



## Curriculum Vitae

### EDUCATION

B.A., Biology, University of Rochester, 1973

Ph.D., Anatomy (and Neuroscience), Georgetown University School of Medicine, 1979

### TEACHING, RESEARCH, AND ADMINISTRATIVE POSITIONS

- 2017-pres Joint Professor of Work and Organization Studies, MIT Sloan School of Management
- 2012-pres. President Emerita, Massachusetts Institute of Technology
- 2012-2013 Marie Curie Visiting Professor, Harvard University, John F. Kennedy School of Government
- 2004-pres. Professor of Neuroscience, Massachusetts Institute of Technology
- 2004-2012 President, Massachusetts Institute of Technology
- 2003-2004 Provost, Yale University
- 2001-2004 William Edward Gilbert Professor of Neurobiology, Yale University
- 1998-2002 Dean, Yale University Graduate School of Arts and Sciences
- 1994-2004 Professor, Yale University School of Medicine, Department of Neurobiology
- 1991-1994 Associate Professor (tenure), Yale University School of Medicine, Section of Neurobiology
- 1989-1991 Associate Professor (term), Yale University School of Medicine, Section of Neurobiology
- 1986-1994 Director of Graduate Studies, Yale University School of Medicine, Section of Neurobiology
- 1985-1989 Assistant Professor, Yale University School of Medicine, Section of Neurobiology
- 1982-1985 Senior Staff Investigator, Cold Spring Harbor Laboratory
- 1980-1982 Junior Staff Investigator, Cold Spring Harbor Laboratory
- 1979-1980 National Institutes of Health (NIH) postdoctoral fellow, University of California, San Francisco,  
Department of Anatomy and Neuroscience Program

### BOARD MEMBERSHIPS

- Belfer Center for Science and International Affairs, Board of Directors, member, 6/2013-present
- Boston Symphony Orchestra, Board of Trustees, member, 9/2014-3/2019
- Break Through Cancer, Board of Directors, member, 7/2020-present
- Carnegie Corporation of New York, Board of Trustees, member, 9/2006-12/2014
- Charles Stark Draper Laboratory, Board of Directors, member, 10/2018-12/2020
- Council on Foreign Relations, Board of Directors, member, 7/2014-6/2019
- Fidelity Non-Profit Management Foundation, member, 6/2017-present
- General Electric Company, Board of Directors, member, 12/2006-4/2018
- Lasker Foundation, Board of Directors, member, 4/2020-present
- Massachusetts Institute of Technology, Corporation, life member, 7/2012-present
- Mass General Brigham Incorporated, Board of Directors, member, 12/2015-present
- Pfizer, Inc., Board of Directors, member, 3/2020-present
- Qualcomm Incorporated, Board of Directors, member, 7/2012-3/2016
- Repertoire Immune Medicines, Board of Directors, member, 4/2021-present
- Whitehead Institute for Biomedical Research, Board of Trustees, member, 1/2020-present
- World Economic Forum, Foundation Board, member, 1/2008-9/2012 and 9/2014-5/2016

**PROFESSIONAL SOCIETIES**

American Academy of Arts and Sciences, Fellow 2004  
American Association for the Advancement of Science, Fellow  
Council on Foreign Relations, Life Member  
Society for Neuroscience, Member

**AWARDS AND RECOGNITION**

2020 Phi Beta Kappa Book Awards Shortlist, **The Age of Living Machines: How Biology Will Build the Next Technology Revolution**, 2020  
2020 Science Communication Award, American Institute of Physics, **The Age of Living Machines: How Biology Will Build the Next Technology Revolution**, 2020  
2019 Charles L. Branch BrainHealth Award, Dallas, 2020  
Advocacy Honoree, American Cancer Society Cancer Action Network, Boston, MA, 2019  
Geoffrey Beene Builders of Science Award, Research!America, Washington, DC, 2019  
The Helen Gurley Brown Presidential Summit on Women and Science Keynote Speaker, Dana-Farber Cancer Institute, Boston, Massachusetts, 2018  
Doctor of Humane Letters (*honoris causa*) degree, Georgetown University, 2018  
22nd Annual Link Lecture, Institute of Cancer Research and The Royal Marsden, London, United Kingdom, 2018  
2017 Celia White Tabor Lecture, Massachusetts General Hospital, Boston, Massachusetts, 2017  
Doctor of Science (*honoris causa*) degree, Northeastern University, 2016  
Doctor of Humane Letters (*honoris causa*) degree, Duke University, 2014  
Arnold D. Kates Lecture, Bowdoin College, Brunswick, Maine, 2014  
Edwin L. Godkin Lecture, Harvard University Kennedy School of Government, Cambridge, Massachusetts, 2014  
Doctor of Science (*honoris causa*) degree, University of Massachusetts Medical School, 2013  
Doctor of Science (*honoris causa*) degree, University of Rochester, 2013  
Pinnacle Award for Lifetime Achievement, Greater Boston Chamber of Commerce, 2013  
American Academy of Rome, Carnegie Corporation/Vartan Gregorian Affiliated Fellow, 2012  
Association of Alumni and Alumnae of the Massachusetts Institute of Technology, Honorary Member, 2010  
Edison Achievement Award, 2010  
Royal Irish Academy, Honorary Member, 2010  
Doctor *honoris causa* degree, University Pierre and Marie Curie, Paris, France, 2010  
Doctor *honoris causa* degree, jointly awarded by the New University of Lisbon, the Technical University of Lisbon, and the University of Porto, Portugal, 2009  
America's Best Leaders 2009 honoree, *U.S. News & World Report* and the Center for Public Leadership, John F. Kennedy School of Government, Harvard University, 2009  
Citation Award, Midwest Research Institute, 2009  
Doctor of Science (*honoris causa*) degree, University of Edinburgh, Scotland, 2009  
Doctor of Science (*honoris causa*) degree, Mount Sinai School of Medicine, New York University, 2009  
Council on Foreign Relations, Life Member, 2007  
Doctor of Science (*honoris causa*) degree, Brown University, 2006  
Doctor of Science (*honoris causa*) degree, Cold Spring Harbor Laboratory, Watson School of Biological Sciences, 2006  
Honorary doctorate degree, Tsinghua University, China, 2006  
Amelia Earhart Award, Women's Union, 2005  
Golden Plate Award, Academy of Achievement, 2005  
American Association for the Advancement of Science, Fellow (neuroscience), 2005  
Sheffield Medal, Yale University, 2004

Meliora Citation for Career Achievement, University of Rochester, 2003  
 Wilbur Lucius Cross Medal, Yale University Graduate School, 2003  
 M.A. (hon.), Yale University, 1994  
 Charles Judson Herrick Award, American Association of Anatomists, 1987  
 Grass Traveling Scientist, Society for Neuroscience, 1987  
 Esther A. and Joseph Klingenstein Fellowship in the Neurosciences, 1985  
 PHS Postdoctoral Research Award, National Institutes of Health, 1980

### PROFESSIONAL AND NATIONAL SERVICE ACTIVITIES

1/2021-present Harvard/MIT MD/PhD Program, Board of Overseers, member  
 10/2019-present MIT Energy Initiative, External Advisory Board, member  
 2/2018-2/2019 American Association for the Advancement of Science, chairman 2018  
 12/2017-present Cancer Research Centre of Excellence, London, Scientific Advisory Board, member  
 10/2017-present Harvard Medical School Dean's Special Advisors Group, member  
 7/2017-present Brigham & Women's Hospital, Boston, Scientific Advisory Board, member  
 2/2017-2/2018 American Association for the Advancement of Science, president 2017  
 6/2016 "Convergence: The Future of Health," report co-chair with Phillip Sharp and Tyler Jacks  
 2/2016-2/2017 American Association for the Advancement of Science, president-elect 2016  
 9/2014-1/2016 World Economic Forum, Forum Academy, chair  
 5/2014-11/2015 Commission to Review the Effectiveness of the National Energy Laboratories, U.S. Department  
 of Energy, member  
 1/2014-2016 David Geffen School of Medicine, UCLA, Scientific Advisory Board, member  
 2/2013-5/2014 Key Challenge Areas for Convergence, Committee of the National Academies, member  
 11/2012-11/2013 U.S. Science Envoy, U.S. Department of State  
 2/2012-6/2012 Sorbonne University Strategy Committee, member  
 6/2011-10/2012 Advanced Manufacturing Partnership Steering Committee, Co-Chair, sponsored by the  
 Executive Office of the President of the United States  
 12/2010-7/2012 WGBH Educational Foundation, Inc., Board of Trustees, *ex officio*, Institutional Trustee  
 7/2009-7/2012 Eli and Edythe L. Broad Institute of MIT and Harvard, Board of Directors, *ex officio*, member  
 5/2009-3/2012 Zayed Future Energy Prize, member of the Jury  
 2/2009-7/2012 Ragon Institute of MGH, MIT, and Harvard, Governance Board, *ex officio*, member  
 1/2009-1/2012 The Climate Group, Leadership Council, member  
 7/2008-11/2008 Association of American Universities (AAU), Task Force on the 2008 Election, member  
 8/2007-7/2012 Association of American Universities (AAU), Advisory Task Force on Indirect Costs, member  
 7/2007-3/2012 Broad Prize for Urban Education, Selection Jury, member  
 7/2007-3/2009 Carnegie Corporation of New York – Institute for Advanced Study (IAS), Commission on  
 Mathematics and Science Education, member  
 5/2007-7/2012 Council on Foreign Relations, Higher Education Working Group on Global Issues, member  
 5/2007-5/2009 Council on Competitiveness, Energy Security, Innovation and Sustainability Initiative Steering  
 Committee, member  
 5/2007-8/2009 National Math and Science Initiative, Inc., Board of Directors, member  
 2/2007-4/2012 Massachusetts General Hospital, Scientific Advisory Committee, member  
 1/2007-7/2012 Massachusetts Life Sciences Collaborative Leadership Council, Co-Chair  
 2006-7/2012 European Humanities University, International Support Committee, member  
 7/2006-11/2006 Republic of Singapore, Research, Innovation, and Enterprise Council, member  
 5/2006-7/2012 Woods Hole Oceanographic Institution, *ex officio*, Corporation member  
 2/2006-2/2007 Universities Research Association, Council of Presidents, Chair  
 2005-2008 United States Department of Justice, National Security Higher Education Advisory Board,  
 member

- 2005–2007 Cogito.org, Board of Advisors, member
- 2005–2006 Association of American Universities (AAU), Task Force on Interdisciplinarity, member
- 3/2005–7/2012 Council on Competitiveness, Executive Committee, member
- 2/2005–2/2006 Universities Research Association, Council of Presidents, Vice-Chair
- 1/2005–7/2012 Lord Foundation of Massachusetts, Class B Director
- 2004–2007 Association of American Universities (AAU), Task Force on Export Controls, member
- 2002–2004 National Institutes of Health, National Advisory Neurological Disorders and Stroke Council, member
- 2002 Council of Graduate Schools, Member of the Board
- 2002 Association of Graduate Schools, Executive Committee, member
- 2000–2004 American Association for the Advancement of Science (AAAS), Section of Neuroscience, Member-at-Large
- 1999–2002 Human Frontier Science Program, Council of Scientists, member
- 1998–2004 Cold Spring Harbor Laboratory, Board of Trustees, member
- 1997–2002 James S. McDonnell Foundation, Brain Cancer Advisory Panel, member
- 1997 Gordon Conference on Neural Plasticity, Chair
- 1997–1999 Astra Pharmaceuticals, Neuroscience Advisory Board, member
- 1996–2002 Calvin Hill Day Care Center and Kitty Lustman Findling Kindergarten, Board Member
- 1996–2000 Hereditary Disease Foundation, Scientific Advisory Board, member
- 1995 Gordon Conference on Neural Plasticity, Co-chair
- 1994 *NeuroImage*, Editorial Board, member
- 1993 *Learning and Memory*, Editorial Board, member
- 1992–1996 *Neuroscience Protocols*, Editorial Board, member
- 1992–1996 Society for Neuroscience, Councilor
- 1991–1995 Hereditary Disease Foundation, Scientific Advisory Board, member
- 1990–1995 *Cerebral Cortex*, Editorial Board, member
- 1989–1991 Society for Neuroscience, Short Course on Basics of Molecular Biology for Neurobiologists, organizer
- 1988–1994 *Journal of Neuroscience*, Editorial Board, member
- 1988–1992 National Institutes of Health, Study Section, Visual Sciences B, member
- 1988–2002 Haskins Laboratory, Board of Directors, member
- 1988–2002 Yale-New Haven Teachers Institute, University Advisory Council, member
- 1985–1997 Cold Spring Harbor Laboratory, Summer Neurobiology Program, Program Director
- 1985 Cold Spring Harbor Laboratory, Course on Molecular Cloning of Eukaryotic Genes, participant
- 1984–1986 Cold Spring Harbor Laboratory, Course on Immunoglobulins: Molecular Probes of the Nervous System, organizer
- 1983 Society for Neuroscience, Short Course on Molecular Approaches to the Nervous System, organizer
- 1981 Society for Neuroscience, Short Course on New Approaches in Developmental Neurobiology, instructor
- 1981 Cold Spring Harbor Laboratory, Course on Neurobiology of the Leech, participant
- 1979–1980 Cold Spring Harbor Laboratory, Pain Workshop, participant

## BIBLIOGRAPHY

### Opinion Pieces

“Our science, our society,” *Science*, February 2, 2018.

“Convergence: The Future of Health,” *Science*, February 10, 2017, coauthored with Phillip Sharp.

“Capitalizing on Convergence for Health Care,” *Science*, June 24, 2016, coauthored with Phillip Sharp and Tyler Jacks.

“A New Century’s New Technologies,” *Project Syndicate*, January 22, 2015.

- “Closing America’s Innovation Deficit,” *The National Interest*, April 28, 2014.
- “Manufacturing a Recovery,” *New York Times*, August 29, 2011.
- “Riding the Innovation Wave,” *Boston Globe*, March 14, 2011, coauthored with Drew Faust.
- “For Future Prosperity, Sow Seeds Now,” *Boston Globe*, August 14, 2010, coauthored with Paul E. Jacobs.
- “Immigrant Scientists Create Jobs and Win Nobels,” *Wall Street Journal*, October 20, 2009.
- “The Next Innovation Revolution,” *Science*, February 27, 2009.
- “The Next Step in Stimulus: Long-Term Economic Growth,” *Boston Globe*, February 13, 2009.
- “Reimagining Energy,” *Washington Post*, September 11, 2008.
- “Gaining Ground on Cancer,” *Boston Globe*, April 28, 2008.
- “Numbers That Can Change the World,” *Boston Globe*, April 14, 2008.
- “MIT’s Burgeoning Role in the Green Movement,” *Boston Globe*, April 7, 2008.
- “Investing in the Nation’s Future,” *Boston Globe*, March 31, 2008.
- “A Model for Tackling the Energy Challenge,” *Boston Globe*, December 13, 2006.
- “The Innovation Equation,” *Boston Globe*, October 12, 2006.
- “Women in Math, Engineering, and Science: Drawing on Our Country’s Entire Talent Pool,” *Boston Globe*, February 12, 2005, coauthored with John Hennessy and Shirley Tilghman.

### Original Articles

- Hockfield, S. and S. Gobel. Neurons in and near nucleus caudalis with long ascending projection axons demonstrated by retrograde labeling with horseradish peroxidase. *Brain Research* **139**: 333-339 (1978).
- Hockfield, S. and S. Gobel. An anatomical demonstration of projections to the medullary dorsal horn (Trigeminal Nucleus Caudalis) from rostral trigeminal nuclei and the contralateral caudal medulla. *Brain Research* **252**: 203-211 (1982).
- McKay, R. and S. Hockfield. Monoclonal antibodies distinguish antigenically discrete neuronal types in the vertebrate central nervous system. *Proc. Natl. Acad. Sci. U.S.A.* **79**: 6747-6751 (1982).
- Hockfield, S. and R. McKay. Monoclonal antibodies demonstrate the organization of axons in the leech. *J. Neurosci.* **3**: 369-375 (1983).
- Hockfield, S. and R. McKay. A surface antigen expressed by a subset of neurons in the vertebrate central nervous system. *Proc. Natl. Acad. Sci. U.S.A.* **80**: 5758-5761 (1983).
- Hockfield, S., R. McKay, S. Hendry, and E. G. Jones. A surface antigen that identifies ocular dominance columns in cortical area 17 and laminar features of the lateral geniculate nucleus. Cold Spring Harbor Symp. *Quant. Biol.* **48**: 877-889 (1983).
- McKay, R., S. Hockfield, and J. Johansen. The organization of molecularly distinct axons in the leech connective. Cold Spring Harbor Symp. *Quant. Biol.* **48**: 599-610 (1983).
- McKay, R., S. Hockfield, J. Johansen, I. Thompson, and K. Frederiksen. Surface molecules identify groups of growing axons. *Science* **222**: 788-794 (1983).
- Hendry, S., S. Hockfield, E. G. Jones, and R. McKay. A monoclonal antibody that identifies subsets of neurons in the central visual system of the monkey and cat. *Nature* **307**: 267-269 (1984).
- Johansen, J., S. Hockfield, and R. McKay. Distribution and morphology of nociceptive cells in the central nervous system of the leech. *J. Comp. Neurol.* **226**: 255-262 (1984).
- Johansen, J., S. Hockfield, and R. McKay. Axonal projections of mechanosensory neurons in the connective and peripheral nerves of the leech. *J. Comp. Neurol.* **226**: 263-273 (1984).
- McKay, R., J. Johansen, and S. Hockfield. Monoclonal antibody identifies a 63,000 dalton antigen found in all central neuronal cell bodies but in only a subset of axons in the leech. *J. Comp. Neurol.* **226**: 448-455 (1984).
- Hockfield, S. and R. McKay. Identification of major cell classes in the developing mammalian nervous system. *J. Neurosci.* **5**: 3310-3329 (1985).

14. Hockfield, S. A novel cerebellar neuron identified by a monoclonal antibody generated with immunosuppressive and rapid immunization strategies. *Science* **237**: 67-70 (1987).
15. Sur, M., D. Frost, and S. Hockfield. Expression of a cell surface antigen on Y-cells in the cat lateral geniculate nucleus is regulated by visual experience. *J. Neurosci.* **8**: 874-882 (1988).
16. Hishinuma, A., S. Hockfield, R. McKay, and J. Hildebrand. Monoclonal antibodies reveal cell type-specific antigens in the sexually dimorphic olfactory system of *Manduca sexta*. 1. Generation of monoclonal antibodies and partial characterization of the antigens. *J. Neurosci.* **8**: 296-307 (1988).
17. Hishinuma, A., S. Hockfield, R. McKay, and J. Hildebrand. Monoclonal antibodies reveal cell type-specific antigens in the sexually dimorphic olfactory system of *Manduca sexta*. 2. Expression of antigens during postembryonic development. *J. Neurosci.* **8**: 308-315 (1988).
18. Hendry, S., E. G. Jones, S. Hockfield, and R. McKay. Neuronal populations stained with the monoclonal antibody, Cat-301, in the mammalian cerebral cortex and thalamus. *J. Neurosci.* **8**: 518-542 (1988).
19. Kalb, R. and S. Hockfield. Molecular evidence for early activity-dependent development of hamster motor neurons. *J. Neurosci.* **8**: 2350-2360 (1988).
20. Zaremba, S., A. Guimaraes, R. G. Kalb, and S. Hockfield. Characterization of an activity-dependent, neuronal surface proteoglycan identified with monoclonal antibody Cat-301. *Neuron* **2**: 1207-1219 (1989).
21. Friedman, B., J. A. Black, S. Hockfield, S. G. Waxman, and B. R. Ransom. Antigenic abnormalities in fiber tract astrocytes of myelin-deficient rats: an immunocytochemical study in the olfactory cortex. *Dev. Neurosci.* **11**, 99-111 (1989).
22. McGuire, P. K., S. Hockfield, and P. Goldman-Rakic. The distribution of Cat-301 immunoreactivity in the frontal and parietal lobes of the macaque monkey. *J. Comp. Neurol.* **288**, 280-296 (1989).
23. Geschwind, D. H. and S. Hockfield. Identification of proteins that are developmentally regulated during early cerebral corticogenesis in the rat. *J. Neurosci.* **9**: 4303-4317 (1989).
24. Friedman, B., J. Black, K. Woodruff, S. Hockfield, and S. Waxman. Monoclonal antibody RIP produces Golgi-like staining of mature oligodendrocytes *in situ*. *Glia* **2**: 380-390 (1989).
25. Mize, R. R. and S. Hockfield. Cat-301 antibody selectively labels neurons in the Y-innervated laminae of the cat superior colliculus. *Visual Neurosci.* **3**: 433-443 (1989).
26. Kalb, R. and S. Hockfield. Large diameter primary afferent input is required for developmental expression of a proteoglycan on the surface of motor neurons. *Neuroscience* **34**: 391-401 (1990).
27. Hockfield, S., R. Tootell, and S. Zaremba. Molecular differences among neurons reveal an organization of human visual cortex. *Proc. Natl. Acad. Sci.* **87**:3027-3031 (1990).
28. Friedman, B., S. Zaremba, and S. Hockfield. Monoclonal antibody Rat-401 recognizes Schwann cells in mature and developing peripheral nerve. *J. Comp. Neurol.* **295**: 43-51 (1990).
29. DeYoe, E. A., S. Hockfield, H. Garren, and D. Van Essen. Antibody labeling of functional subdivisions in visual cortex: Cat-301 in V1, V2, V3 and MT of the Macaque monkey. *Visual Neurosci.* **5**: 67-81 (1990).
30. Sahin, M. and S. Hockfield. Molecular identification of the Lugaro cell in the cat cerebellar cortex. *J. Comp. Neurol.* **301**: 575-584 (1990).
31. Zaremba, S., J. R. Naegele, C. J. Barnstable, and S. Hockfield. Monoclonal antibodies Cat-301 and VC1.1 define different high molecular weight glycoconjugates. *J. Neurosci.* **10**: 2985-2995 (1990).
32. Guimarães, A., S. Zaremba, and S. Hockfield. Molecular and morphological changes in cat lateral geniculate nucleus and visual cortex induced by visual deprivation are revealed by monoclonal antibodies Cat-301 and Cat-304. *J. Neurosci.* **10**: 3014-3024 (1990).

33. Hockfield, S. and M. Sur. Monoclonal antibody Cat-301 identifies Y-cells in the dorsal lateral geniculate nucleus of the cat. *J. Comp. Neurology* **300**: 320-330 (1990).
34. Kalb, R. G. and S. Hockfield. Induction of a neuronal proteoglycan by the NMDA receptor in the developing spinal cord. *Science* **250**: 294-296 (1990).
35. Hockfield, S., S. Zaremba, R. G. Kalb, and H. Fryer. Expression of neural proteoglycans correlates with the acquisition of mature neuronal properties in the mammalian brain. Cold Spring Harbor Sympo. *Quant. Biol.* **55**: 505-514 (1990).
36. Marshall, J., K. A. Martin, M. Picciotto, S. Hockfield, A. C. Nairn, and L. K. Kaczmarek. Identification and localization of a dogfish homologue of human cystic fibrosis transmembrane conductance regulator. *J. Biol. Chem.* **266**: 22749-22754 (1991).
37. Fryer, H. J. L., G. M. Kelly, L. Molinaro, and S. Hockfield. The high molecular weight Cat-301 chondroitin sulfate proteoglycan from brain is related to the large aggregating proteoglycan from cartilage, aggrecan. *J. Biol. Chem.* **267**: 9874-9883 (1992).
38. Martin, K. A., S. Grant, and S. Hockfield. The *mas* proto-oncogene is developmentally regulated in the rat central nervous system. *Dev. Brain Res.* **68**: 75-82 (1992).
39. Perney, T., J. Marshall, K. A. Martin, S. Hockfield, and L. K. Kaczmarek. Expression of the mRNAs for the Kv3.1 potassium channel gene in the adult and developing rat brain. *J. Neurophysiol.* **68**: 756-766 (1992).
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42. Martin, K. A. and S. Hockfield. Expression of the *mas* proto-oncogene in the rat hippocampal formation is regulated by neuronal activity. *Mol. Brain Res.* **19**: 303-309 (1993).
43. Sahin, M. and S. Hockfield. Identification of putative protein tyrosine phosphatases in developing rat brain. *J. Neurosci.* **13**: 4968-4978 (1993).
44. Kind, P., C. Blakemore, H. Fryer, and S. Hockfield. Identification of proteins down-regulated during the postnatal development of the cat visual cortex. *Cerebral Cortex* **4**: 361-375 (1994).
45. Kalb, R. G. and S. Hockfield. Electrical activity in the neuromuscular unit can influence the molecular development of motor neurons. *Developmental Biology* **162**: 539-548 (1994).
46. Jaworski, D. M., G. Kelly, and S. Hockfield. BEHAB, a new member of the proteoglycan tandem repeat family of hyaluronan binding proteins, that is restricted to the brain. *J. Cell Biology* **125**: 495-509 (1994).
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48. Minturn, J., D. Geschwind, H. J. L. Fryer, and S. Hockfield. Early postmitotic neurons transiently express TOAD-64, a neural specific, membrane associated protein. *J. Comp. Neurol.* **355**: 369-379 (1995).
49. Jaworski, D. M., G. Kelly, and S. Hockfield. The CNS specific hyaluronan-binding protein, BEHAB, is expressed in ventricular zones coincident with gliogenesis. *J. Neurosci.* **15**: 1352-1362 (1995).
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51. Boyne, L. J., K. Martin, S. Hockfield, and I. Fischer. Expression and distribution of phosphorylated MAP1B in growing axons of cultured hippocampal neurons. *J. Neuroscience Res.* **40**: 439-450 (1995).
52. Sahin, M., S. A. Slaugenhaup, J. F. Gusella, and S. Hockfield. A protein tyrosine phosphatase, PTPH1, is expressed in a segment-specific pattern in the rat diencephalon. *Proc. Natl. Acad. Sci.* **92**: 7859-7863 (1995).

53. Minturn, J., H. J. L. Fryer, D. Geschwind, and S. Hockfield. TOAD-64, a gene expressed early in neuronal differentiation in the rat, is related to *unc-33*, a *C. elegans* gene involved in axon outgrowth. *J. Neurosci.* **15**: 6757-6766 (1995).
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55. Jaworski, D. M., G. M. Kelly, J. M. Piepmeier, and S. Hockfield. BEHAB (Brain Enriched Hyaluronan Binding) is expressed in surgical samples of glioma and in intracranial grafts of invasive glioma cell lines. *Cancer Research* **56**: 2293-2298 (1996).
56. Geschwind, D. H., G. Kelly, H. J. L. Fryer, and S. Hockfield. Identification and characterization of novel developmentally regulated proteins in rat spinal cord. *Dev. Brain Research* **97**: 62-70 (1996).
57. Kind, P. K., G. Kelly, H. J. L. Fryer, C. Blakemore, and S. Hockfield. PLC- $\beta$ 1 is present in the botrysome, an intermediate compartment-like organelle, during periods of developmental plasticity in cat visual cortex. *J. Neurosci.* **17**: 1471-1480 (1997).
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63. Zhang, H., G. Kelly, C. Zerillo, D. M. Jaworski, and S. Hockfield. Expression of a cleaved, brain specific, extracellular matrix protein mediates glioma cell invasion *in vivo*. *J. Neurosci.* **18**: 2370-2376 (1998).
64. Jaworski, D. M., G. Kelly, and S. Hockfield. Intracranial injury acutely induces the expression of the secreted isoform of the CNS-specific hyaluronan-binding protein BEHAB/Brevican. *Experimental Neurology* **157**: 327-337 (1999).
65. Matthews, R. T., S. C. Gary, C. Zerillo, M. Pratta, K. Solomon, E. C. Arner, and S. Hockfield. BEHAB/Brevican Cleavage in a glioma cell line is mediated by an ADAMTS family member. *J. Biol. Chem.* **275**: 22695-703 (2000).
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67. Nutt, C. L., C. Zerillo, G. Kelly, and S. Hockfield. BEHAB (Brain Enriched Hyaluronan Binding)/Brevican Increases Aggressiveness of CNS-1 Gliomas in Lewis Rats. *Cancer Res.* **61**: 7056-7059 (2001).
68. Benvenuti, S., R. Cramer, C. C. Quinn, J. Bruce, M. Vzelebil, S. Corless, J. Bond, A. Yang, S. Hockfield, A. L. Burlingame, M. D. Waterfield, and P. S. Jat. Differential proteome analysis of replicative senescence in rat embryonic fibroblasts. *Mol. And Cell. Proteomics* **1**: 280-292 (2002).
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