

BIOGRAPHICAL SKETCH

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NAME Copenhaver, Philip Forsyth	POSITION TITLE Professor, Cell & Developmental Biology		
eRA COMMONS USER NAME (credential, e.g., agency login) COPENHAVERP			
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
Stanford University, Stanford, CA	B.S.	06/79	Biology
Stanford University, Stanford, CA	M.S.	06/79	Biology
University of Washington, Seattle, WA	Ph.D.	11/85	Zoology/Neurobiology
Washington University Medical School, St. Louis, MO	Postdoctoral	1986-89	Developmental neuroscience
University of Washington, Seattle, WA	Postdoctoral	1989-90	Zoology/Neurobiology

Positions and employment

- 1979-1985: Graduate Student, Department of Zoology, University of Washington, Seattle, WA
(Advisor, James W. Truman)
- 1986-1989: Postdoctoral Fellow, Department of Anatomy and Neurobiology, Washington University School of Medicine, St. Louis, MO (Advisor, Paul H. Taghert)
- 1989-1990: Postdoctoral Fellow, Department of Zoology, University of Washington, Seattle, WA
(Advisor, William J. Moody)
- 1990-1996: Assistant Professor, Cell & Developmental Biology, Oregon Health Sciences University, Portland, OR
- 1996-2011: Associate Professor, Cell and Developmental Biology, Oregon Health & Science University, Portland, OR
- 2011-present: Professor, Cell and Developmental Biology, Oregon Health & Science University, Portland, OR

Other Experience and Professional Memberships

- 1990-present: Member, Sigma Xi
- 1990-present: Member, Society for Neuroscience
- 1991-present: Member, AAAS
- 1994: Panelist, NSF Special Emphasis Panel, RPG and CAA awards for Women In Science

Honors

- 1979: Bachelor's of Science awarded "With Distinction"; Stanford University
- 1981-1985: NIH Predoctoral Traineeship
- 1986: Finalist, Donald B. Lindsley Prize in Behavioral Neuroscience, Soc. Neuroscience
- 1986-1989: NIH Postdoctoral Fellowship
- 1995: Alan J. Hill for Excellence in Teaching, Oregon Health Sciences University.
- 1990: Outstanding Instructor Award, School of Medicine, Oregon Health Sciences
- 1991-1994: Basil O'Connor Starter Scholar Research Award, March of Dimes
- 1996: AMSA Golden Apple Award for Excellence in Teaching
- 1996: Invited speaker, 20th International Congress of Entomology; Florence, Italy.
- 2005: Alan J. Hill Award for Excellence in Teaching, Oregon Health Sciences University
- 1991-2009: Annual Excellence in Teaching Awards, Oregon Health Sciences University
- 2011: Alan J. Hill Award for Excellence in Teaching, Oregon Health Sciences University

Periodic Journal Reviewer for:

Biochimica et Biophysica Acta
BMC Neuroscience
Brain Research
Cell Motility and the Cytoskeleton
Development
Developmental Biology
Insect Biochemistry and Molecular Biology
Journal of Comparative Neurology
Journal of Insect Physiology
Journal of Neurobiology
Journal of Neuroscience
Journal of Neuroscience Research
PLOS One
Proceedings of the National Academy of Science
Journal of Experimental Biology

Selected Peer-reviewed Publications (in chronological order).

- Truman J. W., P. H. Taghert, P. F. Copenhaver, N. J. Tublitz, and L. M. Schwartz (1981). Eclosion hormone may control all ecdyses in insects. *Nature (London)* 291, pp. 70-71.
- Copenhaver P. F. and J. W. Truman (1982). The role of eclosion hormone in the larval ecdyses of *Manduca sexta*. *J. Insect Physiol.* 28, pp. 695-701.
- Copenhaver P. F. and J. W. Truman (1986). Control of neurosecretion in the moth *Manduca sexta*: physiological regulation of the eclosion hormone cells. *J. comp. Physiol.* 158, 445-455.
- Copenhaver P. F. and J. W. Truman (1986). Identification of the cerebral neurosecretory cells that contain eclosion hormone in the moth *Manduca sexta*. *J. Neurosci.* 6, 1738-1747.
- Copenhaver P. F. and J. W. Truman (1986). Metamorphosis of the cerebral neuroendocrine system in the moth *Manduca sexta*. *J. Comp. Neurol.* 249, 186-204.
- Truman, J.W. and Copenhaver, P.F. (1989). The larval eclosion hormone neurones in *Manduca sexta*: identification of the brain-proctodeal neurosecretory system. *J. Exp. Biol.* 147, 457-470.
- Copenhaver P. F. and P. H. Taghert (1989a). Development of the enteric nervous system in the moth I. Diversity of cell types and the embryonic expression of FMRF amide-related neuropeptides. *Dev. Biol.* 131,70-84.
- Copenhaver P. F. and P. H. Taghert (1989b). Development of the enteric nervous system in the moth II. Stereotyped cell migration precedes the differentiation of embryonic neurons. *Dev. Biol.* 131, 85-101.
- Copenhaver P. F. and P. H. Taghert (1990). Neurogenesis in the insect enteric nervous system: generation of pre-migratory neurons from an epithelial placode. *Development* 109, 17-28.
- Copenhaver, P.F. and P.H. Taghert (1991). Origins of the insect enteric nervous system: differentiation of the enteric ganglia from a neurogenic epithelium. *Development* 113, 1115-1132.
- Copenhaver, P.F. (1993). Origins, migration, and differentiation of glial cells in the insect enteric nervous system from a discrete set of glial precursors. *Development* 117, 59-74.
- Horgan, A.M., M.T. Lagrange, and P.F. Copenhaver (1994). Developmental expression of G proteins in a migratory population of embryonic neurons. *Development* 120, 729-742.

- Copenhaver, P.F., A.M. Horgan, D.C. Nicolls, and M. A. Rasmussen (1995). Developmental expression of heterotrimeric G proteins in the nervous system of *Manduca sexta*. *J. Neurobiol.* 26 (4), 461-484.
- Horgan, A.M., M.T. Lagrange, and P.F. Copenhaver (1995). A developmental role for the heterotrimeric G protein $Go\alpha$ in a migratory population of embryonic neurons. *Dev. Biol.* 172, 640-653.
- Copenhaver, P.F., Snyder, M., Combes, S., and Horgan, A. M. (1996). An identified set of visceral muscle bands is essential for the guidance of migratory neurons in the enteric nervous system of *Manduca sexta*. *Dev. Biol.* 179, 412-426.
- Horgan, A.M., and Copenhaver, P.F. (1998). G Protein-mediated inhibition of neuronal migration requires calcium influx. *J. Neurosci.* 18, 4189-4200.
- Wright, J.W., Schwinoof, K.M., Snyder, M.A., and Copenhaver, P.F. (1998). A delayed role for nitric oxide-sensitive guanylate cyclases in a migratory population of embryonic neurons. *Dev. Biol.* 204, 15-33.
- Wright, J., Snyder, M., Schwinoof K.M., Combes, S., and Copenhaver, P.F. (1999) A role for Fasciclin II in the guidance of neuronal migration. *Development* 126, 3217-3228.
- Wright, J.W. and Copenhaver, P.F. (2000) Different isoforms of Fasciclin II play distinct roles in the guidance of neuronal migration during insect embryogenesis. *Developmental Biology* 225, 59-78.
- Knittel, L.M., Copenhaver, P.F., and Kent, K. (2001) Remodeling of motor terminals during metamorphosis of the moth *Manduca sexta*: Expression patterns of two distinct isoforms of *Manduca* Fasciclin II. *J. Comp. Neurol.* 434, 69-85.
- Wright, J., and Copenhaver, P.F. (2001) Cell type-specific expression of Fasciclin II isoforms reveals neuronal-glia interactions during peripheral nerve growth. *Dev. Biol.* 234, 24-41.
- Higgins, M.R., Gibson, N.J., Eckholdt, P.A., Nighorn, A., Copenhaver, P.F., Nardi, J., Tolbert, L.P. (2002) Different isoforms of Fasciclin II are expressed by a subset of developing olfactory receptor neurons and by olfactory-nerve glial cells during formation of glomeruli in the moth *Manduca sexta*. *Developmental Biology.* 244(1):134-54.
- Swanson, T.R., Knittel, L.M., Coate, T.M., Farley, S.M., Snyder, M.A., Copenhaver, P.F. (2005) The insect homologue of the amyloid precursor protein interacts with the heterotrimeric G protein $Go\alpha$ in an identified population of migratory neurons. *Developmental Biology* 288:160-178.
- Coate, T.M., Swanson, T.L., Proctor, T.M., Nighorn, A.J., Copenhaver, P.F. (2007) Eph receptor expression defines midline boundaries for ephrin-positive migratory neurons in the enteric nervous system of *Manduca sexta*. *J. Comp. Neurol.* 502: 175-191.
- Copenhaver, P.F. (2007). How To Innervate A Simple Gut: Familiar Themes And Unique Aspects In The Formation Of The Insect Enteric Nervous System. *Dev. Dynamics*, 2007 236: 1841-1864.
- Coate, T.M., Wirz, J.A., and Copenhaver, P.F. (2008). Reverse signaling via a glycosyl-phosphatidylinositol-linked Ephrin prevents midline crossing by migratory neurons during embryonic development in *Manduca*. *J. Neurosci.* 28: 3846-3860.
- Coate, T.M., Swanson, T.L., Copenhaver, P.F. (2009). Reverse signaling by GPI-linked *Manduca* Ephrin requires a Src family kinase to restrict neuronal migration in vivo. *J. Neurosci.* 29, 3404-18. PMID: PMC3100805.
- Copenhaver, P.F, Anekonda, T.S., Musashe, D., Ramaker, J., Robinson, K.M., Swanson, T.L, Wadsworth, T.L Kretschmar, D., Woltjer, R.L., and Quinn, J.F. (2011) A translational continuum of model systems for evaluating treatment strategies in Alzheimer's disease: isradipine as a candidate drug. *Disease Models and Mechanisms* 4: 634-48. PMID: PMC3180227.