# Curriculum Vitae

# Dennis D.M. O'Leary

## Current Position and Address

Professor
Vincent J. Coates Chair in Molecular Neurobiology
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## Publications

For peer-reviewed published papers and citation data click following URL: Scholar.Google.com and enter Dennis O'Leary for User Profile.

## Education

| | |
|---|---|
| 1972 - 1976 | B.S., Biology (Biochemistry), University of Illinois, Urbana |
| 1979 - 1983 | Ph.D., Neural Sciences, Washington Univ Sch Med - St. Louis (W. Maxwell Cowan - advisor) |
| 1983 - 1985 | Postdoctoral Fellow, The Salk Institute, La Jolla, CA (W. Maxwell Cowan - advisor) |

## Academic Appointments

| | |
|---|---|
| 1990 - present | Professor (1993-present), Associate Professor (1990-1993), Molecular Neurobiology Laboratory, The Salk Institute, La Jolla, CA |
| 1991 - present | Adjunct Professor (1993-present), Associate Adjunct Professor (1990-1993), Univ California Sch Med, San Diego, Dept of Neuroscience, Dept of Biology, Graduate Programs in Neuroscience and in Biology, and Program in Cognitive Science |
| 1986-1990 | Associate Professor of Neuroscience with tenure (1990), Assistant Prof (1986-1990), Dept of Neurological Surgery, joint appointments in Dept of Anatomy and Neurobiol, Dept of Neurology, Washington Univ School of Medicine, St. Louis |
| 1985-1986 | Research Assistant Professor, Developmental Neurobiology Laboratory, The Salk Institute, La Jolla, California |

## Honors and Awards

| | |
|---|---|
| 2010-2014 | President ('12-'14), President-elect ('10-'12), Cajal Club Association |

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|---|---|
| | (SFN affiliated) |
| 2007 | Krieg Cortical Discoverer Prize, Cajal Club Association |
| 2004-2011 | Javits Investigator Award in Neuroscience, NINDS, NIH |
| 2003 | Fellow, American Association for the Advancement of Science |
| 2003 | Ariens-Kappers Award Laureate, Royal Netherlands Academy of Arts and Sciences |
| 2003 | Highly Cited Researcher Award, Neuroscience, Original Member, Institute for Scientific information |
| 1999-2001 | McKnight Investigator Award |
| 1999 | Capputto Memorial Award, Argentina Society for Neurochemistry |
| 1996 | Decade of the Brain Medalist, American Association of Neurological Surgeons |
| 1996 | Presidential Special Lecture, Society for Neuroscience Annual Meeting |
| 1993-2002 | Senior Editor, Journal of Neuroscience |
| 1991 | Young Investigator Award, Society for Neuroscience |
| 1988 | Krieg Cortical Explorer Award, Cajal Club Association |
| 1987-1989 | McKnight Scholars Award |
| 1987-1989 | Alfred P. Sloan Research Fellow |

**Editorial Boards**

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|---|---|
| 2010 - present | *Frontiers* Reviews Editor |
| 2008 - present | Associate Editor, *Frontiers in Neuroscience / Frontiers in Neural Circuits* |
| 2008 - present | Editorial Board, *Journal of Experimental Neuroscience* |
| 2007 - present | Editorial Board, *Neural Development* |
| 1993 - 2002 | Senior Editor, *Journal of Neuroscience,* Development / Plasticity / Repair Section (handled entire editorial process for approximately 800 new submissions per year, and managed editorial office) |
| 1990 - 1993 | Associate Editor, *Journal of Neuroscience* |
| 1993 - 2002 | Receiving Editor, *Neuroscience Research* |
| 1993 - present | Associate Editor, *Learning and Memory* |
| 1995 - present | Editorial Board, *Current Opinion in Neurobiology* |
| 2000 - present | Highlights Advisory Board, *Nature Reviews Neuroscience* |
| 2001 - present | Editorial Board, *Biological Signals in Neuroscience* |
| 2003 - present | Editorial Board, *Neurosignals* |
| 2001 | Editorial Committee, *Annual Review of Neuroscience* |
| 1995 - 1997 | Associate Editor, *Neuron* |
| 1994 - 1995 | Editorial Board, *Trends in Neuroscience* |
| 1994 | Volume Editor, Development, *Current Opinion in Neurobiology,* 1994, V 4, #1 |
| 1993 | Editor, *Perspectives on Developmental Neurobiology*, 1993, Vol 1, #2. |

**National Institutes of Health Committee Service (partial list)**

| | |
|---|---|
| 2007 | Development and Embryology of the Nervous System, Consensus Terminology Workshop, NIH Neuroscience Blueprint |
| 2003 - present | GENSAT Advisory Committee, NIH |
| 2003 | MDCN7 (NDPR) Scientific Review Group, NIH / CSR |
| 2002 | National Eye Institute Special Emphasis Review panel |
| 2002 | NIH Postgenomics evaluation workshop, Laguna Beach |
| 2000 | Chair, ZNS1 SRB-H SS Technical Evaluation Group-RFP 00-05, NINDS |
| 2000 | Special Emphasis Panel, ZRG1 SSS-R 03 S, NIH / CSR |
| 1998 | NICHD Board of Scientific Directors, Ad hoc reviewer of intramural program |
| 1998 | NINDS Board of Scientific Directors, Ad hoc reviewer of intramural program |
| 1998 | Neuro C Scientific Review Group, NIH / CSR |
| 1997 | NIH Working Group on Neuroscience Peer Review Reorganization |
| 1992 - 1996 | Visual Sciences B Scientific Review Group, NIH / CSR, Regular member |

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|---|---|
| 1993 | National Institute of Mental Health Workshop (Redbook) |
| 1991 | National Eye Institute Workshop, Vice-Chair |
| 1990 - 1991 | NSP-B Scientific Review Group, Ad Hoc, NIH |
| 1990 | Visual Sciences A1 AHR-M1/M2 Scientific Review Group, NIH / CSR |
| 1990 | Visual Sciences B AHR-M3 Scientific Review Group, NIH / CSR |

**Other Professional Service (partial list)**

| | |
|---|---|
| 2005 - present | Howard Hughes Medical Institute, International Program Committee, Canada and Latin America |
| 2004 - present | Kirsch Foundation and Glaucoma Research Foundation Advisory Board |
| 2004 | External Review Committee, CNLM, Univ California-Irvine |
| 2001 – present | External Advisory Comm., West Virginia Univ Med Cntr |
| 2000 | Organizer and Chair, Sam Hersch Symposium on Cerebral Palsy |
| 1994 - present | Scientific Advisory Committee, Australasian Spinal Research Trust |
| 1993 - present | Organizer and Instructor (1993-1996), Instructor (current) Cold Spring Harbor Laboratory Summer Course - Developmental Neurobiology |
| 1993 | Co-organizer of NATO/NSF Conference "Neurospecificity: Maps and Molecules", Cargese, Corsica (May 23-29, 1993) |

**Professional Societies**

American Association for the Advancement of Science
Society for Neuroscience
FASEB/American Association of Anatomists
Cajal Club
International Brain Research Organization

**Service in Professional Societies**

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|---|---|
| 2010 – present | President-elect, Cajal Club |
| 1996 - 1997 | Cajal Club, Program Committee (chair, '97), Awards Committee, Officer Nomination Committee (chair, '96) |
| 1992 - 1996 | Executive Committee of the American Association of Anatomists |
| 1986 - 1989 | Advisory Committee of Young Anatomists to Executive Committee of American Association of Anatomists |

**Major Salk Institute Committees (current service on standing committees)**

Appointments and Promotions (APCOM)
Academic Planning and Facilities (APF)
Innovative Grants (Chairman)

## Summary of Research Contributions

Dennis O'Leary studies the development and plasticity of the vertebrate nervous system. His work focuses on two broad issues: development of neural connectivity and development of the cerebral cortex. To address these issues, O'Leary and his research group use genetic manipulations in mice and chick embryos, in vivo analyses and in vitro assays, and a range of techniques including molecular and cell biology, biochemistry, imaging, and behavioral testing.

O'Leary's goal is to understand fundamental developmental events in the nervous system, to establish a framework to design effective strategies to overcome birth defects, neurological diseases and disorders, and injury.

### *Development of Neural Connectivity*

O'Leary discovered fundamental mechanisms involved in the development of neural connectivity that challenged and supplanted dogma at the time. These discoveries include (i) exuberant axonal projections, (ii) selective axon elimination and the underlying mechanisms, and (iii) interstitial axonal branching as the predominant mechanism of target recognition.

O'Leary's work demonstrated that specific axonal connections arise from initially exuberant projections followed by pruning through a mechanism of selective large-scale axon degeneration. He has established that this naturally-occurring axon pruning is a fundamental characteristic of vertebrate neural development and occurs through a caspase-dependent mechanism that is morphologically similar but molecularly distinct from "Wallerian" degeneration. O'Leary also has shown that the de novo interstitial branching of primary axons is the predominant mechanism of target recognition and innervation in vertebrates, and has determined cellular and molecular mechanisms of its control.

O'Leary's studies on the development of topographic maps in the visual system have defined the predominant mechanisms of topographic axon mapping and novel functions of ephrin-Eph signaling in axon guidance and mapping. This work has established novel cellular and molecular mechanisms for map development, including topographic axon branching as a crucial event in map development that requires unique functions for axon guidance molecules that are distinct from their control of growth cone targeting, and the relative roles of patterned activity and molecular guidance molecules. O'Leary has made prominent contributions to defining functions for ephrins and Ephs in axon guidance and mapping, has shown that distinct ephrins and Ephs regulate interstitial axon branching and direct branch extension, act bifunctionally as repellents and attractants and bidirectionally through forward- and reverse-signaling. His work is the first to determine receptor mechanisms of ephrin-A reverse signaling and the modulation of EphA forward signaling by complexing with neurotrophin receptors.

### *Development of the Cerebral Cortex*

O'Leary has made pioneering contributions to cortical development, especially patterning of the neocortex into functionally-specialized areas. He has pioneered the role of intrinsic genetic mechanisms that specify area identities of cortical progenitors and their neuronal progeny, including the first identification of transcription factors that specify the area identity of progenitors and unique functions for morphogens in progenitor differentiation and regulation of cortical size. Based on this work, O'Leary has proposed a model of neuronal specification for higher brain centers distinct from the model developed from studies of the spinal cord. His group has also established genetic mechanisms for the determination of regional-fate in the cerebral cortex, for example the genetic regulation of the fate decision in telencephalic progenitors to generate olfactory cortex versus neocortex.

Complementing the genetic regulation of forebrain patterning, O'Leary has demonstrated mechanisms of plasticity in area patterning of the neocortex, including novel roles for afferent based mechanisms. Recently, he and his group have found a form of "top-down" plasticity not previously recognized in which the intrinsic genetic specification of cortical sensory areas determines the representation of the sensory periphery within them and drives the subsequent re-patterning of thalamic sensory nuclei to match their cortical counterparts.

**Publications**

For peer-reviewed published papers and citation data click following URL:
Scholar.Google.com and enter Dennis O'Leary for User Profile.

1. O'Leary, DDM, Fricke, RA, Stanfield, BB, Cowan, WM 1979 Changes in the associational afferents to the dentate gyrus in absence of its commissural input. ***Anatomy and Embryology*** 156: 283-299.

2. O'Leary, DDM, Stanfield, BB, Cowan, WM 1980 Evidence for the sprouting of the associational fibers to the dentate gyrus following removal of the commissural afferents in adult rats. ***Anatomy and Embryology*** 156: 151-161.

3. O'Leary, DDM, Stanfield, BB, Cowan, WM 1981 Evidence that early postnatal restriction of the cells of origin of the callosal projection is due to the elimination of axonal collaterals rather than to the death of neurons. ***Developmental Brain Research*** 1:607-617.

4. Stanfield, BB, O'Leary, DDM, Fricks, C 1982 Selective collateral elimination in early postnatal development restricts cortical distribution of rat pyramidal tract neurones. ***Nature*** 298: 371-373.

5. Gerfen, CR, O'Leary, DDM, Cowan, WM 1982 A note on the transneuronal transport of wheat germ agglutinin conjugated horseradish peroxidase in the avian and rodent visual systems. ***Experimental Brain Research*** 48: 443-448.

6. O'Leary, DDM, Cowan, WM 1982 Further studies on the development of the isthmo-optic nucleus with special reference to the occurrence and fate of ectopic and ipsilaterally projecting neurons. ***Journal of Comparative Neurology*** 212: 399-416.

7. Swanson, LW, Lindstrom, J, Tzartos, S, Schmued, LC, O'Leary, DDM, Cowan, WM 1983 Immunohistochemical localization of monoclonal antibodies to the nicotinic acetylcholine receptor in the midbrain of the chick. ***Proc. Natl. Acad. Sci. USA*** 80: 4532-4536.

8. O'Leary, DDM, Gerfen, CR, Cowan, WM 1983 The development and restriction of the ipsilateral retinofugal projection in the chick. ***Developmental Brain Research*** 10: 93-109.

9. O'Leary, DDM, Cowan, WM 1983 Topographic organization of certain tectal afferent and efferent connections can develop normally in the absence of retinal input. ***Proc. Natl. Acad. Sci. USA*** 80: 6131-6135.

10. O'Leary, DDM, Cowan, WM 1984 Survival of isthmo-optic neurons after early removal of one eye. ***Developmental Brain Research*** 12: 293-310.

11. Fawcett, JW, O'Leary, DDM, Cowan, WM 1984 Activity and the control of ganglion cell death in the rat retina. ***Proc. Natl. Acad. Sci. USA*** 81: 5589-5593.

12. Cowan, WM, Fawcett, JW, O'Leary, DDM, Stanfield, BB 1984 Regressive events in neurogenesis. ***Science*** 225: 1258-1265.

13. Cowan, WM, O'Leary, DDM 1984 Cell death and process elimination: the role of regressive phenomena in the development of the vertebrate nervous system. In: *Medicine, Science and Society: Symposia Celebrating the Harvard Medical School Bicentennial*, K.J. Isselbacher (ed.), Wiley Press: New York, pp. 643-668.

14. Stanfield, BB, O'Leary, DDM 1985 Fetal occipital cortical neurons transplanted to rostral cortex develop and maintain a pyramidal tract axon. ***Nature*** 313: 135-137.

15. Crespo, D, O'Leary, DDM, Cowan, WM 1985 Changes in the number of optic nerve axons during late prenatal and postnatal development of the albino rat. ***Developmental Brain Research*** 19: 129-134.

16. O'Leary, DDM, Stanfield, BB 1985 Occipital cortical neurons with transient pyramidal tract axons extend and maintain collaterals to subcortical but not intracortical targets. ***Brain Research*** 336: 326-333.

17. Stanfield, BB, O'Leary, DDM 1985 The transient corticospinal projection from the occipital cortex during the postnatal development of the rat. ***Journal of Comparative Neurology*** 238: 236-248.

18. Fawcett, JW, O'Leary, DDM 1985 The role of electrical activity in the formation of topographic maps. ***Trends in Neuroscience*** 8: 201-206.

19. Cowan, WM, Fawcett, JW, O'Leary, DDM, Stanfield, BB 1985 Regressive events in neurogenesis. In: *Neuroscience*, P.H. Abelson, E. Butz, and S.H. Snyder (eds), Amer Assoc Adv Science, Washington D.C., pp.13-29.

20. O'Leary, DDM, Stanfield, BB 1986 A transient pyramidal tract projection from the visual cortex in the hamster and its removal by selective collateral elimination. ***Developmental Brain Research*** 27: 87-99.

21. O'Leary, DDM, Crespo, D, Fawcett, JW, Cowan, WM 1986 The effect of intraocular tetrodotoxin on the postnatal reduction in numbers of optic nerve axons in the rat. ***Developmental Brain Research***, 30: 96-103.

22. O'Leary, DDM, Fawcett, JW, Cowan, WM 1986 Topographic targeting errors in the retinocollicular projection and their elimination by selective ganglion cell death. ***Journal of Neuroscience*** 6: 3692-3705.

23. Stanfield, BB, Nahin, B, O'Leary, DDM 1987 A transient post-mammillary component of the rat fornix during development: implications for interspecific differences in mature axonal projections. ***Journal of Neuroscience*** 7: 3350-3361.

24. Porter, LL, Cedarbaum, JM, O'Leary, DDM, Stanfield, BB, Asanuma, H 1987 The physiological identification of pyramidal tract neurons within transplants in the rostral cortex taken from the occipital cortex during development. ***Brain Research*** 436: 136-142.

25. O'Leary, DDM 1987 The remodeling of early axonal projections through the selective loss of neurons and axon collaterals. In: *Selective Neuronal Death*, M. O'Connor (ed.), (Ciba Foundation Symposium No. 126), Wiley: Chichester, pp. 113-142.

26. Stanfield, BB, O'Leary, DDM 1988 Neurons in the subiculum with transient postmammillary collaterals during development maintain projections to the mammillary complex. ***Experimental Brain Research*** 72: 185-190.

27. O'Leary, DDM, Terashima, T 1988 Cortical axons branch to multiple subcortical targets by interstitial axon budding: implications for target recognition and "waiting periods." ***Neuron*** 1: 901-910.

28. O'Leary, DDM, Stanfield, BB 1989 Selective elimination of axons extended by developing cortical neurons is dependent on regional locale. Experiments utilizing fetal cortical transplants. ***Journal of Neuroscience*** 9:2230-2246.

29. Nakamura, H, O'Leary, DDM 1989 Inaccuracies in initial growth and arborization of chick retinotectal axons followed by course corrections and axon remodeling to develop topographic order. ***Journal of Neuroscience*** 9:3776-3795.

30. O'Leary, DDM 1989 Do cortical areas emerge from a proto-cortex? ***Trends in Neuroscience*** 12:400-406.

31. Simon, DK, O'Leary, DDM 1990 Limited topographic specificity in the targeting and branching of mammalian retinal axons. ***Developmental Biology*** 137:125-134.

32. Heffner, CA, Lumsden, AGS, O'Leary, DDM 1990 Target control of collateral extension and directional axon growth in the mammalian brain. ***Science*** 247:217-220.

33. O'Leary, DDM, Bicknese, AR, De Carlos, JA, Heffner, CD, Koester, SE, Kutka, LJ, Terashima, T 1990 Target selection by cortical axons: Alternative mechanisms to establish axonal connections in the developing brain. ***Cold Spring Hbr Symp Quant Biol.*** 55:453-468.

34. O'Leary, DDM 1990 Growth, branching, and target selection by developing cortical axons. In: *FESN Symp #8: Neural Development*, T Wiesel, L Katz and D Anderson (Eds.), Elsevier: Amsterdam.

35. Simon, DK, O'Leary, DDM 1991 Relationship of retinotopic ordering of axons in the optic pathway to the formation of visual maps in central targets. ***Journal of Comparative Neurology*** 307:393-404.

36. Schlaggar, BL, O'Leary, DDM 1991 Potential of visual cortex to develop arrays of functional units unique to somatosensory cortex. ***Science*** 252:1556-1560.

37. O'Leary, DDM, Heffner, CD, Kutka, L, Lopez-Mascaraque, L, Missias, A, Reinoso, BS 1991 A target-derived chemoattractant controls the development of the corticopontine projection by a novel mechanism of axon targeting. ***Development*** 2:123-130.

38. O'Leary, DDM, Schlaggar, BL, Stanfield, BB 1992 The specification of sensory cortex: Lessons from cortical transplantation. ***Experimental Neurology*** 115:121-126.

39. Simon, DK, O'Leary, DDM 1992 Development of topographic order in the mammalian retinocollicular projection. ***Journal of Neuroscience*** 12:1212-1232.

40. De Carlos, JA, O'Leary, DDM 1992 Growth and targeting of subplate axons and establishment of major cortical pathways. ***Journal of Neuroscience*** 12:1194-1211.

41. Koester, SE, O'Leary, DDM 1992 Functional classes of cortical projection neurons develop dendritic distinctions by class-specific sculpting of an early common pattern. ***Journal of Neuroscience*** 12:1382-1394.

42. Simon, DK, O'Leary, DDM 1992 Influence of position along the medial-lateral axis of the superior colliculus on the topographic targeting and survival of retinal axons. ***Developmental Brain Research*** 69:167-172.

43. Simon, DK, Prusky, GT, O'Leary, DDM, Constantine-Paton, M 1992 NMDA receptor antagonists disrupt the development of a mammalian neural map. ***Proc. Natl. Acad. Sci. USA*****,** 89:10593-10597.

44. Simon, DK, O'Leary, DDM 1992 Responses of retinal axons in vivo and in vitro to molecules encoding position in the embryonic superior colliculus. ***Neuron*** 9:977-989.

45. O'Leary, DDM 1992 Development of connectional diversity and specificity in the mammalian brain by the pruning of collateral projections. ***Current Opinion in Neurobiology*** 2:70-77.

46. O'Leary, DDM, Simon, DK 1992 Position-encoding molecules and the development of retinal maps. ***Seminars in Neuroscience*** 4:365-371.

47. Schlaggar, BL, De Carlos, JA, O'Leary, DDM 1993 Acetylcholinesterase as an early marker of the differentiation of dorsal thalamus in embryonic rats. ***Developmental Brain Research*** 75:19-30.

48. Schlaggar, BL, Fox, K, O'Leary, DDM 1993 Postsynaptic control of plasticity in developing somatosensory cortex. ***Nature*** 364:623-626.

49. Koester, SE, O'Leary, DDM 1993 Connectional distinction between callosal and subcortically projecting cortical neurons is determined before axon extension. ***Developmental Biology*** 160:1-14.

50. Tuttle, R, O'Leary, DDM 1993 Cortical connections form in culture. ***Current Biology*** 3:70-72.

51. O'Leary, DDM 1993 Adding neurons to the adult mammalian brain. ***Proc Natl Acad Sci USA*** 90:2101-2102.

52. O'Leary, DDM, Koester, SE 1993 Development of projection neuron types, axonal pathways and patterned connections of the mammalian cortex. ***Neuron*** 10:991-1006.

53. Schlaggar, BL, O'Leary, DDM 1993 Patterning of the barrelfield in somatosensory cortex with implications for the specification of neocortical areas. ***Perspectives on Developmental Neurobiology*** 1:81-92.

54. Shatz, CJ, O'Leary, DDM for the panel. 1993 Repair and replacement to restore sight report from panel on ganglion cell connectivity. ***Archs. Opthalmol.***, 111:472-477.

55. Simon, DK, Roskies, AL, O'Leary, DDM 1994 Plasticity in the development of topographic order in the mammalian retinocollicular projection. ***Developmental Biology*** 162:384-393.

56. Bicknese, AR, Sheppard, AM, O'Leary, DDM, Pearlman, AL 1994 Thalamocortical axons extend along a chondroitin sulfate proteoglycan-enriched pathway coincident with the neocortical subplate and distinct from the efferent path. ***Journal of Neuroscience*** 14:3500-3510.

57. Schlaggar, BL, O'Leary, DDM 1994 Early development of the somatotopic map and barrel patterning in rat somatosensory cortex. ***Journal of Comparative Neurology*** 346:80-96.

58. Roskies, A, O'Leary, DDM 1994 Control of topographic retinal axon branching by inhibitory membrane-bound molecules. ***Science*** 265:799-802.

59. Sato, M, Lopez-Mascaraque, L, Heffner, CD, O'Leary, DDM 1994 Action of a diffusible target-derived chemoattractant on cortical axon branch induction and directed growth. ***Neuron*** 13:791-803.

60. Koester, SE, O'Leary, DDM 1994 The corpus callosum is pioneered by early generated neurons of the cingulate cortex. ***Journal of Neuroscience*** 14:6608-6621.

61. O'Leary, DDM, Schlaggar, BL, Tuttle, R 1994 Specification of neocortical areas and thalamocortical connections. ***Annual Review of Neuroscience*** 17: 419-439.

62. Lumsden, AGS, O'Leary, DDM 1994 Development: editorial overview. ***Current Opinion in Neurobiology*** 4: 1-7.

63. O'Leary, DDM, Ruff, NL, Dyck, RL 1994 Development, critical period plasticity, and adult reorganizations of mammalian somatosensory systems. ***Current Opinion in Neurobiology*** 4: 535-544.

64. O'Leary, DDM 1994 Attractive guides for axons. ***Nature*** 371:15-16.

65. Koester, SE, O'Leary, DDM 1994 Development of projection neurons in mammalian cerebral cortex. ***Progress in Brain Research*** 102:207-215.

66. Tuttle, R, Braisted, J, Schlaggar, BL, O'Leary, DDM 1995 Maturation-dependent upregulation of growth promoting molecules in developing cortical plate controls thalamic and cortical neurite growth**.** ***Journal of Neuroscience*** 15:3039-3052.

67. De Carlos, JA, Schlaggar, BL, O'Leary, DDM 1995 Development of acetylcholinesterase-positive thalamocortical and basal forebrain afferents to embryonic rat cortex. ***Experimental Brain Research*** 104:385-401.

68. Roskies, A, Friedman, G, O'Leary, DDM 1995 Molecules and mechanisms in the development of retinotopic maps. ***Perspectives on Developmental Neurobiology*** 3:63-75.

69. O'Leary, DDM, Borngasser, DJ, Fox, K, Schlaggar, BL 1995 Plasticity in the development of neocortical areas. In: Development of the Cerebral Cortex. Ciba Fnd Symp No. 193. G. Bock and C. Blakemore, Eds. pp.214-230.

70. Bastmeyer, M, O'Leary, DDM 1996 Dynamics of target recognition by interstitial axon branching along developing cortical axons. ***Journal of Neuroscience*** 16:1450-1459.

71. Moriyoshi, K, Richards, L, Akazawa, C, O'Leary, DDM, Nakanishi, S 1996 Labeling neural cells using adenoviral gene transfer of membrane-targeted GFP. ***Neuron*** 16:255-260.

72. Fox, K, Schlaggar, BL, O'Leary, DDM 1996 Glutamate receptor blockade at cortical synapses disrupts development of thalamocortical and columnar organization of somatosensory cortex. ***Proc. Natl. Acad. Sci. USA*** 93:5584-5589.

73. Friedman, GC, O'Leary, DDM 1996 Retroviral misexpression of engrailed genes in the chick optic tectum perturbs the topographic targeting of retinal axons. ***Journal of Neuroscience*** 16:5498-5509.

74. Daston, MM, Bastmeyer, M, Rutishauser, U, O'Leary, DDM 1996 Spatially restricted increase in polysialic acid influences target recognition by corticospinal axons. ***Journal of Neuroscience*** 16:5488-5497.

75. Nakamoto, M, Cheng, H-J, Friedmann, GC, McLaughlin, T, Hansen, MJ, Yoon, CH, O'Leary, DDM, Flanagan, JG 1996 Topographically specific effects of ELF-1 on retinal axon guidance in vitro and retinal axon mapping in vivo. ***Cell*** 86:755-766.

76. O'Leary, DDM 1996 Areal specialization of the developing neocortex: differentiation, developmental plasticity and genetic specification. In: Nobel Symposium: The Lifespan Development of Individuals -Behavioral, Neurobiological and Psychosocial Perspectives. D. Magnusson, Ed., Elsevier Press. pp.23-37.

77. Friedman, GC, O'Leary, DDM 1996 Eph receptor tyrosine kinases and their ligands in neural development. ***Current Opinion in Neurobiology*** 6:127-133.

78. O'Leary, DDM, Bastmeyer, M, Daston, ME, Koester, SE, Richards, L, Yee, K 1996 Development of Cortical Output Projections: Axon Guidance, Target Recognition, and Plasticity. In: Integrative and Molecular Approach to Brain Function: Uehara Memorial Foundation Symposium-1996. M. Ito and Y. Miyashita, Eds. Elseveir:Amsterdam. pp.165-178.

79. Richards, LR, Koester, SE, Tuttle, R, O'Leary, DDM 1997 Directed growth of early cortical axons is influenced by a chemoattractant released from an intermediate target. ***Journal of Neuroscience*** 17:2445-2458.

80. Braisted, JE, McLaughlin, T, Wang, HU, Friedman, GC, Anderson, DJ, O'Leary, DDM 1997 Graded and lamina-specific distributions of ligands of EphB receptor tyrosine kinases in the developing retinotectal system. ***Developmental Biology*** 191:14-28.

81. Chenn, A, Braisted, JE, McConnell, SK, O'Leary, DDM 1997 Development of the Cerebral Cortex: Mechanisms Controlling Cell Fate, Laminar and Areal Patterning, and Axonal Connectivity. In, Molecular and Cellular Approaches to Neural Development, pp. 440-473. Oxford Univ. Press. W.M. Cowan, L. Zipursky, and T. Jessell, Eds.

82. Bastmeyer, B, Daston, MM, Possel, H, O'Leary, DDM 1998 Collateral branch formation related to cellular structures in the axon tract during corticopontine target recognition. ***Journal of Comparative Neurology*** 392:1-18.

83. Tuttle, R, Braisted, JE, Richards, LJ, O'Leary, DDM 1998 Retinal axon guidance by region specific cues in the diencephalon. ***Development*** 125:791-801.

84. Frisén J[1], Yates PA[1], McLaughlin T, Friedman GC, O'Leary DDM[2], Barbacid M[2] 1998 Ephrin-A5 (AL-1/RAGS) is essential for proper retinal axon guidance and topographic mapping in the mammalian visual system. ***Neuron*** 20:235-243. [1, co-first authors; 2, co-communicating authors]

85. Tuttle, R, O'Leary, DDM 1998 Neurotrophins rapidly modulate growth cone response to the axon guidance molecule, collapsin-1. ***Mol Cell Neurobio*** 11:1-8.

86. Braisted, JE, Tuttle, R, O'Leary, DDM 1999 Thalamocortical axons are influenced by chemorepellent and chemoattractant activities localized to decision points along their path. ***Developmental Biology*** 208:430-440.

87. Tuttle, R[1], Nakagawa, Y[1], Johnson, JE, O'Leary, DDM 1999 Defects in thalamocortical axon pathfinding correlate with altered cell domains in embryonic *Mash-1* deficient mice. ***Development*** 126:1903-1916. [1, co-first authors]

88. O'Leary, DDM, Wilkinson, DG 1999 Eph receptors and ephrins in neural development. ***Current Opinion in Neurobiology*** 9:55-73.

89. O'Leary, DDM, Yates, P, McLaughlin, T, 1999 Mapping sights and smells in the brain: Distinct mechanisms to achieve a common goal. ***Cell*** 96:255-269.

90. McLaughlin, T, O'Leary, DDM 1999 Functional consequences of coincident expression of EphA receptors and ephrin-A ligands. ***Neuron*** 22:636-639.

91. Bertuzzi, S, Hindges, R, Mui, S, O'Leary, DDM, Lemke, G 1999 The homeodomain protein Vax1 is required for axon guidance and development of major axon tracts in the brain. ***Genes and Development*** 13:3092-3105.

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