

07/14/2010

CURRICULUM VITAE

NAME: Purves, Dale

EDUCATION:

1960 - B.A. Summa cum Laude, Yale University, New Haven, CT

1964 - M.D. Harvard Medical School, Boston, MA

EXPERIENCE:

2009-Present Professor of Neurobiology, Duke University
Director, Neuroscience and Behavioral Disorders Program, Duke-NUS
Graduate Medical School
Executive Director, A*STAR Neuroscience Research Partnership in Singapore

2003-2009 Director, Center for Cognitive Neuroscience, Duke University, Durham, North
Carolina

2003-present Professor, Department of Philosophy

1996-present Professor, Department of Psychological and Brain Sciences

1990-2009 George Barth Geller Professor for Research in Neurobiology, Department of
Neurobiology, Duke University, Durham, North Carolina

1990-2002 Chairman, Department of Neurobiology, Duke University, Durham, North
Carolina

1985-1990 Professor of Neurobiology, Department of Anatomy and Neurobiology,
Washington University School of Medicine, St. Louis, Missouri

1985-1990 Co-Director, Javits Center for Neuroscience at Washington University

1985-1987 Director, Grass Fellows Program, Marine Biological Laboratory

1979-1985 Professor of Physiology and Biophysics, Department of Physiology and
Biophysics, Washington University School of Medicine, St. Louis, Missouri

1976-1979 Associate Professor, Department of Physiology and Biophysics, Washington
University School of Medicine

1978-1984 Instructor and Organizer, Cold Spring Harbor Summer Course on
Developmental Neurobiology

1977; 1979 Instructor and Organizer, Cold Spring Harbor Summer Course on the Structure
and Function of the Synapse

1973-1976 Assistant Professor, Department of Physiology and Biophysics, Washington
University School of Medicine

1971-1973 Postdoctoral Fellow, Department of Biophysics, University College London,
London, England

1970 Grass Fellow in Neurophysiology (Marine Biological Laboratory, Woods Hole)

1968-1971 Postdoctoral Fellow, Department of Neurobiology, Harvard Medical School

1968-69 Resident in Neurosurgery, Massachusetts General Hospital

1968 Physician for the Committee of Responsibility, Vietnam

1967-1968 Assistant Resident in Surgery, Massachusetts General Hospital

1965-1967 Peace Corps Physician, Venezuela (USPHS)

1964-1965 Intern in Surgery, Massachusetts General Hospital

PRIMARY ACADEMIC APPOINTMENTS:

Professor of Neurobiology, Duke University

Director, Neuroscience and Behavioral Disorders Program, Duke-NUS Graduate Medical School, Singapore

Executive Director, A*STAR/Duke-NUS Neuroscience Research Partnership, Singapore

SECONDARY ACADEMIC APPOINTMENTS:

Professor, Department of Psychological and Brain Sciences, Duke University

Professor, Department of Philosophy, Duke University

Professor, Department of Physiology, National University of Singapore

HONORS AND AWARDS:

Scholar of the House, Yale University, 1959-60

Dean's Prize, Yale University, 1960

Alpha Omega Alpha, Harvard Medical School, 1963

Graduation Speaker, Harvard Medical School, 1964

Moseley Traveling Fellowship, Harvard Medical School, 1971

Named Teacher of Year by first year medical students, Washington University School of Medicine, 1974

Named Teacher of the Year by graduating class, Washington University School of Medicine, 1978.

Mathilde Solowey Award in Neuroscience, 1979

Alexander Forbes Lectureship (Grass Foundation), 1983

Jacob K. Javits Neuroscience Investigator Award (NINCDS), 1984

Viktor Hamburger Lecturer (Washington University), 1984

Clinton Woolsey Annual Lecturer (University of Wisconsin), 1986

Annual Distinguished Lecturer in Neuroscience (SUNY, Stony Brook), 1987

Camillo Golgi Award Lecturer (FIDIA), 1988-89

Election to National Academy of Sciences, 1989

Annual Distinguished Lecturer in Neuroscience (University of Edinburgh), 1990

Grass Lecturer (Society for Neuroscience), 1990

Jacob K. Javits Neuroscience Investigator Award (NINDS - 2nd Award), 1990

John H. Krantz, Jr. Memorial Lectureship (University of Maryland), 1991

Decade of the Brain Plenary Lecturer (American Academy of Neurology), 1992

"Lezioni Lincee" Award Lectures (Accademia Nazionale dei Lincei, Italy), 1992

Plenary Special Lecturer, Japanese Society for Neuroscience, 1992

5th C.U. Ariens Kappers Lecturer, Brain Research Institute, Amsterdam, The Netherlands, 1993

10th Annual Dodge Lecturer (Washington University), 1995

Davison Society Excellence in Teaching Award (Duke University), 1995

Election to the Institute of Medicine, National Academy of Sciences, 1996

Second Annual Stephen S. Kuffler Lecturer (Stanford University), 1998

Election to the American Academy of Arts and Sciences, 1999

Edward W. Snowden Lecturer, Wesleyan University, 2007

Award for Excellence in Neuroscience Education (Association of Neuroscience Departments and Programs), 2008
Election to Fellowship, American Association for the Advancement of Science, 2008

EDITORIAL POSTS:

Associate Editor, Journal of Neurocytology (1977-1983)
Associate Editor, Journal of Neuroscience (1980-1987)
Associate Editor, Journal of Physiology (Lond.) (1982-1989)
Editorial Advisor, Seminars in Neuroscience (1989-1992)
Editor-in-Chief, Journal of Neuroscience (1988-1993)
Editorial Board, Proceedings of the National Academy of Sciences (2004-present)

MEMBERSHIPS:

Society for Neuroscience
Corporation of the Marine Biological Laboratory
The Cognitive Neuroscience Society
National Academy of Sciences
Institute of Medicine
American Academy of Arts and Sciences

OTHER PROFESSIONAL ACTIVITIES:

Course master for Neural Sciences Course, Washington University School of Medicine (1978-1984)
Program Committee, Society for Neuroscience (1978-1981)
Neurological Sciences Study Section, NIH (1981-1985)
Chairman, Task Force on the Annual Meeting, Society for Neuroscience (1982)
Chairman, Publications Committee, Society for Neuroscience (1984-1987)
Vice-President, St. Louis Chapter, Physicians for Social Responsibility (1985-1986)
Nominating Committee for the Dana Foundation Awards (1992-1995)
Howard Hughes Medical Institute, Postdoctoral Research Fellowships for Physicians External Review Panel (1992-1994)
Member at Large, Class Membership Committee, National Academy of Sciences (1992)
Board of Directors, Ruth K. Broad Biomedical Research Foundation (1992-2002)
International Scientific Advisory Board for the Basic Research Institute of the Max-Planck-Institut für Psychiatrie in Martinsried (1994-2000)
Dana Alliance (1994-present)
Committee on the History of Neuroscience, Society for Neuroscience (1995-1998)
Morehouse School of Medicine Neuroscience Institute External Advisory Committee (1995-present)
Liaison for Neuroscience Section, National Academy of Sciences (1997-1999)
Trustee, Grass Foundation (1998-2001)
Liaison to the National Research Council, National Academy of Science (1999-2002)
City of Medicine Awards Committee (1999-present)
Perl Neuroscience Prize Selection Committee (2000-2004)
NASA, The Universities Space Research Association's Division of Space Life Sciences Committee (2003-2005)
Grass Foundation Lecture Selection Committee (2003-2006)

Committee on the History of Neuroscience, Society for Neuroscience (2005-2006)
Chair, Wellcome Trust Neurosciences and Mental Health Strategy Committee (2005-2007)

STATEMENT OF RESEARCH INTERESTS:

Current research in the Purves laboratory concerns visual and auditory perception and the neurobiological underpinnings of perceptual phenomena. Ongoing investigations in vision include understanding the perception of brightness, color, orientation, motion, and depth; the interest in audition concerns understanding the tonal relationships in music arising from the similarity of musical tones and voiced speech spectra. The unifying theme of these projects is the hypothesis that visual and auditory percepts are generated according to a wholly empirical strategy that represents in perception the behavioral significance of sensory stimuli rather than their physical properties. This theory of perception and its relation to cortical structure and function is being explored by examining the perceptual responses of human subjects, the statistical relation of stimuli and sources in natural image and sound databases, as well as the emerging properties of virtual organisms evolving in simulated environments. The overarching hypothesis is that perceptual phenomenology is determined in a wholly empirical manner and thus predicted by information in databases that serve as proxies of human experience.

PUBLICATIONS:

Original Research Papers

1. Nicholls JG, Purves D (1970) Monosynaptic chemical and electrical connections between sensory and motor cells in the central nervous system of the leech. *J Physiol* 209: 647-667.
2. Nicholls JG, Purves D (1972) A comparison of chemical and electrical synaptic transmission between single sensory cells and a motoneurone in the central nervous system of the leech. *J Physiol* 225: 637-656.
3. Purves D, McMahan UJ (1973) The distribution of synapses on a physiologically identified motor neuron in the central nervous system of the leech: an electron microscope study after injection of the fluorescent dye Procion yellow. *J Cell Biol* 55: 205-220.
4. Purves D, Sakmann B (1974) The effect of contractile activity on fibrillation and extrajunctional acetylcholine-sensitivity in rat muscle maintained in organ culture. *J Physiol* 237: 157-182.
5. Purves D, Sakmann B (1974) Membrane properties underlying spontaneous activity of denervated muscle fibres. *J Physiol* 239: 125-153.
6. Purves D (1975) Functional and structural changes in mammalian sympathetic neurones following interruption of their axons. *J Physiol* 252: 429-463.
7. Purves D (1975) Persistent innervation of mammalian sympathetic neurones by native and foreign fibres. *Nature* 256: 589-590.

8. McMahan UJ, Purves D (1976) Visual identification of two kinds of nerve cells and their synaptic contacts in a living autonomic ganglion of the mudpuppy (Necturus maculosus). J Physiol 254: 405-425.
9. Purves D (1976) Functional and structural changes in mammalian sympathetic neurones following colchicine application to postganglionic nerves. J Physiol 259: 159-175.
10. Purves D, Njå A (1976) Effect of nerve growth factor on synaptic depression after axotomy. Nature 260: 535-536.
11. Purves D (1976) Competitive and non-competitive re-innervation of mammalian sympathetic neurones by native and foreign fibres. J Physiol 261: 453-475.
12. Njå A, Purves D (1977) Specific innervation of guinea-pig superior cervical ganglion cells by preganglionic fibres arising from different levels of the spinal cord. J Physiol 264: 565-583.
13. Njå A, Purves D (1977) Re-innervation of guinea-pig superior cervical ganglion cells by preganglionic fibres arising from different levels of the spinal cord. J Physiol 272: 633-651.
14. Njå A, Purves D (1978) The effects of nerve growth factor and its antiserum on synapses in the superior cervical ganglion of the guinea-pig. J Physiol 277: 53-75.
15. Njå A, Purves D (1978) Specificity of initial synaptic contacts made on guinea-pig superior cervical ganglion cells during regeneration of the cervical sympathetic trunk. J Physiol 281: 45-62.
16. Lichtman JW, Purves D, Yip JW (1979) On the purpose of selective innervation of guinea-pig superior cervical ganglion cells. J Physiol 292: 69-84.
17. Purves D, Thompson W (1979) The effects of postganglionic axotomy on selective synaptic connections in the superior cervical ganglion of the guinea pig. J Physiol 297: 95-110.
18. Lichtman JW, Purves D, Yip JW (1980) Innervation of sympathetic neurones in the guinea-pig thoracic chain. J Physiol 298: 285-299.
19. Lichtman JW, Purves D (1980) The elimination of redundant preganglionic innervation to hamster sympathetic ganglion cells in early post-natal life. J Physiol 301: 213-228.
20. Rubin E, Purves D (1980) Segmental organization of sympathetic preganglionic neurons in the mammalian spinal cord. J Comp Neurol 192: 163-174.
21. Purves D, Thompson W, Yip JW (1981) Re-innervation of ganglia transplanted to the neck from different levels of the guinea-pig sympathetic chain. J Physiol 313: 49-63.

22. Purves D, Hume RI (1981) The relation of postsynaptic geometry to the number of presynaptic axons that innervate autonomic ganglion cells. *J Neurosci* 1: 441-452.
23. Johnson DA, Purves D (1981) Post-natal reduction of neural unit size in the rabbit ciliary ganglion. *J Physiol* 318: 143-159.
24. Hume RI, Purves D (1981) Geometry of neonatal neurones and the regulation of synapse elimination. *Nature* 293: 469-471.
25. Purves D, Wigston DJ (1983) Neural units in the superior cervical ganglion of the guinea pig. *J Physiol* 334: 169-178.
26. Hume RI, Purves D (1983) Apportionment of the terminals from single preganglionic axons to target neurones in the rabbit ciliary ganglion. *J Physiol* 338: 259-275.
27. Johnson DA, Purves D (1983) Tonic and reflex synaptic activity recorded in ciliary ganglion cells of anaesthetized rabbits. *J Physiol* 339: 599-613.
28. Forehand CJ, Purves D (1984) Regional innervation of rabbit ciliary ganglion cells by the terminals of preganglionic axons. *J Neurosci* 4: 1-12.
29. Purves D, Hadley RD (1985) Changes in the dendritic branching of adult mammalian neurones revealed by repeated imaging in situ. *Nature* 315: 404-406.
30. Purves D, Lichtman JW (1985) Geometrical differences among homologous neurons in mammals. *Science* 228: 298-302.
31. Purves D, Rubin E, Snider WD, Lichtman JW (1986) Relation of animal size to convergence, divergence and neuronal number in peripheral sympathetic pathways. *J Neurosci* 6: 158-163.
32. Purves D, Hadley RD, Voyvodic J (1986) Dynamic changes in the dendritic geometry of individual neurons visualized over periods of up to three months in the superior cervical ganglion of living mice. *J Neurosci* 6: 1051-1060.
33. Purves D, Lichtman JW (1987) Synaptic sites on reinnervation nerve cells visualized at two different times in living mice. *J Neurosci* 7: 1492-1497.
34. Magrassi L, Purves D, Lichtman JW (1987) Fluorescent probes that stain living nerve terminals. *J Neurosci* 7: 1207-1214.
35. Lichtman JW, Magrassi L, Purves D (1987) Visualization of neuromuscular junctions over periods of several months in living mice. *J Neurosci* 7: 1215-1222.
36. Purves D, Voyvodic JT, Magrassi L, Yawo H (1987) Nerve terminal remodeling visualized in living mice by repeated examination of the same neuron. *Science* 238: 1122-1126.

37. Pomeroy SL, Purves D (1988) Neuron/glia relationships observed over intervals of several months in living mice. *J Cell Biol* 107: 1167-1175.
38. Purves D, Snider WD, Voyvodic JT (1988) Trophic regulation of nerve cell morphology and innervation in the autonomic nervous system. *Nature* 336: 123-128.
39. Harris L, Purves D (1989) Rapid remodeling of sensory endings in the corneas of living mice. *J Neurosci* 6: 2210-2214.
40. Ivanov A, Purves D (1989) Ongoing electrical activity of superior cervical ganglion cells in mammals of different sizes. *J Comp Neurol* 284: 398-404.
41. LaMantia A-S, Purves D (1989) Development of glomerular pattern visualized in the olfactory bulbs of living mice. *Nature* 341: 646-649.
42. Pomeroy SL, LaMantia A-S, Purves D (1990) Postnatal construction of neural circuitry in the mouse olfactory bulb. *J Neurosci* 10: 1952-1966.
43. Purves D, LaMantia A-S (1990) Number of "blobs" in the primary visual cortex of neonatal and adult monkeys. *Proc Natl Acad Sci* 87: 5764-5767.
44. Zheng D, LaMantia A-S, Purves D (1991) Specialized vascularization of the primate visual cortex. *J Neurosci* 11: 2622-2629.
45. LaMantia A-S, Pomeroy S, Purves D (1992) Vital imaging of glomeruli in the mouse olfactory bulb. *J Neurosci* 12: 976-988.
46. Riddle D, Richards A, Zsuppan F, Purves D (1992) Growth of the rat somatic sensory cortex and its constituent parts during postnatal development. *J Neurosci* 12: 3509-3524.
47. Purves D, LaMantia A (1993) Development of blobs in the visual cortex of macaques. *J Comp Neurol* 334: 169-175.
48. Riddle DR, Gutierrez G, Zheng D, White LE, Richards A, Purves D (1993) Differential metabolic and electrical activity in the somatic sensory cortex of juvenile and adult rats. *J Neurosci* 13: 4193-4213.
49. White L, Lucas G, Richards A, Purves D (1994) Cerebral asymmetry and handedness. *Nature* 368: 197-198.
50. Purves D, White LE, Andrews T (1994) Manual asymmetry and handedness. *Proc Natl Acad Sci* 91: 5030-5032.
51. Purves D, White LE (1994) Monocular preferences in binocular viewing. *Proc Natl Acad Sci* 91: 8339-8342.
52. Zheng D, Purves D (1995) Effects of increased neural activity on brain growth. *Proc Natl Acad Sci* 92: 1802-1806.

53. Riddle DR, Purves D (1995) Individual variation and lateral asymmetry of the rat primary somatosensory cortex. *J Neurosci* 15: 4184-4195.
54. Andrews TJ, White LE, Binder D, Purves D (1996) Temporal events in cyclopean vision. *Proc Natl Acad Sci* 93: 3689-3692.
55. Purves D, Paydarfar JA, Andrews TJ (1996) The wagon wheel illusion in movies and reality. *Proc Natl Acad Sci* 93: 3693-3697.
56. Coppola D, Purves D (1996) The extraordinarily rapid disappearance of entoptic images. *Proc Natl Acad Sci* 93: 8001-8004.
57. Purves D, White LE, Riddle DR (1996) Is neural development Darwinian? *TINS* 19 (11): 460-464.
58. White LE, Andrews TJ, Hulette C, Richards A, Groelle M, Paydarfar J, Purves (1997) Structure of the human sensorimotor system I. Morphology and cytoarchitecture of the central sulcus. *Cereb Cortex* 7: 18-30.
59. White LE, Andrews TJ, Hulette C, Richards A, Groelle M, Paydarfar J, Purves D (1997) Structure of the Human Sensorimotor System II. Lateral symmetry. *Cereb Cortex* 7:31-47.
60. Andrews TJ, Halpern SD, Purves D (1997) Correlated size variations in human visual cortex, lateral geniculate nucleus and optic tract. *J Neurosci* 17: 2859-2868.
61. Purves D, Andrews TJ (1997) The perception of transparent 3-dimensional objects. *Proc Natl Acad Sci* 94: 6517-6522.
62. Andrews TJ, Purves, D (1997) Similarities in normal and binocularly rivalrous viewing. *Proc Natl Acad Sci* 94: 9905-9908.
63. Coppola DM, White LE, Fitzpatrick D, Purves D (1998) Unequal representation of cardinal and oblique contours in ferret visual cortex. *Proc Natl Acad Sci* 95(5): 2621-2623.
64. Coppola DM, Purves HR, McCoy AN, Purves D (1998) The distribution of oriented contours in the real world. *Proc Natl Acad Sci* 95(7): 4002-4006.
65. Williams, SM, McCoy AN, Purves D (1998) The influence of depicted illumination on perceived brightness. *Proc Natl Acad Sci* 95(22): 13296-13300.
66. Williams, SM, McCoy AN, Purves D (1998) An empirical explanation of brightness. *Proc Natl Acad Sci* 95(22): 13301-13306.
67. Lotto RB, Williams SM, Purves D (1999) An empirical basis for Mach bands. *Proc Natl Acad Sci* 96(9): 5239-5244.

68. Lotto RB, Williams SM, Purves D (1999) Mach bands as empirically derived associations. *Proc Natl Acad Sci* 96(9): 5245-5250.
69. Purves D, Shimpi A, Lotto RB (1999) An empirical explanation of the Cornsweet effect. *J Neurosci* 19(19): 8542-8551.
70. Lotto, RB, Purves D (1999) The effects of color on brightness. *Nature Neurosci* 2: 1010-1014.
71. Halpern, SD, Andrews TJ, Purves D (1999) Interindividual variation in human visual performance. *J Cog Neurosci* 11(5): 521-534.
72. Purves D, Lotto B, Polger T (2000) Color vision and the four-color-map problem. *J Cog Neurosci* 12(2): 233-237.
73. Nundy S, Lotto B, Coppola D, Shimpi A, Purves D. (2000) Why are angles misperceived? *Proc Natl Acad Sci*. 97(10): 5592-5597.
74. Lotto, RB, Purves D (2000). An empirical explanation of color contrast. *Proc Natl Acad Sci* 97(23): 12834-12839.
75. Lotto RB, Purves D (2001) An empirical explanation of the Chubb illusion. *J Cog Neurosci* 13(5): 547-555.
76. Yang Z, Shimpi A, Purves D (2001) A wholly empirical explanation of perceived motion. *Proc Natl Acad Sci* 98(9): 5252-5257.
77. Howe CQ, Purves D (2002) Range image statistics can explain the anomalous perception of length. *Proc Natl Acad Sci* 99(20): 13184-13188.
78. Lotto RB, Purves D (2002) The empirical basis of color perception. *Consciousness and Cognition* 11(4): 609-629.
79. Nundy S, Purves D (2002) A probabilistic explanation of brightness scaling. *Proc Natl Acad Sci* 99(22): 14482-14487.
80. Yang Z, Shimpi A, Purves D (2002) Perception of objects that are translating and rotating. *Perception* 31(8): 925-942.
81. Yang Z, Purves D (2003) A statistical explanation of visual space. *Nature Neurosci* 6: 632 - 640.
82. Schwartz D, Howe CQ, Purves D (2003) The statistical structure of human speech sounds predicts musical universals. *J Neurosci* 23(18): 7160-7168.
83. Long F, Purves D (2003) Natural scene statistics as the universal basis for color context effects. *Proc Natl Acad Sci* 100 (25): 15190-15193.
84. Yang Z, Purves D (2003) Image/source statistics of surfaces in natural scenes. *Network: Computation in Neural Systems* 14: 371-390.

85. Howe CQ, Purves D (2004) Size contrast and assimilation explained by the statistics of natural scene geometry. *J Cog Neurosci* 16(1): 90-102.
86. Yang Z, Purves D (2004) The statistical structure of natural light patterns determines perceived light intensity. *Proc Natl Acad Sci* 101(23): 8745-8750.
87. Schwartz D, Purves D (2004) Pitch is determined by naturally occurring periodic sounds. *Hearing Research* 194: 31-46.
88. Howe CQ, Purves D (2005) Natural scene geometry predicts the perception of angles and line orientation. *Proc Natl Acad Sci* 102(4): 1228-1233.
89. Howe CQ, Purves D (2005) The Müller-Lyer illusion explained by the statistics of image-source relationships. *Proc Natl Acad Sci* 102(4): 1234-1239.
90. Howe CQ, Yang Z, Purves D (2005) The Poggendorff illusion explained by natural scene geometry. *Proc Natl Acad Sci* 102(21): 7707-7712.
91. Long F, Yang Z, Purves D (2006) Spectral statistics in natural scene predict hue, saturation, and brightness. *Proc Natl Acad Sci* 103(15): 6013-6018.
92. Howe CQ, Lotto RB, Purves D (2006) Comparison of Bayesian and empirical ranking approaches to visual perception. *J Theor Biol* 241: 866-875.
93. Boots B, Nundy S, Purves D (2007) Evolution of visually-guided behavior in artificial agents. *Network: Computation in Neural Systems* 18 (1): 11-34.
94. Ross D, Choi J, Purves D (2007) Musical intervals in speech. *Proc Natl Acad Sci* 104(23): 9852-9857.
95. Wojtach W.T., Sung K, Truong S, Purves D (2008) An empirical explanation of the flash-lag effect. *Proc Natl Acad Sci*, 105(42): 16338-16343.
96. Sung K, Wojtach W.T., Purves D (2009) An empirical explanation of aperture effects *Proc Natl Acad Sci*, 106 (1): 298-303.
97. Wojtach WT, Sung K, Purves D (2009) An Empirical Explanation of the Speed-Distance Effect. *PLoS ONE* 4(8): e6771 doi:10.1371/ journal.pone.0006771
98. Gill, KZ and Purves D (2009) A biological rationale for musical scales. *PLoS ONE* 4: e8144. doi:10.1371/ journal.pone.0008144.
99. Bowling, D.L., K.Gill, et al. (2010) Major and minor music compared to excited and subdued speech. *J Acoust Soc Am* 127 (1): 491-503.

Supervised Papers by Students in the Lab

1. Lichtman JW (1977) The reorganization of synaptic connexions in the rat submandibular ganglion during post-natal development. *J Physiol* 273: 155-177.
2. Lichtman JW (1980) On the predominantly single innervation of submandibular ganglion cells in the rat. *J Physiol* 302: 121-130.
3. Wigston DJ (1981) Innervation of individual guinea-pig superior cervical ganglion cells by axons with similar conduction velocities. *J Physiol* 334: 178-187.
4. Wigston DJ, Sanes JR (1982) Selective reinnervation of adult mammalian muscle by axons from different segmental levels. *Nature* 299: 464-467.
5. Wigston DJ (1983) Maintenance of cholinergic neurones and synapses in the ciliary ganglion of aged rats. *J Physiol* 344: 223-231.
6. Jackson PC (1983) Reduced activity during development delays the normal rearrangement of synapses in the rabbit ciliary ganglion. *J Physiol* 345: 319-327.
7. Rubin E (1985) Development of the rat superior cervical ganglion: ganglion cell maturation. *J Neurosci* 5: 673-684.
8. Rubin E (1985) Development of the rat superior cervical ganglion: ingrowth of preganglionic axons. *J Neurosci* 5: 685-696.
9. Rubin E (1985) Development of the rat superior cervical ganglion: initial stages of synapse formation. *J Neurosci* 5: 697-704.
10. Snider WD (1986) Rostro-caudal differences in the development of rat sympathetic chain ganglia. *J Comp Neurol* 244: 245-253.
11. Forehand CJ (1985) Density of somatic innervation on mammalian autonomic ganglion cells is inversely related to dendritic complexity and preganglionic convergence. *J Neurosci* 5: 3403-3408.
12. Jackson PC (1986) Innervation of the iris by individual parasympathetic axons in the adult mouse. *J Physiol* 378: 485-495.
13. Snider WD (1986) Rostrocaudal differences in dendritic growth and synaptogenesis in rat sympathetic chain ganglia. *J Comp Neurol* 244: 245-253.
14. Snider WD (1987) The dendritic complexity and innervation of submandibular neurons in five species of mammals. *J Neurosci* 7: 1760-1768.
15. Voyvodic J (1987) Development and regulation of dendrites in the rat superior cervical ganglion. *J Neurosci* 7: 904-912.

16. Forehand C (1987) Ultrastructural analysis of the distribution of synaptic boutons from labeled preganglionic axons on rabbit ciliary neurons. *J Neurosci* 7: 3274-3281.
17. Yawo H (1987) Changes in the dendritic geometry of mouse superior cervical ganglion cells following postganglionic axotomy. *J Neurosci* 7: 3703-3711.
18. Johnson DA (1988) Regulation of intraganglionic synapses among rabbit parasympathetic neurones. *J Physiol* 397: 51-62.
19. Snider WD (1988) Nerve growth factor promotes dendritic arborization of sympathetic ganglion cells in developing mammals. *J Neurosci* 8: 2628-2634.
20. Voyvodic JT (1989) Target size regulates calibre and myelination of sympathetic axons. *Nature* 342: 430-433.
21. Voyvodic JT (1989) Peripheral target regulation of dendritic geometry in the rat superior cervical ganglion. *J Neurosci* 9: 1997-2010.
22. Hadley RD (1990) Innervation and geometry of rabbit ciliary ganglion cells after preganglionic nerve regeneration. *J Comp Neurol* 295: 268-276.
23. LaMantia A-S (1991) The regulation of neuronal morphology and innervation in developing and adult animals: Anatomical, physiological and in vivo observations. NATO Advanced Study Institute Proceedings, Systems Approaches to Developmental Neurobiology, (Raymond P, Easter S, eds), pp. 99-111. New York: Plenum Press.
24. Andrews TJ, McCoy AN (1997) Illusory motion prevents tracking real motion. *Perception* 26: 269-275.
25. Andrews TJ, Coppola DM (1999) Idiosyncratic characteristics of saccadic eye movements when viewing different visual environments. *Vision Research* 39: 2947-2953.

Reviews

1. Roper S, Purves D, McMahan UJ (1976) Synaptic organization and acetylcholine sensitivity of multiply innervated autonomic ganglion cells. Cold Spring Harbor Symposium on Quantitative Biology, 40: 283-295.
2. Purves D, Lichtman JW (1978) Formation and maintenance of synaptic connections in autonomic ganglia. *Physiol Rev* 58: 821-862.
3. Purves D, Lichtman JW (1980) Elimination of synapses in the developing nervous system. *Science* 210: 153-157.
4. Purves D, Lichtman JW (1983) Specific connections between nerve cells. *Ann Rev Physiol* 45: 553-565.

5. Purves D (1983) Modulation of neuronal competition by postsynaptic geometry in autonomic ganglia. *Trends in Neurosci* 6: 10-16.
6. Easter SS, Purves D, Rakic P, Spitzer NC (1985) The changing view of neural specificity. *Science* 230: 507-511.
7. Purves D (1986) The trophic theory of neural connections. *Trends in Neurosci* 9: 486-489.
8. Purves D, Voyvodic JT (1987) Imaging mammalian nerve cells and their connections over time in living animals. *Trends in Neurosci* 10: 398-404.
9. Purves D (1990) Assessing some dynamic properties of the living nervous system. "School of Bernard Katz" Symposium. *Quart J Exp Physiol* 74: 1089-1105.
10. Purves D (1990) Neural architecture visualized over time in living animals. FIDIA Research Foundation, Neuroscience Award Lectures, Vol. 4, pp. 203-225. Raven Press, Ltd., New York.
11. Purves D, LaMantia A-S (1990) Construction of modular circuits in the mammalian brain. *Cold Spring Harbor Symposia on Quantitative Biology* LV: 445-452.
12. Purves D, Riddle D, LaMantia A (1992) Iterated patterns of brain circuitry (or how the cortex gets its spots). *Trends in Neurosci* 15: 362-368.
13. Purves D, Riddle D, White L, Gutierrez G (1994) Neural activity and the development of the somatic sensory system. *Curr Opin Neurobiol* 4: 120-123.
14. Purves D, White LE, Riddle DR (1996) Is neural development Darwinian? *Trends Neurosci* 19:460-464.
15. Purves D, Lotto RB, Williams SM, Nundy S, Yang, Z (2001) Why we see things the way we do: Evidence for a wholly empirical strategy of vision. *Philos Trans R Soc Lond B*, 356:285-297.
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