
BIOGRAPHICAL SKETCH10-05-2011

NAME William D. Eldred	POSITION TITLE Professor of Biology		
eRA COMMONS USER NAME ELDRED.WILLIAM			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of Colorado, Boulder, CO	BS	1972	Psychology
University of Colorado Health Sciences Center, Denver, CO	PhD	1979	Anatomy

A. Personal Statement

My research for the past 15 years has examined the role of the gaseous neuromodulator nitric oxide (NO) in retinal signal transduction and ocular pathology. We have determined that nitric oxide is reciprocally related to many retinal neurotransmitters including GABA, glycine, acetylcholine, and dopamine in that NO modulates their release and they in turn modulate NO production. We have also shown that every cell type in the retina can produce NO. Using direct imaging of NO, we have established that in retina NO is not freely diffusible. We are now examining the role that NO plays in the early neuronal cell death seen in diabetic retinopathy. We are focusing on the role that the signaling peptide adrenomedullin plays in producing the pathological increases in NO found in early diabetic retinopathy. We have established and localized all of the biochemical steps in this pathway and now we are developing pharmacological interventions to inhibit the pathological activation of the adrenomedullin/NO signaling pathway. Since both NO and adrenomedullin are involved in much ocular pathology including glaucoma, ischemia, and uveitis, a better understanding of the adrenomedullin/NO signaling pathways may have broad clinical applicability.

B. Positions and Honors.**Positions and Employment**

1981-1982	Res. Asst. Prof., State Univ. New York, Stony Brook, Dept. Neurobiology and Behavior
1982-1988	Assistant Professor, Boston University, Department of Biology
1984 - Present	Faculty Director of the Proteomics and Imaging Facility, Department of Biology
1988-1998	Associate Professor, Boston University, Department of Biology
1994-Present	Research Fellow, Department of Cognitive and Neural Systems
1998-Present	Professor, Boston University, Department of Biology
1998-Present	Professor, Program in Molecular Biology, Cell Biology and Biochemistry
2000-Present	Professor, Graduate Program in Neuroscience
2002-2010	Director of the graduate Program in Neuroscience, Boston University

HONORS AND SERVICE

1991	International Human Frontier Science Program Organization Fellowship
1992-1993	Alexander von Humboldt Foundation Research Fellow
1992-1994	Editor- Visual Neuroscience
1997	Visiting Scholar, Vision Science Research Center, University of Alabama, Birmingham
2003-2004	NIH Biology and Diseases of the Posterior Eye Study Section
2005-2006	NIH Predoctoral Training Program Review Panel
2008- Present	Editorial Board- Open Journal of Nitric Oxide
2009- Present	Editorial Board- Journal of Experimental Pharmacology

C. Selected peer-reviewed publications (from 60 papers)

1. Blute, T.A., B. Mayer & W.D. Eldred (1997) Immunocytochemical and histochemical localization of nitric oxide synthase in the turtle retina. *Vis. Neurosci.*, 14:717-729. PM:9279000
2. Blute, T.A., P. Velasco & W.D. Eldred (1998) Functional localization of soluble guanylate cyclase in turtle retina: Modulation of cGMP by nitric oxide donors. *Vis. Neurosci.*, 15:485-498. PM:9685201
3. Blute, T.A., M.R. Lee & W.D. Eldred (2000) Direct imaging of NMDA-stimulated nitric oxide production in the retina. *Vis. Neurosci.*, 17:557-566. PM:11016575
4. Cao, L. & W.D. Eldred (2001) Subcellular localization of neuronal nitric oxide synthase in turtle retina: electron immunocytochemistry. *Vis. Neurosci.*, 18:949-960. PM:12020086
5. Blute, T.A., S. Strang, K.T. Keyser & W.D. Eldred (2003) Activation of the cGMP/nitric oxide signal transduction system by nicotine in the retina. *Vis. Neurosci.*, 20:165-176. PM:12916738
6. Yu, D. & W.D. Eldred (2003) GABA_A and GABA_C receptor antagonists increase retinal cyclic GMP levels through nitric oxide synthase. *Vis. Neurosci.* 20:627-637. PM:15088716
7. Yu, D. & W.D. Eldred (2005) Nitric oxide stimulates GABA release and inhibits glycine release in retina. *J. Comp. Neurol.* 483:278-291. PM:15682393
8. Eldred, W.D. & T.A. Blute (2005) Imaging of nitric oxide in the retina. *Vis. Res.* 45:3469–3486. PM:16171845
9. Yu, D. & W.D. Eldred (2005) Glycine and GABA interact to regulate the nitric oxide/cGMP signaling pathway in the turtle retina. *Vis. Neurosci.* 22:825-838. PM:16469191
10. Cimini, B.A., C.E. Strang, V.E. Wotring, K.T. Keyser KT & W.D. Eldred (2008) The role of acetylcholine in nitric oxide production in the salamander retina. *J. Comp. Neurol.*, 507: 1952-1953. PM:18273886
11. Pong, W.W. and W.D. Eldred WD (2009) Interactions of the gaseous neuromodulators nitric oxide, carbon monoxide, and hydrogen sulfide in the salamander retina. *J. Neurosci. Res.*, 87:2356-2364. PM:20090309
12. Giove, T.J., M.M. Deshpande & W.D. Eldred (2009) Identification of alternate transcripts of neuronal nitric oxide synthase in the mouse retina. *J. Neurosci. Res.*, 87: 3134-3142. PM:19479987.
13. Blom, J.T., T.A. Blute & W.D. Eldred (2009) Functional localization of the nitric oxide/cGMP pathway in the salamander retina. *Vis. Neurosci.*, 26:275-286. PM:19602301
14. Giove, T.J., M.M. Deshpande, C.S. Gagen & W.D. Eldred (2009) Increased neuronal nitric oxide synthase activity in retinal neurons in early diabetic retinopathy. *Molecular Vis.*, 15:2249-2258. PM:19936028.
15. Giove, T.J., M. Sena-Esteves & W.D. Eldred (2010) Transduction of the inner mouse retina using AAVrh8 and AAVrh10 via intravitreal injection. *Exp. Eye Res.*, 91:652-659. PM:20723541.