

BIOGRAPHICAL SKETCH

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NAME Barres, Ben A.		POSITION TITLE Professor of Neurobiology	
eRA COMMONS USER NAME BARRES.BEN			
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
Massachusetts Institute of Technology	SB	1976	Life Science
Dartmouth Medical School	M.D.	1979	Medicine
Harvard Medical School	Ph.D.	1990	Neurobiology
University College London	Postdoc	1993	Neurobiology

Employment/Experience

1980-1983 Chief Resident, Resident in Neurology, Cornell Cooperating Hospitals
 1979-1980 Internship in Internal Medicine, Cornell Cooperating Hospitals
 1993-1997 Assistant Professor of Neurobiology, Stanford University School of Medicine
 1997-2001 Associate Professor of Neurobiology and Dev. Biology, Stanford Univ. School of Medicine
 1998- Vice-Chair, Department of Neurobiology, Stanford University School of Medicine
 2001-2005 Co-Director, Neuroscience Institute at Stanford
 2001- Professor of Neurobiology, Dev. Biology, and Neurology, Stanford Univ. School of Medicine
 2003- Team Member, Myelin Repair Foundation
 2005- Steering Committee, Neuroscience Institute at Stanford
 2005- Director, Masters of Science in Medicine Degree Program for PhD Students at Stanford Univ.

Honors

1999, 03, 07 Kaiser Award for Excellence in Preclinical Teaching
 2000 Kirsch Investigator Award
 1997 Kaiser Award for Outstanding Contributions to Medical Education
 1997-2001 McKnight Investigator Award
 1995 Kaiser Award for Excellence in Preclinical Teaching
 1993-1996 Searle Scholar Award; McKnight Scholar Award, Klingenstein Fellowship Award
 1989-1992 Life Sciences Research Fellowship; National Multiple Sclerosis Society Fellowship
 1980, 1984 Diplomate, Am. Board of Psych. and Neurology, and National Board of Medical Examiners
 1976 Bell Labs Engineering Scholar

Professional Activities

1993-1997 Referee for NIH NLS1 study section and NINDS Board of Scientific Counselors
 1997-2001 Member of Neurobiology of Disease Advisory Committee, Soc. for Neuroscience
 1999-2003 Co-Director, Cold Spring Harbor Summer Course on Developmental Neurobiology
 1999-2004 Member of Basic Sciences Study Section for National Multiple Sclerosis Society
 2001 Co-Chair, Keystone Symposium on Synapse Formation and Function
 2002, 2004 Co-Chair and Chair, Gordon Conference on Neural Development
 2005- Evaluator, NIH Director's Pioneer Awards, Phases I, II, III; Chair, Phase III
 2006, 2008 Chair, Cold Spring Harbor Conference on Glia in Health and Disease

Editorial Boards

Neuron, J. Neuroscience (1993-03), J. Cell Biology, Development, Molecular Cellular Neuroscience, Current Biology, Journal of Neurobiology, Glia, Current Opinion in Neurobiology, Faculty of 1000, Science Magazine (Board of Scientific Reviewing Editors)

B. Selected peer-reviewed publications (in chronological order, since 1998).

1. Hanson G, Shen S, Wiemelt A, McMorris FA and Barres BA. (1998) cAMP elevation is sufficient to promote the survival of spinal motor neurons. J. Neurosci. 18, 7361-71.
2. Meyer-Franke A, Wilkinson G, Kruttgen A, Hu M, Munro E, Hanson M, Reichardt L and Barres BA. (1998) Depolarization and cAMP recruit TrkB to the membrane of CNS neurons. Neuron 21, 681-93.
3. Mi H; Barres BA. (1999) Purification and characterization of astrocyte precursors. J. Neurosci. 19, 1049-61.
4. Meyer-Franke A and Barres BA. (1999) Astrocyte-induced adhesion of axons and oligodendrocytes. MCN 14, 385-97.
5. Shen, S, Wiemelt, A, McMorris, F, Barres B. (1999) RGCs lose trophic responsiveness after axotomy. Neuron 23,285-95.
6. Mi H, Haeberle, H, Barres BA. (2001) Endothelial cells induce astrocyte differentiation. J. Neurosci. 2, 1538-47.
7. Wang S, Sdrulla A, Weinmaster G, Barres BA. (2001) Control of oligodendrocyte differentiation by Id2. Neuron 29, 603-14.
8. Kaplan M, Cho M, Isom L, Levinson R, Barres BA. (2001) Differential control of clustering of the sodium channels Nav1.2 and Nav1.6 at developing CNS nodes of Ranvier. Neuron 30, 105-19.
9. Ullian E, Sapperstein S, and Barres BA. (2001) Control of synapse number by glia. Science 291:657-61.
10. Goldberg J, Espinosa J, Xu Y, Davidson N, Kovacs G and Barres BA. (2002) CNS axon extension does not occur by default but is stimulated by electrical activity and neurotrophic factors. Neuron 33, 689-702.
11. Goldberg J, Klassen M, Hua Y and Barres BA. (2002) An Irreversible, Neonatal Switch from Axonal to Dendritic Growth in the Developing CNS. Science 296, 1860-64.
12. Cayouette M, Barres B, Raff M (2003) Early spec. of subclasses of rat retinal stem cells. Neuron 40, 897-04.
13. Ullian EM, Harris BT, Wu A, and Barres BA. (2004) Schwann cells strongly promote synapse formation by spinal motor neurons in culture. MCN 25, 241-51.
14. Goldberg J, Vargas M, Mandemakers W, Barres BA. (2004) Inhibition of retinal ganglion cell regeneration by oligodendrocyte- derived semaphorin 5A. J. Neurosci. 24, 4989-99.
15. Ullian E. M., W. Barkis, S. Chen, J. Diamond, and Barres BA. (2004) Invulnerability of retinal ganglion cells to glutamate excitotoxicity. MCN 26, 544-57.
16. Chan JR, Watkins T, Cosgaya J, Zhang C, Chen L, Reichardt L, Shooter E, Barres B. (2004) NGF controls axonal receptivity to myelination by Schwann cells and oligodendrocytes. Neuron 43, 183-91.
17. Christopherson KS, Ullian EM, Stokes CC, Mallowney CE, Hell JW, Agah A, Lawler J, Mosher DF, Bornstein P, Barres BA. (2005) Thrombospondins are astrocyte-secreted proteins that promote CNS synaptogenesis. Cell 120, 421-33.
18. Zigman M, Cayouette M, Firnberg N, Barres BA, Siderovski DP, Knoblich JA. (2005) Mammalian invertebrate regulates spindle orientation and cell fate in the developing retina. Neuron 48, 539-45.
19. Bjartmar L, Huberman A, Ullian EM, Chapman B, Barres BA, Perin M. (2006) Neuronal pentraxins mediate process refinement in the retinogeniculate system. J Neurosci 22, 6269-81.
20. Dugas J, Ngai J, Barres B. (2006) Functional Genomic Analysis Reveals That Terminal Oligodendrocyte Differentiation Proceeds in Distinct Temporal Stages. J Neurosci 26(43):10967-83.
21. Wang JT, Kunzevitzky NJ, Dugas JC, Barres BA, Goldberg JL (2007) Disease gene candidates revealed by expression profiling of retinal ganglion cell development. J. Neurosci. 27, 8593-603.
22. Dugas J, Barres B (2007) A Crucial Role for p57Kip2 in the Intracellular Timer that Controls Oligodendrocyte Differentiation. J. Neurosci. 27, 6185-96
23. Stevens B, Allen N, Huberman H, ..., Lambris J, John S, Barres B (2007) The classical complement cascade mediates developmental CNS synapse elimination. Cell 131, 1164-68
24. Vargas M, Singh S, Barres B (2007) Auto anti-myelin antibodies mediate rapid clearance of myelin after PNS axotomy. Nature, submitted (under revision)
25. Watkins T, Barres B (2007) Gamma secretase activity regulates the transition to a myelinating oligodendrocyte. Neuron, submitted.
26. Cahoy JD, Emery B, Kaushal A, ..., Barres BA (2008) A transcriptome database for astrocytes, neurons, and oligodendrocytes: a new resource for understanding brain development and function. J. NEUROSCI 28, 264-78.
27. Cagla E, Susman M, Allen NJ, Huberman A, ...Luo ZD, Mosher D, Barres BA (2008) Identification of the neuronal thrombospondin receptor that induces CNS synapse formation as the gabapentin receptor cacna2d1. CELL, submitted.

C. Research Support.

RO1 EY10257, Barres (PI)

04/01/05 – 03/31/09

NIH/NEI

Optic Nerve Myelination

The major goals of this project are to understand the signaling pathways that control CNS myelination.

Role: Principal Investigator

RO1 EY11310, Barres (PI)

01/01/04 – 6/31/12

NIH NEI

Repair and Regeneration of Central Visual Pathways

The major goals of this project are to understand the molecular mechanisms that limit CNS axon regeneration.

Role: Principal Investigator

RO1 DA15043, Barres (PI)

06/01/04 – 03/31/09

NIH NIDA

The Role of Glia in the Formation of Functional Synapses

The major goals of this project are to determine the molecular mechanisms by which astrocytes enhance the formation of functional synapses.

Role: Principal Investigator

(Grant Number N/A), Barres (PI)

06/18/04 – 06/30/08

Myelin Repair Foundation

Promotion of Oligodendrocyte Regeneration and Remyelination

Collaborative work with 4 other investigators to develop new ways to promote repair using animal models of Multiple Sclerosis

Role: Principal Investigator

(Grant Number N/A), Barres (PI)

12/01/06 – 11/30/09

Alcon Laboratories

Neuroprotective Therapies for Glaucoma

The major goals are to identify novel neurotrophic factors for glaucoma treatment.

Role: Principle Investigator

(Grant Number N/A), Barres (PI)

04/01/07 – 03/30/09

AHA Centennial Award: The Role of ApoE in Alzheimers Disease

The major goals are to determine whether ApoE controls the ability of astrocytes to clear amyloid.

Role: Principle Investigator

(Grant Number N/A), Barres (PI)

10/01/07 – 09/30/10

National Multiple Sclerosis Society

Role of the Blood-Brain Barrier in Multiple Sclerosis

The goals of this project are to determine if breaking down the blood-brain barrier triggers Multiple Sclerosis.

Role: Principal Investigator

(Grant Number N/A), Barres (PI)

08/01/07 – 07/31/09

Fidelity Foundation

Understanding the Role of Neuron-Glial Interactions in Alzheimers Disease

The major goals of this project are to determine the role of astrocytes in the aging brain.

Role: Principal Investigator

R21 EY018320, Barres (PI) 4/1/08 - 03/31/10
Development of Synaptic Specificity in the Mammalian Visual System
The major goals of this project are to understand the molecular mechanisms that control synaptic specificity of retinal ganglion cell subtypes.
Role: Principal Investigator

R01 NIH NINDS, Barres (co-PI) 2/1/08 - 01/30/13
Astrocyte Development I
The major goals of this project are to gene profile astrocyte progenitor cells, identify new astrocyte lineage markers, and fate map astrocyte development.
Role: Co-Principal Investigator with Stiles, Rowitch, Richardson

Completed Research Support

RO1 NS045621, Barres (PI) 04/01/03 – 02/28/07
NIH NINDS
Role of Mature Astrocytes in Health and Disease.
The major goals of this project are to determine the biological roles of astrocytes.
Role: Principal Investigator

RG2553, Barres (PI) 04/01/03 – 03/31/06
National MS Society
The Development of Nodes of Ranvier in the CNS (this project has terminated)
major goals of this project are to further characterize and identify glial-derived signals that trigger sodium channel clustering along CNS axons
Role: Principal Investigator

(Grant Number N/A), Barres (PI) 04/01/05 – 03/31/08
Fidelity Foundation
Is Alzheimer's Disease caused by Reactivation of a Normal Developmental Mechanism of Synapse Elimination?
The major goals of this project are to compare the mechanism of synapse loss in AD brain tissue with that of developing brain.
Role: Principal Investigator