

BIOGRAPHICAL SKETCH

Give the following information for the key personnel and consultants and collaborators. Begin with the principal investigator/program director. Photocopy this page for each person.

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| NAME Andrew B. Norman, Ph.D. | POSITION TITLE Associate Professor |
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EDUCATION (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

| INSTITUTION AND LOCATION | DEGREE | YEAR CONFERRED | FIELD OF STUDY |
|-------------------------------------|--------------|----------------|----------------|
| King's College, London, England | B.SC.(Hons) | 1980 | Pharmacology |
| King's College, London, England | Ph.D. | 1983 | Pharmacology |
| University of California, San Diego | Postdoctoral | 1983-1986 | Neuroscience |

RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list, in chronological order, previous employment, experience, and honors. Key personnel include the principal investigator and any other individuals who participate in the scientific development or execution of the project. Key personnel typically will include all individuals with doctoral or other professional degrees, but in some projects will include individuals at the masters or baccalaureate level provided they contribute in a substantive way to the scientific development or execution of the project. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. DO NOT EXCEED TWO PAGES.

Present: Associate Professor, Departments of Psychiatry, Anatomy and Physiology, University of Cincinnati College of Medicine

PERTINENT PUBLICATIONS (selected from a total of 78 papers/reviews and 100 abstracts)

Norman, AB, Lu, SY, Klug, JM and Norgren, RB. Sensitization of c-fos expression in rat striatum following multiple challenges with d-amphetamine. Brain Research, 603:125-128, 1993.

Sanberg, P.R., Emerich, D.F., El-Etri, M.M., Shipley, M.T., Zanol, M.D., Cahill, D.W. and Norman, A.B. Nicotine potentiation of haloperidol-induced catalepsy: Striatal mechanisms. Pharmacology Biochemistry and Behavior, 46:303-308, 1993.

McConville, BJ, Sanberg, PR, Fogelson, MH, King, J, Cirino, P, Parker, KW and Norman, AB. The effects of nicotine plus haloperidol compared to nicotine only and placebo nicotine only in reducing tic severity and frequency in Tourette's Disorder. Biological Psychiatry, 31:832-840, 1992.

McConville, B.J., Fogelson, M.H. and Norman, A.B. Nicotine potentiation of haloperidol in reducing tic frequency in Tourette's disorder. Pharmacy Digest, 2:13-14, 1992.

Emerich, DF, Zanol, MD, Norman, AB, McConville, BJ and Sanberg, PR. Nicotine potentiates haloperidol-induced catalepsy and locomotor hypoactivity. Pharmacology, Biochemistry and Behavior, 38:875-880, 1991.

Emerich, D.F., Norman, A.B. and Sanberg, P.R. Nicotine potentiates the behavioral effects of haloperidol. Psychopharmacology Bulletin, 27: 385-390, 1991.

McConville, B.J., Fogelson, H.M., Norman, A.B., Klykylo, W.M., Manderscheid, P.Z., Parker, K.W. and Sanberg, P.R. Nicotine potentiates the effects of haloperidol in reducing tic frequency in Tourette's disorder. American Journal of Psychiatry, 148:793-794, 1991.

Sanberg, P.R., McConville, B.J., Fogelson, H.M., Manderscheid, P.Z., Parker, K.W., Blythe, M.M., Klykylo, W.M. and Norman, A.B. Nicotine potentiates the effects of haloperidol in animals and patients with Tourette syndrome. Biomedicine and Pharmacotherapy, 43, 19-23, 1989.

Moss, D.E., Manderscheid, P.Z., Montgomery, S.P., Norman, A.B. and Sanberg, P.R. Nicotine and cannabinoids as adjuncts to neuroleptics in the treatment of Tourette Syndrome and other motor disorders. Life Sciences, 44:1521-1525, 1989.

Sanberg, P.R., Fogelson, H.M., Manderscheid, P.Z., Parker, K.W., Norman, A.B. and McConville, B.J. Nicotine gum and haloperidol improve Tourettes syndrome. Lancet, 1:592, 1988.

OTHER RELEVANT PUBLICATIONS

Bertram, K.J., Shipley, M.T., Ennis, M., Sanberg, P.R. and Norman, A.B. Permeability of the blood brain barrier within rat intrastriatal transplants assessed by simultaneous systemic injection of horseradish peroxidase and Evans blue dye. Experimental Neurology, 127: 245-252, 1994.

Norman, A.B., Khosla, U.M., Klug, J.M. and Thompson, H.R. Autoradiographic measurement of tyrosine hydroxylase immunoreactivity in rat brain using enhanced chemiluminescence: A general method for combined quantitative and cytochemical detection. Brain Research, 638:352-356, 1994.

Lu, S.Y. and Norman, A.B. Neurotransmitter receptors in fetal tissue transplants: Expression and functional significance. Journal of Neural Transplantation and Plasticity, 4:215-226, 1993.

Lu, S.Y., Pixley, S.K., Emerich, D., Lehman, M.N. and Norman, A.B. Effect of fetal striatal and astrocyte transplants into unilateral excitotoxin-lesioned striatum. Journal of Neural Transplantation and Plasticity, 4:279-287, 1993.

- Klug, J.M. and Norman, A.B. Long-term sensitization of apomorphine-induced rotation behavior in rats with dopamine deafferentation or excitotoxin lesions of the striatum. Pharmacology Biochemistry and Behavior, 46:397-403, 1993.
- Norman, A.B., Thomas, S.R., Pratt, R.G., Lu, S.Y. and Norgren, R.B. Magnetic resonance imaging of neural transplants in rat brain using a superparamagnetic contrast agent. Brain Research, 594:279-283, 1992.
- Norman, A.B., Norgren, R.B., Wyatt, L.M., Hildebrand, J.P. and Sanberg, P.R. The direction of apomorphine-induced rotation behavior is dependent on the location of excitotoxin lesions in the rat basal ganglia. Brain Research, 569:169-172, 1992.
- Norman, A.B., Ford, L.M. and Sanberg, P.R. Differential loss of neurochemical markers following quinolinic acid-induced lesions of rat striatum. Experimental Neurology, 114:132-135, 1991.
- Jinnah, H.A., Norman, A.B. and Creese, I. The effects of ions, guanine nucleotides and N-ethylmaleimide on the proportions of pirenzepine-defined M₁ and M₂ muscarinic acetylcholine receptors in rat brain. Life Science Advances Neurochemistry, 10:29-41, 1991.
- Norman, A.B., Bertram, K.J., Thomas, S.R., Pratt, R.G., Samarutunga, R.C. and Sanberg, P.R. Magnetic resonance imaging of rat brain following in vivo disruption of the cerebral vasculature. Brain Research Bulletin, 26:593-597, 1991.
- Lu, S.Y., Shipley, M.T., Norman, A.B. and Sanberg, P.R. Striatal, ventral mesencephalic and cortical transplants into the intact striatum: A neuroanatomical study. Experimental Neurology, 113:109-130, 1991.
- Norman, A.B., Wyatt, L.M., Hildebrand, J.P., Kolmonpunporna, M., Moody, C.A., Lehman, M.N. and Sanberg, P.R. Sensitization of rotation behavior in rats with unilateral 6-hydroxydopamine or kainic acid-induced striatal lesions. Pharmacology, Biochemistry and Behavior, 37:755-759, 1990.
- Norman, A.B., Ford, L.M., Kolmonpunporna, M. and Sanberg, P.R. Chronic treatment with MK801 increases the quinolinic acid-induced loss of D₁ dopamine receptors in rat striatum. European Journal of Pharmacology, 176:363-366, 1990.
- Norman, A.B., Thomas, S.R., Pratt, R.G., Samarutunga, R.C. and Sanberg, P.R. T₁ and T₂ weighted magnetic resonance imaging of excitotoxin lesions and neural transplants in rat brain in vivo. Experimental Neurology, 109:164-170, 1990.
- Norman, A.B., Giordano, M. and Sanberg, P.R. Fetal striatal tissue grafts into excitotoxin-lesioned striatum: Pharmacological and behavioral aspects. Pharmacology Biochemistry and Behavior, 34:139-147, 1989.
- Norman, A.B., Thomas, S.R., Pratt, R.G., Samarutunga, R.C. and Sanberg, P.R. Magnetic resonance imaging of rat brain following kainic acid lesions and fetal striatal tissue transplants. Brain Research, 483:188-191, 1989.
- Norman, A.B., Thomas, S.R., Pratt, R.G., Samarutunga, R.C. and Sanberg, P.R. A magnetic resonance imaging contrast agent differentiates between the vascular properties of fetal striatal tissue transplants and gliomas in rat brain in vivo. Brain Research, 503:156-159, 1989.
- Norman, A.B., Eubanks, J.H. and Creese, I. Irreversible and quaternary muscarinic antagonists discriminate multiple muscarinic receptor binding sites in rat brain. Journal of Pharmacology and Experimental Therapeutics, 248:1116-1122, 1989.
- Norman, A.B., Nash, D.R. and Sanberg, P.R. [³H]Lysergic acid diethylamide (LSD): Differential agonist and antagonist binding properties at 5-HT receptor subtypes in rat brain. Neurochemistry International, 14:497-504, 1989.
- Norman, A.B., Wachendorf, T.J. and Sanberg, P.R. Differential effect of N-ethoxycarbonyl-2-ethoxy-1, 2-dihydroquinoline (EEDQ) on [³H]SCH23390 and [³H]forskolin binding in rat striatum. Life Sciences, 44:831-836, 1989.
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