psychopharmacology*, 98: 102-107, 1989.
27. M.S. Lidow, P.S. Goldman-Rakic, P. Rakic, and **R.B. Innis**. Dopamine D2 receptors in cerebral cortex and striatum of rat and monkey: distribution and pharmacological characterization with [³H]raclopride. *Proc. Natl. Acad. Sci. USA*, 86: 6412-6416, 1989.
28. A.Y. Deutch, B. Moghaddam, **R.B. Innis**, J.H. Krystal, G.K. Aghajanian, B.S. Bunney, and D.S. Charney. Mechanisms of action of atypical antipsychotic drugs: implications for novel therapeutic strategies for schizophrenia. *Schizophrenia Res.*, 4: 121-156, 1991.
29. M.F. Kritzer, **R.B. Innis**, and P.S. Goldman-Rakic. Regional distribution of cholecystokinin binding in macaque basal ganglia determined by in vitro receptor autoradiography. *Neuroscience*, 38: 81-92, 1990.
30. E.W. Johnson, S.W. Woods, S. Zoghbi, R. Baldwin, and **R.B. Innis**. Characterization of the benzodiazepine radioligand ¹²⁵I-Ro16-0154: potential probe for SPECT brain imaging. *Life Sci.*, 47: 1535-1546, 1990.
31. **R. Innis**, S. Zoghbi, E. Johnson, S. Woods, M. Al-Tikriti, R. Baldwin, J. Seibyl, R. Malison, G. Zubal, D. Charney, G. Heninger, P. Hoffer. SPECT imaging of the benzodiazepine receptor in non-human primate brain with [¹²³I]Ro 16-0154. *Eur. J. Pharmacol.*, 193: 249-252, 1991.
32. **R.B. Innis**, M.S. Al-Tikriti, S.S. Zoghbi, R.M. Baldwin, E.H. Sybirska, M.A. Laruelle, R.T. Malison, J.P. Seibyl, R.C. Zimmermann, E.W. Johnson, E.O. Smith, D.S. Charney, G.R. Heninger, S.W. Woods, and P.B. Hoffer. SPECT Imaging of the benzodiazepine receptor: feasibility of in vivo potency measurements from stepwise displacements curves. *J. Nucl. Med.*, 32: 1754-1761, 1991.
33. E.W. Johnson, E. Sybirska, M. Al-Tikriti, and **R.B. Innis**. Calibration of [¹²³I] labeled tissue standards for autoradiographic studies. *Applied Radiation and Isotopes*, 42: 1199-1201, 1991.
34. J.L. Neumeyer, S. Wang, R.A. Milius, R.M. Baldwin, Y. Zea-Ponce, P.B. Hoffer, E. Sybirska, M. Al-Tikriti, D.S. Charney, R.T. Malison, M.A. Laruelle, and **R.B. Innis**. [¹²³I]-2-β-Carbomethoxy-3-β-(4-iodophenyl)-tropane (β-CIT): High Affinity SPECT Radiotracer of Monoamine Reuptake Sites in Brain. *J. Med. Chem.*, 34: 3144-3146, 1991.
35. R.M. Kessler, M.S. Ansari, D.E. Schmidt, T. de Paulis, J.A. Clanton, **R. Innis**, M. Al-Tikriti, R.G. Manning, D. Gillespie. High affinity dopamine D2 receptor radioligands. 2. [¹²⁵I]epidepride, a potent and specific radioligand for the characterization of striatal and extrastriatal dopamine D2 receptors. *Life Sci.*, 49: 617-628, 1991.
36. M. Al-Tikriti, R. Kessler, R. Roth, and **R. Innis**. Autoradiographic localization of dopamine D1 and D2 receptors in rat cerebral cortex following unilateral neurotoxic lesions. *Brain Res.*, 575: 39-46, 1992.
37. E.W. Johnson, N.C. de Lanerolle, J.H. Kim, Sundaresan, D.D. Spencer, R. Mattson, S., Zoghbi, R. Baldwin, P. Hoffer, J. Seibyl, and **R.B. Innis**. "Central" and "peripheral" benzodiazepine receptors: opposite changes in human epileptogenic tissue. *Neurology*, 42: 811-815, 1992.

38. **R.B. Innis**, R.T. Malison, M. Al-Tikriti, E.H. Sybiraska, S. Zoghbi, R.M. Baldwin, P.B. Hoffer, R.H. Roth. Amphetamine-mediated dopamine release competes for [¹²³I]IBZM binding to dopamine D2 receptors in non-human primate brain. *Synapse*, 10: 177-184, 1992.
39. S.W. Woods, J.P. Seibyl, A.W. Goddard, H.M. Dey, S.S. Zoghbi, M. Germine, R.M. Baldwin, E.O. Smith, D.S. Charney, G.R. Heninger, P.B. Hoffer, and **R.B. Innis**. Dynamic SPECT imaging of the benzodiazepine receptor in healthy human subjects with [¹²³I]Ro 16-0154. *Psychiatry Res. Neuroimaging*, 47: 67-77, 1992.
40. E. Sybiraska, M. Al-Tikriti, S.S. Zoghbi, R.M. Baldwin, E.W. Johnson, and **R.B. Innis**. SPECT imaging of the benzodiazepine receptor: autoradiographic comparison of receptor density and radioligand distribution. *Synapse*, 12: 119-128, 1992.
41. **R. Innis**, R. Baldwin, E. Sybiraska, Y. Zea, M. Laruelle, M. Al-Tikriti, D. Charney, S. Zoghbi, E. Smith, G. Wisniewski, P. Hoffer, S. Wang, R. Milius, and J. Neumeyer. SPECT imaging of monoamine reuptake sites in primate brain with [¹²³I]CIT. *Eur. J. Pharmacol.*, 200: 369-370, 1991.
42. S. Zoghbi, R.M. Baldwin, J.P. Seibyl, M. Al-Tikriti, Y. Zea-Ponce, M. Laruelle, E. Sybiraska, S.W. Woods, A. Goddard, R.T. Malison, R. Zimmermann, D. Charney, E.O. Smith, P.B. Hoffer, and **R.B. Innis**. Pharmacokinetics of the SPECT benzodiazepine receptor radioligand [¹²³I]iomazenil in human and non-human primates. *Nucl. Med. Biol.*, 19: 881-888, 1992.
43. J.P. Seibyl, S.W. Woods, A.W. Goddard, H.M. Dey, S.S. Zoghbi, R.M. Baldwin, I.G. Zubal, M. Germine, E.O. Smith, G.R. Heninger, D.S. Charney, H.F. Kung, A. Alavi, P.B. Hoffer, and **R.B. Innis**. Dynamic SPECT and whole body imaging of dopamine D2 receptors in human subjects with [¹²³I]IBZM. *J. Nucl. Med.*, 33: 1964-1971, 1992.
44. M. Laruelle, R.M. Baldwin, R.T. Malison, Y. Zea-Ponce, S.S. Zoghbi, M.S. Al-Tikriti, E.H. Sybiraska, R.C. Zimmermann, G. Wisniewski, J.L. Neumeyer, R.A. Milius, S. Wang, E.O. Smith, D.S. Charney, R.H. Roth, P.B. Hoffer, and **R.B. Innis**. SPECT imaging of dopamine and serotonin transporters with [¹²³I]CIT: Pharmacological characterization of brain uptake in nonhuman primates. *Synapse*, 13: 295-309, 1993.
45. R.M. Baldwin, Y. Zea-Ponce, S.S. Zoghbi, M. Laruelle, M.S. Al-Tikriti, E.H. Sybiraska, R.T. Malison, J.L. Neumeyer, R.A. Milius, S. Wang, M. Stabin, E.O. Smith, D.S. Charney, P.B. Hoffer, and **R.B. Innis**. Evaluation of the monoamine uptake site ligand [¹²³I] methyl 3β-(4-iodophenyl)tropane-2β-carboxylate ([¹²³I]β-CIT) in nonhuman primates: pharmacokinetics, biodistribution, and SPECT brain imaging coregistered with MRI. *Nucl. Med. Biol. - Int. J. Rad. App. B.* 20: 597-606, 1993.
46. M. Laruelle, A. Abi-Dargham, M.S. Al-Tikriti, Y. Zea-Ponce, S.S. Zoghbi, D.S. Charney, J. Price, J.J. Frost, P.B. Hoffer, R.M. Baldwin, **R.B. Innis**. SPECT measurement of benzodiazepine receptor number and affinity in primate brain: a constant infusion paradigm with [¹²³I]iomazenil. *Eur. J. Pharmacol.*, 230: 119-123, 1993.
47. S.C. Wall, **R.B. Innis**, G. Rudnick. Binding of the cocaine analog [¹²⁵I]-2β-carbomethoxy-3β-(4-iodophenyl) tropane (β-CIT) to serotonin and dopamine transporters: different ionic requirements for substrate and β-CIT binding. *Mol. Pharmacol.* 43: 264-270, 1993.
48. R.T. Malison, E.G. Miller, R. Greene, P.B. Hoffer, G. McCarthy, and **R.B. Innis**. Computer-assisted coregistration of multislice SPECT and MR images by fixed external fiducials. *J. Comput. Assist. Tomogr.*, 17: 952-960, 1993.
49. E.H. Sybiraska, J.P. Seibyl, D. Bremner, R.M. Baldwin, M.S. Al-Tikriti, Y. Zea-Ponce, S. Zoghbi, R.T. Malison, C. Bradberry, M. Dearing, A.W. Goddard, S.W. Woods, P.B. Hoffer, D.S. Charney, and **R.B. Innis**. [¹²³I]Iomazenil SPECT imaging demonstrates significant benzodiazepine receptor reserve in human and nonhuman primate brain. *Neuropharmacol.*, 32: 671-680, 1993.
50. Y. Zea-Ponce, R.M. Baldwin, S.S. Zoghbi, and **R.B. Innis**. Formation of [¹²³I]1-iodobutane in labeling [¹²³I]iomazenil by iododestannylation: implications for the reaction mechanism. *Appl. Radiat. Isot.* 45: 63-68, 1993.
51. S. Wang, Y. Gao, M.A. Laruelle, R.M. Baldwin, B.E. Scanley, **R.B. Innis**, and J.L. Neumeyer.

- Enantioselectivity of cocaine recognition sites: binding of (1S)- and (1R)-2 β -carbomethoxy-3 β -(4-iodophenyl) tropane (β -CIT) to monoamine transporters. *J. Med. Chem.*, 36: 1914-1917, 1993.
52. J.D. Bremner, T.M. Scott, R.C. Delaney, S.M. Southwick, J.W. Mason, D.R. Johnson, **R.B. Innis**, G. McCarthy, D.S. Charney. Deficits in short-term memory in posttraumatic stress disorder. *Am. J. Psychiatry*, 150: 1015-1019, 1993.
 53. P.J. Kontur, M. Al-Tikriti, **R.B. Innis**, and R.H. Roth. Postmortem stability of monoamines and receptor binding in rat brain. *J. Neurochem.*, 62: 282-290, 1994.
 54. M. Laruelle, S.S. Giddings, Y. Zea-Ponce, S.S. Zoghbi, D.S. Charney, J.L. Neumeyer, R.M. Baldwin, and **R.B. Innis**. *In vitro* binding of [¹²⁵I] β -CIT to dopamine and serotonin transporters under "physiological" conditions. *J. Neurochem.*, 62: 978-986, 1994.
 55. **R.B. Innis**, J.P. Seibyl, E. Scanley, M. Laruelle, A. Abi-Dargham, E. Wallace, R.M. Baldwin, Y. Zea-Ponce, S. Zoghbi, S. Wang, Y. Gao, J.L. Neumeyer, D.S. Charney, P.B. Hoffer, and K. Marek. Single photon emission computed tomographic imaging demonstrates loss of striatal dopamine transporters in Parkinson disease. *Proc. Natl. Acad. Sci. USA*, 90: 11,965-11,969, 1993.
 56. R.M. Baldwin, Y. Zea-Ponce, S.S. Zoghbi, M.S. Al-Tikriti, J.P. Seibyl, E.H. Sybirska, R.T. Malison, M. Laruelle, D.S. Charney, P.B. Hoffer, and **R.B. Innis**. Pharmacokinetics of three radioiodinated high affinity dopamine D2 receptor ligands ([¹²³I]IBF, Epidepride, and 2'-ISP) in nonhuman primates. *Nucl. Med. Biol.*, 21(7): 969-976, 1994.
 57. M. Laruelle, R.M. Baldwin, Z. Rattner, M. Al-Tikriti, Y. Zea-Ponce, S.S. Zoghbi, D.S. Charney, J.C. Price, J.J. Frost, P.B. Hoffer, and **R.B. Innis**. SPECT quantification of [¹²³I]iomazenil binding to benzodiazepine receptors in nonhuman primates. I. Kinetic analysis of single bolus experiments. *J. Cereb. Blood Flow Metab.*, 14: 439-452, 1994.
 58. M. Laruelle, A. Abi-Dargham, M. Al-Tikriti, R.M. Baldwin, Y. Zea-Ponce, S.S. Zoghbi, D.S. Charney, P.B. Hoffer, and **R.B. Innis**. SPECT quantification of [¹²³I]iomazenil binding to benzodiazepine receptors in nonhuman primates. II. Equilibrium analysis of constant infusion experiments and correlation with *in vitro* parameters. *J. Cereb. Blood Flow Metab.*, 14: 453-465, 1994.
 59. J.P. Seibyl, E. Wallace, E.O. Smith, R.M. Baldwin, S.S. Zoghbi, Y. Zea-Ponce, Y. Gao, W.Y. Zhang, J.L. Neumeyer, I.G. Zubal, M. Stabin, D.S. Charney, P.B. Hoffer, and **R.B. Innis**. Whole body biodistribution, radiation absorbed dose, and brain SPECT imaging with [¹²³I] β -CIT in healthy human subjects. *J. Nucl. Med.*, 35: 764-770, 1994.
 60. H.M. Dey, J.P. Seibyl, J.B. Stubbs, S.S. Zoghbi, R.M. Baldwin, E.O. Smith, I.G. Zubal, C. Olson, D.S. Charney, P.B. Hoffer, and **R.B. Innis**. Human biodistribution and dosimetry of the SPECT benzodiazepine receptor radioligand [¹²³I]iomazenil. *J. Nucl. Med.*, 35: 399-404, 1994.
 61. B.E. Scanley, R.M. Baldwin, M.S. Al-Tikriti, M. Laruelle, Y. Zea-Ponce, S. Zoghbi, S.S. Giddings, D.S. Charney, P.B. Hoffer, S. Wang, J.L. Gao, J.L. Neumeyer, and **R.B. Innis**. Active and inactive enantiomers of β -CIT: comparison using homogenate binding and SPECT imaging. *Mol. Pharmacol.*, 45: 136-141, 1994.
 62. A. Abi-Dargham, M. Laruelle, J. Seibyl, Z. Rattner, R.M. Baldwin, S.S. Zoghbi, Y. Zea-Ponce, D. Bremner, T. Hyde, D.S. Charney, P.B. Hoffer, and **R.B. Innis**. SPECT measurement of benzodiazepine receptors in human brain with [¹²³I]iomazenil: kinetic and equilibrium paradigms. *J. Nucl. Med.*, 35: 228-238, 1994.
 63. M.S. Al-Tikriti, R.M. Baldwin, Y. Zea-Ponce, E. Sybirska, S.S. Zoghbi, M. Laruelle, R.T. Malison, H.F. Kung, R.M. Kessler, I. Nakatsuka, D.S. Charney, P.B. Hoffer, and **R.B. Innis**. Comparison of three high affinity SPECT radiotracers for the dopamine D2 receptor. *Nucl. Med. Biol.*, 21: 179-188, 1994.
 64. M.S. Al-Tikriti, H.M. Dey, S.S. Zoghbi, R.M. Baldwin, Y. Zea-Ponce, and **R.B. Innis**. Dual isotopic autoradiographic measurement of regional blood flow and benzodiazepine receptor availability following unilateral middle cerebral artery occlusion. *Eur. J. Nucl. Med.*, 21: 196-202, 1994.

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273. REVIEWS AND BOOK CHAPTERS:

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GRANTS & CONTRACTS 2001: AT TIME OF DEPARTURE FROM YALE UNIVERSITY

ACTIVE

- "Serotonin 5-HT_{2A} Receptors in Depression." NIMH R01 MH58620. PI: R. Innis. Annual direct costs: \$216,000. Total period (direct & indirect): \$818,343; Expected funded period: 1/1/00 – 12/31/02.
- "Neuroimaging of Dopamine Transporters in Parkinson's Disease." VA Merit Review. PI: R. Innis. Annual direct costs: \$129,900. Total period (direct & indirect): \$447,700; 10/1/99- 8/31/02.
- "VA Schizophrenia Research Center," PI: R. Innis. Annual direct costs: \$400,000. Total period (direct & indirect): \$1,700,000; 1/1/00-12/31/04.
- "Neuroimaging Sciences Training Program." NINDS T32 NS07416. PI: R. Innis. This institutional training grant will support 4 postdoctoral fellows per year for up to 2-3 years in areas of methodology and research imaging using nuclear magnetic resonance and radiotracer techniques. First year direct costs approximately \$156,000. Total period (direct & indirect): \$890,630; 7/1/97-6/30/02.
- "SPECT Benzodiazepine Receptor and MR Imaging in PTSD." VA Research Service. PI: R. Innis. Annual direct costs: \$100,000. Total period (direct & indirect): \$300,000; 4/1/99- 3/31/02.
- "Neuronal Mechanisms and Treatment Response in Depression." VA Research Enhancement Award Program (REAP). PI: R. Innis. Annual direct costs: \$300,000. Total period (direct & indirect): \$1,600,000; 1/1/99-12/31/04.
- "Mental Health Clinical Research Center." NIMH P30-MH30929. PI: G. Heninger. Dr. Innis directs the Laboratory of Neuroimaging on this competitive renewal. Annual direct costs for Laboratory: \$100,000. Total period (direct & indirect): \$490,500; 9/1/98-8/31/01.
- "Transdisciplinary Tobacco Use Research Center." NIDA & NCI P50 DA84733. PI: S. O'Malley. Dr. Innis directs a project entitled "Imaging of Serotonergic and Cholinergic Markers in Smokers." Project annual direct: \$220,000. Project total period (direct & indirect): \$1,520,000; 10/1/99-9/30/04.
- "Clinical Neuroscience Division for the National Center for Post-Traumatic Stress Disorder." VA. PI: J. Krystal. Annual direct costs approx. \$1.2M; total period (direct & indirect) ~\$9M. Dr. Innis is Director of the Laboratory of Brain Imaging, annual direct costs, approx. \$140,000; 5/1/89-without term;
- "Epilepsy Research Center Program Project." NINDS P50 NS06208. PI: R. Mattson. Director of Imaging Project: R. Innis. Annual direct costs for imaging: \$15,000. Total period (direct & indirect): \$122,625; 9/1/97-8/31/02.
- "VA Alcohol Research Center." Co-PI's: B. Rounsaville and J. Krystal. As Investigator, Dr. Innis directs the brain imaging studies, with an annual budget of \$20,000. Total period (direct & indirect) \$100,000; 2/1/99-1/31/04.
- "Mental Illness: Research, Education, and Clinical Center" (MIRECC). VA. PI: B. Rounsaville. Dr. Innis directs a SPECT imaging project of dopaminergic transmission in dual diagnosis (cocaine addiction and schizophrenia). Project annual direct costs: \$95,000. Total period (direct & indirect): \$475,000; 9/1/97 - 8/31/02.
- "Striatal and Extrastriatal Dopaminergic Neurotransmission in Schizophrenia." NIMH P50 MH44866. This project is directed by Dr. Innis and is part of the CNMD (Center for Neuroscience of Mental Disorders; PI: P.Goldman-Rakic). Project annual direct costs: \$100,000. Project total period (direct & indirect): \$817,500; 9/1/98 - 8/31/03.
- "Center for the Study of Borderline Personality Disorder." PI: T. McGlashan. Source: Swiss Foundation. Dr. Innis directs the PET neuroimaging Core. Annual direct costs for Core: ~\$100,000. 1/1/00 – 1/1/05.
- "Iodinated Imaging Agents for the Serotonin Transporter." Phase I SBIR (Small Business Innovative Research) application from RadioTracer, Inc. to NIMH. PI: R. Baldwin. Dr. Innis will direct the subcontract to Yale. Subcontract (6 mos.) direct costs: \$10,716. Total period (direct & indirect): \$15,548; 9/1/99 – 3/31/00.
- "Technetium Radiotracers for the Dopamine Transporter." Phase II SBIR (Small Business Innovative Research) application from Department of Energy to RadioTracer, Inc. PI: R. Baldwin. Dr. Innis is President of RadioTracer, Inc. and will also direct the subcontract to Yale. Subcontract annual direct costs: \$13,280. Total period (direct and indirect): \$38,514; 10/1/99-9/30/01.