
BIOGRAPHICAL SKETCH

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NAME Ford F. Ebner	POSITION TITLE Professor of Psychology and of Cell Biology		
eRA COMMONS USER NAME Ebnerf			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Washington State University	BS, DVM	1958	Vet. Med.
University of Maryland	Ph.D.	1965	Neuroanatomy

A. Positions and Honors.

Research and Professional Experience

1958-1960 U. S. Army, Lab Officer, Armed Forces Instit. of Pathology/Walter Reed Inst. Res.
1960-1963 NIH-NINDB Postdoctoral Fellow, Department of Physiology, The Johns Hopkins University School of Medicine (Dr. V. Mountcastle)
1963-1965 NIH-NINDB Special Fellow, Department of Anatomy, University of Maryland School of Medicine (Dr. W.J.H. Nauta)
1965-1966 Assistant Prof. of Anatomy & Physiology, University of Maryland School of Medicine
1966-1969 Assistant Prof. of Medical Science, Div. of Biological and Medical Sciences, Brown Univ.
1969-1975 Associate Prof. of Medical Science, Brown University
1972-1973 NIH-NINDS Senior Traineeship, Department of Anatomy, University of Ottawa School of Medicine (Sabbatical with Dr. M. Colonnier)
1976-1991 Prof. of Medical Science, Brown University
1976-1979 Neuroscience Section Chairman, Division of Biology and Medicine, Brown University
1977-1991 Co-Director of the Center for Neural Science, Brown University (with Dr. Leon N Cooper)
1980-1981 Fogarty Senior Fellow at Mill Hill London (Sabbatical with Dr. G. Raisman)
1991-2000 Director, Inst. for Develop. Neurosci., J. F. Kennedy Ctr., Vanderbilt University
1994-2000 Deputy Director for Biomedical Research, J. F. Kennedy Center, Vanderbilt University
1991-pres Prof. of Psychology and Cell/Developmental Biology, Vanderbilt University

Professional Services

Neurology B II study section (1988-1992) (ad hoc) 1993-1995
Brain Disorders and Clinical Neuroscience-5 Study Section 1997-1999
Javits Neuroscientist Grant Award (1985-1996) NIH Neuroscience Investigator Award
President, Cajal Club, FASEB/APS meetings (1995-1997)
Planning committee, Conference on Dendritic Abnormalities in MR and DD (1997), NIH
Consultant, Minority Research Infrastructure Support Program (Meharry Medical College)
Editorial Board of "The Journal of Comparative Neurology," January, 1995-December, 2003
Conference Program Committee for the "barrels" NS satellite symposium, 1997-1999
Consultant, Prog Grant on "Modulation of glutamate synapses in neonatal cortex, UAB, 1999
Consultant, Program Grant on "Fragile X syndrome", UIUC, 2002.
Advisory Board, Special Neuroscience Research Program for Underrepresented Minorities, NINDS, Meharry Medical college
NICHD study section for MR Centers (2005)
Book ed. "Plasticity in Somatic Sensory and Motor Systems". Taylor and Francis Press, 2005
Book ed. "Blindness, Brain Plasticity, and Spatial Function", J. Reiser, D. Ashmead, F. Ebner, and A. Corn, co-editors. Wiley Publishers 2008
Editorial Board of PLoS (Public Library of Science, San Francisco) (2006-2009)

B. Selected Publication (1995-2008)

- Ebner, F.F., Rema, V., and Armstrong-James, M. (1995) NMDA-type glutamate receptors and use-dependent plasticity in barrel field cortex. In T.P. Hicks & F. Conti (Eds.), *Excitatory amino acids in the cerebral cortex*, MIT Press, pp. 245-252.
- Benuskova, L., Diamond, M.E., Ebner, F.F. (1996) Computational Study of Plasticity in Barrel Cortex. *Intelligent Technologies*, Vol. II Proceedings of the 1st Slovak Neural Network Symposium. Peter Sincak, editor
- Ebner, F.F. (1996) Teaching the brain to learn. *Peabody J. of Educ.* 71:(4.) 143-151.
- Oster-Granite, M.L. and Ebner, F.F. (1996) Development processes and the pathophysiology of mental retardation. In: *Animals models for the study of mental retardation. Mental Retardation and Developmental Disabilities Research Review* 2:(4) 197-208.
- Rema, V., Ebner, F.F. and Armstrong-James, M. (1996) NMDA-type glutamate receptors and use-dependent plasticity in barrel field cortex. In T.P. Hicks & F. Conti (Eds.), *Excitatory amino acids in the cerebral cortex*. MIT Press, pp. 245-252.
- Rema, V. and Ebner, F.F. (1996) Postnatal changes in NMDAR1 subunit expression in the rat trigeminal pathway to barrel field cortex. *J. Comp. Neurol.* 368:165-184.
- Strack, S., Wadzinski, B.E., and Ebner, F.F. (1996) Localization of calcium calmodulin-dependent protein phosphatase, calcineurin, in the hindbrain and spinal cord of the rat. *J. Comp. Neurol.* 375: 66-76.
- Ebner, F.F., Rema, V., Sachdev, R. and Symons, F.J. (1997) Activity-dependent plasticity in adult somatic sensory cortex. *Seminars in Neurosciences* 9:47-58.
- Ebner, F.F., Melzer, P. and Price, R. (1998) Functional magnetic resonance imaging (fMRI) can be used to study typical and atypical brain function in children. *March/April Kennedy Center Newsletter*.
- Huang, W., Armstrong-James, M., Diamond, M.E., Rema, V., and Ebner, F.F. (1998) Contribution of the supragranular layers to sensory processing and plasticity in adult rat barrel cortex. *J. Neurophysiology*, 80(6): 3261-3271.
- Kaas, J. and Ebner, F. (1998) Intrathalamic connections: a new way to modulate cortical plasticity? *Nature Neuroscience*, 1(5):341-342.
- Rema, V., Armstrong-James, M. and Ebner, F.F. (1998) Experience-dependent plasticity of adult rat S1 cortex requires local NMDA receptor activation. *J. Neurosci.* 18(23):10196-10206.
- Sachdev, R.S., Lu, S.M., Wiley, R.G. and Ebner, F.F. (1998) The role of the basal forebrain cholinergic projection in somatosensory cortical plasticity. *J. Neurophysiol.* 79:3216-3228.
- Strack, S., Zaucha J., Ebner, F.F., Colbran, R.J. and Wadzinski, B.E. (1998) Brain protein phosphate 2A: developmental regulation and distinct cellular and subcellular localization by B subunits. *J. of Comp. Neurol.* 392, 513-524.
- Friedberg, M.H., Lee, S.M., and Ebner, F.F. (1999) Modulation of receptive field properties of thalamic somatosensory neurons by the depth of anesthesia. *J. Neurophysiol.*, 81 (5):2243-2252.
- Kim, U., and Ebner, F.F., (1999) Barrels and Septa: Separate circuits in rat barrel field cortex. *J. Comp. Neurol.* 408: 489-505.
- Rema, V. and Ebner, F.F. (1999) Effect of enriched environment rearing on impairments in cortical excitability and plasticity after prenatal alcohol exposure. *J. Neurosci.* 19:10993-11006.
- Strack, S., Kini, S., Ebner, F.F., Wadzinski, B.E. and Colbran, R.J. (1999) Differential cellular and subcellular localization of protein phosphate 1 isoforms in brain, *J. Comp. Neurol.*, 413:373-384.
- Benuskova, L., Ebner, F.F., Diamond, M.E., and Armstrong-James, M. (1999) Computational study of experience-dependent plasticity in adult rat cortical barrel column. *Network: Comput. Neural Syst.*, 10:303-323.
- Ebner, F.F. and Rema, V. (1999) The effect of early experiences on the development of cortical plasticity. In: *Dendritic Mechanisms in Mental Retardation and Developmental Disabilities*, D. Molfese, ed., *Developmental Psychology*, Lawrence Erlbaum Associates
- Sachdev, R., Jenkinson, E.W., Melzer, P., and Ebner, F.F. (1999) Response properties of barrel field neurons in the awake, behaving rat. *Somatosensory and Motor Research*, 16:165-168.
- Sachdev, R., Egli, M., Stonecypher, M., Wiley, R.G., Ebner, F.F. (2000) Use-dependent cortical plasticity in acetylcholine depleted adult rats. *J. Neurophysiol.*, 84:1971-1981.
- Sachdev, R.N.S., Sellien, H. and Ebner, F.F. (2000) Inhibition evoked by whisker stimulation in somatic sensory (SI) barrel field cortex of the awake rat. *J. Neurophysiol.*, 84:1497-1504.

- Benuskova, L., Velayudhan, R., Armstrong-James, M. and Ebner, F. (2001) Theory for normal and impaired experience-dependent plasticity in neocortex of adult rats. *Proc. Nat. Acad. Sci.* 98(5):2797-2802.
- Sachdev, R.N.S., E. Jenkinson, H.P. Zeigler and F.F. Ebner (2001) Sensorimotor plasticity in the rodent vibrissa system. In: *Mutable Brain*, pp. 123-164. Ed., Jon Kaas.
- Sachdev, R.N.S., Sellien, H. and Ebner, F.F. (2001) Timing and duration of multi-whisker contact monitored in a head-fixed rat. *Somatic Sensory Motor Res.*, 18(2):93-102.
- Melzer, P., Morgan, V.L., Pickens, D.R., Price, R.R., Wall, R.S., and Ebner, F.F. (2001) Cortical activation during Braille reading is influenced by early visual experience in subjects with severe visual disability: a correlational fMRI study. *Human Brain Mapping*, 14:186-195.
- Sachdev, N.S.R., Sato, T., and Ebner, F.F. (2002) Divergent movement of adjacent whiskers: evidence for independent control of whiskers. *J. Neurophysiol.*, 87:1440-1448.
- Kleinfeld, D., Sachdev, R.N.S., Merchant, L.M., Jarvis, M.R., and Ebner, F.F. (2002) Representation of vibrissa input in motor cortex of alert rat: evidence for adaptive filtering by a thalamocortical loop. *Neuron*, 34:1021-1034.
- Rema, V., Armstrong-James, M. and Ebner, F.F. (2003) Experience-dependent plasticity is impaired in adult rat barrel cortex after whisker disuse in early postnatal life. *J. Neurosci.*, 23(1):358-366.
- Sachdev, R.N.S., Berg, R.W., Champney, G., Kleinfeld, D., and Ebner, F.F. (2003) Unilateral vibrissa contact: changes in amplitude but not timing of rhythmic whisking. *Somatosensory Motor Res*, 20(2):163-169.
- Sachdev, R.N.S., Champney, G.C., Lee, H., Price, R.R., Pickens, D.R., Morgan, V.L., Stefansic, J.D., Melzer, P., and Ebner, F.F. (2003) Experimental Model for Functional Magnetic Resonance Imaging of Somatic Sensory Cortex in the Unanesthetized Rat. *NeuroImage*, 19:742-750.
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- Friedberg, M.H., Lee, S.M. and Ebner, F.F. (2004) The contribution of the principal and spinal trigeminal nuclei to the receptive field properties of thalamic VPM neurons. *J. Neurocytol.*, 33:75-85.
- Sachdev, R.N.S., Ebner, F.F. and Wilson, C.J. (2004) The effect of sub-threshold up and down states on the whisker evoked response in somatosensory cortex. *J. Neurophysiol.*, 92(6):3511-3521.
- Ebner, F.F. and Armstrong-James, M. (2005) The effects of sensory deprivation on sensory function of SI barrel cortex. In: *Neural Plasticity in Adult Somatic Sensory-Motor Systems*. F. Ebner, ed., CRC Press, Boca Raton, FL, Ch. 6, pp. 109-138.
- Sellien, H., Eshenroder, D.S., and Ebner, F.F. (2005) Comparison of bilateral whisker movement in freely exploring and head-fixed adult rats. *Somatosens Mot Res*, 22:97-114.
- Li, L., Rema, V. and Ebner, F.F. (2005) Balancing bilateral inputs: Chronic suppression of activity in barrel field cortex downregulates sensory responses in contralateral barrel field cortex. *J. Neurophysiol.*, 94(5):3342-3356.
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- Li, L. and Ebner, F.F. (2005) Balancing bilateral sensory activity: callosal processing modulates sensory transmission through the contralateral thalamus by altering the response threshold. *Exp. Br. Res.*, 168(4):221-240
- Schaffer, C.B., Friedman, B., Nishimura, N., Schroeder, L.F., Tsai, P.S., Ebner, F.F., Lyden, P.D., Kleinfeld, D. (2006) Two-photon Imaging of cortical surface microvessels reveals a robust redistribution in blood flow after vascular occlusion. *PLoS Biol.* 4(2):e22 [Epub]
- Melzer, P., Champney, G.C., Maguire, M.J. and Ebner, F.F. (2006) Rate code and temporal code for frequency of whisker stimulation in rat primary and secondary somatic sensory cortex. *Exp. Br. Res.*, 172(3):370-386.
- Rema, V., Armstrong-James, M., Jenkinson, N. and Ebner, F.F. (2006) Short exposure to an enriched environment accelerates plasticity in the barrel cortex of adult rats. *Neuroscience*, 140:659-672.
- Burk, R.F., Christensen, J.M., Maguire, M.J., Austin, L.J., Whetsell, W.O., May, J.M., Hill, K.L., and Ebner, F.F. (2006) Combined deficiency of vitamins E and C causes severe central nervous system damage in the guinea pig. *J. Nutrition*, 136:1576-1581.

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Sellien, H. and Ebner, F.F. (2006) Rapid plasticity following whisker pairing in barrel cortex of the awake rat. *Exp. Br. Res.* Aug 22, Epub PMID 16839606.

Melzer, P., Sachdev, R.N.S., Jenkinson, E., and Ebner, F.F. (2006) Stimulus frequency processing in awake rat barrel cortex. *J. Neurosci.* 22:26(47):12198-12205.

Li, L. and Ebner, F.F. (2007) Cortical modulation of spatial and angular tuning maps in the rat thalamus. *J. Neurosci.*, 27(1):167-179.

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Melzer P, Mineo L, Ebner FF. (2007) Optic nerve transection affects development and use-dependent plasticity in neocortex of the rat: Quantitative acetylcholinesterase imaging. *Brain Res.* Mar 30;1139:68-84.

McCallister, MM, Maguire, M, Ramesh, A, Aimin, Q, Liu, S, Khoshbouei, H, Aschner, M, Ebner, FF, and Hood, DB (2008) Prenatal Exposure to Benzo(a)pyrene Impairs Later-Life Cortical Neuronal Function. *Neurotoxicology* (Aug 9: Epub ahead of print).

Popescu, M.V. and Ebner F.F. (2009) Circuit and timing changes in adult rat barrel cortex after postnatal unilateral or bilateral whisker trimming. *J. Neurosci.* (under revision).

Ghoshal, A, Pouget, P, Popescu, MV and Ebner, FF (2009) Early bilateral sensory deprivation blocks the development of correlated discharge in rat barrel cortex. *J. Neurosci.* (in press).

C. Research Support.

Ongoing Research Support

NIH-NINDS Grant #RO1 NS065916-01 (pending)	Ebner (PI)	2009-2014
Vanderbilt Discovery grant (intramural)	Ebner (PI)	2008-2010
Hobbs Kennedy Center Grant (intramural)	Ebner (PI)	2008-2009