

07/01/18

ANIRVAN GHOSH

Sr. Vice President, Head of Research and Early Development, Biogen

Brief Biography

Anirvan Ghosh serves as Senior Vice President, Head of Research and Early Development at Biogen. In this capacity he leads a team of 370 scientists and clinicians responsible for research and early clinical development across disease areas including Alzheimer's Disease, Parkinson's Disease and Movement Disorders, Neuromuscular Disorders, Multiple Sclerosis, Acute Neurology, Ophthalmology, Pain, Neuropsychiatry, and Immunology.

Prior to joining Biogen, Anirvan served as VP/Global Head of Neuroscience Discovery and Biomarkers at Roche, where he led the Neuroscience research and drug discovery programs in Neurodegenerative Diseases, Neurodevelopmental Disorders, and Psychiatric Disorders. He also headed the Biomarkers and Clinical Imaging group. During his time at Roche he delivered 11 clinical candidate molecules to early clinical development in a number of areas including Alzheimer's Disease, Spinal Muscular Atrophy, Schizophrenia, and Autism. Subsequent to his role at Roche, Anirvan served as the founding Chief Scientific Officer at E-Scape Bio, a biotech company developing therapeutics for neurodegenerative disorders.

Anirvan has held academic appointments at The Johns Hopkins School of Medicine and UC San Diego, where his research has been focused on understanding how connections in the brain are established during development and how they may be affected in neurodevelopmental disorders. Major contributions from his lab have included the identification of activity-dependent transcription factors that regulate neuronal development and plasticity, and the discovery of transmembrane Leucine Rich Repeat (LRR) proteins as key regulators of synapse formation and function.

Anirvan received his BS in Physics from Caltech, his Ph.D. in Neuroscience from Stanford University and did his postdoctoral work at Harvard Medical School. He is recipient of several awards including the Pew Scholar Award, Presidential Early Career Award for Scientists and Engineers, the Society for Neuroscience Young Investigator Award, and the UCSD Revelle College Outstanding Faculty Award.

Education

California Institute of Technology	B.S. in Physics with honor	1981-1985
Stanford University	Ph. D. in Neuroscience	1985-1991
Harvard Medical School	Postdoctoral Fellow	1991-1995

Professional Positions

9/95-2/00	Assistant Professor, Department of Neuroscience, Johns Hopkins University School of Medicine
3/00-6/03	Associate Professor, Department of Neuroscience, Johns Hopkins University School of Medicine
7/03-6/13	Stephen Kuffler Professor of Neurobiology University of California San Diego
7/08-6/11	Chair, Neurobiology Section, Division of Biological Sciences, UCSD
7/13-6/17	Adjunct Professor, Neurobiology Section, Division of Biological Sciences, UCSD
7/11-4/16	Global Head/VP, Neuroscience Discovery, F. Hoffmann- La Roche
5/16-4/17	Chief Scientific Officer, E-Scape Bio
5/17-present	SVP, Head of Research and Early Development, Biogen

Selected Professional Service

2002-2003	Chair, Johns Hopkins Medical School Council
2004-2010	Director, UCSD/Salk Neurosciences Graduate Program
2004-2010	Associate Editor, Journal of Neuroscience
2006, 2008	Co-chair, CSHL meeting on Axon Guidance, Synaptogenesis, and Neural Plasticity
2007, 2009	Co-chair, Gordon Conference on Dendrites
2009-2011	Co-Director, Center for Neural Circuits and Behavior, UCSD
2008-2011	Chair, Neurobiology Section, Division of Biological Sciences, UCSD

Selected Honors

1984-1985:	Caltech Prize Scholarship; Graduated with honor in Physics
1991-1994:	Damon Runyon-Walter Winchell Cancer Research Fund Postdoctoral Fellowship
1995-1997:	Damon Runyon Scholar Award
1996-1999:	EJLB Foundation Scholar Research Award
1996-1999:	Klingenstein Fellowship Award in Neuroscience
1996-1998:	Alfred P. Sloan Research Fellow
1997-2001:	Pew Scholar Award
1997:	Presidential Early Career Award for Scientists and Engineers
2000:	John Merck Scholar Award
2001:	Society for Neuroscience Young Investigator Award
2008:	UCSD Revelle College Outstanding Faculty Award
2003-2011:	Stephen Kuffler Professor, University of California San Diego

Publications

1. McConnell, S.K., **A. Ghosh** and C.J. Shatz (1989). Subplate neurons pioneer the first axon pathway from the cerebral cortex. **Science** 245: 978-982.
 2. **Ghosh, A.**, A. Antonini, S.K. McConnell and C.J. Shatz (1990). Requirement for subplate neurons in the formation of thalamocortical connections. **Nature** 347: 179-181
 3. Shatz, C.J., **A. Ghosh**, S.K. McConnell, K.L. Allendoerfer, E. Friauf and A. Antonini (1991). Pioneer neurons and target selection in cerebral cortical development. in **Cold Spring Harbor Symp. Quant. Biol.** 55: 469-480.
 4. Shatz, C.J., **A. Ghosh**, S.K. McConnell, K.L. Allendoerfer, E. Friauf and A. Antonini (1991). Subplate neurons and the development of neocortical connections. in **Development of the Visual System**, D.M. Lam and C.J. Shatz, eds (MIT Press).
 5. **Ghosh, A.** and C.J. Shatz (1992). Pathfinding and target selection by developing geniculocortical axons. **J. Neurosci.** 12:39-55.
 6. **Ghosh, A.** and C.J. Shatz (1992). Involvement of subplate neurons in the formation of ocular dominance columns. **Science** 255:1441-1443.
 7. **Ghosh, A.** and C.J. Shatz (1993). A role for subplate neurons in the patterning of connections from thalamus to cortex. **Development** 117:1031-1047.
 8. McConnell, S.K., **A. Ghosh** and C. J. Shatz (1994). Subplate pioneers and the formation of descending connections from cerebral cortex. **J. Neurosci.** 14:1892-1907
 9. Dalva, M.B., **A. Ghosh** and C.J. Shatz (1994). Independent control of dendritic and axonal form in the developing lateral geniculate nucleus. **J. Neurosci.** 14:3588-3602
 10. **Ghosh, A.** and C.J. Shatz (1994). Segregation of geniculocortical afferents during the critical period: a role for subplate neurons. **J. Neurosci.** 14:3862-3880
 11. **Ghosh, A.**, J. Carnahan and M.E. Greenberg (1994). Requirement for BDNF in activity-dependent survival of cortical neurons. **Science** 263:1618-1623.
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12. **Ghosh, A.**, D.D.Ginty, H. Bading and M.E. Greenberg (1994). Calcium regulation of gene expression in neuronal cells. **J. Neurobiol.** 25:294-303.
 13. Farnsworth, C.L., N.W. Freshney, L.B. Rosen, **A. Ghosh**, M.E. Greenberg and L.A. Feig (1995). Calcium activation of Ras mediated by neuronal exchange factor Ras-GRF. **Nature** 376:524-527.
 14. **Ghosh, A.** and M.E. Greenberg (1995). Distinct roles for bFGF and NT3 in the regulation of cortical neurogenesis. **Neuron** 15:89-103.
 15. **Ghosh, A.** (1995). Subplate neurons and the patterning of thalamocortical connections. **Proceedings of the Ciba Foundation Symposium on Cortical Development**
 16. **Ghosh, A.** and Greenberg, M.E. (1995). Calcium signaling in neurons: molecular mechanisms and cellular consequences. **Science** 268:239-247.
 17. **Ghosh, A.** (1996). Cortical development: With an eye on neurotrophins. **Current Biology** 6:130-133.
 18. Threadgill, R., Bobb, K. and **A. Ghosh** (1997). Regulation of dendritic growth and remodeling by Rho, Rac, and Cdc42. **Neuron** 19:625-634.
 19. **Ghosh, A.** (1997). Axons follow Reelin routes. **Nature** 385:23-24.
 20. Shieh, P. B. and **A. Ghosh** (1997). Neurotrophins: New roles for a seasoned cast. **Current Biology** 7:627-630.
 21. Shieh, P.B., Hu, S.-C., Timmusk, T., and **A. Ghosh** (1998). Identification of a signaling pathway involved in calcium regulation of BDNF expression. **Neuron** 20:727-740.
 22. Polleux, F., R.J. Giger, D.D. Ginty, A.L. Kolodkin, and **A. Ghosh** (1998). Patterning of cortical efferent projections by semaphorin-neuropilin interactions. **Science** 282:1904-1906.
 23. **Ghosh, A.** and A.L. Kolodkin (1998). Specification of neuronal connectivity: ETS marks the spot. **Cell** 95:303-306.
 24. Hu, S.-C., J. Chrivia and **A. Ghosh** (1999). Regulation of CBP-mediated transactivation by neuronal calcium signaling. **Neuron** 22:799-808.
 25. Shieh, P. B. and **Ghosh, A.** (1999). Molecular mechanisms underlying activity-dependent regulation of BDNF expression. **J. Neurobiol.** 41:127-134.
 26. Redmond, L.J., S.-R. Oh, C. Hicks, G. Weinmaster, and **A. Ghosh** (2000). Nuclear Notch1 signaling and the regulation of dendritic development. **Nature Neuroscience** 3:30-40.
 27. Polleux, F., T. Morrow and **A. Ghosh** (2000). Semaphorin 3A is a chemoattractant for developing cortical dendrites. **Nature (research article; cover)** 404:567-573.
 28. **Ghosh, A.** (2000). Dendritic Growth: Don't go says Flamingo. **Neuron** 28:3-4.
 29. Dickson, B.J., H.Cline, F. Polleux and **A. Ghosh** (2001). New directions in axon guidance. **EMBO Reports** 2:182-186.
 30. Redmond, L. and **A. Ghosh** (2001). The role of Notch and Rho GTPase signaling in the control of dendritic development. **Curr. Opin. Neurobiology** 11:111-117.
 31. Morrow, T., M.-R. Song and **A. Ghosh** (2001). Sequential specification of neurons and glia by developmentally regulated extracellular factors. **Development** 128:3585-3594.
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 36. Polleux, F., Whitford, K.L., Dijkhuizen, P.A., Vitalis, T., and **A. Ghosh** (2002) Control of cortical interneuron migration by neurotrophins and PI 3-kinase signaling. **Development** 129:3147-3160.
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 78. Sylwestrak, E and **Ghosh, A** (2012) Efn1 regulates target-specific release probability at CA1-interneuron synapses. **Science** 338:536-540.
 79. DeNardo LA, de Wit J, Otto-Hitt S, **Ghosh A** (2012) NGL-2 regulates input-specific synapse development in CA1 pyramidal neurons. **Neuron** 76:762-775.
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 87. Stachniak TJ, **Ghosh A**, Sternson SM (2014) Chemogenetic synaptic silencing of neural circuits localizes a hypothalamus→hindbrain pathway for feeding behavior. **Neuron** 82:797-808
 88. Savas JN, de Wit J, Comoletti D, Zemla R, **Ghosh A**, Yates III JR (2014) Ecto-Fc MS identifies ligand-receptor interactions through extracellular domain Fc fusion protein baits and shotgun proteomic analysis. **Nature Protocols** 9:2061-2074
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 90. De Wit J, **Ghosh A** (2014) Control of Neural Circuit Formation by Leucine-Rich Repeat Proteins. **Trends in Neuroscience** 37:539-550
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