

Charles David Nichols

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Education:

B.S. (With Honors): Department of Biological Sciences, Purdue University, West Lafayette, IN. Undergraduate Mentor: Dr. Barry Wanner (1989).

Ph.D.: Department of Biological Sciences, Carnegie Mellon University, Pittsburgh, PA. Dissertation Advisor: Dr. John A. Pollock (1997).

Post-Doctoral Fellowship: Department of Pharmacology, Vanderbilt University, Nashville, TN. Mentor: Dr. Elaine Sanders-Bush (1997-2002).

Academic, Professional, and Research Appointments:

Assistant Professor, Department of Pharmacology and Experimental Therapeutics, LSU Health Sciences Center, New Orleans, LA. (2004-present)

Visiting Scholar: Purdue University, Department of Molecular Pharmacology and Medicinal Chemistry (9/2005 – 3/2006; Post Hurricane Katrina)

Research Assistant Professor, Department of Pharmacology, Vanderbilt University, Nashville, TN. (2002-2004)

Membership in Professional Organizations:

Alpha Chi Sigma
American Society for Pharmacology and Experimental Therapeutics
Genetics Society of America
Society for Neuroscience

Awards and Honors:

NRSA Individual Postdoctoral Fellowship, Vanderbilt University (2000-2002)
Graduate Travel Award, Carnegie Mellon University (1996)
Purdue University - Graduated with Honors (1989)
Purdue University - Distinguished Senior
Purdue University - Dean's List
Purdue University - Leath Memorial Scholarship

Inventions and Patents:

Provisional U.S. patent 61,079,576 (July 10, 2008): Serotonin 5-HT_{2A} Receptor Activation Suppresses TNF-alpha-induced Inflammation. U.S. Patent filed July 10, 2009.

Journal Publications (*all peer reviewed*):

In Press:

Nichols C.D. (2009). Serotonin 5-HT_{2A} receptor function as an underlying factor contributing to both cardiovascular and psychiatric disease. *Cardiovascular Psychiatry and Neurology*.

Nichols C.D. and B.L. Roth (2009). Engineered G-protein coupled receptors as a tool to investigate biological processes. *Frontiers in Molecular Neuroscience*.

Published:

Johnson, O. J. Becnel, and **C.D. Nichols** (2009). Serotonin 5-HT_{1A} and 5-HT₂ receptors modulate different aspects of aggressive behaviors in *Drosophila*. *Neuroscience*. 4:1292-1300.

Duvernay M.T., Dong C., Zhang X., Zhou F., **Nichols C.D.**, G. Wu (2009). Anterograde trafficking of G protein-coupled receptors: function of the C-terminal F(X)6LL motif in export from the endoplasmic reticulum. *Molecular Pharmacology*. 75:751-61.

Yu, B., J. Becnel, M. Zerfaoui, R. Rohatgi, H. Boulares, **C. D. Nichols** (2008) Serotonin 5-HT_{2A} receptor activation suppresses TNF- α -induced inflammation with extraordinary potency. *Journal of Pharmacology and Experimental Therapeutics*. 327(2):316-23. *Featured article with commentary*

Nichols, D.E. and **C.D. Nichols** (2008). Serotonin Receptors. *Chemical Reviews*. 108(5):1614-1641.

Zerfaoui, M., Y. Suzuki, A.S. Naura, C.P.Hans, **C.D. Nichols**, A.H. Boulares (2008). Nuclear translocation of p65 NF- κ B is sufficient for VCAM-1, but not ICAM-1, expression in TNF-stimulated smooth muscle cells: Differential requirement for PARP-1 expression and interaction. *Cellular Signaling*, 20:186-194.

Nichols, C.D. (2007). 5HT₂ receptors in *Drosophila* are expressed in the brain and modulate aspects of circadian behaviors. *Developmental Neurobiology*. 67:752-763.

Marvanova, M, and **C.D. Nichols**. (2007). Identification of neuroprotective compounds of *C. elegans* dopaminergic neurons against 6-OHDA. *Journal of Molecular Neurobiology*. 31:131-141.

Nichols, C.D. (2006). *Drosophila melanogaster* neurobiology, neuropharmacology, and how the fly can inform CNS drug discovery. 2006. *Pharmacology and Therapeutics*. 112(3):677-700.

Behan, K.J., Fair, J., Sing, S., Bogwitz, M., Perry, T., Grubor, V., Cunningham, F., **Nichols, C.D.**, Cheung, T., Batterham, P., and J.A. Pollock. (2005). Alternative splicing removes an Ets interaction domain from Lozenge during *Drosophila* eye development. *Development Genes and Evolution*. 215(8):423-35.

Nichols, C.D., and E. Sanders-Bush (2004). Molecular genetic responses to lysergic acid diethylamide include transcriptional activation of MAP Kinase Phosphatase-1, C/EBP-b, and ILAD-1, a novel gene with homology to arrestins. *Journal of Neurochemistry*, Aug;90(3):576-84.

Nichols, C.D., E.E. Garcia, and E. Sanders-Bush (2003). Dynamic changes in prefrontal cortex gene expression following lysergic acid diethylamide administration. *Molecular Brain Research*, 111: 182-188.

- Nichols, C.D.**, J. Ronesi, W. Pratt, and E. Sanders-Bush (2002). Hallucinogens and *Drosophila*: Linking serotonin receptor activation to behavior. *Neuroscience*, 115: 979-984.
- Nichols, C.D.** and E. Sanders-Bush (2002). A single dose of lysergic acid diethylamide influences gene expression patterns within the mammalian brain. *Neuropsychopharmacology*, 26(5): 634-42.
- Behan, K. J., **C.D. Nichols**, T. Cheung, J. Fair, B. Hogan, P. Batterham, and J. A. Pollock (2002). Yan regulates Lozenge through an eye specific enhancer in *Drosophila*. *Development Genes and Evolution*, 212:267–276.
- É. L. S. Loreto, A. Zaha, **C. Nichols**, J. A. Pollock, and V. L. S. Valente (1998). Characterization of a hypermutable strain of *Drosophila simulans*. *CMLS, Cell and Molecular Life Sciences*. 54: pp 1283-1290.
- Pollock, J.A., A. Assaf, A. Peretz, **C.D. Nichols**, M.H. Mojet, R.C. Hardie, and B. Minke (1995). TRP, a Protein Essential for Inositide-Mediated Ca²⁺ Influx Is Localized Adjacent to the Calcium Stores in *Drosophila* Photoreceptors. *Journal of Neuroscience*, 15(5):3747-3760.

Book Chapters:

- Nass, R., and **C.D. Nichols** (2007). Invertebrates as powerful genetic models for human neurodegenerative diseases. In: *Handbook of Contemporary Neuropharmacology*, ed. David Sibley, Israel Hanin, and Michael Kuhar. John Wiley and Sons, 567-588
- Sanders-Bush, E. and, **C.D. Nichols** (2004). Serotonin Receptors and Neurotransmission. Primer on the Autonomic Nervous System. Elsevier Science, 93-96.
- Nichols, C.D.** and E. Sanders-Bush (2003). Neuropharmacology: Serotonin. Encyclopedia of the Neurological Sciences. v.4, 245-248, Academic Press.
- Nichols, C.D.** and E. Sanders-Bush (2001). Serotonin receptor signaling and hallucinogenic drug action. *Heffter Review of Psychedelic Research*, 2: 73-79.

Abstracts since employment at LSUHSC:

- C.D. Nichols**, O. Johnson, and J. Becnel (2009) Serotonin 5-HT_{1A}-like, 5-HT₂, and 5-HT₇ receptors modulate aspects of olfactory learning and memory in *Drosophila*. Neurobiology of *Drosophila* Meeting, Cold Spring Harbor, NY.
- Yu, B., and **C.D. Nichols** (2009) Serotonin 5HT_{2A} receptor activity mediates adipocyte differentiation. Experimental Biology/ASPET annual meeting, New Orleans, LA.
- Johnson, O., Becnel, J., and **C.D. Nichols** (2009) Serotonin 5-HT_{1A}-like, 5-HT₂, and 5-HT₇ receptors modulate learning and memory in *Drosophila*. Experimental Biology/ASPET annual meeting, New Orleans, LA.
- Johnson, O., Becnel, J., and **C.D. Nichols** (2009) Serotonin 5-HT_{1A}-like, 5-HT₂, and 5-HT₇ receptors modulate learning and memory in *Drosophila*. 50th Annual *Drosophila* Research Conference, Chicago, IL.
- Nichols, D.E., **Nichols, C.D.**, and D. Marona-Lewicka (2008). Chronic LSD in rats: A potential novel animal model of psychosis. 47th Annual meeting of the American College of Neuropsychopharmacology, Scottsdale, AZ.
- Becnel, J., Johnson, O., **Nichols, C.D.** (2008). The 5-HT₇Dro Serotonin Receptor: Expression in the CNS and Function. 49th Annual *Drosophila* Research Conference, San Diego, CA.

- Nichols, C.D.** and J. Becnel (2008). The Serotonin 5-HT₇ Receptor in *Drosophila*: Expression and Function. 46th Annual meeting of the American College of Neuropsychopharmacology, Boca Raton, FL.
- Nichols, C.D.** and O. Johnson (2007). The 5-HT_{2Dro} receptor is expressed in the larva and adult CNS and modulates aspects of circadian and aggressive behaviors. 48th Annual *Drosophila* Research Conference, Philadelphia, PA.
- Nichols, C.D.** and O. Johnson (2006) Developing *Drosophila Melanogaster* as a Model Organism to Study Molecular and Genetic Factors Underlying Neuropsychiatric Disorders. 45th Annual meeting of the American College of Neuropsychopharmacology, Hollywood, FL.
- Nichols, C.D.**, and Elaine Sanders-Bush (2005) An integrative approach to investigate molecular mechanisms underlying schizophrenia using both rat and *Drosophila melanogaster*. 44th Annual meeting of the American College of Neuropsychopharmacology, Waikoloa, HI.

Videos and Multimedia:

Interviewed and filmed by National Geographic Explorer about research, May 2009, To be aired November 3, 2009 on National Geographic Chanel.

Research featured in an article on the front page of the Metro section of the New Orleans newspaper: Times-Picayune, July 27, 2009.

Grants and Contracts:

Awarded

Louisiana Board of Regents - Principal Investigator: Developing the Fruit Fly, *Drosophila melanogaster*, as a Model to Study Serotonergic Function, 2007. (awarded, but declined due to overlap with NIH R21 MH078454, see below)

NIH 1R21-MH078454 - Principal Investigator: *Drosophila* as a Model Genetic System to Study Neuropsychiatric Disorders, 4/1/07 – 9/30/09. (currently under no-cost extension). Total award: \$351,450.

NIH 1R21-MH078454-S1 – Diversity supplement to MH078454 for Oralee Johnson, 8/1/2007 – 9/30/2009 (currently under no-cost extension). Total award: \$81,567.

NIH 1R01-MH083689 - Principal Investigator: Combining mammalian and *Drosophila* systems to study neuropsychiatric disorders, 7/07/2009 – 6/30/2013. Total Award: \$1,4300,000.

Research Review Committee: (NIH study section, etc)

National Institutes of Health/Center for Scientific Review Study Section: ETTN-C
(Emerging Technologies and Training in Neuroscience) (6/2008)

National Institutes of Health/Center for Scientific Review Study Section: GGG-J
(Genes, Genomes, and Genetics) (11/2008)

Israeli Science Foundation (ad hoc reviewer)

Graduate Women in Science Foundation (ad hoc reviewer 2009)

NSF (ad hoc reviewer)

Editorial Posts and Activities:

Editorial:

Review Editor for Frontiers in Neuropharmacology

Ad Hoc Reviewer:

Archives of Dermatological Research

British Journal of Pharmacology

Drugs in R&D

Fly

Journal of Biological Chemistry

Journal of Experimental Zoology

Journal of Neuroscience

Neuropsychopharmacology

Neuroscience

Pharmacology, Biochemistry and Behavior

Teaching Experience/Responsibilities:

Course Directorships:

Course Co-Director for Audiology Doctoral Program Pharmacology (SPTHAUD
7329) Fall 2006.

Course Co-Director for Dental Hygiene Pharmacology (Fall 2008)

Course Co-Director for Nursing Pharmacology (Fall 2009)

Curriculum Development/Implementation

Developed curriculum for Audiology Doctoral Program Pharmacology SPTHAUD
7329, Fall 2006

Formal Course Responsibilities

Principles of Pharmacology I (~5-10 students/class):

Drosophila as a pharmacological model system (2004) (1 hour; ~8 students)

Principles of Pharmacology II (~5-10 students/class)

Drug-receptor interactions *in vivo* (2006 - 2008) (2 hours/yr; ~5-10 students)

Behavioral Pharmacology-Animal models (2006 - 2008) (2 hours/yr)

Integrative Graduate Program, CMB-D (~15-20 students/class):

G-Protein Coupled Receptors (2006 – present) (1 hour/yr)

Drug receptor interactions (2007 - present) (1 hour/yr)

Functional Genomics and Microarrays (2009) (1 hour/yr)

Physiology 280, Technologies in Biological Research (9 students/class):

Confocal microscopy (2009) (2 hours)

Medical and Graduate Pharmacology (PHARM200, PHARM195) (195 medical students, 6-8 graduate students/class):

Anti-convulsants (2007 - present) (1 hour/yr)

Gastrointestinal Pharmacology (2009) (2 hour/yr)

Advanced Nursing Pharmacology HLSC6409 (~40 students/class):

Anti-convulsants (2007 - present) (1 hour/yr)

CNS Stimulants (2008 - present) (1 hour/yr)

Gastrointestinal Pharmacology (2008-present) (2 hours/yr)

CARE Nursing Pharmacology HLSC3409CA (~15 students/class)

Anti-convulsants (2007 - present) (1 hour/yr)

Gastrointestinal Pharmacology (2008 - present) (2 hours/yr)

Nursing Pharmacology HLSC3409 (~75-80 undergraduate students/class):

Anti-convulsants (2007 - present) (1 hour/yr)

CNS Stimulants (2008) (1 hour/yr)

Gastrointestinal Pharmacology (2008 - present) (1 hour/yr)

Dental Pharmacology DENT2122 (~40 students/class)

Gastrointestinal Pharmacology (spring 2009-present) (1 hour/yr)

Dental Hygiene Pharmacology DH4109 (~30 students/class)

CNS Stimulants, Antidepressants, and Anticonvulsants (2008-present) (2 hours/yr)

Graduate Students Trained:

Oralee Johnson (Dissertation Advisor; 2006-present; anticipated completion 2009-10 academic year)

Rasika Rohatgi (Dissertation Advisor; 2008-present)

Thesis and Dissertation Committees:

Matthew Duvernay (PhD awarded fall 2008; Currently at Vanderbilt University)

Xaioping Zhang (2007-present; 4th year graduate student)

Post-Doctoral or Post-Residency Fellows Trained:

Bangning Yu, M.D., Ph.D. Hunan Medical University, China (12/2006 - Present)

Jaime Becnel, Ph.D., Rice University, Houston, TX (6/2006 - Present)

University/Institutional Service:

Departmental committees

Member, Pharmacology Graduate Training Committee (2006 to present)

School of Graduate Studies committees

Member, Graduate Advisory Committee (2006 to present),
Recruitment subcommittee (2008-present)

School of Medicine committees

Member, Sabbatical Leave (2006-present)

Member, Computer-Assisted Learning (2006-2008)

Administrative Responsibilities:

Departmental

Director of the Pharmacology Department Leica Confocal Microscope Facility (2006-present). This involves maintaining the equipment and training users, and assisting other researchers in the use of the microscope for imaging purposes.

Community Service Activities:

NOLA Public Schools Science Partnership Field Day (May, 2009)