Los inhibidores asociados a la mielina desempeñan un papel muy importante a la hora de impedir la regeneración axonal del sistema nervioso central (SNC) en el animal adulto.

Dentro de estos inhibidores destaca Nogo-A, una proteína recientemente identificada con expresión en oligodendrocitos.

Sin embargo, tras su descubrimiento como proteína asociada a la mielina, se han empezado a describir nuevas funciones para Nogo-A que distan mucho de su papel en la mielina de los oligodendrocitos.

Tras una introducción a los cambios moleculares que tienen lugar después de una lesión en el SNC, nos centramos en la figura de Nogo-A y su familia de proteínas.

Aunque Nogo-A se descubriera en el contexto de la inhibición del crecimiento axonal, y efectivamente desempeñe un papel determinante en esta inhibición, Nogo-A ha resultado ser también una proteína neuronal implicada en diversos procesos durante el desarrollo y en el adulto, que van desde la fasciculación axonal hasta la apoptosis. A

medida que profundizamos en nuestro conocimiento sobre los mecanismos moleculares que organizan el complejo funcionamiento del SNC, resulta más claro que las proteínas que se implican en fasciculación y guía axonal durante el desarrollo llevan a cabo en el SNC adulto funciones igualmente importantes en procesos como la inhibición axonal o la regulación de la plasticidad sináptica (Soriano García y col., 2004).

Las funciones fisiológicas de Nogo-A en el desarrollo neuronal y en la formación de oligodendrocitos sanos son desconocidas.

El receptor de Nogo (NgR) puede tener efectos inhibitorios sobre la actividad tumoral y el Nogo-A puede restringir la migración de las células tumorales a través del NgR (Xiong y col., 2011).

Bibliografía

Soriano García, Eduardo, Ana Mingorance Jiménez de la Espada, y J. A. del Río. Funciones de Nogo-A durante el desarrollo del sistema nervioso central y en el animal adulto. Http://purl.org/dc/dcmitype/Text. http://dialnet.unirioja.es/servlet/articulo?codigo=997226.

Xiong, Nanxiang, Jianying Shen, Shuai Li, Junjun Li, y Hongyang Zhao. 2011. «Expression of Nogo-66 receptor in human astrocytoma is correlated with tumor malignancy». Molecular Biology Reports (Junio 18). doi:10.1007/s11033-011-1015-8. http://www.ncbi.nlm.nih.gov/pubmed/21681431.

Bibliografía recomendada

1. Acevedo L, Yu J, Erdjument-Bromage H, Miao RQ, Kim JE, Fulton D, Tempst P, Strittmatter SM, Sessa WC.A new role for Nogo as a regulator of vascular remodeling.Nat Med. 2004 Apr;10(4):382-8. Epub 2004 Mar 21.PubMed [citation] PMID: 15034570

2. Ahmed Z, Suggate EL, Brown ER, Dent RG, Armstrong SJ, Barrett LB, Berry M, Logan A.Schwann cell-derived factor-induced modulation of the NgR/p75NTR/EGFR axis disinhibits axon growth through CNS myelin in vivo and in vitro.Brain. 2006 Jun;129(Pt 6):1517-33. Epub 2006 Apr 13.PubMed [citation] PMID: 16613894

3. Akbik F, Cafferty WB, Strittmatter SM.Myelin associated inhibitors: A link between injury-induced and experience-dependent plasticity.Exp Neurol. 2011 Jun 15. [Epub ahead of print]PubMed [citation]

PMID: 21699896, PMCID: PMC3189418

4. Alisky JM.Nogo A protein neutralisation and motor cortex computer implants: a future hope for spinal cord injury.Singapore Med J. 2007 Jun;48(6):596-7. Review. No abstract available. PubMed [citation] PMID: 17538769

5. Aloy EM, Weinmann O, Pot C, Kasper H, Dodd DA, Rülicke T, Rossi F, Schwab ME.Synaptic destabilization by neuronal Nogo-A.Brain Cell Biol. 2006 Jun;35(2-3):137-56. Epub 2007 Oct 4.PubMed [citation] PMID: 17957480

6. Askanas V, Wojcik S, Engel WK.Expression of Nogo-A in human muscle fibers is not specific for amyotrophic lateral sclerosis.Ann Neurol. 2007 Dec;62(6):676-7; author reply 677. No abstract available. PubMed [citation] PMID: 17894379

7. Atalay B, Bavbek M, Cekinmez M, Ozen O, Nacar A, Karabay G, Gulsen S.Antibodies neutralizing Nogo-A increase pan-cadherin expression and motor recovery following spinal cord injury in rats.Spinal Cord. 2007 Dec;45(12):780-6. Epub 2007 Aug 28.PubMed [citation] PMID: 17724451

8. Atalay B, Bavbek M, Ozen O, Nacar A, Gülşen S, Yiğitkanli K, Caner H, Altinörs N.Nogo-A inhibitory peptide (NEP1-40) increases pan-cadherin expression following mild cortical contusion injury in rats.Turk Neurosurg. 2008 Oct;18(4):356-65.PubMed [citation] PMID: 19107681

9. Azari MF, Karnezis T, Bernard CC, Profyris C, LeGrande MR, Zang DW, Cheema SS, Petratos S.Incomplete Freund's adjuvant enhances locomotor performance following spinal cord injury.Eur J Neurol. 2005 Dec;12(12):1004-8.PubMed [citation] PMID: 16324097

10. Bandtlow CE, Dlaska M, Pirker S, Czech T, Baumgartner C, Sperk G.Increased expression of Nogo-A in hippocampal neurons of patients with temporal lobe epilepsy.Eur J Neurosci. 2004 Jul;20(1):195-206.PubMed [citation] PMID: 15245492

11. Bandtlow CE.Regeneration in the central nervous system.Exp Gerontol. 2003 Jan-Feb;38(1-2):79-86.PubMed [citation] PMID: 12543264

12. Bandtlow CE, Schwab ME.NI-35/250/nogo-a: a neurite growth inhibitor restricting structural plasticity and regeneration of nerve fibers in the adult vertebrate CNS.Glia. 2000 Jan 15;29(2):175-81. Review. No abstract available. PubMed [citation] PMID: 10625336

13. Bareyre FM, Haudenschild B, Schwab ME.Long-lasting sprouting and gene expression changes induced by the monoclonal antibody IN-1 in the adult spinal cord.J Neurosci. 2002 Aug 15;22(16):7097-110.PubMed [citation] PMID: 12177206

14. Baumann MD, Austin JW, Fehlings MG, Shoichet MS.A quantitative ELISA for bioactive anti-Nogo-A, a promising regenerative molecule for spinal cord injury repair.Methods. 2009 Feb;47(2):104-8. Epub 2008 Aug 12.PubMed [citation] PMID: 18703145

15. Beaud ML, Schmidlin E, Wannier T, Freund P, Bloch J, Mir A, Schwab ME, Rouiller EM.Anti-Nogo-A antibody treatment does not prevent cell body shrinkage in the motor cortex in adult monkeys subjected to unilateral cervical cord lesion.BMC Neurosci. 2008 Jan 14;9:5.PubMed [citation] PMID: 18194520, PMCID: PMC2242790

16. Blöchlinger S, Weinmann O, Schwab ME, Thallmair M.Neuronal plasticity and formation of new synaptic contacts follow pyramidal lesions and neutralization of Nogo-A: a light and electron microscopic study in the pontine nuclei of adult rats.J Comp Neurol. 2001 May

7;433(3):426-36.PubMed [citation] PMID: 11298366

17. Bongiorno D, Petratos S.Molecular regulation of Nogo-A in neural cells: Novel insights into structure and function.Int J Biochem Cell Biol. 2010 Jul;42(7):1072-5. Epub 2010 Feb 18. Review.PubMed [citation] PMID: 20171301

18. Bourquin C, van der Haar ME, Anz D, Sandholzer N, Neumaier I, Endres S, Skerra A, Schwab ME, Linington C.DNA vaccination efficiently induces antibodies to Nogo-A and does not exacerbate experimental autoimmune encephalomyelitis.Eur J Pharmacol. 2008 Jun 24;588(1):99-105. Epub 2008 Apr 16.PubMed [citation] PMID: 18495110

19. Brenneman MM, Wagner SJ, Cheatwood JL, Heldt SA, Corwin JV, Reep RL, Kartje GL, Mir AK, Schwab ME.Nogo-A inhibition induces recovery from neglect in rats.Behav Brain Res. 2008 Mar 5;187(2):262-72. Epub 2007 Sep 20.PubMed [citation] PMID: 17963852

20. Broggini T, Nitsch R, Savaskan NE.Plasticity-related gene 5 (PRG5) induces filopodia and neurite growth and impedes lysophosphatidic acid- and nogo-A-mediated axonal retraction.Mol Biol Cell. 2010 Feb 15;21(4):521-37. Epub 2009 Dec 23.PubMed [citation] PMID: 20032306, PMCID: PMC2820418

21. Brösamle C, Huber AB, Fiedler M, Skerra A, Schwab ME.Regeneration of lesioned corticospinal tract fibers in the adult rat induced by a recombinant, humanized IN-1 antibody fragment.J Neurosci. 2000 Nov 1;20(21):8061-8.PubMed [citation] PMID: 11050127

22. Buchli AD, Schwab ME.Inhibition of Nogo: a key strategy to increase regeneration, plasticity and functional recovery of the lesioned central nervous system.Ann Med. 2005;37(8):556-67. Review.PubMed [citation] PMID: 16338758

23. Buchli AD, Rouiller E, Mueller R, Dietz V, Schwab ME.Repair of the injured spinal cord. A joint approach of basic and clinical research.Neurodegener Dis. 2007;4(1):51-6. Review.PubMed [citation] PMID: 17429219

24. Buss A, Pech K, Merkler D, Kakulas BA, Martin D, Schoenen J, Noth J, Schwab ME, Brook GA.Sequential loss of myelin proteins during Wallerian degeneration in the human spinal cord.Brain. 2005 Feb;128(Pt 2):356-64. Epub 2005 Jan 5.PubMed [citation] PMID: 15634734

25. Buss A, Sellhaus B, Wolmsley A, Noth J, Schwab ME, Brook GA.Expression pattern of NOGO-A protein in the human nervous system.Acta Neuropathol. 2005 Aug;110(2):113-9. Epub 2004 Dec 22.PubMed [citation] PMID: 15616791

26. Buss A, Schwab ME.Sequential loss of myelin proteins during Wallerian degeneration in the rat spinal cord.Glia. 2003 Jun;42(4):424-32.PubMed [citation] PMID: 12730963

27. Caelers A, Monge A, Michael J, Schwab ME, Bodmer D.Nogo in the Mammalian cochlea.Otol Neurotol. 2009 Aug;30(5):668-75.PubMed [citation] PMID: 19546827

28. Cafferty WB, Duffy P, Huebner E, Strittmatter SM.MAG and OMgp synergize with Nogo-A to restrict axonal growth and neurological recovery after spinal cord trauma.J Neurosci. 2010 May 19;30(20):6825-37.PubMed [citation] PMID: 20484625, PMCID: PMC2883258

29. Cafferty WB, Kim JE, Lee JK, Strittmatter SM.Response to correspondence: Kim et al., “axon regeneration in young adult mice lacking Nogo-A/B.” Neuron 38, 187-199.Neuron. 2007 Apr 19;54(2):195-9. No abstract available. PubMed [citation] PMID: 17442242, PMCID: PMC2848952

30. Cafferty WB, Strittmatter SM.The Nogo-Nogo receptor pathway limits a spectrum of adult CNS axonal growth.J Neurosci. 2006 Nov 22;26(47):12242-50.PubMed [citation] PMID: 17122049, PMCID: PMC2848954

31. Cafferty WB, Gardiner NJ, Das P, Qiu J, McMahon SB, Thompson SW.Conditioning injury-induced spinal axon regeneration fails in interleukin-6 knock-out mice.J Neurosci. 2004 May 5;24(18):4432-43.PubMed [citation] PMID: 15128857

32. Caltharp SA, Pira CU, Mishima N, Youngdale EN, McNeill DS, Liwnicz BH, Oberg KC.NOGO-A induction and localization during chick brain development indicate a role disparate from neurite outgrowth inhibition.BMC Dev Biol. 2007 Apr 14;7:32.PubMed [citation] PMID: 17433109, PMCID: PMC1865376

33. Cheatwood JL, Emerick AJ, Kartje GL.Neuronal plasticity and functional recovery after ischemic stroke.Top Stroke Rehabil. 2008 Jan-Feb;15(1):42-50. Review.PubMed [citation] PMID: 18250073

34. Cheatwood JL, Emerick AJ, Schwab ME, Kartje GL.Nogo-A expression after focal ischemic stroke in the adult rat.Stroke. 2008 Jul;39(7):2091-8. Epub 2008 May 8.PubMed [citation] PMID: 18467652

35. Chen MS, Huber AB, van der Haar ME, Frank M, Schnell L, Spillmann AA, Christ F, Schwab ME.Nogo-A is a myelin-associated neurite outgrowth inhibitor and an antigen for monoclonal antibody IN-1.Nature. 2000 Jan 27;403(6768):434-9.PubMed [citation] PMID: 10667796

36. Chen S, Xiao N, Zhang X.Effect of combined therapy with ephedrine and hyperbaric oxygen on neonatal hypoxic-ischemic brain injury.Neurosci Lett. 2009 Nov 13;465(2):171-6. Epub 2009 Sep 17.PubMed [citation] PMID: 19765636

37. Chen Y, Tang X, Cao X, Chen H, Zhang X.Human Nogo-C overexpression induces HEK293 cell apoptosis via a mechanism that involves JNK-c-Jun pathway.Biochem Biophys Res Commun. 2006 Sep 29;348(3):923-8. Epub 2006 Aug 4.PubMed [citation] PMID: 16905119

38. Chen YC, Wu BK, Chu CY, Cheng CH, Han HW, Chen GD, Lee MT, Hwang PP, Kawakami K, Chang CC, Huang CJ.Identification and characterization of alternative promoters of zebrafish Rtn-4/Nogo genes in cultured cells and zebrafish embryos.Nucleic Acids Res. 2010 Aug;38(14):4635-50. Epub 2010 Apr 8.PubMed [citation] PMID: 20378713, PMCID: PMC2919723

39. Chivatakarn O, Kaneko S, He Z, Tessier-Lavigne M, Giger RJ.The Nogo-66 receptor NgR1 is required only for the acute growth cone-collapsing but not the chronic growth-inhibitory actions of myelin inhibitors.J Neurosci. 2007 Jul 4;27(27):7117-24.PubMed [citation] PMID: 17611264

40. Chytrova G, Ying Z, Gomez-Pinilla F.Exercise normalizes levels of MAG and Nogo-A growth inhibitors after brain trauma.Eur J Neurosci. 2008 Jan;27(1):1-11. Epub 2007 Dec 15.PubMed [citation] PMID: 18093178

41. Craveiro LM, Hakkoum D, Weinmann O, Montani L, Stoppini L, Schwab ME.Neutralization of the membrane protein Nogo-A enhances growth and reactive sprouting in established organotypic hippocampal slice cultures.Eur J Neurosci. 2008 Nov;28(9):1808-24.PubMed [citation] PMID: 18973596

42. Cui Q.Actions of neurotrophic factors and their signaling pathways in neuronal survival and axonal regeneration.Mol Neurobiol. 2006 Apr;33(2):155-79. Review.PubMed [citation] PMID: 16603794

43. Deng B, Liu FF, Zhao XH, Yu CY, Bian GL, Feng R, Ju G, Wang J.[Identification of six kinds of monoclonal antibodies against rat Nogo-A molecule in the immunofluorescent histochemical

staining].Xi Bao Yu Fen Zi Mian Yi Xue Za Zhi. 2011 Apr;27(4):425-7. Chinese. PubMed [citation] PMID: 21481323

44. Dengler R, von Neuhoff N, Bufler J, Krampfl K, Peschel T, Grosskreutz J.Amyotrophic lateral sclerosis: new developments in diagnostic markers.Neurodegener Dis. 2005;2(3-4):177-84. Review.PubMed [citation] PMID: 16909023

45. Di Lorenzo A, Manes TD, Davalos A, Wright PL, Sessa WC.Endothelial reticulon-4B (Nogo-B) regulates ICAM-1-mediated leukocyte transmigration and acute inflammation.Blood. 2011 Feb 17;117(7):2284-95. Epub 2010 Dec 23.PubMed [citation] PMID: 21183689, PMCID: PMC3062334

46. Diekmann H, Klinger M, Oertle T, Heinz D, Pogoda HM, Schwab ME, Stuermer CA.Analysis of the reticulon gene family demonstrates the absence of the neurite growth inhibitor Nogo-A in fish.Mol Biol Evol. 2005 Aug;22(8):1635-48. Epub 2005 Apr 27.PubMed [citation] PMID: 15858203

47. Dimou L, Schnell L, Montani L, Duncan C, Simonen M, Schneider R, Liebscher T, Gullo M, Schwab ME.Nogo-A-deficient mice reveal strain-dependent differences in axonal regeneration.J Neurosci. 2006 May 24;26(21):5591-603.PubMed [citation] PMID: 16723516

48. Dodd DA, Niederoest B, Bloechlinger S, Dupuis L, Loeffler JP, Schwab ME.Nogo-A, -B, and -C are found on the cell surface and interact together in many different cell types.J Biol Chem. 2005 Apr 1;280(13):12494-502. Epub 2005 Jan 7.PubMed [citation] PMID: 15640160

49. Domeniconi M, Filbin MT.Overcoming inhibitors in myelin to promote axonal regeneration.J Neurol Sci. 2005 Jun 15;233(1-2):43-7. Epub 2005 Apr 20. Review.PubMed [citation] PMID: 15949495

50. Dupuis L, Gonzalez de Aguilar JL, di Scala F, Rene F, de Tapia M, Pradat PF, Lacomblez L, Seihlan D, Prinjha R, Walsh FS, Meininger V, Loeffler JP.Nogo provides a molecular marker for diagnosis of amyotrophic lateral sclerosis.Neurobiol Dis. 2002 Aug;10(3):358-65.PubMed [citation] PMID: 12270696

51. Eslamboli A, Grundy RI, Irving EA.Time-dependent increase in Nogo-A expression after focal cerebral ischemia in marmoset monkeys.Neurosci Lett. 2006 Nov 13;408(2):89-93. Epub 2006 Sep 18.PubMed [citation] PMID: 16982144

52. Fiedler M, Horn C, Bandtlow C, Schwab ME, Skerra A.An engineered IN-1 F(ab) fragment with improved affinity for the Nogo-A axonal growth inhibitor permits immunochemical detection and shows enhanced neutralizing activity.Protein Eng. 2002 Nov;15(11):931-41.PubMed [citation] PMID: 12538913

53. Fontoura P, Steinman L.Nogo in multiple sclerosis: growing roles of a growth inhibitor.J Neurol Sci. 2006 Jun 15;245(1-2):201-10. Epub 2006 May 6. Review.PubMed [citation] PMID: 16682057

54. Fontoura P, Ho PP, DeVoss J, Zheng B, Lee BJ, Kidd BA, Garren H, Sobel RA, Robinson WH, Tessier-Lavigne M, Steinman L.Immunity to the extracellular domain of Nogo-A modulates experimental autoimmune encephalomyelitis.J Immunol. 2004 Dec 1;173(11):6981-92.PubMed [citation] PMID: 15557195

55. Fouad K, Klusman I, Schwab ME.Regenerating corticospinal fibers in the Marmoset (Callitrix jacchus) after spinal cord lesion and treatment with the anti-Nogo-A antibody IN-1.Eur J Neurosci. 2004 Nov;20(9):2479-82.PubMed [citation] PMID: 15525289

56. Fouad K, Dietz V, Schwab ME.Improving axonal growth and functional recovery after experimental spinal cord injury by neutralizing myelin associated inhibitors.Brain Res Brain Res Rev. 2001

Oct;36(2-3):204-12. Review.PubMed [citation] PMID: 11690617

57. Fournier AE, GrandPre T, Strittmatter SM.Identification of a receptor mediating Nogo-66 inhibition of axonal regeneration.Nature. 2001 Jan 18;409(6818):341-6.PubMed [citation] PMID: 11201742

58. Fournier AE, GrandPré T, Gould G, Wang X, Strittmatter SM.Nogo and the Nogo-66 receptor.Prog Brain Res. 2002;137:361-9. Review.PubMed [citation] PMID: 12440378

59. Freund P, Schmidlin E, Wannier T, Bloch J, Mir A, Schwab ME, Rouiller EM.Nogo-A-specific antibody treatment enhances sprouting and functional recovery after cervical lesion in adult primates.Nat Med. 2006 Jul;12(7):790-2. Epub 2006 Jul 2. Erratum in: Nat Med. 2006 Oct;12(10):1220. PubMed [citation] PMID: 16819551

60. Freund P, Schmidlin E, Wannier T, Bloch J, Mir A, Schwab ME, Rouiller EM.Anti-Nogo-A antibody treatment promotes recovery of manual dexterity after unilateral cervical lesion in adult primates–re-examination and extension of behavioral data.Eur J Neurosci. 2009 Mar;29(5):983-96.PubMed [citation] PMID: 19291225, PMCID: PMC2695186

61. Freund P, Wannier T, Schmidlin E, Bloch J, Mir A, Schwab ME, Rouiller EM.Anti-Nogo-A antibody treatment enhances sprouting of corticospinal axons rostral to a unilateral cervical spinal cord lesion in adult macaque monkey.J Comp Neurol. 2007 Jun 1;502(4):644-59.PubMed [citation] PMID: 17394135

62. Funahashi S, Hasegawa T, Nagano A, Sato K.Differential expression patterns of messenger RNAs encoding Nogo receptors and their ligands in the rat central nervous system.J Comp Neurol. 2008 Jan 1;506(1):141-60.PubMed [citation] PMID: 17990276

63. Gao Y, Xiao Z, Chen B, Wang B, Han J, Zhao Y, Zhang J, Dai J.Effect of different regions of Nogo-A on the differentiation of neural progenitors.Neurosci Lett. 2009 Jul 24;458(3):132-5. Epub 2009 Apr 18.PubMed [citation] PMID: 19379790

64. Gao Y, Wang B, Xiao Z, Chen B, Han J, Wang X, Zhang J, Gao S, Zhao Y, Dai J.Nogo-66 regulates nanog expression through stat3 pathway in murine embryonic stem cells.Stem Cells Dev. 2010 Jan;19(1):53-60.PubMed [citation] PMID: 19400741

65. García Navia JT, Burguillos MA, Ramón-Cueto A, Machado A, Cano J, Venero JL.Regional-specific regulation of BDNF and trkB correlates with nigral dopaminergic cell sprouting following unilateral nigrostriatal axotomy.J Neurosci Res. 2008 Jul;86(9):2016-27.PubMed [citation] PMID: 18338800

66. Gharabaghi A, Tatagiba M.Functional regeneration of the axotomized auditory nerve with combined neurotrophic and anti-inhibitory strategies.Acta Neurochir Suppl. 2005;93:89-91.PubMed [citation] PMID: 15986734

67. Gianola S, Rossi F.Neurite-myelin interaction in the control of purkinje axon growth and regeneration.Ann N Y Acad Sci. 2005 Jun;1048:141-8.PubMed [citation] PMID: 16154928

68. Gianola S, Savio T, Schwab ME, Rossi F.Cell-autonomous mechanisms and myelin-associated factors contribute to the development of Purkinje axon intracortical plexus in the rat cerebellum.J Neurosci. 2003 Jun 1;23(11):4613-24.PubMed [citation] PMID: 12805301

69. Gianola S, Rossi F.GAP-43 overexpression in adult mouse Purkinje cells overrides myelin-derived inhibition of neurite growth.Eur J Neurosci. 2004 Feb;19(4):819-30.PubMed [citation] PMID: 15009129

70. Giger RJ, Venkatesh K, Chivatakarn O, Raiker SJ, Robak L, Hofer T, Lee H, Rader C.Mechanisms of CNS myelin inhibition: evidence for distinct and neuronal cell type specific receptor systems.Restor Neurol Neurosci. 2008;26(2-3):97-115. Review.PubMed [citation] PMID: 18820405

71. Gil V, Bichler Z, Lee JK, Seira O, Llorens F, Bribian A, Morales R, Claverol-Tinture E, Soriano E, Sumoy L, Zheng B, Del Río JA.Developmental expression of the oligodendrocyte myelin glycoprotein in the mouse telencephalon.Cereb Cortex. 2010 Aug;20(8):1769-79. Epub 2009 Nov 5.PubMed [citation] PMID: 19892785, PMCID: PMC2901018

72. Gil V, Nicolas O, Mingorance A, Ureña JM, Tang BL, Hirata T, Sáez-Valero J, Ferrer I, Soriano E, del Río JA.Nogo-A expression in the human hippocampus in normal aging and in Alzheimer disease.J Neuropathol Exp Neurol. 2006 May;65(5):433-44.PubMed [citation] PMID: 16772867

73. Gillani RL, Tsai SY, Wallace DG, O'Brien TE, Arhebamen E, Tole M, Schwab ME, Kartje GL.Cognitive recovery in the aged rat after stroke and anti-Nogo-A immunotherapy.Behav Brain Res. 2010 Apr 2;208(2):415-24. Epub 2009 Dec 24.PubMed [citation] PMID: 20035795, PMCID: PMC2831114

74. Gonzenbach RR, Gasser P, Zörner B, Hochreutener E, Dietz V, Schwab ME.Nogo-A antibodies and training reduce muscle spasms in spinal cord-injured rats.Ann Neurol. 2010 Jul;68(1):48-57.PubMed [citation] PMID: 20582944

75. Gonzenbach RR, Schwab ME.Disinhibition of neurite growth to repair the injured adult CNS: focusing on Nogo.Cell Mol Life Sci. 2008 Jan;65(1):161-76.PubMed [citation] PMID: 17975707

76. Gonzenbach RR, Zoerner B, Schnell L, Weinmann O, Mir AK, Schwab ME.Delayed Anti-Nogo-A Antibody Application after Spinal Cord Injury Shows Progressive Loss of Responsiveness.J Neurotrauma. 2011 Oct 17. [Epub ahead of print]PubMed [citation] PMID: 21815784

77. Gou X, Wang Q, Yang Q, Xu L, Xiong L.TAT-NEP1-40 as a novel therapeutic candidate for axonal regeneration and functional recovery after stroke.J Drug Target. 2011 Feb;19(2):86-95. Epub 2010 Apr 1.PubMed [citation] PMID: 20367026

78. GrandPré T, Li S, Strittmatter SM.Nogo-66 receptor antagonist peptide promotes axonal regeneration.Nature. 2002 May 30;417(6888):547-51.PubMed [citation] PMID: 12037567

79. Grandpré T, Strittmatter SM.Nogo: a molecular determinant of axonal growth and regeneration.Neuroscientist. 2001 Oct;7(5):377-86. Review.PubMed [citation] PMID: 11597097

80. Grünewald E, Kinnell HL, Porteous DJ, Thomson PA.GPR50 interacts with neuronal NOGO-A and affects neurite outgrowth.Mol Cell Neurosci. 2009 Dec;42(4):363-71. Epub 2009 Aug 21.PubMed [citation] PMID: 19699797

81. Guertin PA.Paraplegic mice are leading to new advances in spinal cord injury research.Spinal Cord. 2005 Aug;43(8):459-61. Review.PubMed [citation] PMID: 15809672

82. Harel NY, Cudkowicz ME, Brown RH, Strittmatter SM.Serum Nogo-A levels are not elevated in amyotrophic lateral sclerosis patients.Biomarkers. 2009 Sep;14(6):414-7.PubMed [citation] PMID: 19548774, PMCID: PMC2842187

83. Harel NY, Strittmatter SM.Nogo-A marks motor neuron disease.Ann Neurol. 2007 Jul;62(1):1-2. No abstract available. PubMed [citation] PMID: 17474106, PMCID: PMC2323439

84. Harris VK, Sadiq SA.Disease biomarkers in multiple sclerosis: potential for use in therapeutic

decision making.Mol Diagn Ther. 2009;13(4):225-44. doi: 10.2165/11313470-000000000-00000. Review.PubMed [citation] PMID: 19712003

85. Harsan L, Jalabi W, Grucker D, Ghandour MS.New insights on neuronal alterations in jimpy mutant brain.Neurochem Res. 2004 May;29(5):943-52.PubMed [citation] PMID: 15139292

86. Hasegawa T, Ohno K, Sano M, Omura T, Omura K, Nagano A, Sato K.The differential expression patterns of messenger RNAs encoding Nogo-A and Nogo-receptor in the rat central nervous system.Brain Res Mol Brain Res. 2005 Jan 5;133(1):119-30.PubMed [citation] PMID: 15661372

87. Hauben E, Ibarra A, Mizrahi T, Barouch R, Agranov E, Schwartz M.Vaccination with a Nogo-A-derived peptide after incomplete spinal-cord injury promotes recovery via a T-cell-mediated neuroprotective response: comparison with other myelin antigens.Proc Natl Acad Sci U S A. 2001 Dec 18;98(26):15173-8.PubMed [citation] PMID: 11752461, PMCID: PMC65002

88. Heraud P, Caine S, Campanale N, Karnezis T, McNaughton D, Wood BR, Tobin MJ, Bernard CC.Early detection of the chemical changes occurring during the induction and prevention of autoimmune-mediated demyelination detected by FT-IR imaging.Neuroimage. 2010 Jan 15;49(2):1180-9. Epub 2009 Sep 28.PubMed [citation] PMID: 19796690

89. Hou T, Shi Y, Cheng S, Yang X, Li L, Xiao C.Nogo-A expresses on neural stem cell surface.Int J Neurosci. 2010 Mar;120(3):201-5.PubMed [citation] PMID: 20374087

90. Hsieh SH, Ferraro GB, Fournier AE.Myelin-associated inhibitors regulate cofilin phosphorylation and neuronal inhibition through LIM kinase and Slingshot phosphatase.J Neurosci. 2006 Jan 18;26(3):1006-15.PubMed [citation] PMID: 16421320

91. Hu F, Liu BP, Budel S, Liao J, Chin J, Fournier A, Strittmatter SM.Nogo-A interacts with the Nogo-66 receptor through multiple sites to create an isoform-selective subnanomolar agonist.J Neurosci. 2005 Jun 1;25(22):5298-304.PubMed [citation] PMID: 15930377, PMCID: PMC2855126

92. Hu F, Strittmatter SM.The N-terminal domain of Nogo-A inhibits cell adhesion and axonal outgrowth by an integrin-specific mechanism.J Neurosci. 2008 Jan 30;28(5):1262-9.PubMed [citation] PMID: 18234903, PMCID: PMC2856844

93. Hu JG, Lu PH, Xu XM.[Inhibitory proteins against axon regeneration in the central nervous system].Sheng Li Ke Xue Jin Zhan. 2004 Oct;35(4):311-4. Review. Chinese. PubMed [citation] PMID: 15727207

94. Huber AB, Schwab ME.Nogo-A, a potent inhibitor of neurite outgrowth and regeneration.Biol Chem. 2000 May-Jun;381(5-6):407-19. Review.PubMed [citation] PMID: 10937871

95. Huber AB, Weinmann O, Brösamle C, Oertle T, Schwab ME.Patterns of Nogo mRNA and protein expression in the developing and adult rat and after CNS lesions.J Neurosci. 2002 May 1;22(9):3553-67.PubMed [citation] PMID: 11978832

96. Huebner EA, Kim BG, Duffy PJ, Brown RH, Strittmatter SM.A multi-domain fragment of Nogo-A protein is a potent inhibitor of cortical axon regeneration via Nogo receptor 1.J Biol Chem. 2011 May 20;286(20):18026-36. Epub 2011 Mar 24.PubMed [citation] PMID: 21454605, PMCID: PMC3093876

97. Hunt D, Coffin RS, Prinjha RK, Campbell G, Anderson PN.Nogo-A expression in the intact and injured nervous system.Mol Cell Neurosci. 2003 Dec;24(4):1083-102.PubMed [citation] PMID: 14697671

98. Huo Y, Yuan RD, Ye J, Yin XL, Zou H.[Expression of Nogo-A and Nogo receptor in neonatal rats visual system during development].Zhonghua Yan Ke Za Zhi. 2011 Jan;47(1):54-8. Chinese. PubMed [citation] PMID: 21418929

99. Hånell A, Clausen F, Björk M, Jansson K, Philipson O, Nilsson LN, Hillered L, Weinreb PH, Lee D, McIntosh TK, Gimbel DA, Strittmatter SM, Marklund N.Genetic deletion and pharmacological inhibition of Nogo-66 receptor impairs cognitive outcome after traumatic brain injury in mice.J Neurotrauma. 2010 Jul;27(7):1297-309.PubMed [citation] PMID: 20486800, PMCID: PMC2942864

100. Jiang W, Xia F, Han J, Wang J.Patterns of Nogo-A, NgR, and RhoA expression in the brain tissues of rats with focal cerebral infarction.Transl Res. 2009 Jul;154(1):40-8. Epub 2009 May 19.PubMed [citation] PMID: 19524873

101. Jin WL, Liu YY, Liu HL, Yang H, Wang Y, Jiao XY, Ju G.Intraneuronal localization of Nogo-A in the rat.J Comp Neurol. 2003 Mar 24;458(1):1-10.PubMed [citation] PMID: 12577319

102. Jokic N, Gonzalez de Aguilar JL, Pradat PF, Dupuis L, Echaniz-Laguna A, Muller A, Dubourg O, Seilhean D, Hauw JJ, Loeffler JP, Meininger V.Nogo expression in muscle correlates with amyotrophic lateral sclerosis severity.Ann Neurol. 2005 Apr;57(4):553-6.PubMed [citation] PMID: 15786457

103. Jokic N, Gonzalez de Aguilar JL, Dimou L, Lin S, Fergani A, Ruegg MA, Schwab ME, Dupuis L, Loeffler JP.The neurite outgrowth inhibitor Nogo-A promotes denervation in an amyotrophic lateral sclerosis model.EMBO Rep. 2006 Nov;7(11):1162-7. Epub 2006 Oct 13.PubMed [citation] PMID: 17039253, PMCID: PMC1679784

104. Josephson A, Trifunovski A, Schéele C, Widenfalk J, Wahlestedt C, Brené S, Olson L, Spenger C.Activity-induced and developmental downregulation of the Nogo receptor.Cell Tissue Res. 2003 Mar;311(3):333-42. Epub 2003 Jan 31.PubMed [citation] PMID: 12658441

105. Josephson A, Trifunovski A, Widmer HR, Widenfalk J, Olson L, Spenger C.Nogo-receptor gene activity: cellular localization and developmental regulation of mRNA in mice and humans.J Comp Neurol. 2002 Nov 18;453(3):292-304.PubMed [citation] PMID: 12378589

106. Josephson A, Widenfalk J, Widmer HW, Olson L, Spenger C.NOGO mRNA expression in adult and fetal human and rat nervous tissue and in weight drop injury.Exp Neurol. 2001 Jun;169(2):319-28.PubMed [citation] PMID: 11358445

107. Joset A, Dodd DA, Halegoua S, Schwab ME.Pincher-generated Nogo-A endosomes mediate growth cone collapse and retrograde signaling.J Cell Biol. 2010 Jan 25;188(2):271-85. Epub 2010 Jan 18.PubMed [citation] PMID: 20083601, PMCID: PMC2812518

108. Jung TY, Jung S, Lee KH, Cao VT, Jin SG, Moon KS, Kim IY, Kang SS, Kim HS, Lee MC.Nogo-A expression in oligodendroglial tumors.Neuropathology. 2011 Feb;31(1):11-9. doi: 10.1111/j.1440-1789.2010.01118.x.PubMed [citation] PMID: 20487307

109. Jurewicz A, Matysiak M, Raine CS, Selmaj K.Soluble Nogo-A, an inhibitor of axonal regeneration, as a biomarker for multiple sclerosis.Neurology. 2007 Jan 23;68(4):283-7.PubMed [citation] PMID: 17242333

110. Karnezis T, Mandemakers W, McQualter JL, Zheng B, Ho PP, Jordan KA, Murray BM, Barres B, Tessier-Lavigne M, Bernard CC.The neurite outgrowth inhibitor Nogo A is involved in autoimmune-mediated demyelination.Nat Neurosci. 2004 Jul;7(7):736-44. Epub 2004 Jun 6.PubMed [citation] PMID: 15184901

111. Kilic E, ElAli A, Kilic U, Guo Z, Ugur M, Uslu U, Bassetti CL, Schwab ME, Hermann DM.Role of Nogo-A in neuronal survival in the reperfused ischemic brain.J Cereb Blood Flow Metab. 2010 May;30(5):969-84. Epub 2010 Jan 20.PubMed [citation] PMID: 20087369, PMCID: PMC2949191

112. Kim JE, Liu BP, Park JH, Strittmatter SM.Nogo-66 receptor prevents raphespinal and rubrospinal axon regeneration and limits functional recovery from spinal cord injury.Neuron. 2004 Oct 28;44(3):439-51.PubMed [citation] PMID: 15504325

113. Kim JE, Li S, GrandPré T, Qiu D, Strittmatter SM.Axon regeneration in young adult mice lacking Nogo-A/B.Neuron. 2003 Apr 24;38(2):187-99.PubMed [citation] PMID: 12718854

114. Kim JE, Bonilla IE, Qiu D, Strittmatter SM.Nogo-C is sufficient to delay nerve regeneration.Mol Cell Neurosci. 2003 Jul;23(3):451-9.PubMed [citation] PMID: 12837628

115. Klinger M, Diekmann H, Heinz D, Hirsch C, Hannbeck von Hanwehr S, Petrausch B, Oertle T, Schwab ME, Stuermer CA.Identification of two NOGO/RTN4 genes and analysis of Nogo-A expression in Xenopus laevis.Mol Cell Neurosci. 2004 Feb;25(2):205-16.PubMed [citation] PMID: 15019938

116. Kou SB, Xu G, Jiang XD, Xu RX, Tang YP, Xu G, Cai YQ, Du MX, Xiao ZC.Therapeutic DNA vaccination as a repair strategy following spinal cord injury.Cell Mol Neurobiol. 2010 Mar;30(2):275-82. Epub 2009 Sep 16. Retraction in: Cell Mol Neurobiol. 2010 Aug;30(6):977. PubMed [citation] PMID: 19757023

117. Kuhlmann T, Remington L, Maruschak B, Owens T, Brück W.Nogo-A is a reliable oligodendroglial marker in adult human and mouse CNS and in demyelinated lesions.J Neuropathol Exp Neurol. 2007 Mar;66(3):238-46.PubMed [citation] PMID: 17356385

118. Kuhlmann T, Gutenberg A, Schulten HJ, Paulus W, Rohde V, Bruck W.Nogo-a expression in glial CNS tumors: a tool to differentiate between oligodendrogliomas and other gliomas?Am J Surg Pathol. 2008 Oct;32(10):1444-53.PubMed [citation] PMID: 18685489

119. Lackner P, Beer R, Broessner G, Helbok R, Dallago K, Hess MW, Pfaller K, Bandtlow C, Schmutzhard E.Nogo-a expression in the brain of mice with cerebral malaria.PLoS One. 2011;6(9):e25728. Epub 2011 Sep 29.PubMed [citation] PMID: 21980529, PMCID: PMC3183069

120. Laurén J, Hu F, Chin J, Liao J, Airaksinen MS, Strittmatter SM.Characterization of myelin ligand complexes with neuronal Nogo-66 receptor family members.J Biol Chem. 2007 Feb 23;282(8):5715-25. Epub 2006 Dec 21.PubMed [citation] PMID: 17189258, PMCID: PMC2852886

121. Laurén J, Airaksinen MS, Saarma M, Timmusk T.Two novel mammalian Nogo receptor homologs differentially expressed in the central and peripheral nervous systems.Mol Cell Neurosci. 2003 Nov;24(3):581-94.PubMed [citation] PMID: 14664809

122. Lee H, Raiker SJ, Venkatesh K, Geary R, Robak LA, Zhang Y, Yeh HH, Shrager P, Giger RJ.Synaptic function for the Nogo-66 receptor NgR1: regulation of dendritic spine morphology and activity-dependent synaptic strength.J Neurosci. 2008 Mar 12;28(11):2753-65.PubMed [citation] PMID: 18337405

123. Lee JK, Chan AF, Luu SM, Zhu Y, Ho C, Tessier-Lavigne M, Zheng B.Reassessment of corticospinal tract regeneration in Nogo-deficient mice.J Neurosci. 2009 Jul 8;29(27):8649-54.PubMed [citation] PMID: 19587271, PMCID: PMC2747754

124. Lenzlinger PM, Shimizu S, Marklund N, Thompson HJ, Schwab ME, Saatman KE, Hoover RC,

Bareyre FM, Motta M, Luginbuhl A, Pape R, Clouse AK, Morganti-Kossmann C, McIntosh TK.Delayed inhibition of Nogo-A does not alter injury-induced axonal sprouting but enhances recovery of cognitive function following experimental traumatic brain injury in rats.Neuroscience. 2005;134(3):1047-56.PubMed [citation] PMID: 15979242

125. Li M, Shi J, Wei Z, Teng FY, Tang BL, Song J.Structural characterization of the human Nogo-A functional domains. Solution structure of Nogo-40, a Nogo-66 receptor antagonist enhancing injured spinal cord regeneration.Eur J Biochem. 2004 Sep;271(17):3512-22.PubMed [citation] PMID: 15317586

126. Li M, Song J.The N- and C-termini of the human Nogo molecules are intrinsically unstructured: bioinformatics, CD, NMR characterization, and functional implications.Proteins. 2007 Jul 1;68(1):100-8.PubMed [citation] PMID: 17397058

127. Li Q, Qi B, Oka K, Shimakage M, Yoshioka N, Inoue H, Hakura A, Kodama K, Stanbridge EJ, Yutsudo M.Link of a new type of apoptosis-inducing gene ASY/Nogo-B to human cancer.Oncogene. 2001 Jul 5;20(30):3929-36.PubMed [citation] PMID: 11494121

128. Li S, Carmichael ST.Growth-associated gene and protein expression in the region of axonal sprouting in the aged brain after stroke.Neurobiol Dis. 2006 Aug;23(2):362-73. Epub 2006 Jun 19.PubMed [citation] PMID: 16782355

129. Li X, Su H, Fu QL, Guo J, Lee DH, So KF, Wu W.Soluble NgR Fusion Protein Modulates the Proliferation of Neural Progenitor Cells via the Notch Pathway.Neurochem Res. 2011 Aug 7. [Epub ahead of print]PubMed [citation] PMID: 21822922

130. Liao H, Duka T, Teng FY, Sun L, Bu WY, Ahmed S, Tang BL, Xiao ZC.Nogo-66 and myelin-associated glycoprotein (MAG) inhibit the adhesion and migration of Nogo-66 receptor expressing human glioma cells.J Neurochem. 2004 Sep;90(5):1156-62.PubMed [citation] PMID: 15312170

131. Liao XX, Chen D, Shi J, Sun YQ, Sun SJ, So KF, Fu QL.The expression patterns of nogo-a, myelin associated glycoprotein and oligodendrocyte myelin glycoprotein in the retina after ocular hypertension : the expression of myelin proteins in the retina in glaucoma.Neurochem Res. 2011 Nov;36(11):1955-61. Epub 2011 Jun 4.PubMed [citation] PMID: 21643729

132. Liebscher T, Schnell L, Schnell D, Scholl J, Schneider R, Gullo M, Fouad K, Mir A, Rausch M, Kindler D, Hamers FP, Schwab ME.Nogo-A antibody improves regeneration and locomotion of spinal cord-injured rats.Ann Neurol. 2005 Nov;58(5):706-19.PubMed [citation] PMID: 16173073

133. Lindner M, Fokuhl J, Linsmeier F, Trebst C, Stangel M.Chronic toxic demyelination in the central nervous system leads to axonal damage despite remyelination.Neurosci Lett. 2009 Apr 3;453(2):120-5. Epub 2009 Feb 10.PubMed [citation] PMID: 19356606

134. Lindsey JW, Crawford MP, Hatfield LM.Soluble Nogo-A in CSF is not a useful biomarker for multiple sclerosis.Neurology. 2008 Jul 1;71(1):35-7. Epub 2008 May 21.PubMed [citation] PMID: 18495952

135. Liu BP, Cafferty WB, Budel SO, Strittmatter SM.Extracellular regulators of axonal growth in the adult central nervous system.Philos Trans R Soc Lond B Biol Sci. 2006 Sep 29;361(1473):1593-610. Review.PubMed [citation] PMID: 16939977, PMCID: PMC1664666

136. Liu H, Ng CE, Tang BL.Nogo-A expression in mouse central nervous system neurons.Neurosci Lett. 2002 Aug 16;328(3):257-60.PubMed [citation] PMID: 12147320

137. Liu J, Li M, Ran X, Fan JS, Song J.Structural insight into the binding diversity between the human

Nck2 SH3 domains and proline-rich proteins.Biochemistry. 2006 Jun 13;45(23):7171-84.PubMed [citation] PMID: 16752908

138. Liu X, Liu YY, Jin WL, Liu HL, Ju G.Nogo-66 receptor at cerebellar cortical glia gap junctions in the rat.Neurosignals. 2005;14(3):96-101.PubMed [citation] PMID: 16088223

139. Liu X, Wang Y, Zhang Y, Zhu W, Xu X, Niinobe M, Yoshikawa K, Lu C, He C.Nogo-A inhibits necdin-accelerated neurite outgrowth by retaining necdin in the cytoplasm.Mol Cell Neurosci. 2009 May;41(1):51-61. Epub 2009 Feb 6.PubMed [citation] PMID: 19386232

140. Liu YY, Jin WL, Liu HL, Ju G.Electron microscopic localization of Nogo-A at the postsynaptic active zone of the rat.Neurosci Lett. 2003 Aug 7;346(3):153-6.PubMed [citation] PMID: 12853107

141. Llorens F, Gil V, del Río JA.Emerging functions of myelin-associated proteins during development, neuronal plasticity, and neurodegeneration.FASEB J. 2011 Feb;25(2):463-75. Epub 2010 Nov 8. Review.PubMed [citation] PMID: 21059749

142. Ma Z, Cao Q, Zhang L, Hu J, Howard RM, Lu P, Whittemore SR, Xu XM.Oligodendrocyte precursor cells differentially expressing Nogo-A but not MAG are more permissive to neurite outgrowth than mature oligodendrocytes.Exp Neurol. 2009 May;217(1):184-96. Epub 2009 Feb 21.PubMed [citation] PMID: 19236864, PMCID: PMC2843101

143. Magnusson C, Libelius R, Tågerud S.Nogo (Reticulon 4) expression in innervated and denervated mouse skeletal muscle.Mol Cell Neurosci. 2003 Mar;22(3):298-307.PubMed [citation] PMID: 12691732

144. Maier IC, Ichiyama RM, Courtine G, Schnell L, Lavrov I, Edgerton VR, Schwab ME.Differential effects of anti-Nogo-A antibody treatment and treadmill training in rats with incomplete spinal cord injury.Brain. 2009 Jun;132(Pt 6):1426-40. Epub 2009 Apr 16.PubMed [citation] PMID: 19372269

145. Marin EP, Moeckel G, Al-Lamki R, Bradley J, Yan Q, Wang T, Wright PL, Yu J, Sessa WC.Identification and regulation of reticulon 4B (Nogo-B) in renal tubular epithelial cells.Am J Pathol. 2010 Dec;177(6):2765-73. Epub 2010 Oct 22.PubMed [citation] PMID: 20971739, PMCID: PMC2993268

146. Marklund N, Morales D, Clausen F, Hånell A, Kiwanuka O, Pitkänen A, Gimbel DA, Philipson O, Lannfelt L, Hillered L, Strittmatter SM, McIntosh TK.Functional outcome is impaired following traumatic brain injury in aging Nogo-A/B-deficient mice.Neuroscience. 2009 Oct 6;163(2):540-51. Epub 2009 Jun 23.PubMed [citation] PMID: 19555742, PMCID: PMC2756649

147. Marklund N, Bareyre FM, Royo NC, Thompson HJ, Mir AK, Grady MS, Schwab ME, McIntosh TK.Cognitive outcome following brain injury and treatment with an inhibitor of Nogo-A in association with an attenuated downregulation of hippocampal growth-associated protein-43 expression.J Neurosurg. 2007 Oct;107(4):844-53.PubMed [citation] PMID: 17937233, PMCID: PMC2366808

148. Marklund N, Fulp CT, Shimizu S, Puri R, McMillan A, Strittmatter SM, McIntosh TK.Selective temporal and regional alterations of Nogo-A and small proline-rich repeat protein 1A (SPRR1A) but not Nogo-66 receptor (NgR) occur following traumatic brain injury in the rat.Exp Neurol. 2006 Jan;197(1):70-83.PubMed [citation] PMID: 16321384, PMCID: PMC2849132

149. Markus TM, Tsai SY, Bollnow MR, Farrer RG, O'Brien TE, Kindler-Baumann DR, Rausch M, Rudin M, Wiessner C, Mir AK, Schwab ME, Kartje GL.Recovery and brain reorganization after stroke in adult and aged rats.Ann Neurol. 2005 Dec;58(6):950-3.PubMed [citation] PMID: 16315284

150. Marucci G, Di Oto E, Farnedi A, Panzacchi R, Ligorio C, Foschini MP.Nogo-A: a useful marker for

the diagnosis of oligodendroglioma and for identifying 1p19q codeletion.Hum Pathol. 2011 Aug 9. [Epub ahead of print]PubMed [citation] PMID: 21835431

151. Matchett GA, Martin RD, Zhang JH.Hyperbaric oxygen therapy and cerebral ischemia: neuroprotective mechanisms.Neurol Res. 2009 Mar;31(2):114-21. Review.PubMed [citation] PMID: 19298750

152. Mathis C, Schröter A, Thallmair M, Schwab ME.Nogo-a regulates neural precursor migration in the embryonic mouse cortex.Cereb Cortex. 2010 Oct;20(10):2380-90. Epub 2010 Jan 21.PubMed [citation] PMID: 20093372, PMCID: PMC2936797

153. McDonald CL, Bandtlow C, Reindl M.Targeting the Nogo receptor complex in diseases of the central nervous system.Curr Med Chem. 2011;18(2):234-44. Review.PubMed [citation] PMID: 21110803

154. Meier S, Bräuer AU, Heimrich B, Schwab ME, Nitsch R, Savaskan NE.Molecular analysis of Nogo expression in the hippocampus during development and following lesion and seizure.FASEB J. 2003 Jun;17(9):1153-5. Epub 2003 Apr 8. Retraction in: FASEB J. 2011 Aug;25(8):2853. PubMed [citation] PMID: 12692091

155. Merkler D, Oertle T, Buss A, Pinschewer DD, Schnell L, Bareyre FM, Kerschensteiner M, Buddeberg BS, Schwab ME.Rapid induction of autoantibodies against Nogo-A and MOG in the absence of an encephalitogenic T cell response: implication for immunotherapeutic approaches in neurological diseases.FASEB J. 2003 Dec;17(15):2275-7. Epub 2003 Oct 16.PubMed [citation] PMID: 14563689

156. Merkler D, Metz GA, Raineteau O, Dietz V, Schwab ME, Fouad K.Locomotor recovery in spinal cord-injured rats treated with an antibody neutralizing the myelin-associated neurite growth inhibitor Nogo-A.J Neurosci. 2001 May 15;21(10):3665-73.PubMed [citation] PMID: 11331396

157. Miao RQ, Gao Y, Harrison KD, Prendergast J, Acevedo LM, Yu J, Hu F, Strittmatter SM, Sessa WC.Identification of a receptor necessary for Nogo-B stimulated chemotaxis and morphogenesis of endothelial cells.Proc Natl Acad Sci U S A. 2006 Jul 18;103(29):10997-1002. Epub 2006 Jul 11.PubMed [citation] PMID: 16835300, PMCID: PMC1544163

158. Mingorance A, Soriano-García E, del Rio JA.[Nogo-A functions during the development of the central nervous system and in the adult].Rev Neurol. 2004 Sep 1-15;39(5):440-6. Review. Spanish. PubMed [citation] PMID: 15378458

159. Mingorance A, Fontana X, Solé M, Burgaya F, Ureña JM, Teng FY, Tang BL, Hunt D, Anderson PN, Bethea JR, Schwab ME, Soriano E, del Río JA.Regulation of Nogo and Nogo receptor during the development of the entorhino-hippocampal pathway and after adult hippocampal lesions.Mol Cell Neurosci. 2004 May;26(1):34-49.PubMed [citation] PMID: 15121177

160. Mingorance-Le Meur A, Zheng B, Soriano E, del Río JA.Involvement of the myelin-associated inhibitor Nogo-A in early cortical development and neuronal maturation.Cereb Cortex. 2007 Oct;17(10):2375-86. Epub 2006 Dec 27.PubMed [citation] PMID: 17192421

161. Miyazaki K, Nagai M, Ohta Y, Morimoto N, Kurata T, Murakami T, Takehisa Y, Ikeda Y, Kamiya T, Abe K.Changes of Nogo-A and receptor NgR in the lumbar spinal cord of ALS model mice.Neurol Res. 2009 Apr;31(3):316-21. Epub 2009 Feb 25.PubMed [citation] PMID: 19243684

162. Montani L, Gerrits B, Gehrig P, Kempf A, Dimou L, Wollscheid B, Schwab ME.Neuronal Nogo-A modulates growth cone motility via Rho-GTP/LIMK1/cofilin in the unlesioned adult nervous system.J

Biol Chem. 2009 Apr 17;284(16):10793-807. Epub 2009 Feb 9.PubMed [citation] PMID: 19208621, PMCID: PMC2667767

163. Mozafari S, Javan M, Sherafat MA, Mirnajafi-Zadeh J, Heibatollahi M, Pour-Beiranvand S, Tiraihi T, Ahmadiani A.Analysis of structural and molecular events associated with adult rat optic chiasm and nerves demyelination and remyelination; possible role for 3rd ventricle proliferating cells.Neuromolecular Med. 2011 Jun;13(2):138-50. Epub 2011 Feb 3.PubMed [citation] PMID: 21290199

164. Mukaino M, Nakamura M, Yamada O, Okada S, Morikawa S, Renault-Mihara F, Iwanami A, Ikegami T, Ohsugi Y, Tsuji O, Katoh H, Matsuzaki Y, Toyama Y, Liu M, Okano H.Anti-IL-6-receptor antibody promotes repair of spinal cord injury by inducing microglia-dominant inflammation.Exp Neurol. 2010 Aug;224(2):403-14. Epub 2010 May 16.PubMed [citation] PMID: 20478301

165. Murphy KJ, Miller AM, Thelma R, Cowley F, Cox FF, Lynch MA.The age- and amyloid-β-related increases in Nogo B contribute to microglial activation.Neurochem Int. 2011 Feb;58(2):161-8. Epub 2010 Nov 24.PubMed [citation] PMID: 21111015

166. Müllner A, Gonzenbach RR, Weinmann O, Schnell L, Liebscher T, Schwab ME.Lamina-specific restoration of serotonergic projections after Nogo-A antibody treatment of spinal cord injury in rats.Eur J Neurosci. 2008 Jan;27(2):326-33.PubMed [citation] PMID: 18215231

167. Nath AK, Krauthammer M, Li P, Davidov E, Butler LC, Copel J, Katajamaa M, Oresic M, Buhimschi I, Buhimschi C, Snyder M, Madri JA.Proteomic-based detection of a protein cluster dysregulated during cardiovascular development identifies biomarkers of congenital heart defects.PLoS One. 2009;4(1):e4221. Epub 2009 Jan 19.PubMed [citation] PMID: 19156209, PMCID: PMC2626248

168. Nie DY, Zhou ZH, Ang BT, Teng FY, Xu G, Xiang T, Wang CY, Zeng L, Takeda Y, Xu TL, Ng YK, Faivre-Sarrailh C, Popko B, Ling EA, Schachner M, Watanabe K, Pallen CJ, Tang BL, Xiao ZC.Nogo-A at CNS paranodes is a ligand of Caspr: possible regulation of K(+) channel localization.EMBO J. 2003 Nov 3;22(21):5666-78.PubMed [citation] PMID: 14592966, PMCID: PMC275427

169. Niederöst B, Oertle T, Fritsche J, McKinney RA, Bandtlow CE.Nogo-A and myelin-associated glycoprotein mediate neurite growth inhibition by antagonistic regulation of RhoA and Rac1.J Neurosci. 2002 Dec 1;22(23):10368-76.PubMed [citation] PMID: 12451136

170. Novak G, Tallerico T.Nogo A, B and C expression in schizophrenia, depression and bipolar frontal cortex, and correlation of Nogo expression with CAA/TATC polymorphism in 3'-UTR.Brain Res. 2006 Nov 20;1120(1):161-71. Epub 2006 Oct 4.PubMed [citation] PMID: 17022955

171. Nyatia E, Lang DM.Localisation and expression of a myelin associated neurite inhibitor, Nogo-A and its receptor Nogo-receptor by mammalian CNS cells.Res Vet Sci. 2007 Dec;83(3):287-301. Epub 2007 Apr 10.PubMed [citation] PMID: 17428512

172. O'Neill P, Whalley K, Ferretti P.Nogo and Nogo-66 receptor in human and chick: implications for development and regeneration.Dev Dyn. 2004 Sep;231(1):109-21.PubMed [citation] PMID: 15305291

173. Oertle T, Huber C, van der Putten H, Schwab ME.Genomic structure and functional characterisation of the promoters of human and mouse nogo/rtn4.J Mol Biol. 2003 Jan 10;325(2):299-323.PubMed [citation] PMID: 12488097

174. Oertle T, van der Haar ME, Bandtlow CE, Robeva A, Burfeind P, Buss A, Huber AB, Simonen M, Schnell L, Brösamle C, Kaupmann K, Vallon R, Schwab ME.Nogo-A inhibits neurite outgrowth and cell

spreading with three discrete regions.J Neurosci. 2003 Jul 2;23(13):5393-406.PubMed [citation] PMID: 12843238

175. Oertle T, Klinger M, Stuermer CA, Schwab ME.A reticular rhapsody: phylogenic evolution and nomenclature of the RTN/Nogo gene family.FASEB J. 2003 Jul;17(10):1238-47.PubMed [citation] PMID: 12832288

176. Oertle T, Merkler D, Schwab ME.Do cancer cells die because of Nogo-B?Oncogene. 2003 Mar 6;22(9):1390-9.PubMed [citation] PMID: 12618765

177. Onoue H, Satoh JI, Ogawa M, Tabunoki H, Yamamura T.Detection of anti-Nogo receptor autoantibody in the serum of multiple sclerosis and controls.Acta Neurol Scand. 2007 Mar;115(3):153-60.PubMed [citation] PMID: 17295709

178. Osborne SL, Corcoran SL, Prinjha RK, Moore SE.Nogo A expression in the adult enteric nervous system.Neurogastroenterol Motil. 2004 Aug;16(4):465-74.PubMed [citation] PMID: 15306002

179. Papadopoulos CM, Tsai SY, Cheatwood JL, Bollnow MR, Kolb BE, Schwab ME, Kartje GL.Dendritic plasticity in the adult rat following middle cerebral artery occlusion and Nogo-a neutralization.Cereb Cortex. 2006 Apr;16(4):529-36. Epub 2005 Jul 20.PubMed [citation] PMID: 16033928

180. Papadopoulos CM, Tsai SY, Alsbiei T, O'Brien TE, Schwab ME, Kartje GL.Functional recovery and neuroanatomical plasticity following middle cerebral artery occlusion and IN-1 antibody treatment in the adult rat.Ann Neurol. 2002 Apr;51(4):433-41.PubMed [citation] PMID: 11921049

181. Peng X, Liu S, Ye J, Yuan R.Downregulation of Nogo-A expression of oligodendrocytes in vitro with antisense oligodeoxynucleotides.Yan Ke Xue Bao. 2003 Sep;19(3):195-200.PubMed [citation] PMID: 14574981

182. Peng X, Zhou Z, Hu J, Fink DJ, Mata M.Soluble Nogo receptor down-regulates expression of neuronal Nogo-A to enhance axonal regeneration.J Biol Chem. 2010 Jan 22;285(4):2783-95. Epub 2009 Nov 9.PubMed [citation] PMID: 19901030, PMCID: PMC2807333

183. Peng X, Kim J, Zhou Z, Fink DJ, Mata M.Neuronal Nogo-A regulates glutamate receptor subunit expression in hippocampal neurons.J Neurochem. 2011 Oct 10. doi: 10.1111/j.1471-4159.2011.07520.x. [Epub ahead of print]PubMed [citation] PMID: 21985178

184. Pernet V, Joly S, Christ F, Dimou L, Schwab ME.Nogo-A and myelin-associated glycoprotein differently regulate oligodendrocyte maturation and myelin formation.J Neurosci. 2008 Jul 16;28(29):7435-44.PubMed [citation] PMID: 18632947

185. Petrinovic MM, Duncan CS, Bourikas D, Weinman O, Montani L, Schroeter A, Maerki D, Sommer L, Stoeckli ET, Schwab ME.Neuronal Nogo-A regulates neurite fasciculation, branching and extension in the developing nervous system.Development. 2010 Aug 1;137(15):2539-50. Epub 2010 Jun 23.PubMed [citation] PMID: 20573699

186. Pignot V, Hein AE, Barske C, Wiessner C, Walmsley AR, Kaupmann K, Mayeur H, Sommer B, Mir AK, Frentzel S.Characterization of two novel proteins, NgRH1 and NgRH2, structurally and biochemically homologous to the Nogo-66 receptor.J Neurochem. 2003 May;85(3):717-28.PubMed [citation] PMID: 12694398

187. Pot C, Simonen M, Weinmann O, Schnell L, Christ F, Stoeckle S, Berger P, Rülicke T, Suter U, Schwab ME.Nogo-A expressed in Schwann cells impairs axonal regeneration after peripheral nerve

injury.J Cell Biol. 2002 Oct 14;159(1):29-35. Epub 2002 Oct 14.PubMed [citation] PMID: 12379801, PMCID: PMC2173480

188. Pradat PF.[New biological and radiological markers in amyotrophic lateral sclerosis].Presse Med. 2009 Dec;38(12):1843-51. Epub 2009 Apr 21. French. PubMed [citation] PMID: 19386463

189. Pradat PF, Bruneteau G, Gonzalez de Aguilar JL, Dupuis L, Jokic N, Salachas F, Le Forestier N, Echaniz-Laguna A, Dubourg O, Hauw JJ, Tranchant C, Loeffler JP, Meininger V.Muscle Nogo-A expression is a prognostic marker in lower motor neuron syndromes.Ann Neurol. 2007 Jul;62(1):15-20.PubMed [citation] PMID: 17455292

190. Pradhan AD, Case AM, Farrer RG, Tsai SY, Cheatwood JL, Martin JL, Kartje GL.Dendritic spine alterations in neocortical pyramidal neurons following postnatal neuronal Nogo-A knockdown.Dev Neurosci. 2010;32(4):313-20. Epub 2010 Oct 13.PubMed [citation] PMID: 20938157, PMCID: PMC3021499

191. Qi B, Qi Y, Watari A, Yoshioka N, Inoue H, Minemoto Y, Yamashita K, Sasagawa T, Yutsudo M.Pro-apoptotic ASY/Nogo-B protein associates with ASYIP.J Cell Physiol. 2003 Aug;196(2):312-8.PubMed [citation] PMID: 12811824

192. Qin H, Pu HX, Li M, Ahmed S, Song J.Identification and structural mechanism for a novel interaction between a ubiquitin ligase WWP1 and Nogo-A, a key inhibitor for central nervous system regeneration.Biochemistry. 2008 Dec 23;47(51):13647-58.PubMed [citation] PMID: 19035836

193. Raineteau O, Fouad K, Bareyre FM, Schwab ME.Reorganization of descending motor tracts in the rat spinal cord.Eur J Neurosci. 2002 Nov;16(9):1761-71.PubMed [citation] PMID: 12431229

194. Raineteau O, Fouad K, Noth P, Thallmair M, Schwab ME.Functional switch between motor tracts in the presence of the mAb IN-1 in the adult rat.Proc Natl Acad Sci U S A. 2001 Jun 5;98(12):6929-34. Epub 2001 May 29.PubMed [citation] PMID: 11381120, PMCID: PMC34455

195. Reilly CE.Nogo-A is the inhibitor of CNS axon regeneration.J Neurol. 2000 Mar;247(3):239-40. No abstract available. PubMed [citation] PMID: 10787127

196. Reindl M, Khantane S, Ehling R, Schanda K, Lutterotti A, Brinkhoff C, Oertle T, Schwab ME, Deisenhammer F, Berger T, Bandtlow CE.Serum and cerebrospinal fluid antibodies to Nogo-A in patients with multiple sclerosis and acute neurological disorders.J Neuroimmunol. 2003 Dec;145(1-2):139-47.PubMed [citation] PMID: 14644040

197. Richard M, Giannetti N, Saucier D, Sacquet J, Jourdan F, Pellier-Monnin V.Neuronal expression of Nogo-A mRNA and protein during neurite outgrowth in the developing rat olfactory system.Eur J Neurosci. 2005 Nov;22(9):2145-58.PubMed [citation] PMID: 16262653

198. Richard M, Sacquet J, Jourdan F, Pellier-Monnin V.Spatio-temporal expression pattern of receptors for myelin-associated inhibitors in the developing rat olfactory system.Brain Res. 2009 Feb 3;1252:52-65. Epub 2008 Nov 27.PubMed [citation] PMID: 19063867

199. Rossi F, Buffo A, Strata P.Regulation of intrinsic regenerative properties and axonal plasticity in cerebellar Purkinje cells.Restor Neurol Neurosci. 2001;19(1-2):85-94. Review.PubMed [citation] PMID: 12085795

200. Saha N, Kolev MV, Semavina M, Himanen J, Nikolov DB.Ganglioside mediate the interaction between Nogo receptor 1 and LINGO-1.Biochem Biophys Res Commun. 2011 Sep 16;413(1):92-7.

Epub 2011 Aug 22.PubMed [citation] PMID: 21872576

201. Sarkey JP, Chu M, McShane M, Bovo E, Mou YA, Zima AV, de Tombe PP, Kartje GL, Martin JL.Nogo-A knockdown inhibits hypoxia/reoxygenation-induced activation of mitochondrial-dependent apoptosis in cardiomyocytes.J Mol Cell Cardiol. 2011 Jun;50(6):1044-55. Epub 2011 Mar 17.PubMed [citation] PMID: 21420413, PMCID: PMC3091973

202. Satoh J, Tabunoki H, Yamamura T, Arima K, Konno H.TROY and LINGO-1 expression in astrocytes and macrophages/microglia in multiple sclerosis lesions.Neuropathol Appl Neurobiol. 2007 Feb;33(1):99-107.PubMed [citation] PMID: 17239012

203. Satoh J, Onoue H, Arima K, Yamamura T.Nogo-A and nogo receptor expression in demyelinating lesions of multiple sclerosis.J Neuropathol Exp Neurol. 2005 Feb;64(2):129-38.PubMed [citation] PMID: 15751227

204. Satoh JI, Kuroda Y.Cytokines and neurotrophic factors fail to affect Nogo-A mRNA expression in differentiated human neurones: implications for inflammation-related axonal regeneration in the central nervous system.Neuropathol Appl Neurobiol. 2002 Apr;28(2):95-106.PubMed [citation] PMID: 11972796

205. Schanda K, Hermann M, Stefanova N, Gredler V, Bandtlow C, Reindl M.Nogo-B is associated with cytoskeletal structures in human monocyte-derived macrophages.BMC Res Notes. 2011 Jan 14;4:6.PubMed [citation] PMID: 21235733, PMCID: PMC3029212

206. Schimchowitsch S, Cassel JC.Polyamine and aminoguanidine treatments to promote structural and functional recovery in the adult mammalian brain after injury: a brief literature review and preliminary data about their combined administration.J Physiol Paris. 2006 Mar-May;99(2-3):221-31. Review.PubMed [citation] PMID: 16646157

207. Schnell L, Hunanyan AS, Bowers WJ, Horner PJ, Federoff HJ, Gullo M, Schwab ME, Mendell LM, Arvanian VL.Combined delivery of Nogo-A antibody, neurotrophin-3 and the NMDA-NR2d subunit establishes a functional 'detour' in the hemisected spinal cord.Eur J Neurosci. 2011 Oct;34(8):1256-1267. doi: 10.1111/j.1460-9568.2011.07862.x. Epub 2011 Oct 13.PubMed [citation] PMID: 21995852, PMCID: PMC3195885

208. Schulz K, Vulpe CD, Harris LZ, David S.Iron efflux from oligodendrocytes is differentially regulated in gray and white matter.J Neurosci. 2011 Sep 14;31(37):13301-11.PubMed [citation] PMID: 21917813

209. Schwab ME.Increasing plasticity and functional recovery of the lesioned spinal cord.Prog Brain Res. 2002;137:351-9. Review.PubMed [citation] PMID: 12440377

210. Schwab ME.Nogo and axon regeneration.Curr Opin Neurobiol. 2004 Feb;14(1):118-24. Review.PubMed [citation] PMID: 15018947

211. Schwab ME.Functions of Nogo proteins and their receptors in the nervous system.Nat Rev Neurosci. 2010 Dec;11(12):799-811. Epub 2010 Nov 3.PubMed [citation] PMID: 21045861

212. Schweigreiter R.The natural history of the myelin-derived nerve growth inhibitor Nogo-A.Neuron Glia Biol. 2008 May;4(2):83-9. Review.PubMed [citation] PMID: 19737432

213. Schweigreiter R, Stasyk T, Contarini I, Frauscher S, Oertle T, Klimaschewski L, Huber LA, Bandtlow CE.Phosphorylation-regulated cleavage of the reticulon protein Nogo-B by caspase-7 at a

noncanonical recognition site.Proteomics. 2007 Dec;7(24):4457-67.PubMed [citation] PMID: 18072206

214. Schweigreiter R, Bandtlow CE.Nogo in the injured spinal cord.J Neurotrauma. 2006 Mar-Apr;23(3-4):384-96. Review.PubMed [citation] PMID: 16629624

215. Schweigreiter R, Walmsley AR, Niederöst B, Zimmermann DR, Oertle T, Casademunt E, Frentzel S, Dechant G, Mir A, Bandtlow CE.Versican V2 and the central inhibitory domain of Nogo-A inhibit neurite growth via p75NTR/NgR-independent pathways that converge at RhoA.Mol Cell Neurosci. 2004 Oct;27(2):163-74.PubMed [citation] PMID: 15485772

216. Selmaj K, Jurewicz A, Matysiak M, Raine CS.Soluble Nogo-A in CSF is not a useful biomarker for multiple sclerosis.Neurology. 2009 May 12;72(19):1708; author reply 1708-9. No abstract available. PubMed [citation] PMID: 19433749

217. Seymour AB, Andrews EM, Tsai SY, Markus TM, Bollnow MR, Brenneman MM, O'Brien TE, Castro AJ, Schwab ME, Kartje GL.Delayed treatment with monoclonal antibody IN-1 1 week after stroke results in recovery of function and corticorubral plasticity in adult rats.J Cereb Blood Flow Metab. 2005 Oct;25(10):1366-75.PubMed [citation] PMID: 15889044

218. Shen LH, Li Y, Chen J, Cui Y, Zhang C, Kapke A, Lu M, Savant-Bhonsale S, Chopp M.One-year follow-up after bone marrow stromal cell treatment in middle-aged female rats with stroke.Stroke. 2007 Jul;38(7):2150-6. Epub 2007 May 24.PubMed [citation] PMID: 17525391

219. Shen YX, Liu D, Sun YM, Zhou XZ, Tian Y, Lu ZF, Fan ZH.[Local X-irradiation promotes regeneration of spinal cord central nervous system in a rat model].Zhonghua Wai Ke Za Zhi. 2009 Jun 15;47(12):934-6. Chinese. PubMed [citation] PMID: 19781251

220. Sherafat MA, Javan M, Mozafari S, Mirnajafi-Zadeh J, Motamedi F.Castration attenuates myelin repair following lysolecithin induced demyelination in rat optic chiasm: an evaluation using visual evoked potential, marker genes expression and myelin staining.Neurochem Res. 2011 Oct;36(10):1887-95. Epub 2011 May 28.PubMed [citation] PMID: 21626170

221. Shibata T, Shimoyama I, Ito T, Abla D, Iwasa H, Koseki K, Yamanouchi N, Sato T, Nakajima Y.Event-related dynamics of the gamma-band oscillation in the human brain: information processing during a GO/NOGO hand movement task.Neurosci Res. 1999 Mar;33(3):215-22.PubMed [citation] PMID: 10211765

222. Shin JW, Shim ES, Hwang GH, Jung HS, Park JH, Sohn NW.Cell size-dependent Nogo-A expression in layer V pyramidal neurons of the rat primary somatosensory cortex.Neurosci Lett. 2006 Feb 13;394(2):117-20. Epub 2005 Nov 2.PubMed [citation] PMID: 16260091

223. Shypitsyna A, Málaga-Trillo E, Reuter A, Stuermer CA.Origin of Nogo-A by domain shuffling in an early jawed vertebrate.Mol Biol Evol. 2011 Apr;28(4):1363-70. Epub 2010 Nov 22.PubMed [citation] PMID: 21098000

224. Sicotte M, Tsatas O, Jeong SY, Cai CQ, He Z, David S.Immunization with myelin or recombinant Nogo-66/MAG in alum promotes axon regeneration and sprouting after corticospinal tract lesions in the spinal cord.Mol Cell Neurosci. 2003 Jun;23(2):251-63.PubMed [citation] PMID: 12812757

225. Simonen M, Pedersen V, Weinmann O, Schnell L, Buss A, Ledermann B, Christ F, Sansig G, van der Putten H, Schwab ME.Systemic deletion of the myelin-associated outgrowth inhibitor Nogo-A improves regenerative and plastic responses after spinal cord injury.Neuron. 2003 Apr 24;38(2):201-11.PubMed [citation] PMID: 12718855

226. Sironen RK, Karjalainen HM, Törrönen KJ, Elo MA, Hyttinen MM, Helminen HJ, Lammi MJ.Reticulon 4 in chondrocytic cells: barosensitivity and intracellular localization.Int J Biochem Cell Biol. 2004 Aug;36(8):1521-31.PubMed [citation] PMID: 15147731

227. Starkey ML, Schwab ME.Anti-Nogo-A and training: Can one plus one equal three?Exp Neurol. 2011 Apr 21. [Epub ahead of print]PubMed [citation] PMID: 21530508

228. Steward O, Zheng B, Banos K, Yee KM.Response to: Kim et al., “axon regeneration in young adult mice lacking Nogo-A/B.” Neuron 38, 187-199.Neuron. 2007 Apr 19;54(2):191-5. No abstract available. PubMed [citation] PMID: 17442241

229. Su Y, Wang F, Zhao SG, Liu P, Cui H, Teng Y.[Axonal regeneration of retinal ganglion cells after optic nerve crush: experiment of Nogo-A knockout mice].Zhonghua Yi Xue Za Zhi. 2006 Dec 26;86(48):3409-13. Chinese. PubMed [citation] PMID: 17313854

230. Su Y, Wang F, Zhao SG, Pan SH, Liu P, Teng Y, Cui H.Axonal regeneration after optic nerve crush in Nogo-A/B/C knockout mice.Mol Vis. 2008 Feb 4;14:268-73.PubMed [citation] PMID: 18334965, PMCID: PMC2263011

231. Su Y, Wang F, Teng Y, Zhao SG, Cui H, Pan SH.Axonal regeneration of optic nerve after crush in Nogo66 receptor knockout mice.Neurosci Lett. 2009 Sep 4;460(3):223-6. Epub 2009 Jun 7.PubMed [citation] PMID: 19500648

232. Su Z, Cao L, Zhu Y, Liu X, Huang Z, Huang A, He C.Nogo enhances the adhesion of olfactory ensheathing cells and inhibits their migration.J Cell Sci. 2007 Jun 1;120(Pt 11):1877-87. Epub 2007 May 8.PubMed [citation] PMID: 17488779

233. Sumiyoshi K, Obayashi S, Tabunoki H, Arima K, Satoh J.Protein microarray analysis identifies cyclic nucleotide phosphodiesterase as an interactor of Nogo-A.Neuropathology. 2010 Feb 1;30(1):7-14. Epub 2009 Jun 7.PubMed [citation] PMID: 19508346

234. Sun AP, Zhang J, Liao Q, Tang L, Fan DS.[Significance of Nogo-A expression of atrophic muscle fibers in diagnosis of amyotrophic lateral sclerosis].Beijing Da Xue Xue Bao. 2011 Apr 18;43(2):238-41. Chinese. PubMed [citation] PMID: 21503119

235. Sutendra G, Dromparis P, Wright P, Bonnet S, Haromy A, Hao Z, McMurtry MS, Michalak M, Vance JE, Sessa WC, Michelakis ED.The role of Nogo and the mitochondria-endoplasmic reticulum unit in pulmonary hypertension.Sci Transl Med. 2011 Jun 22;3(88):88ra55.PubMed [citation] PMID: 21697531

236. Syed YA, Baer AS, Lubec G, Hoeger H, Widhalm G, Kotter MR.Inhibition of oligodendrocyte precursor cell differentiation by myelin-associated proteins.Neurosurg Focus. 2008;24(3-4):E5.PubMed [citation] PMID: 18341408

237. Takeda Y, Kamida T, Fujiki M, Kobayashi H.Hippocampal Nogo-A and neo-Timm's staining in amygdala kindling rats.Neurol Res. 2007 Mar;29(2):199-203.PubMed [citation] PMID: 17439704

238. Takei Y.Phosphorylation of Nogo receptors suppresses Nogo signaling, allowing neurite regeneration.Sci Signal. 2009 Mar 31;2(64):ra14.PubMed [citation] PMID: 19336839

239. Taketomi M, Kinoshita N, Kimura K, Kitada M, Noda T, Asou H, Nakamura T, Ide C.Nogo-A expression in mature oligodendrocytes of rat spinal cord in association with specific molecules.Neurosci Lett. 2002 Oct 25;332(1):37-40.PubMed [citation] PMID: 12377379

240. Tan CL, Kwok JC, Patani R, Ffrench-Constant C, Chandran S, Fawcett JW.Integrin activation promotes axon growth on inhibitory chondroitin sulfate proteoglycans by enhancing integrin signaling.J Neurosci. 2011 Apr 27;31(17):6289-95.PubMed [citation] PMID: 21525268, PMCID: PMC3116378

241. Tang J, Yao YJ, Zhong L.[The influence of oxygen and glucose deprivation on the expression of neurite growth inhibitor Nogo-A in oligodendrocyte precursor cell of rat].Sichuan Da Xue Xue Bao Yi Xue Ban. 2007 Nov;38(6):938-41. Chinese. PubMed [citation] PMID: 18095590

242. Teng FY, Tang BL.Nogo-A and Nogo-66 receptor in amyotrophic lateral sclerosis.J Cell Mol Med. 2008 Aug;12(4):1199-204. Epub 2008 Apr 15. Review.PubMed [citation] PMID: 18419791

243. Teng FY, Tang BL.Nogo signaling and non-physical injury-induced nervous system pathology.J Neurosci Res. 2005 Feb 1;79(3):273-8. Review.PubMed [citation] PMID: 15619232

244. Teng FY, Tang BL.Why do Nogo/Nogo-66 receptor gene knockouts result in inferior regeneration compared to treatment with neutralizing agents?J Neurochem. 2005 Aug;94(4):865-74. Review.PubMed [citation] PMID: 16092935

245. Toda T, Hayakawa I, Matsubayashi Y, Tanaka K, Ikenaka K, Lu QR, Kawasaki H.Termination of lesion-induced plasticity in the mouse barrel cortex in the absence of oligodendrocytes.Mol Cell Neurosci. 2008 Sep;39(1):40-9. Epub 2008 Jul 9.PubMed [citation] PMID: 18588982

246. Tsai SY, Markus TM, Andrews EM, Cheatwood JL, Emerick AJ, Mir AK, Schwab ME, Kartje GL.Intrathecal treatment with anti-Nogo-A antibody improves functional recovery in adult rats after stroke.Exp Brain Res. 2007 Sep;182(2):261-6. Epub 2007 Aug 24.PubMed [citation] PMID: 17717658

247. Tsai SY, Papadopoulos CM, Schwab ME, Kartje GL.Delayed anti-nogo-a therapy improves function after chronic stroke in adult rats.Stroke. 2011 Jan;42(1):186-90. Epub 2010 Nov 18.PubMed [citation] PMID: 21088244

248. Tågerud S, Libelius R, Magnusson C.Muscle Nogo-A: a marker for amyotrophic lateral sclerosis or for denervation?Ann Neurol. 2007 Dec;62(6):676. No abstract available. PubMed [citation] PMID: 17702029

249. VanGuilder HD, Farley JA, Yan H, Van Kirk CA, Mitschelen M, Sonntag WE, Freeman WM.Hippocampal dysregulation of synaptic plasticity-associated proteins with age-related cognitive decline.Neurobiol Dis. 2011 Jul;43(1):201-12. Epub 2011 Apr 1.PubMed [citation] PMID: 21440628, PMCID: PMC3096728

250. Vandenberghe N.[Ancillary exams in the diagnosis of amyotrophic lateral sclerosis].Rev Neurol (Paris). 2006 Jun;162 Spec No 2:4S57-4S66. French. PubMed [citation] PMID: 17128091

251. Vitellaro-Zuccarello L, Mazzetti S, Madaschi L, Bosisio P, Gorio A, De Biasi S.Erythropoietin-mediated preservation of the white matter in rat spinal cord injury.Neuroscience. 2007 Feb 9;144(3):865-77. Epub 2006 Dec 4.PubMed [citation] PMID: 17141961

252. Walmsley AR, Mir AK.Targeting the Nogo-A signalling pathway to promote recovery following acute CNS injury.Curr Pharm Des. 2007;13(24):2470-84. Review.PubMed [citation] PMID: 17692015

253. Walmsley AR, Mir AK, Frentzel S.Ectodomain shedding of human Nogo-66 receptor homologue-1 by zinc metalloproteinases.Biochem Biophys Res Commun. 2005 Feb 4;327(1):112-6.PubMed [citation] PMID: 15629437

254. Walmsley AR, McCombie G, Neumann U, Marcellin D, Hillenbrand R, Mir AK, Frentzel S.Zinc metalloproteinase-mediated cleavage of the human Nogo-66 receptor.J Cell Sci. 2004 Sep 1;117(Pt 19):4591-602.PubMed [citation] PMID: 15331667

255. Wang F, Liang Z, Hou Q, Xing S, Ling L, He M, Pei Z, Zeng J.Nogo-A is involved in secondary axonal degeneration of thalamus in hypertensive rats with focal cortical infarction.Neurosci Lett. 2007 May 7;417(3):255-60. Epub 2007 Mar 12.PubMed [citation] PMID: 17382469

256. Wang H, Yao YJ, Chen DP.[Expression of Nogo-A mRNA and Nogo-A protein in brain tissue of neonatal mice with ischemic-hypoxic brain damage].Zhonghua Er Ke Za Zhi. 2006 Oct;44(10):792-3. Chinese. No abstract available. PubMed [citation] PMID: 17229389

257. Wang H, Yao Y, Jiang X, Chen D, Xiong Y, Mu D.Expression of Nogo-A and NgR in the developing rat brain after hypoxia-ischemia.Brain Res. 2006 Oct 9;1114(1):212-20. Epub 2006 Aug 22.PubMed [citation] PMID: 16928363

258. Wang H, Shen J, Xiong N, Zhao H, Chen Y.Protein kinase B is involved in Nogo-66 inhibiting neurite outgrowth in PC12 cells.Neuroreport. 2011 Oct 26;22(15):733-8.PubMed [citation] PMID: 21862940

259. Wang KC, Koprivica V, Kim JA, Sivasankaran R, Guo Y, Neve RL, He Z.Oligodendrocyte-myelin glycoprotein is a Nogo receptor ligand that inhibits neurite outgrowth.Nature. 2002 Jun 27;417(6892):941-4. Epub 2002 Jun 16.PubMed [citation] PMID: 12068310

260. Wang KC, Kim JA, Sivasankaran R, Segal R, He Z.P75 interacts with the Nogo receptor as a co-receptor for Nogo, MAG and OMgp.Nature. 2002 Nov 7;420(6911):74-8. Epub 2002 Oct 20.PubMed [citation] PMID: 12422217

261. Wang L, Zhao H, Fan YP, Gong HY, Li M, Qi F, Liu Y.Research on the mechanism of Zuogui Pill and Yougui Pill in promoting axonal regeneration in model rats of autoimmune encephalomyelitis.Chin J Integr Med. 2010 Apr;16(2):167-72. Epub 2010 May 16.PubMed [citation] PMID: 20473744

262. Wang M, Han Y, Zhang XP, Lu YP.Nogo, a star protein in reticulon family.Neurosci Bull. 2006 May;22(3):183-6.PubMed [citation] PMID: 17704847

263. Wang X, Chun SJ, Treloar H, Vartanian T, Greer CA, Strittmatter SM.Localization of Nogo-A and Nogo-66 receptor proteins at sites of axon-myelin and synaptic contact.J Neurosci. 2002 Jul 1;22(13):5505-15.PubMed [citation] PMID: 12097502

264. Wannier-Morino P, Schmidlin E, Freund P, Belhaj-Saif A, Bloch J, Mir A, Schwab ME, Rouiller EM, Wannier T.Fate of rubrospinal neurons after unilateral section of the cervical spinal cord in adult macaque monkeys: effects of an antibody treatment neutralizing Nogo-A.Brain Res. 2008 Jun 27;1217:96-109. Epub 2007 Nov 22.PubMed [citation] PMID: 18508036

265. Watari A, Yutsudo M.Multi-functional gene ASY/Nogo/RTN-X/RTN4: apoptosis, tumor suppression, and inhibition of neuronal regeneration.Apoptosis. 2003 Jan;8(1):5-9. Review.PubMed [citation] PMID: 12510146

266. Weinmann O, Schnell L, Ghosh A, Montani L, Wiessner C, Wannier T, Rouiller E, Mir A, Schwab ME.Intrathecally infused antibodies against Nogo-A penetrate the CNS and downregulate the endogenous neurite growth inhibitor Nogo-A.Mol Cell Neurosci. 2006 May-Jun;32(1-2):161-73. Epub 2006 May 11.PubMed [citation] PMID: 16697217

267. Weiss J, Takizawa B, McGee A, Stewart WB, Zhang H, Ment L, Schwartz M, Strittmatter S.Neonatal hypoxia suppresses oligodendrocyte Nogo-A and increases axonal sprouting in a rodent model for human prematurity.Exp Neurol. 2004 Sep;189(1):141-9.PubMed [citation] PMID: 15296844

268. Wiessner C, Bareyre FM, Allegrini PR, Mir AK, Frentzel S, Zurini M, Schnell L, Oertle T, Schwab ME.Anti-Nogo-A antibody infusion 24 hours after experimental stroke improved behavioral outcome and corticospinal plasticity in normotensive and spontaneously hypertensive rats.J Cereb Blood Flow Metab. 2003 Feb;23(2):154-65.PubMed [citation] PMID: 12571447

269. Willi R, Aloy EM, Yee BK, Feldon J, Schwab ME.Behavioral characterization of mice lacking the neurite outgrowth inhibitor Nogo-A.Genes Brain Behav. 2009 Mar;8(2):181-92. Epub 2008 Dec 3.PubMed [citation] PMID: 19077178

270. Willi R, Weinmann O, Winter C, Klein J, Sohr R, Schnell L, Yee BK, Feldon J, Schwab ME.Constitutive genetic deletion of the growth regulator Nogo-A induces schizophrenia-related endophenotypes.J Neurosci. 2010 Jan 13;30(2):556-67.PubMed [citation] PMID: 20071518

271. Winckler B, Choo Yap C.Endocytosis and endosomes at the crossroads of regulating trafficking of axon outgrowth-modifying receptors.Traffic. 2011 Sep;12(9):1099-108. doi: 10.1111/j.1600-0854.2011.01213.x. Epub 2011 May 23.PubMed [citation] PMID: 21535338, PMCID: PMC3155643

272. Wojcik S, Engel WK, Yan R, McFerrin J, Askanas V.NOGO is increased and binds to BACE1 in sporadic inclusion-body myositis and in A beta PP-overexpressing cultured human muscle fibers.Acta Neuropathol. 2007 Nov;114(5):517-26. Epub 2007 Aug 31.PubMed [citation] PMID: 17764014

273. Wojcik S, Engel WK, Askanas V.Increased expression of Noga-A in ALS muscle biopsies is not unique for this disease.Acta Myol. 2006 Dec;25(3):116-8.PubMed [citation] PMID: 17626519

274. Woodhall E, West AK, Vickers JC, Chuah MI.Olfactory ensheathing cell phenotype following implantation in the lesioned spinal cord.Cell Mol Life Sci. 2003 Oct;60(10):2241-53.PubMed [citation] PMID: 14618270

275. Woolf CJ.No Nogo: now where to go?Neuron. 2003 Apr 24;38(2):153-6. Review.PubMed [citation] PMID: 12718850

276. Wright KT, El Masri W, Osman A, Roberts S, Chamberlain G, Ashton BA, Johnson WE.Bone marrow stromal cells stimulate neurite outgrowth over neural proteoglycans (CSPG), myelin associated glycoprotein and Nogo-A.Biochem Biophys Res Commun. 2007 Mar 9;354(2):559-66. Epub 2007 Jan 10.PubMed [citation] PMID: 17234155

277. Wright PL, Yu J, Di YP, Homer RJ, Chupp G, Elias JA, Cohn L, Sessa WC.Epithelial reticulon 4B (Nogo-B) is an endogenous regulator of Th2-driven lung inflammation.J Exp Med. 2010 Nov 22;207(12):2595-607. Epub 2010 Oct 25.PubMed [citation] PMID: 20975041, PMCID: PMC2989775

278. Wu J, Yang H, Qiu Z, Zhang Q, Ding T, Geng D.Effect of combined treatment with methylprednisolone and Nogo-A monoclonal antibody after rat spinal cord injury.J Int Med Res. 2010 Mar-Apr;38(2):570-82.PubMed [citation] PMID: 20515570

279. Xiao ZA, Xie DH, Hu P, Xia K, Cai F, Pan Q.[Functional interaction of the C-terminal of Nogo protein with connexin 26 and the expression of Nogo's mRNA in the murine inner ear].Zhonghua Yi Xue Yi Chuan Xue Za Zhi. 2006 Oct;23(5):492-6. Chinese. PubMed [citation] PMID: 17029193

280. Xiaolei Y, Rongdi Y, Shuxing J, Jian Y.The expression patterns of Nogo-A and NgR in the neonatal rat visual nervous system.Neurochem Res. 2009 Jul;34(7):1204-8. Epub 2009 Jan 6.PubMed [citation] PMID: 19125329

281. Xiong N, Pu J, Zhao H, Su Q, Jiang X, Yao D.Knocking-down of Nogo-A gene expression in PC12 cell line by plasmid-based RNAi.J Huazhong Univ Sci Technolog Med Sci. 2007 Aug;27(4):433-6.PubMed [citation] PMID: 17828504

282. Xiong N, Shen J, Li S, Li J, Zhao H.Expression of Nogo-66 receptor in human astrocytoma is correlated with tumor malignancy.Mol Biol Rep. 2011 Jun 18. [Epub ahead of print]PubMed [citation] PMID: 21681431

283. Xiong NX, Zhao HY, Zhang FC, He ZQ.Negative correlation of Nogo-A with the malignancy of oligodendroglial tumor.Neurosci Bull. 2007 Jan;23(1):41-5.PubMed [citation] PMID: 17592524

284. Xiong NX, Pu JZ, Zhao HY, Zhang FC.Effect of Nogo-A gene inhibition on dopamine release in PC12 cells.Neuro Endocrinol Lett. 2008 Dec;29(6):884-8.PubMed [citation] PMID: 19112410

285. Xu G, Nie DY, Chen JT, Wang CY, Yu FG, Sun L, Luo XG, Ahmed S, David S, Xiao ZC.Recombinant DNA vaccine encoding multiple domains related to inhibition of neurite outgrowth: a potential strategy for axonal regeneration.J Neurochem. 2004 Nov;91(4):1018-23.PubMed [citation] PMID: 15525355

286. Yang Y, Liu Y, Wei P, Peng H, Winger R, Hussain RZ, Ben LH, Cravens PD, Gocke AR, Puttaparthi K, Racke MK, McTigue DM, Lovett-Racke AE.Silencing Nogo-A promotes functional recovery in demyelinating disease.Ann Neurol. 2010 Apr;67(4):498-507.PubMed [citation] PMID: 20437585, PMCID: PMC2929680

287. Yang YS, Harel NY, Strittmatter SM.Reticulon-4A (Nogo-A) redistributes protein disulfide isomerase to protect mice from SOD1-dependent amyotrophic lateral sclerosis.J Neurosci. 2009 Nov 4;29(44):13850-9.PubMed [citation] PMID: 19889996, PMCID: PMC2797811

288. Ye J, Wang Z, Zhu P.[Expression and localization of Nogo-A mRNA in rat nerve tissue].Zhonghua Yi Xue Za Zhi. 2002 Apr 10;82(7):498-500. Chinese. PubMed [citation] PMID: 12133526

289. Yokoyama K, Tezuka T, Hoshina N, Nakazawa T, Yamamoto T.Phosphorylation at Tyr-694 of Nogo-A by Src-family kinases.Biochem Biophys Res Commun. 2006 Nov 3;349(4):1401-5. Epub 2006 Sep 12.PubMed [citation] PMID: 16979591

290. Yu P, Huang L, Zou J, Yu Z, Wang Y, Wang X, Xu L, Liu X, Xu XM, Lu PH.Immunization with recombinant Nogo-66 receptor (NgR) promotes axonal regeneration and recovery of function after spinal cord injury in rats.Neurobiol Dis. 2008 Dec;32(3):535-42. Epub 2008 Sep 30.PubMed [citation] PMID: 18930141

291. Zagrebelsky M, Schweigreiter R, Bandtlow CE, Schwab ME, Korte M.Nogo-A stabilizes the architecture of hippocampal neurons.J Neurosci. 2010 Oct 6;30(40):13220-34.PubMed [citation] PMID: 20926648

292. Zander H, Hettich E, Greiff K, Chatwell L, Skerra A.Biochemical characterization of the recombinant human Nogo-A ectodomain.FEBS J. 2007 May;274(10):2603-13. Epub 2007 Apr 16.PubMed [citation] PMID: 17437522

293. Zander H, Reineke U, Schneider-Mergener J, Skerra A.Epitope mapping of the neuronal growth

inhibitor Nogo-A for the Nogo receptor and the cognate monoclonal antibody IN-1 by means of the SPOT technique.J Mol Recognit. 2007 May-Jun;20(3):185-96.PubMed [citation] PMID: 17486692

294. Zhang D, Utsumi T, Huang HC, Gao L, Sangwung P, Chung C, Shibao K, Okamoto K, Yamaguchi K, Groszmann RJ, Jozsef L, Hao Z, Sessa WC, Iwakiri Y.Reticulon 4B (Nogo-B) is a novel regulator of hepatic fibrosis.Hepatology. 2011 Apr;53(4):1306-15. doi: 10.1002/hep.24200.PubMed [citation] PMID: 21480333

295. Zhang S, Zhang Q, Zhang JH, Qin X.NgR acts as an inhibitor to axonal regeneration in adults.Front Biosci. 2008 Jan 1;13:2030-40. Review.PubMed [citation] PMID: 17981689

296. Zhao X, Wu J, Kuang F, Wang J, Ju G.Silencing of Nogo-A in rat oligodendrocyte cultures enhances process branching.Neurosci Lett. 2011 Jul 15;499(1):32-6. Epub 2011 May 20.PubMed [citation] PMID: 21624429

297. Zhao XH, Jin WL, Wu J, Mi S, Ju G.Inactivation of glycogen synthase kinase-3beta and up-regulation of LINGO-1 are involved in LINGO-1 antagonist regulated survival of cerebellar granular neurons.Cell Mol Neurobiol. 2008 Aug;28(5):727-35. Epub 2008 Jan 9.PubMed [citation] PMID: 18183482

298. Zhao XH, Jin WL, Ju G.An in vitro study on the involvement of LINGO-1 and Rho GTPases in Nogo-A regulated differentiation of oligodendrocyte precursor cells.Mol Cell Neurosci. 2007 Oct;36(2):260-9. Epub 2007 Jul 24.PubMed [citation] PMID: 17719796

299. Zheng B, Ho C, Li S, Keirstead H, Steward O, Tessier-Lavigne M.Lack of enhanced spinal regeneration in Nogo-deficient mice.Neuron. 2003 Apr 24;38(2):213-24.PubMed [citation] PMID: 12718856

300. Zhou C, Li Y, Nanda A, Zhang JH.HBO suppresses Nogo-A, Ng-R, or RhoA expression in the cerebral cortex after global ischemia.Biochem Biophys Res Commun. 2003 Sep 19;309(2):368-76.PubMed [citation] PMID: 12951059

301. Zhou XG, Liu RH, Xiong AH.[Effect of ventricle injection of Nogo-A antibody on neuronal regeneration following hypoxic-ischemic brain damage in the neonatal rat].Zhongguo Dang Dai Er Ke Za Zhi. 2007 Aug;9(4):301-4. Chinese. PubMed [citation] PMID: 17706025

302. Zhou ZM, Sha JH, Li JM, Lin M, Zhu H, Zhou YD, Wang LR, Zhu H, Wang YQ, Zhou KY.Expression of a novel reticulon-like gene in human testis.Reproduction. 2002 Feb;123(2):227-34.PubMed [citation] PMID: 11866689

303. Zhu WW, Zhao HY, Wen TL, Guo AL, Bi MR.[Expression of Nogo receptor in brain and neuroprotective effect of NEP1-40 on hypoxic ischemic brain damage in newborn rats].Zhonghua Er Ke Za Zhi. 2010 Feb;48(2):138-42. Chinese. PubMed [citation] PMID: 20426940

304. Zörner B, Schwab ME.Anti-Nogo on the go: from animal models to a clinical trial.Ann N Y Acad Sci. 2010 Jun;1198 Suppl 1:E22-34. Review.PubMed [citation] PMID: 20590535

305. del Río JA, Solé M, Borrell V, Martínez A, Soriano E.Involvement of Cajal-Retzius cells in robust and layer-specific regeneration of the entorhino-hippocampal pathways.Eur J Neurosci. 2002 Jun;15(12):1881-90.PubMed [citation] PMID: 12099894

306. von Wild KR, Brunelli G.Restoration of locomotion in posttraumatic paraplegics: the multidisciplinary approach and unexpected plasticity of single neurons–facts and fantasy.Acta

Neurochir Suppl. 2008;101:47-53.PubMed [citation] PMID: 18642633