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Caracterización de factores de transcripción estriatales para su uso en la diferenciación de células madre.

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para optar al título de doctora por la Universidad de Barcelona

VII. Bibliografía

VII. BIBLIOGRAFÍA

Abematsu, M., Kagawa, T., Fukuda, S., Inoue, T., Takebayashi, H., Komiya, S., and Taga, T., 2006. Basic fibroblast growth factor endows dorsal telencephalic neural progenitors with the ability to differentiate into oligodendrocytes but not gamma-aminobutyric acidergic neurons. J. Neurosci. Res. 83, 731-743.

Aberg, M.A., Aberg, N.D., Hedbacker, H., Oscarsson, J., and Eriksson, P.S., 2000. Peripheral infusion of IGF-I selectively induces neurogenesis in the adult rat hippocampus. J. Neurosci 20, 2896-2903.

Aboody, K.S., Brown, A., Rainov, N.G., Bower, K.A., Liu, S., Yang, W., Small, J.E., Herrlinger, U., Ourednik, V., Black, P.M., Breakefield, X.O., and Snyder, E.Y., 2000. Neural stem cells display extensive tropism for pathology in adult brain: evidence from intracranial gliomas. Proc. Natl. Acad. Sci. U. S. A 97, 12846-12851.

Agoston, D.V., Szemes, M., Dobi, A., Palkovits, M., Georgopoulos, K., Gyorgy, A., and Ring, M.A., 2007. Ikaros is expressed in developing striatal neurons and involved in enkephalinergic differentiation. J. Neurochem. 102, 1805-1816.

Akerud, P., Canals, J.M., Snyder, E.Y., and Arenas, E., 2001. Neuroprotection through delivery of glial cell line-derived neurotrophic factor by neural stem cells in a mouse model of Parkinson's disease. J. Neurosci. 21, 8108-8118.

Alberch, J., Perez-Navarro, E., and Canals, J.M., 2004. Neurotrophic factors in Huntington's disease. Prog. Brain Res. 146, 195-229.

Alberch, J., Perez-Navarro, E., and Canals, J.M., 2002. Neuroprotection by neurotrophins and GDNF family members in the excitotoxic model of Huntington's disease. Brain Res. Bull. 57, 817-822.

Albin, R.L., Reiner, A., Anderson, K.D., Dure, L.S., Handelin, B., Balfour, R., Whetsell, W.O., Jr., Penney, J.B., and Young, A.B., 1992. Preferential loss of striato-external pallidal projection neurons in presymptomatic Huntington's disease. Ann. Neurol. 31, 425-430.

Albin, R.L., Young, A.B., and Penney, J.B., 1989. The functional anatomy of basal ganglia disorders. Trends Neurosci. 12, 366-375.

Alifragis, P., Liapi, A., and Parnavelas, J.G., 2004. Lhx6 regulates the migration of cortical interneurons from the ventral telencephalon but does not specify their GABA phenotype. J. Neurosci. 24, 5643-5648.

Allman, D., Sambandam, A., Kim, S., Miller, J.P., Pagan, A., Well, D., Meraz, A., and Bhandoola, A., 2003. Thymopoiesis independent of common lymphoid progenitors. Nat. Immunol. 4, 168-174.

Altaba, A., Nguyen, V., and Palma, V., 2003. The emergent design of the neural tube: prepattern, SHH morphogen and GLI code. Curr. Opin. Genet. Dev. 13, 513-521.

Altmann, C.R. and Brivanlou, A.H., 2001. Neural patterning in the vertebrate embryo. Int. Rev. Cytol. 203, 447-482.

Alvarez-Buylla, A. and Lim, D.A., 2004. For the long run: maintaining germinal niches in the adult brain. Neuron 41, 683-686.

Alvarez-Buylla, A., Seri, B., and Doetsch, F., 2002. Identification of neural stem cells in the adult vertebrate brain. Brain Res. Bull. 57, 751-758.

Anderson, H.C., Hodges, P.T., Aguilera, X.M., Missana, L., and Moylan, P.E., 2000. Bone morphogenetic protein (BMP) localization in developing human and rat growth plate, metaphysis, epiphysis, and articular cartilage. J. Histochem. Cytochem. 48, 1493-1502.

Anderson, S., Mione, M., Yun, K., and Rubenstein, J.L., 1999. Differential origins of neocortical projection and local circuit neurons: role of Dlx genes in neocortical interneuronogenesis. Cereb. Cortex 9, 646-654.

Anderson, S.A., Eisenstat, D.D., Shi, L., and Rubenstein, J.L., 1997a. Interneuron migration from basal forebrain to neocortex: dependence on Dlx genes. Science 278, 474-476.

Anderson, S.A., Qiu, M., Bulfone, A., Eisenstat, D.D., Meneses, J., Pedersen, R., and Rubenstein, J.L., 1997b. Mutations of the homeobox genes Dlx-1 and Dlx-2 disrupt the striatal subventricular zone and differentiation of late born striatal neurons. Neuron 19, 27-37.

Anthony, T.E., Mason, H.A., Gridley, T., Fishell, G., and Heintz, N., 2005. Brain lipid-binding protein is a direct target of Notch signaling in radial glial cells. Genes Dev. 19, 1028-1033.

Aoi, T., Yae, K., Nakagawa, M., Ichisaka, T., Okita, K., Takahashi, K., Chiba, T., and Yamanaka, S., 2008. Generation of pluripotent stem cells from adult mouse liver and stomach cells. Science 321, 699-702.

Aoto, K., Nishimura, T., Eto, K., and Motoyama, J., 2002. Mouse GLI3 regulates Fgf8 expression and apoptosis in the developing neural tube, face, and limb bud. Dev. Biol. 251, 320-332.

Appolloni, I., Calzolari, F., Corte, G., Perris, R., and Malatesta, P., 2008. Six3 controls the neural progenitor status in the murine CNS. Cereb. Cortex 18, 553-562.

Arenas, E., 2002. Stem cells in the treatment of Parkinson's disease. Brain Res. Bull. 57, 795-808.

Arlotta, P., Molyneaux, B.J., Jabaudon, D., Yoshida, Y., and Macklis, J.D., 2008. Ctip2 controls the differentiation of medium spiny neurons and the establishment of the cellular architecture of the striatum. J. Neurosci. 28, 622-632.

Artavanis-Tsakonas, S., Rand, M.D., and Lake, R.J., 1999. Notch signaling: cell fate control and signal integration in development. Science 284, 770-776.

Arvidsson, A., Collin, T., Kirik, D., Kokaia, Z., and Lindvall, O., 2002. Neuronal replacement from endogenous precursors in the adult brain after stroke. Nat. Med. 8, 963-970.

Bachoud-Levi, A., Bourdet, C., Brugieres, P., Nguyen, J.P., Grandmougin, T., Haddad, B., Jeny, R., Bartolomeo, P., Boisse, M.F., Barba, G.D., Degos, J.D., Ergis, A.M., Lefaucheur, J.P., Lisovoski, F., Pailhous, E., Remy, P., Palfi, S., Defer, G.L., Cesaro, P., Hantraye, P., and Peschanski, M., 2000a. Safety and tolerability assessment of intrastriatal neural allografts in five patients with Huntington's disease. Exp. Neurol. 161, 194-202.

Bachoud-Levi, A.C., Remy, P., Nguyen, J.P., Brugieres, P., Lefaucheur, J.P., Bourdet, C., Baudic, S., Gaura, V., Maison, P., Haddad, B., Boisse, M.F., Grandmougin, T., Jeny, R., Bartolomeo, P., Dalla, B.G., Degos, J.D., Lisovoski, F., Ergis, A.M., Pailhous, E., Cesaro, P., Hantraye, P., and Peschanski, M., 2000b. Motor and cognitive improvements in patients with Huntington's disease after neural transplantation. Lancet 356, 1975-1979.

Baharvand, H., Mehrjardi, N.Z., Hatami, M., Kiani, S., Rao, M., and Haghighi, M.M., 2007. Neural differentiation from human embryonic stem cells in a defined adherent culture condition. Int. J. Dev. Biol. 51, 371-378.

Barberi, T., Klivenyi, P., Calingasan, N.Y., Lee, H., Kawamata, H., Loonam, K., Perrier, A.L., Bruses, J., Rubio, M.E., Topf, N., Tabar, V., Harrison, N.L., Beal, M.F., Moore, M.A., and

Studer, L., 2003. Neural subtype specification of fertilization and nuclear transfer embryonic stem cells and application in parkinsonian mice. Nat. Biotechnol. 21, 1200-1207.

Barnabe-Heider, F. and Miller, F.D., 2003. Endogenously produced neurotrophins regulate survival and differentiation of cortical progenitors via distinct signaling pathways. J. Neurosci. 23, 5149-5160.

Barres, B.A. and Raff, M.C., 1994. Control of oligodendrocyte number in the developing rat optic nerve. Neuron 12, 935-942.

Basak, O. and Taylor, V., 2007. Identification of self-replicating multipotent progenitors in the embryonic nervous system by high Notch activity and Hes5 expression. Eur. J. Neurosci. 25, 1006-1022.

Beal, M.F., 1995. Aging, energy, and oxidative stress in neurodegenerative diseases. Ann. Neurol. 38, 357-366.

Beal, M.F., Kowall, N.W., Swartz, K.J., Ferrante, R.J., and Martin, J.B., 1989. Differential sparing of somatostatin-neuropeptide Y and cholinergic neurons following striatal excitotoxin lesions. Synapse 3, 38-47.

Becher, M.W., Kotzuk, J.A., Sharp, A.H., Davies, S.W., Bates, G.P., Price, D.L., and Ross, C.A., 1998. Intranuclear neuronal inclusions in Huntington's disease and dentatorubral and pallidoluysian atrophy: correlation between the density of inclusions and IT15 CAG triplet repeat length. Neurobiol. Dis. 4, 387-397.

Bellavia, D., Mecarozzi, M., Campese, A.F., Grazioli, P., Gulino, A., and Screpanti, I., 2007. Notch and Ikaros: not only converging players in T cell leukemia. Cell Cycle 6, 2730-2734.

Beverly, L.J. and Capobianco, A.J., 2003. Perturbation of Ikaros isoform selection by MLV integration is a cooperative event in Notch(IC)-induced T cell leukemogenesis. Cancer Cell 3, 551-564.

Bhardwaj, R.D., Curtis, M.A., Spalding, K.L., Buchholz, B.A., Fink, D., Bjork-Eriksson, T., Nordborg, C., Gage, F.H., Druid, H., Eriksson, P.S., and Frisen, J., 2006. Neocortical neurogenesis in humans is restricted to development. Proc. Natl. Acad. Sci. U. S. A 103, 12564-12568.

Bhide, P.G., 1996. Cell cycle kinetics in the embryonic mouse corpus striatum. J. Comp Neurol. 374, 506-522.

Bibel, M., Richter, J., Schrenk, K., Tucker, K.L., Staiger, V., Korte, M., Goetz, M., and Barde, Y.A., 2004. Differentiation of mouse embryonic stem cells into a defined neuronal lineage. Nat. Neurosci 7, 1003-1009.

Biedler, J.L., Roffler-Tarlov, S., Schachner, M., and Freedman, L.S., 1978. Multiple neurotransmitter synthesis by human neuroblastoma cell lines and clones. Cancer Res. 38, 3751-3757.

Bithell, A., Finch, S.E., Hornby, M.F., and Williams, B.P., 2008. Fibroblast growth factor 2 maintains the neurogenic capacity of embryonic neural progenitor cells in vitro but changes their neuronal subtype specification. Stem Cells 26, 1565-1574.

Bjorklund, A. and Lindvall, O., 2000. Cell replacement therapies for central nervous system disorders. Nat. Neurosci. 3, 537-544.

Bjornson, C.R., Rietze, R.L., Reynolds, B.A., Magli, M.C., and Vescovi, A.L., 1999. Turning brain into blood: a hematopoietic fate adopted by adult neural stem cells in vivo. Science 283, 534-537.

Bohner, A.P., Akers, R.M., and McConnell, S.K., 1997. Induction of deep layer cortical neurons in vitro. Development 124, 915-923.

Bolam, J.P., 1984. Synapses of identified neurons in the neostriatum. Ciba Found. Symp. 107, 30-47.

Bolam, J.P., Hanley, J.J., Booth, P.A., and Bevan, M.D., 2000. Synaptic organisation of the basal ganglia. J. Anat. 196 (Pt 4), 527-542.

Bonilla, S., Silva, A., Valdes, L., Geijo, E., Garcia-Verdugo, J.M., and Martinez, S., 2005. Functional neural stem cells derived from adult bone marrow. Neuroscience 133, 85-95.

Bonni, A., Sun, Y., Nadal-Vicens, M., Bhatt, A., Frank, D.A., Rozovsky, I., Stahl, N., Yancopoulos, G.D., and Greenberg, M.E., 1997. Regulation of gliogenesis in the central nervous system by the JAK-STAT signaling pathway. Science 278, 477-483.

Bosch, M., Pineda, J.R., Sunol, C., Petriz, J., Cattaneo, E., Alberch, J., and Canals, J.M., 2004. Induction of GABAergic phenotype in a neural stem cell line for transplantation in an excitotoxic model of Huntington's disease. Exp. Neurol. 190, 42-58.

Brazelton, T.R., Rossi, F.M., Keshet, G.I., and Blau, H.M., 2000. From marrow to brain: expression of neuronal phenotypes in adult mice. Science 290, 1775-1779.

Briscoe, J., Chen, Y., Jessell, T.M., and Struhl, G., 2001. A hedgehog-insensitive form of patched provides evidence for direct long-range morphogen activity of sonic hedgehog in the neural tube. Mol. Cell 7, 1279-1291.

Buc-Caron, M.H., 1995. Neuroepithelial progenitor cells explanted from human fetal brain proliferate and differentiate in vitro. Neurobiol. Dis. 2, 37-47.

Bulfone, A., Puelles, L., Porteus, M.H., Frohman, M.A., Martin, G.R., and Rubenstein, J.L., 1993. Spatially restricted expression of Dlx-1, Dlx-2 (Tes-1), Gbx-2, and Wnt-3 in the embryonic day 12.5 mouse forebrain defines potential transverse and longitudinal segmental boundaries. J. Neurosci. 13, 3155-3172.

Burrows, R.C., Wancio, D., Levitt, P., and Lillien, L., 1997. Response diversity and the timing of progenitor cell maturation are regulated by developmental changes in EGFR expression in the cortex. Neuron 19, 251-267.

Buscarlet, M. and Stifani, S., 2007. The 'Marx' of Groucho on development and disease. Trends Cell Biol. 17, 353-361.

Cabanes, C., Bonilla, S., Tabares, L., and Martinez, S., 2007. Neuroprotective effect of adult hematopoietic stem cells in a mouse model of motoneuron degeneration. Neurobiol. Dis. 26, 408-418.

Cai, J., Qi, Y., Hu, X., Tan, M., Liu, Z., Zhang, J., Li, Q., Sander, M., and Qiu, M., 2005. Generation of oligodendrocyte precursor cells from mouse dorsal spinal cord independent of Nkx6 regulation and Shh signaling. Neuron 45, 41-53.

Calvi, L.M., Adams, G.B., Weibrecht, K.W., Weber, J.M., Olson, D.P., Knight, M.C., Martin, R.P., Schipani, E., Divieti, P., Bringhurst, F.R., Milner, L.A., Kronenberg, H.M., and Scadden, D.T., 2003. Osteoblastic cells regulate the haematopoietic stem cell niche. Nature 425, 841-846.

Cameron, H.A. and McKay, R.D., 1999. Restoring production of hippocampal neurons in old age. Nat. Neurosci 2, 894-897.

Campbell, K., Olsson, M., and Bjorklund, A., 1995. Regional incorporation and site-specific differentiation of striatal precursors transplanted to the embryonic forebrain ventricle. Neuron 15, 1259-1273.

Campbell, K.H., McWhir, J., Ritchie, W.A., and Wilmut, I., 1996. Sheep cloned by nuclear transfer from a cultured cell line. Nature 380, 64-66.

Campos-Ortega, J.A., 1993. Mechanisms of early neurogenesis in Drosophila melanogaster. J. Neurobiol. 24, 1305-1327.

Canals, J.M., Pineda, J.R., Torres-Peraza, J.F., Bosch, M., Martin-Ibanez, R., Munoz, M.T., Mengod, G., Ernfors, P., and Alberch, J., 2004. Brain-derived neurotrophic factor regulates the onset and severity of motor dysfunction associated with enkephalinergic neuronal degeneration in Huntington's disease. J. Neurosci. 24, 7727-7739.

Canzoniere, D., Farioli-Vecchioli, S., Conti, F., Ciotti, M.T., Tata, A.M., Augusti-Tocco, G., Mattei, E., Lakshmana, M.K., Krizhanovsky, V., Reeves, S.A., Giovannoni, R., Castano, F., Servadio, A., Ben Arie, N., and Tirone, F., 2004. Dual control of neurogenesis by PC3 through cell cycle inhibition and induction of Math1. J. Neurosci. 24, 3355-3369.

Carney, R.S., Alfonso, T.B., Cohen, D., Dai, H., Nery, S., Stoica, B., Slotkin, J., Bregman, B.S., Fishell, G., and Corbin, J.G., 2006. Cell migration along the lateral cortical stream to the developing basal telencephalic limbic system. J. Neurosci. 26, 11562-11574.

Carpenter, M.K., Cui, X., Hu, Z.Y., Jackson, J., Sherman, S., Seiger, A., and Wahlberg, L.U., 1999. In vitro expansion of a multipotent population of human neural progenitor cells. Exp. Neurol. 158, 265-278.

Carpenter, M.K., Inokuma, M.S., Denham, J., Mujtaba, T., Chiu, C.P., and Rao, M.S., 2001. Enrichment of neurons and neural precursors from human embryonic stem cells. Exp. Neurol. 172, 383-397.

Casarosa, S., Fode, C., and Guillemot, F., 1999. Mash1 regulates neurogenesis in the ventral telencephalon. Development 126, 525-534.

Castella, P., Sawai, S., Nakao, K., Wagner, J.A., and Caudy, M., 2000. HES-1 repression of differentiation and proliferation in PC12 cells: role for the helix 3-helix 4 domain in transcription repression. Mol. Cell Biol. 20, 6170-6183.

Cavallo, R.A., Cox, R.T., Moline, M.M., Roose, J., Polevoy, G.A., Clevers, H., Peifer, M., and Bejsovec, A., 1998. Drosophila Tcf and Groucho interact to repress Wingless signalling activity. Nature 395, 604-608.

Cha, J.H., 2000. Transcriptional dysregulation in Huntington's disease. Trends Neurosci 23, 387-392.

Chalmers-Redman, R.M., Priestley, T., Kemp, J.A., and Fine, A., 1997. In vitro propagation and inducible differentiation of multipotential progenitor cells from human fetal brain. Neuroscience 76, 1121-1128.

Chambers, I., 2004. The molecular basis of pluripotency in mouse embryonic stem cells. Cloning Stem Cells 6, 386-391.

Chandran, S., Compston, A., Jauniaux, E., Gilson, J., Blakemore, W., and Svendsen, C., 2004. Differential generation of oligodendrocytes from human and rodent embryonic spinal cord neural precursors. Glia 47, 314-324.

Chang, C.W., Tsai, C.W., Wang, H.F., Tsai, H.C., Chen, H.Y., Tsai, T.F., Takahashi, H., Li, H.Y., Fann, M.J., Yang, C.W., Hayashizaki, Y., Saito, T., and Liu, F.C., 2004. Identification of a developmentally regulated striatum-enriched zinc-finger gene, Nolz-1, in the mammalian brain. Proc. Natl. Acad. Sci. U. S. A 101, 2613-2618.

Cheah, P.Y., Meng, Y.B., Yang, X., Kimbrell, D., Ashburner, M., and Chia, W., 1994. The Drosophila l(2)35Ba/nocA gene encodes a putative Zn finger protein involved in the

development of the embryonic brain and the adult ocellar structures. Mol. Cell Biol. 14, 1487-1499.

Chen, G. and Courey, A.J., 2000. Groucho/TLE family proteins and transcriptional repression. Gene 249, 1-16.

Chen, G., Fernandez, J., Mische, S., and Courey, A.J., 1999. A functional interaction between the histone deacetylase Rpd3 and the corepressor groucho in Drosophila development. Genes Dev. 13, 2218-2230.

Chen, K.S. and Gage, F.H., 1995. Somatic gene transfer of NGF to the aged brain: behavioral and morphological amelioration. J. Neurosci 15, 2819-2825.

Chenn, A. and McConnell, S.K., 1995. Cleavage orientation and the asymmetric inheritance of Notch1 immunoreactivity in mammalian neurogenesis. Cell 82, 631-641.

Chesne, P., Adenot, P.G., Viglietta, C., Baratte, M., Boulanger, L., and Renard, J.P., 2002. Cloned rabbits produced by nuclear transfer from adult somatic cells. Nat. Biotechnol. 20, 366-369.

Chmielnicki, E., Benraiss, A., Economides, A.N., and Goldman, S.A., 2004. Adenovirally expressed noggin and brain-derived neurotrophic factor cooperate to induce new medium spiny neurons from resident progenitor cells in the adult striatal ventricular zone. J. Neurosci 24, 2133-2142.

Choi, C.Y., Kim, Y.H., Kwon, H.J., and Kim, Y., 1999. The homeodomain protein NK-3 recruits Groucho and a histone deacetylase complex to repress transcription. J. Biol. Chem. 274, 33194-33197.

Cobos, I., Borello, U., and Rubenstein, J.L., 2007. Dlx transcription factors promote migration through repression of axon and dendrite growth. Neuron 54, 873-888.

Cobos, I., Calcagnotto, M.E., Vilaythong, A.J., Thwin, M.T., Noebels, J.L., Baraban, S.C., and Rubenstein, J.L., 2005. Mice lacking Dlx1 show subtype-specific loss of interneurons, reduced inhibition and epilepsy. Nat. Neurosci. 8, 1059-1068.

Conti, L. and Cattaneo, E., 2008. Novel and immortalization-based protocols for the generation of neural CNS stem cell lines for gene therapy approaches. Methods Mol. Biol. 438, 319-332.

Corbin, J.G., Gaiano, N., Machold, R.P., Langston, A., and Fishell, G., 2000. The Gsh2 homeodomain gene controls multiple aspects of telencephalic development. Development 127, 5007-5020.

Corbin, J.G., Rutlin, M., Gaiano, N., and Fishell, G., 2003. Combinatorial function of the homeodomain proteins Nkx2.1 and Gsh2 in ventral telencephalic patterning. Development 130, 4895-4906.

Correa, F.M., Innis, R.B., Hester, L.D., and Snyder, S.H., 1981. Diffuse enkephalin innervation from caudate to globus pallidus. Neurosci. Lett. 25, 63-68.

Craig, C.G., Tropepe, V., Morshead, C.M., Reynolds, B.A., Weiss, S., and van der Kooy, D., 1996. In vivo growth factor expansion of endogenous subependymal neural precursor cell populations in the adult mouse brain. J. Neurosci 16, 2649-2658.

Crossley, P.H., Martinez, S., and Martin, G.R., 1996. Midbrain development induced by FGF8 in the chick embryo. Nature 380, 66-68.

Cuello, A.C. and Paxinos, G., 1978. Evidence for a long Leu-enkephalin striopallidal pathway in rat brain. Nature 271, 178-180.

Cui, X.Y., Hu, Q.D., Tekaya, M., Shimoda, Y., Ang, B.T., Nie, D.Y., Sun, L., Hu, W.P., Karsak, M., Duka, T., Takeda, Y., Ou, L.Y., Dawe, G.S., Yu, F.G., Ahmed, S., Jin, L.H., Schachner, M., Watanabe, K., Arsenijevic, Y., and Xiao, Z.C., 2004. NB-3/Notch1 pathway via Deltex1 promotes neural progenitor cell differentiation into oligodendrocytes. J. Biol. Chem. 279, 25858-25865.

Curtis, M.A., Kam, M., Nannmark, U., Anderson, M.F., Axell, M.Z., Wikkelso, C., Holtas, S., van Roon-Mom, W.M., Bjork-Eriksson, T., Nordborg, C., Frisen, J., Dragunow, M., Faull, R.L., and Eriksson, P.S., 2007. Human neuroblasts migrate to the olfactory bulb via a lateral ventricular extension. Science 315, 1243-1249.

Curtis, M.A., Penney, E.B., Pearson, A.G., Roon-Mom, W.M., Butterworth, N.J., Dragunow, M., Connor, B., and Faull, R.L., 2003. Increased cell proliferation and neurogenesis in the adult human Huntington's disease brain. Proc. Natl. Acad. Sci. U. S. A 100, 9023-9027.

Dang, L., Yoon, K., Wang, M., and Gaiano, N., 2006. Notch3 signaling promotes radial glial/progenitor character in the mammalian telencephalon. Dev. Neurosci. 28, 58-69.

Davis, T.H., Cuellar, T.L., Koch, S.M., Barker, A.J., Harfe, B.D., McManus, M.T., and Ullian, E.M., 2008. Conditional loss of Dicer disrupts cellular and tissue morphogenesis in the cortex and hippocampus. J. Neurosci. 28, 4322-4330.

De Carlos, J.A., Lopez-Mascaraque, L., and Valverde, F., 1996. Dynamics of cell migration from the lateral ganglionic eminence in the rat. J. Neurosci. 16, 6146-6156.

De, F.L., Lamorte, G., Snyder, E.Y., Malgaroli, A., and Vescovi, A.L., 2007. A novel, immortal, and multipotent human neural stem cell line generating functional neurons and oligodendrocytes. Stem Cells 25, 2312-2321.

Deacon, T.W., Pakzaban, P., and Isacson, O., 1994. The lateral ganglionic eminence is the origin of cells committed to striatal phenotypes: neural transplantation and developmental evidence. Brain Res. 668, 211-219.

Dehni, G., Liu, Y., Husain, J., and Stifani, S., 1995. TLE expression correlates with mouse embryonic segmentation, neurogenesis, and epithelial determination. Mech. Dev. 53, 369-381.

Del Toro, D., Canals, J.M., Gines, S., Kojima, M., Egea, G., and Alberch, J., 2006. Mutant huntingtin impairs the post-Golgi trafficking of brain-derived neurotrophic factor but not its Val66Met polymorphism. J. Neurosci. 26, 12748-12757.

Delaunay, D., Heydon, K., Cumano, A., Schwab, M.H., Thomas, J.L., Suter, U., Nave, K.A., Zalc, B., and Spassky, N., 2008. Early neuronal and glial fate restriction of embryonic neural stem cells. J. Neurosci. 28, 2551-2562.

Delaune, E., Lemaire, P., and Kodjabachian, L., 2005. Neural induction in Xenopus requires early FGF signalling in addition to BMP inhibition. Development 132, 299-310.

Delong, M.R. and Wichmann, T., 2007. Circuits and circuit disorders of the basal ganglia. Arch. Neurol. 64, 20-24.

Depew, M.J., Liu, J.K., Long, J.E., Presley, R., Meneses, J.J., Pedersen, R.A., and Rubenstein, J.L., 1999. Dlx5 regulates regional development of the branchial arches and sensory capsules. Development 126, 3831-3846.

Dhara, S.K. and Stice, S.L., 2008. Neural differentiation of human embryonic stem cells. J. Cell Biochem. 105, 633-640.

Diaz-Hernandez, M., Torres-Peraza, J., Salvatori-Abarca, A., Moran, M.A., Gomez-Ramos, P., Alberch, J., and Lucas, J.J., 2005. Full motor recovery despite striatal neuron loss and formation

of irreversible amyloid-like inclusions in a conditional mouse model of Huntington's disease. J. Neurosci. 25, 9773-9781.

DiFiglia, M., Sena-Esteves, M., Chase, K., Sapp, E., Pfister, E., Sass, M., Yoder, J., Reeves, P., Pandey, R.K., Rajeev, K.G., Manoharan, M., Sah, D.W., Zamore, P.D., and Aronin, N., 2007. Therapeutic silencing of mutant huntingtin with siRNA attenuates striatal and cortical neuropathology and behavioral deficits. Proc. Natl. Acad. Sci. U. S. A 104, 17204-17209.

Dobi, A., Palkovits, M., Ring, M.A., Eitel, A., Palkovits, C.G., Lim, F., and Agoston, D.V., 1997. Sample and probe: a novel approach for identifying development-specific cis-elements of the enkephalin gene. Brain Res. Mol. Brain Res. 52, 98-111.

Doetsch, F., 2003. A niche for adult neural stem cells. Curr. Opin. Genet. Dev. 13, 543-550.

Doetsch, F., Caille, I., Lim, D.A., Garcia-Verdugo, J.M., and Alvarez-Buylla, A., 1999. Subventricular zone astrocytes are neural stem cells in the adult mammalian brain. Cell 97, 703-716.

Doetsch, F., Garcia-Verdugo, J.M., and Alvarez-Buylla, A., 1997. Cellular composition and three-dimensional organization of the subventricular germinal zone in the adult mammalian brain. J. Neurosci 17, 5046-5061.

Doetsch, F., Verdugo, J.M., Caille, I., Alvarez-Buylla, A., Chao, M.V., and Casaccia-Bonnefil, P., 2002. Lack of the cell-cycle inhibitor p27Kip1 results in selective increase of transit-amplifying cells for adult neurogenesis. J. Neurosci. 22, 2255-2264.

Doetschman, T.C., Eistetter, H., Katz, M., Schmidt, W., and Kemler, R., 1985. The in vitro development of blastocyst-derived embryonic stem cell lines: formation of visceral yolk sac, blood islands and myocardium. J. Embryol. Exp. Morphol. 87, 27-45.

Donovan, P.J. and Gearhart, J., 2001. The end of the beginning for pluripotent stem cells. Nature 414, 92-97.

Dorfman, R., Glazer, L., Weihe, U., Wernet, M.F., and Shilo, B.Z., 2002. Elbow and Noc define a family of zinc finger proteins controlling morphogenesis of specific tracheal branches. Development 129, 3585-3596.

Dromard, C., Bartolami, S., Deleyrolle, L., Takebayashi, H., Ripoll, C., Simonneau, L., Prome, S., Puech, S., Tran, V.B., Duperray, C., Valmier, J., Privat, A., and Hugnot, J.P., 2007. NG2 and Olig2 expression provides evidence for phenotypic deregulation of cultured central nervous system and peripheral nervous system neural precursor cells. Stem Cells 25, 340-353.

Duman, R.S., Malberg, J., and Thome, J., 1999. Neural plasticity to stress and antidepressant treatment. Biol. Psychiatry 46, 1181-1191.

Dumortier, A., Jeannet, R., Kirstetter, P., Kleinmann, E., Sellars, M., dos Santos, N.R., Thibault, C., Barths, J., Ghysdael, J., Punt, J.A., Kastner, P., and Chan, S., 2006. Notch activation is an early and critical event during T-Cell leukemogenesis in Ikaros-deficient mice. Mol. Cell Biol. 26, 209-220.

Duncan, A.W., Rattis, F.M., DiMascio, L.N., Congdon, K.L., Pazianos, G., Zhao, C., Yoon, K., Cook, J.M., Willert, K., Gaiano, N., and Reya, T., 2005. Integration of Notch and Wnt signaling in hematopoietic stem cell maintenance. Nat. Immunol. 6, 314-322.

Durand, B., Gao, F.B., and Raff, M., 1997. Accumulation of the cyclin-dependent kinase inhibitor p27/Kip1 and the timing of oligodendrocyte differentiation. EMBO J. 16, 306-317.

Durston, A.J., Timmermans, J.P., Hage, W.J., Hendriks, H.F., de Vries, N.J., Heideveld, M., and Nieuwkoop, P.D., 1989. Retinoic acid causes an anteroposterior transformation in the developing central nervous system. Nature 340, 140-144.

Eberhard, D., Jimenez, G., Heavey, B., and Busslinger, M., 2000. Transcriptional repression by Pax5 (BSAP) through interaction with corepressors of the Groucho family. EMBO J. 19, 2292-2303.

Echelard, Y., Epstein, D.J., St-Jacques, B., Shen, L., Mohler, J., McMahon, J.A., and McMahon, A.P., 1993. Sonic hedgehog, a member of a family of putative signaling molecules, is implicated in the regulation of CNS polarity. Cell 75, 1417-1430.

Echevarria, D., Vieira, C., Gimeno, L., and Martinez, S., 2003. Neuroepithelial secondary organizers and cell fate specification in the developing brain. Brain Res. Brain Res. Rev. 43, 179-191.

Eisenstat, D.D., Liu, J.K., Mione, M., Zhong, W., Yu, G., Anderson, S.A., Ghattas, I., Puelles, L., and Rubenstein, J.L., 1999. DLX-1, DLX-2, and DLX-5 expression define distinct stages of basal forebrain differentiation. J. Comp Neurol. 414, 217-237.

Elliott, J., Jolicoeur, C., Ramamurthy, V., and Cayouette, M., 2008. Ikaros confers early temporal competence to mouse retinal progenitor cells. Neuron 60, 26-39.

Elshatory, Y. and Gan, L., 2008. The LIM-homeobox gene Islet-1 is required for the development of restricted forebrain cholinergic neurons. J. Neurosci. 28, 3291-3297.

Erceg, S., Lainez, S., Ronaghi, M., Stojkovic, P., Perez-Arago, M.A., Moreno-Manzano, V., Moreno-Palanques, R., Planells-Cases, R., and Stojkovic, M., 2008. Differentiation of human embryonic stem cells to regional specific neural precursors in chemically defined medium conditions. PLoS. ONE. 3, e2122.

Ericson, J., Muhr, J., Placzek, M., Lints, T., Jessell, T.M., and Edlund, T., 1995. Sonic hedgehog induces the differentiation of ventral forebrain neurons: a common signal for ventral patterning within the neural tube. Cell 81, 747-756.

Eriksson, C., Bjorklund, A., and Wictorin, K., 2003. Neuronal differentiation following transplantation of expanded mouse neurosphere cultures derived from different embryonic forebrain regions. Exp. Neurol. 184, 615-635.

Evans, M.J. and Kaufman, M.H., 1981. Establishment in culture of pluripotential cells from mouse embryos. Nature 292, 154-156.

Ezoe, S., Matsumura, I., Satoh, Y., Tanaka, H., and Kanakura, Y., 2004. Cell cycle regulation in hematopoietic stem/progenitor cells. Cell Cycle 3, 314-318.

Ezzat, S., Mader, R., Fischer, S., Yu, S., Ackerley, C., and Asa, S.L., 2006. An essential role for the hematopoietic transcription factor Ikaros in hypothalamic-pituitary-mediated somatic growth. Proc. Natl. Acad. Sci. U. S. A 103, 2214-2219.

Faedo, A., Quinn, J.C., Stoney, P., Long, J.E., Dye, C., Zollo, M., Rubenstein, J.L., Price, D.J., and Bulfone, A., 2004. Identification and characterization of a novel transcript down-regulated in Dlx1/Dlx2 and up-regulated in Pax6 mutant telencephalon. Dev. Dyn. 231, 614-620.

Fallon, J., Reid, S., Kinyamu, R., Opole, I., Opole, R., Baratta, J., Korc, M., Endo, T.L., Duong, A., Nguyen, G., Karkehabadhi, M., Twardzik, D., Patel, S., and Loughlin, S., 2000. In vivo induction of massive proliferation, directed migration, and differentiation of neural cells in the adult mammalian brain. Proc. Natl. Acad. Sci. U. S. A 97, 14686-14691.

Fan, G., Martinowich, K., Chin, M.H., He, F., Fouse, S.D., Hutnick, L., Hattori, D., Ge, W., Shen, Y., Wu, H., ten, H.J., Shuai, K., and Sun, Y.E., 2005. DNA methylation controls the timing of astrogliogenesis through regulation of JAK-STAT signaling. Development 132, 3345-3356.

Feng, J., Bi, C., Clark, B.S., Mady, R., Shah, P., and Kohtz, J.D., 2006. The Evf-2 noncoding RNA is transcribed from the Dlx-5/6 ultraconserved region and functions as a Dlx-2 transcriptional coactivator. Genes Dev. 20, 1470-1484.

Fero, M.L., Rivkin, M., Tasch, M., Porter, P., Carow, C.E., Firpo, E., Polyak, K., Tsai, L.H., Broudy, V., Perlmutter, R.M., Kaushansky, K., and Roberts, J.M., 1996. A syndrome of multiorgan hyperplasia with features of gigantism, tumorigenesis, and female sterility in p27(Kip1)-deficient mice. Cell 85, 733-744.

Ferrante, R.J., Kowall, N.W., Beal, M.F., Martin, J.B., Bird, E.D., and Richardson, E.P., Jr., 1987. Morphologic and histochemical characteristics of a spared subset of striatal neurons in Huntington's disease. J. Neuropathol. Exp. Neurol. 46, 12-27.

Ferrante, R.J., Kowall, N.W., Beal, M.F., Richardson, E.P., Jr., Bird, E.D., and Martin, J.B., 1985. Selective sparing of a class of striatal neurons in Huntington's disease. Science 230, 561-563.

Ferrante, R.J., Kowall, N.W., Cipolloni, P.B., Storey, E., and Beal, M.F., 1993. Excitotoxin lesions in primates as a model for Huntington's disease: histopathologic and neurochemical characterization. Exp. Neurol. 119, 46-71.

Ferrer, I., Goutan, E., Marin, C., Rey, M.J., and Ribalta, T., 2000. Brain-derived neurotrophic factor in Huntington disease. Brain Res. 866, 257-261.

Finzsch, M., Stolt, C.C., Lommes, P., and Wegner, M., 2008. Sox9 and Sox10 influence survival and migration of oligodendrocyte precursors in the spinal cord by regulating PDGF receptor alpha expression. Development 135, 637-646.

Fishell, G. and van der Kooy, D., 1987. Pattern formation in the striatum: developmental changes in the distribution of striatonigral neurons. J. Neurosci. 7, 1969-1978.

Fishell, G. and van der Kooy, D., 1989. Pattern formation in the striatum: developmental changes in the distribution of striatonigral projections. Brain Res. Dev. Brain Res. 45, 239-255.

Fishell, G. and van der Kooy, D., 1991. Pattern formation in the striatum: neurons with early projections to the substantia nigra survive the cell death period. J. Comp Neurol. 312, 33-42.

Fisher, A.L. and Caudy, M., 1998. Groucho proteins: transcriptional corepressors for specific subsets of DNA-binding transcription factors in vertebrates and invertebrates. Genes Dev. 12, 1931-1940.

Flames, N. and Marin, O., 2005. Developmental mechanisms underlying the generation of cortical interneuron diversity. Neuron 46, 377-381.

Flax, J.D., Aurora, S., Yang, C., Simonin, C., Wills, A.M., Billinghurst, L.L., Jendoubi, M., Sidman, R.L., Wolfe, J.H., Kim, S.U., and Snyder, E.Y., 1998. Engraftable human neural stem cells respond to developmental cues, replace neurons, and express foreign genes. Nat. Biotechnol. 16, 1033-1039.

Flores, I., Canela, A., Vera, E., Tejera, A., Cotsarelis, G., and Blasco, M.A., 2008. The longest telomeres: a general signature of adult stem cell compartments. Genes Dev. 22, 654-667.

Fode, C., Ma, Q., Casarosa, S., Ang, S.L., Anderson, D.J., and Guillemot, F., 2000. A role for neural determination genes in specifying the dorsoventral identity of telencephalic neurons. Genes Dev. 14, 67-80.

Fogarty, M., Richardson, W.D., and Kessaris, N., 2005. A subset of oligodendrocytes generated from radial glia in the dorsal spinal cord. Development 132, 1951-1959.

Freeman, T.B., Cicchetti, F., Hauser, R.A., Deacon, T.W., Li, X.J., Hersch, S.M., Nauert, G.M., Sanberg, P.R., Kordower, J.H., Saporta, S., and Isacson, O., 2000. Transplanted fetal striatum in Huntington's disease: phenotypic development and lack of pathology. Proc. Natl. Acad. Sci. U. S. A 97, 13877-13882.

Fruttiger, M., Karlsson, L., Hall, A.C., Abramsson, A., Calver, A.R., Bostrom, H., Willetts, K., Bertold, C.H., Heath, J.K., Betsholtz, C., and Richardson, W.D., 1999. Defective oligodendrocyte development and severe hypomyelination in PDGF-A knockout mice. Development 126, 457-467.

Fukuchi-Shimogori, T. and Grove, E.A., 2001. Neocortex patterning by the secreted signaling molecule FGF8. Science 294, 1071-1074.

Fukuda, H., Takahashi, J., Watanabe, K., Hayashi, H., Morizane, A., Koyanagi, M., Sasai, Y., and Hashimoto, N., 2006. Fluorescence-activated cell sorting-based purification of embryonic stem cell-derived neural precursors averts tumor formation after transplantation. Stem Cells 24, 763-771.

Fukuda, S., Kondo, T., Takebayashi, H., and Taga, T., 2004. Negative regulatory effect of an oligodendrocytic bHLH factor OLIG2 on the astrocytic differentiation pathway. Cell Death. Differ. 11, 196-202.

Furuta, Y., Piston, D.W., and Hogan, B.L., 1997. Bone morphogenetic proteins (BMPs) as regulators of dorsal forebrain development. Development 124, 2203-2212.

Gabay, L., Lowell, S., Rubin, L.L., and Anderson, D.J., 2003. Deregulation of dorsoventral patterning by FGF confers trilineage differentiation capacity on CNS stem cells in vitro. Neuron 40, 485-499.

Gage, F.H., 2000. Mammalian neural stem cells. Science 287, 1433-1438.

Gaiano, N., Nye, J.S., and Fishell, G., 2000. Radial glial identity is promoted by Notch1 signaling in the murine forebrain. Neuron 26, 395-404.

Gallo, V. and Armstrong, R.C., 2008. Myelin repair strategies: a cellular view. Curr. Opin. Neurol. 21, 278-283.

Garcia-Dominguez, M., Poquet, C., Garel, S., and Charnay, P., 2003. Ebf gene function is required for coupling neuronal differentiation and cell cycle exit. Development 130, 6013-6025.

Garcia-Olmo, D., Garcia-Arranz, M., and Herreros, D., 2008. Expanded adipose-derived stem cells for the treatment of complex perianal fistula including Crohn's disease. Expert. Opin. Biol. Ther. 8, 1417-1423.

Garel, S., Huffman, K.J., and Rubenstein, J.L., 2003. Molecular regionalization of the neocortex is disrupted in Fgf8 hypomorphic mutants. Development 130, 1903-1914.

Garel, S., Marin, F., Grosschedl, R., and Charnay, P., 1999. Ebf1 controls early cell differentiation in the embryonic striatum. Development 126, 5285-5294.

Garel, S., Yun, K., Grosschedl, R., and Rubenstein, J.L., 2002. The early topography of thalamocortical projections is shifted in Ebf1 and Dlx1/2 mutant mice. Development 129, 5621-5634.

Gasperowicz, M. and Otto, F., 2005. Mammalian Groucho homologs: redundancy or specificity? J. Cell Biochem. 95, 670-687.

Gauthier, L.R., Charrin, B.C., Borrell-Pages, M., Dompierre, J.P., Rangone, H., Cordelieres, F.P., De Mey, J., MacDonald, M.E., Lessmann, V., Humbert, S., and Saudou, F., 2004. Huntingtin controls neurotrophic support and survival of neurons by enhancing BDNF vesicular transport along microtubules. Cell 118, 127-138.

Georgopoulos, K., 2002. Haematopoietic cell-fate decisions, chromatin regulation and ikaros. Nat. Rev. Immunol. 2, 162-174.

Georgopoulos, K., Bigby, M., Wang, J.H., Molnar, A., Wu, P., Winandy, S., and Sharpe, A., 1994. The Ikaros gene is required for the development of all lymphoid lineages. Cell 79, 143-156.

Georgopoulos, K., Moore, D.D., and Derfler, B., 1992. Ikaros, an early lymphoid-specific transcription factor and a putative mediator for T cell commitment. Science 258, 808-812.

Gerfen, C.R., 1985. The neostriatal mosaic. I. Compartmental organization of projections from the striatum to the substantia nigra in the rat. J. Comp Neurol. 236, 454-476.

Gerfen, C.R., 1992. The neostriatal mosaic: multiple levels of compartmental organization in the basal ganglia. Annu. Rev. Neurosci. 15, 285-320.

Gerfen, C.R., Engber, T.M., Mahan, L.C., Susel, Z., Chase, T.N., Monsma, F.J., Jr., and Sibley, D.R., 1990. D1 and D2 dopamine receptor-regulated gene expression of striatonigral and striatopallidal neurons. Science 250, 1429-1432.

Gerfen, C.R., Herkenham, M., and Thibault, J., 1987. The neostriatal mosaic: II. Patch- and matrix-directed mesostriatal dopaminergic and non-dopaminergic systems. J. Neurosci. 7, 3915-3934.

Gerfen, C.R. and Young, W.S., III, 1988. Distribution of striatonigral and striatopallidal peptidergic neurons in both patch and matrix compartments: an in situ hybridization histochemistry and fluorescent retrograde tracing study. Brain Res. 460, 161-167.

Gerrard, L., Rodgers, L., and Cui, W., 2005. Differentiation of human embryonic stem cells to neural lineages in adherent culture by blocking bone morphogenetic protein signaling. Stem Cells 23, 1234-1241.

Gervais, F.G., Singaraja, R., Xanthoudakis, S., Gutekunst, C.A., Leavitt, B.R., Metzler, M., Hackam, A.S., Tam, J., Vaillancourt, J.P., Houtzager, V., Rasper, D.M., Roy, S., Hayden, M.R., and Nicholson, D.W., 2002. Recruitment and activation of caspase-8 by the Huntingtin-interacting protein Hip-1 and a novel partner Hippi. Nat. Cell Biol. 4, 95-105.

Ghanem, N., Yu, M., Long, J., Hatch, G., Rubenstein, J.L., and Ekker, M., 2007. Distinct cis-regulatory elements from the Dlx1/Dlx2 locus mark different progenitor cell populations in the ganglionic eminences and different subtypes of adult cortical interneurons. J. Neurosci. 27, 5012-5022.

Gogas, K.R., 2006. Glutamate-based therapeutic approaches: NR2B receptor antagonists. Curr. Opin. Pharmacol. 6, 68-74.

Gomez-del-Arco, P., Maki, K., and Georgopoulos, K., 2004. Phosphorylation controls Ikaros's ability to negatively regulate the G(1)-S transition. Mol. Cell Biol. 24, 2797-2807.

Gong, X., Lin, T., Sun, Z., Fu, M., Zuo, H., and Xie, Z., 2008. Olig1 is downregulated in oligodendrocyte progenitor cell differentiation. Neuroreport 19, 1203-1207.

Gottlieb, D.I. and Huettner, J.E., 1999. An in vitro pathway from embryonic stem cells to neurons and glia. Cells Tissues. Organs 165, 165-172.

Gotz, M. and Huttner, W.B., 2005. The cell biology of neurogenesis. Nat. Rev. Mol. Cell Biol. 6, 777-788.

Gotz, M., Stoykova, A., and Gruss, P., 1998. Pax6 controls radial glia differentiation in the cerebral cortex. Neuron 21, 1031-1044.

Graybiel, A.M., 2000. The basal ganglia. Curr. Biol. 10, R509-R511.

Graybiel, A.M., 2005. The basal ganglia: learning new tricks and loving it. Curr. Opin. Neurobiol. 15, 638-644.

Graybiel, A.M. and Ragsdale, C.W., Jr., 1978. Histochemically distinct compartments in the striatum of human, monkeys, and cat demonstrated by acetylthiocholinesterase staining. Proc. Natl. Acad. Sci. U. S. A 75, 5723-5726.

Grbavec, D., Lo, R., Liu, Y., and Stifani, S., 1998. Transducin-like Enhancer of split 2, a mammalian homologue of Drosophila Groucho, acts as a transcriptional repressor, interacts with Hairy/Enhancer of split proteins, and is expressed during neuronal development. Eur. J. Biochem. 258, 339-349.

Grbavec, D. and Stifani, S., 1996. Molecular interaction between TLE1 and the carboxyl-terminal domain of HES-1 containing the WRPW motif. Biochem. Biophys. Res. Commun. 223, 701-705.

Grigoriou, M., Tucker, A.S., Sharpe, P.T., and Pachnis, V., 1998. Expression and regulation of Lhx6 and Lhx7, a novel subfamily of LIM homeodomain encoding genes, suggests a role in mammalian head development. Development 125, 2063-2074.

Grill, R., Murai, K., Blesch, A., Gage, F.H., and Tuszynski, M.H., 1997. Cellular delivery of neurotrophin-3 promotes corticospinal axonal growth and partial functional recovery after spinal cord injury. J. Neurosci 17, 5560-5572.

Gross, R.E., Mehler, M.F., Mabie, P.C., Zang, Z., Santschi, L., and Kessler, J.A., 1996. Bone morphogenetic proteins promote astroglial lineage commitment by mammalian subventricular zone progenitor cells. Neuron 17, 595-606.

Guan, K., Chang, H., Rolletschek, A., and Wobus, A.M., 2001. Embryonic stem cell-derived neurogenesis. Retinoic acid induction and lineage selection of neuronal cells. Cell Tissue Res. 305, 171-176.

Guillemot, F. and Joyner, A.L., 1993. Dynamic expression of the murine Achaete-Scute homologue Mash-1 in the developing nervous system. Mech. Dev. 42, 171-185.

Gunhaga, L., Jessell, T.M., and Edlund, T., 2000. Sonic hedgehog signaling at gastrula stages specifies ventral telencephalic cells in the chick embryo. Development 127, 3283-3293.

Gunning, J., 2007. Umbilical cord cell banking: an issue of self-interest versus altruism. Med. Law 26, 769-780.

Gusella, J.F. and MacDonald, M.E., 1998. Huntingtin: a single bait hooks many species. Curr. Opin. Neurobiol. 8, 425-430.

Gutin, G., Fernandes, M., Palazzolo, L., Paek, H., Yu, K., Ornitz, D.M., McConnell, S.K., and Hebert, J.M., 2006. FGF signalling generates ventral telencephalic cells independently of SHH. Development 133, 2937-2946.

Hagell, P., Piccini, P., Bjorklund, A., Brundin, P., Rehncrona, S., Widner, H., Crabb, L., Pavese, N., Oertel, W.H., Quinn, N., Brooks, D.J., and Lindvall, O., 2002. Dyskinesias following neural transplantation in Parkinson's disease. Nat. Neurosci 5, 627-628.

Hagman, J. and Lukin, K., 2005. Early B-cell factor 'pioneers' the way for B-cell development. Trends Immunol. 26, 455-461.

Halliday, A.L. and Cepko, C.L., 1992. Generation and migration of cells in the developing striatum. Neuron 9, 15-26.

Hanashima, C., Li, S.C., Shen, L., Lai, E., and Fishell, G., 2004. Foxg1 suppresses early cortical cell fate. Science 303, 56-59.

Harlan, R.E., Garcia, M.M., and Krause, J.E., 1989. Cellular localization of substance P- and neurokinin A-encoding preprotachykinin mRNA in the female rat brain. J. Comp Neurol. 287, 179-212.

Harlan, R.E., Shivers, B.D., Romano, G.J., Howells, R.D., and Pfaff, D.W., 1987. Localization of preproenkephalin mRNA in the rat brain and spinal cord by in situ hybridization. J. Comp Neurol. 258, 159-184.

Hasson, P., Egoz, N., Winkler, C., Volohonsky, G., Jia, S., Dinur, T., Volk, T., Courey, A.J., and Paroush, Z., 2005. EGFR signaling attenuates Groucho-dependent repression to antagonize Notch transcriptional output. Nat. Genet. 37, 101-105.

Hasson, P. and Paroush, Z., 2007. Crosstalk between the EGFR and other signalling pathways at the level of the global transcriptional corepressor Groucho/TLE. Br. J. Cancer 96 Suppl, R21-R25.

Hatakeyama, J., Bessho, Y., Katoh, K., Ookawara, S., Fujioka, M., Guillemot, F., and Kageyama, R., 2004. Hes genes regulate size, shape and histogenesis of the nervous system by control of the timing of neural stem cell differentiation. Development 131, 5539-5550.

Hatta, K., Kimmel, C.B., Ho, R.K., and Walker, C., 1991. The cyclops mutation blocks specification of the floor plate of the zebrafish central nervous system. Nature 350, 339-341.

Haubensak, W., Attardo, A., Denk, W., and Huttner, W.B., 2004. Neurons arise in the basal neuroepithelium of the early mammalian telencephalon: a major site of neurogenesis. Proc. Natl. Acad. Sci. U. S. A 101, 3196-3201.

Haubst, N., Berger, J., Radjendirane, V., Graw, J., Favor, J., Saunders, G.F., Stoykova, A., and Gotz, M., 2004. Molecular dissection of Pax6 function: the specific roles of the paired domain and homeodomain in brain development. Development 131, 6131-6140.

Hauser, R.A., Furtado, S., Cimino, C.R., Delgado, H., Eichler, S., Schwartz, S., Scott, D., Nauert, G.M., Soety, E., Sossi, V., Holt, D.A., Sanberg, P.R., Stoessl, A.J., and Freeman, T.B., 2002. Bilateral human fetal striatal transplantation in Huntington's disease. Neurology 58, 687-695.

He, W., Ingraham, C., Rising, L., Goderie, S., and Temple, S., 2001. Multipotent stem cells from the mouse basal forebrain contribute GABAergic neurons and oligodendrocytes to the cerebral cortex during embryogenesis. J. Neurosci. 21, 8854-8862.

Hebert, J.M., Lin, M., Partanen, J., Rossant, J., and McConnell, S.K., 2003. FGF signaling through FGFR1 is required for olfactory bulb morphogenesis. Development 130, 1101-1111.

Heimbucher, T., Murko, C., Bajoghli, B., Aghaallaei, N., Huber, A., Stebegg, R., Eberhard, D., Fink, M., Simeone, A., and Czerny, T., 2007. Gbx2 and Otx2 interact with the WD40 domain of Groucho/Tle corepressors. Mol. Cell Biol. 27, 340-351.

Heisenberg, C.P., Houart, C., Take-Uchi, M., Rauch, G.J., Young, N., Coutinho, P., Masai, I., Caneparo, L., Concha, M.L., Geisler, R., Dale, T.C., Wilson, S.W., and Stemple, D.L., 2001. A mutation in the Gsk3-binding domain of zebrafish Masterblind/Axin1 leads to a fate transformation of telencephalon and eyes to diencephalon. Genes Dev. 15, 1427-1434.

Hemmati-Brivanlou, A., Kelly, O.G., and Melton, D.A., 1994. Follistatin, an antagonist of activin, is expressed in the Spemann organizer and displays direct neuralizing activity. Cell 77, 283-295.

Hitoshi, S., Seaberg, R.M., Koscik, C., Alexson, T., Kusunoki, S., Kanazawa, I., Tsuji, S., and van der Kooy, D., 2004. Primitive neural stem cells from the mammalian epiblast differentiate to definitive neural stem cells under the control of Notch signaling. Genes Dev. 18, 1806-1811.

Hollyday, M., 2001. Neurogenesis in the vertebrate neural tube. Int. J. Dev. Neurosci. 19, 161-173.

Horton, S., Meredith, A., Richardson, J.A., and Johnson, J.E., 1999. Correct coordination of neuronal differentiation events in ventral forebrain requires the bHLH factor MASH1. Mol. Cell Neurosci. 14, 355-369.

Houart, C., Caneparo, L., Heisenberg, C., Barth, K., Take-Uchi, M., and Wilson, S., 2002. Establishment of the telencephalon during gastrulation by local antagonism of Wnt signaling. Neuron 35, 255-265.

Houart, C., Westerfield, M., and Wilson, S.W., 1998. A small population of anterior cells patterns the forebrain during zebrafish gastrulation. Nature 391, 788-792.

Hoyle, J., Tang, Y.P., Wiellette, E.L., Wardle, F.C., and Sive, H., 2004. nlz gene family is required for hindbrain patterning in the zebrafish. Dev. Dyn. 229, 835-846.

Hsieh, J., Nakashima, K., Kuwabara, T., Mejia, E., and Gage, F.H., 2004. Histone deacetylase inhibition-mediated neuronal differentiation of multipotent adult neural progenitor cells. Proc. Natl. Acad. Sci. U. S. A 101, 16659-16664.

Hu, Q.D., Ang, B.T., Karsak, M., Hu, W.P., Cui, X.Y., Duka, T., Takeda, Y., Chia, W., Sankar, N., Ng, Y.K., Ling, E.A., Maciag, T., Small, D., Trifonova, R., Kopan, R., Okano, H., Nakafuku, M., Chiba, S., Hirai, H., Aster, J.C., Schachner, M., Pallen, C.J., Watanabe, K., and Xiao, Z.C., 2003. F3/contactin acts as a functional ligand for Notch during oligodendrocyte maturation. Cell 115, 163-175.

Hu, Q.D., Ma, Q.H., Gennarini, G., and Xiao, Z.C., 2006. Cross-talk between F3/contactin and Notch at axoglial interface: a role in oligodendrocyte development. Dev. Neurosci. 28, 25-33.

Huttner, W.B. and Kosodo, Y., 2005. Symmetric versus asymmetric cell division during neurogenesis in the developing vertebrate central nervous system. Curr. Opin. Cell Biol. 17, 648-657.

Imura, T., Kornblum, H.I., and Sofroniew, M.V., 2003. The predominant neural stem cell isolated from postnatal and adult forebrain but not early embryonic forebrain expresses GFAP. J. Neurosci. 23, 2824-2832.

Invernizzi, P., Benedetti, M.D., Poli, S., and Monaco, S., 2008. Azathioprine in multiple sclerosis. Mini. Rev. Med. Chem. 8, 919-926.

Ito, H., Nakajima, A., Nomoto, H., and Furukawa, S., 2003. Neurotrophins facilitate neuronal differentiation of cultured neural stem cells via induction of mRNA expression of basic helix-loop-helix transcription factors Mash1 and Math1. J. Neurosci. Res. 71, 648-658.

Itsykson, P., Ilouz, N., Turetsky, T., Goldstein, R.S., Pera, M.F., Fishbein, I., Segal, M., and Reubinoff, B.E., 2005. Derivation of neural precursors from human embryonic stem cells in the presence of noggin. Mol. Cell Neurosci. 30, 24-36.

Ivanova, N.B., Dimos, J.T., Schaniel, C., Hackney, J.A., Moore, K.A., and Lemischka, I.R., 2002. A stem cell molecular signature. Science 298, 601-604.

Ivkovic, S., Polonskaia, O., Farinas, I., and Ehrlich, M.E., 1997. Brain-derived neurotrophic factor regulates maturation of the DARPP-32 phenotype in striatal medium spiny neurons: studies in vivo and in vitro. Neuroscience 79, 509-516.

Jackson, E.L., Garcia-Verdugo, J.M., Gil-Perotin, S., Roy, M., Quinones-Hinojosa, A., VandenBerg, S., and Alvarez-Buylla, A., 2006. PDGFR alpha-positive B cells are neural stem cells in the adult SVZ that form glioma-like growths in response to increased PDGF signaling. Neuron 51, 187-199.

Jacobowitz, D.M. and Winsky, L., 1991. Immunocytochemical localization of calretinin in the forebrain of the rat. J. Comp Neurol. 304, 198-218.

Jarriault, S., Brou, C., Logeat, F., Schroeter, E.H., Kopan, R., and Israel, A., 1995. Signalling downstream of activated mammalian Notch. Nature 377, 355-358.

Jensen, J.B., Bjorklund, A., and Parmar, M., 2004. Striatal neuron differentiation from neurosphere-expanded progenitors depends on Gsh2 expression. J. Neurosci. 24, 6958-6967.

Jin, K., Mao, X.O., Sun, Y., Xie, L., and Greenberg, D.A., 2002. Stem cell factor stimulates neurogenesis in vitro and in vivo. J. Clin. Invest 110, 311-319.

Jin, K., Sun, Y., Xie, L., Peel, A., Mao, X.O., Batteur, S., and Greenberg, D.A., 2003. Directed migration of neuronal precursors into the ischemic cerebral cortex and striatum. Mol. Cell Neurosci 24, 171-189.

Jones, E.A., Tosh, D., Wilson, D.I., Lindsay, S., and Forrester, L.M., 2002. Hepatic differentiation of murine embryonic stem cells. Exp. Cell Res. 272, 15-22.

Kabos, P., Kabosova, A., and Neuman, T., 2002. Blocking HES1 expression initiates GABAergic differentiation and induces the expression of p21(CIP1/WAF1) in human neural stem cells. J. Biol. Chem. 277, 8763-8766.

Kageyama, R., Ohtsuka, T., Hatakeyama, J., and Ohsawa, R., 2005. Roles of bHLH genes in neural stem cell differentiation. Exp. Cell Res. 306, 343-348.

Kakita, A. and Goldman, J.E., 1999. Patterns and dynamics of SVZ cell migration in the postnatal forebrain: monitoring living progenitors in slice preparations. Neuron 23, 461-472.

Kallur, T., Darsalia, V., Lindvall, O., and Kokaia, Z., 2006. Human fetal cortical and striatal neural stem cells generate region-specific neurons in vitro and differentiate extensively to neurons after intrastriatal transplantation in neonatal rats. J. Neurosci. Res. 84, 1630-1644.

Kanatsu-Shinohara, M., Inoue, K., Lee, J., Yoshimoto, M., Ogonuki, N., Miki, H., Baba, S., Kato, T., Kazuki, Y., Toyokuni, S., Toyoshima, M., Niwa, O., Oshimura, M., Heike, T., Nakahata, T., Ishino, F., Ogura, A., and Shinohara, T., 2004. Generation of pluripotent stem cells from neonatal mouse testis. Cell 119, 1001-1012.

Kathrein, K.L., Lorenz, R., Innes, A.M., Griffiths, E., and Winandy, S., 2005. Ikaros induces quiescence and T-cell differentiation in a leukemia cell line. Mol. Cell Biol. 25, 1645-1654.

Kawasaki, H., Mizuseki, K., Nishikawa, S., Kaneko, S., Kuwana, Y., Nakanishi, S., Nishikawa, S.I., and Sasai, Y., 2000. Induction of midbrain dopaminergic neurons from ES cells by stromal cell-derived inducing activity. Neuron 28, 31-40.

Keirstead, H.S., 2005. Stem cells for the treatment of myelin loss. Trends Neurosci. 28, 677-683.

Kemp, J.A. and McKernan, R.M., 2002. NMDA receptor pathways as drug targets. Nat. Neurosci. 5 Suppl, 1039-1042.

Kempermann, G., Kuhn, H.G., and Gage, F.H., 1997. More hippocampal neurons in adult mice living in an enriched environment. Nature 386, 493-495.

Kessaris, N., Fogarty, M., Iannarelli, P., Grist, M., Wegner, M., and Richardson, W.D., 2006. Competing waves of oligodendrocytes in the forebrain and postnatal elimination of an embryonic lineage. Nat. Neurosci. 9, 173-179.

Kim, H.T., Kim, I.S., Lee, I.S., Lee, J.P., Snyder, E.Y., and Park, K.I., 2006. Human neurospheres derived from the fetal central nervous system are regionally and temporally specified but are not committed. Exp. Neurol. 199, 222-235.

Kim, J.B., Zaehres, H., Wu, G., Gentile, L., Ko, K., Sebastiano, V., Arauzo-Bravo, M.J., Ruau, D., Han, D.W., Zenke, M., and Scholer, H.R., 2008. Pluripotent stem cells induced from adult neural stem cells by reprogramming with two factors. Nature 454, 646-650.

Kim, J.H., Auerbach, J.M., Rodriguez-Gomez, J.A., Velasco, I., Gavin, D., Lumelsky, N., Lee, S.H., Nguyen, J., Sanchez-Pernaute, R., Bankiewicz, K., and McKay, R., 2002. Dopamine neurons derived from embryonic stem cells function in an animal model of Parkinson's disease. Nature 418, 50-56.

Kippin, T.E., Martens, D.J., and van der Kooy, D., 2005. p21 loss compromises the relative quiescence of forebrain stem cell proliferation leading to exhaustion of their proliferation capacity. Genes Dev. 19, 756-767.

Kishi, N., Tang, Z., Maeda, Y., Hirai, A., Mo, R., Ito, M., Suzuki, S., Nakao, K., Kinoshita, T., Kadesch, T., Hui, C., Artavanis-Tsakonas, S., Okano, H., and Matsuno, K., 2001. Murine homologs of deltex define a novel gene family involved in vertebrate Notch signaling and neurogenesis. Int. J. Dev. Neurosci. 19, 21-35.

Kitajima, H., Yoshimura, S., Kokuzawa, J., Kato, M., Iwama, T., Motohashi, T., Kunisada, T., and Sakai, N., 2005. Culture method for the induction of neurospheres from mouse embryonic stem cells by coculture with PA6 stromal cells. J. Neurosci. Res. 80, 467-474.

Kleinsmith, L.J. and Pierce, G.B., 1964. Multipotentality of single embryonal carcinoma cells. Cancer Res. 24, 1544-1551.

Kobayashi, M., Nishikawa, K., Suzuki, T., and Yamamoto, M., 2001. The homeobox protein Six3 interacts with the Groucho corepressor and acts as a transcriptional repressor in eye and forebrain formation. Dev. Biol. 232, 315-326.

Kohtz, J.D., Baker, D.P., Corte, G., and Fishell, G., 1998. Regionalization within the mammalian telencephalon is mediated by changes in responsiveness to Sonic Hedgehog. Development 125, 5079-5089.

Kohtz, J.D. and Fishell, G., 2004. Developmental regulation of EVF-1, a novel non-coding RNA transcribed upstream of the mouse Dlx6 gene. Gene Expr. Patterns. 4, 407-412.

Koop, K.E., MacDonald, L.M., and Lobe, C.G., 1996. Transcripts of Grg4, a murine groucho-related gene, are detected in adjacent tissues to other murine neurogenic gene homologues during embryonic development. Mech. Dev. 59, 73-87.

Kovall, R.A., 2008. More complicated than it looks: assembly of Notch pathway transcription complexes. Oncogene 27, 5099-5109.

Krushel, L.A., Connolly, J.A., and van der Kooy, D., 1989. Pattern formation in the mammalian forebrain: patch neurons from the rat striatum selectively reassociate in vitro. Brain Res. Dev. Brain Res. 47, 137-142.

Kuhn, H.G., Winkler, J., Kempermann, G., Thal, L.J., and Gage, F.H., 1997. Epidermal growth factor and fibroblast growth factor-2 have different effects on neural progenitors in the adult rat brain. J. Neurosci 17, 5820-5829.

Kunisch, M., Haenlin, M., and Campos-Ortega, J.A., 1994. Lateral inhibition mediated by the Drosophila neurogenic gene delta is enhanced by proneural proteins. Proc. Natl. Acad. Sci. U. S. A 91, 10139-10143.

Kuschel, S., Ruther, U., and Theil, T., 2003. A disrupted balance between Bmp/Wnt and Fgf signaling underlies the ventralization of the Gli3 mutant telencephalon. Dev. Biol. 260, 484-495.

Lagasse, E., Connors, H., Al-Dhalimy, M., Reitsma, M., Dohse, M., Osborne, L., Wang, X., Finegold, M., Weissman, I.L., and Grompe, M., 2000. Purified hematopoietic stem cells can differentiate into hepatocytes in vivo. Nat. Med. 6, 1229-1234.

LaMantia, A.S., Colbert, M.C., and Linney, E., 1993. Retinoic acid induction and regional differentiation prefigure olfactory pathway formation in the mammalian forebrain. Neuron 10, 1035-1048.

Lamb, T.M., Knecht, A.K., Smith, W.C., Stachel, S.E., Economides, A.N., Stahl, N., Yancopolous, G.D., and Harland, R.M., 1993. Neural induction by the secreted polypeptide noggin. Science 262, 713-718.

Le, B.B., Chatzopoulou, E., Heydon, K., Martinez, S., Ikenaka, K., Prestoz, L., Spassky, N., Zalc, B., and Thomas, J.L., 2005. Oligodendrocyte development in the embryonic brain: the contribution of the plp lineage. Int. J. Dev. Biol. 49, 209-220.

Le, M.C., Normand, E., Guitteny, A.F., Fouque, B., Teoule, R., and Bloch, B., 1990. Dopamine receptor gene expression by enkephalin neurons in rat forebrain. Proc. Natl. Acad. Sci. U. S. A 87, 230-234.

Le, T.N., Du, G., Fonseca, M., Zhou, Q.P., Wigle, J.T., and Eisenstat, D.D., 2007. Dlx homeobox genes promote cortical interneuron migration from the basal forebrain by direct repression of the semaphorin receptor neuropilin-2. J. Biol. Chem. 282, 19071-19081.

Lee, B.C., Kim, M.K., Jang, G., Oh, H.J., Yuda, F., Kim, H.J., Hossein, M.S., Kim, J.J., Kang, S.K., Schatten, G., and Hwang, W.S., 2005. Dogs cloned from adult somatic cells. Nature 436, 641.

Lee, H., Shamy, G.A., Elkabetz, Y., Schofield, C.M., Harrsion, N.L., Panagiotakos, G., Socci, N.D., Tabar, V., and Studer, L., 2007. Directed differentiation and transplantation of human embryonic stem cell-derived motoneurons. Stem Cells 25, 1931-1939.

Lee, J.E., 1997. Basic helix-loop-helix genes in neural development. Curr. Opin. Neurobiol. 7, 13-20.

Lee, M.K., Tuttle, J.B., Rebhun, L.I., Cleveland, D.W., and Frankfurter, A., 1990. The expression and posttranslational modification of a neuron-specific beta-tubulin isotype during chick embryogenesis. Cell Motil. Cytoskeleton 17, 118-132.

Lee, S.H., Lumelsky, N., Studer, L., Auerbach, J.M., and McKay, R.D., 2000. Efficient generation of midbrain and hindbrain neurons from mouse embryonic stem cells. Nat. Biotechnol. 18, 675-679.

Leegwater-Kim, J. and Cha, J.H., 2004. The paradigm of Huntington's disease: therapeutic opportunities in neurodegeneration. NeuroRx. 1, 128-138.

Levenberg, S., Huang, N.F., Lavik, E., Rogers, A.B., Itskovitz-Eldor, J., and Langer, R., 2003. Differentiation of human embryonic stem cells on three-dimensional polymer scaffolds. Proc. Natl. Acad. Sci. U. S. A 100, 12741-12746.

Li, H., Wagner, E., McCaffery, P., Smith, D., Andreadis, A., and Drager, U.C., 2000. A retinoic acid synthesizing enzyme in ventral retina and telencephalon of the embryonic mouse. Mech. Dev. 95, 283-289.

Li, X.J., Du, Z.W., Zarnowska, E.D., Pankratz, M., Hansen, L.O., Pearce, R.A., and Zhang, S.C., 2005. Specification of motoneurons from human embryonic stem cells. Nat. Biotechnol. 23, 215-221.

Liao, W.L., Tsai, H.C., Wang, H.F., Chang, J., Lu, K.M., Wu, H.L., Lee, Y.C., Tsai, T.F., Takahashi, H., Wagner, M., Ghyselinck, N.B., Chambon, P., and Liu, F.C., 2008. Modular patterning of structure and function of the striatum by retinoid receptor signaling. Proc. Natl. Acad. Sci. U. S. A 105, 6765-6770.

Liao, W.L., Wang, H.F., Tsai, H.C., Chambon, P., Wagner, M., Kakizuka, A., and Liu, F.C., 2005. Retinoid signaling competence and RARbeta-mediated gene regulation in the developing mammalian telencephalon. Dev. Dyn. 232, 887-900.

Lie, D.C., Song, H., Colamarino, S.A., Ming, G.L., and Gage, F.H., 2004. Neurogenesis in the adult brain: new strategies for central nervous system diseases. Annu. Rev. Pharmacol. Toxicol. 44, 399-421.

Lillien, L. and Gulacsi, A., 2006. Environmental signals elicit multiple responses in dorsal telencephalic progenitors by threshold-dependent mechanisms. Cereb. Cortex 16 Suppl 1, i74-i81.

Lin, H. and Grosschedl, R., 1995. Failure of B-cell differentiation in mice lacking the transcription factor EBF. Nature 376, 263-267.

Lindvall, O. and Hagell, P., 2000. Clinical observations after neural transplantation in Parkinson's disease. Prog. Brain Res. 127, 299-320.

Lindvall, O., Kokaia, Z., and Martinez-Serrano, A., 2004. Stem cell therapy for human neurodegenerative disorders-how to make it work. Nat. Med. 10 Suppl, S42-S50.

Lindvall, O. and Wahlberg, L.U., 2008. Encapsulated cell biodelivery of GDNF: a novel clinical strategy for neuroprotection and neuroregeneration in Parkinson's disease? Exp. Neurol. 209, 82-88.

Linker, C. and Stern, C.D., 2004. Neural induction requires BMP inhibition only as a late step, and involves signals other than FGF and Wnt antagonists. Development 131, 5671-5681.

Liodis, P., Denaxa, M., Grigoriou, M., Akufo-Addo, C., Yanagawa, Y., and Pachnis, V., 2007. Lhx6 activity is required for the normal migration and specification of cortical interneuron subtypes. J. Neurosci. 27, 3078-3089.

Litingtung, Y. and Chiang, C., 2000. Specification of ventral neuron types is mediated by an antagonistic interaction between Shh and Gli3. Nat. Neurosci. 3, 979-985.

Lledo, P.M., Merkle, F.T., and Alvarez-Buylla, A., 2008. Origin and function of olfactory bulb interneuron diversity. Trends Neurosci. 31, 392-400.

Lo, L.C., Johnson, J.E., Wuenschell, C.W., Saito, T., and Anderson, D.J., 1991. Mammalian achaete-scute homolog 1 is transiently expressed by spatially restricted subsets of early neuroepithelial and neural crest cells. Genes Dev. 5, 1524-1537.

Lobo, M.K., Karsten, S.L., Gray, M., Geschwind, D.H., and Yang, X.W., 2006. FACS-array profiling of striatal projection neuron subtypes in juvenile and adult mouse brains. Nat. Neurosci. 9, 443-452.

Lobo, M.K., Yeh, C., and Yang, X.W., 2008. Pivotal role of early B-cell factor 1 in development of striatonigral medium spiny neurons in the matrix compartment. J. Neurosci. Res. 86, 2134-2146.

Lois, C. and Alvarez-Buylla, A., 1994. Long-distance neuronal migration in the adult mammalian brain. Science 264, 1145-1148.

Londin, E.R., Niemiec, J., and Sirotkin, H.I., 2005. Chordin, FGF signaling, and mesodermal factors cooperate in zebrafish neural induction. Dev. Biol. 279, 1-19.

Long, J.E., Garel, S., Alvarez-Dolado, M., Yoshikawa, K., Osumi, N., Alvarez-Buylla, A., and Rubenstein, J.L., 2007. Dlx-dependent and -independent regulation of olfactory bulb interneuron differentiation. J. Neurosci. 27, 3230-3243.

Lopez-Rios, J., Tessmar, K., Loosli, F., Wittbrodt, J., and Bovolenta, P., 2003. Six3 and Six6 activity is modulated by members of the groucho family. Development 130, 185-195.

Louvi, A. and Artavanis-Tsakonas, S., 2006. Notch signalling in vertebrate neural development. Nat. Rev. Neurosci. 7, 93-102.

Lu, Q.R., Sun, T., Zhu, Z., Ma, N., Garcia, M., Stiles, C.D., and Rowitch, D.H., 2002. Common developmental requirement for Olig function indicates a motor neuron/oligodendrocyte connection. Cell 109, 75-86.

Luque, C.M. and Milan, M., 2007. Growth control in the proliferative region of the Drosophila eye-head primordium: the elbow-noc gene complex. Dev. Biol. 301, 327-339.

Malatesta, P., Hack, M.A., Hartfuss, E., Kettenmann, H., Klinkert, W., Kirchhoff, F., and Gotz, M., 2003. Neuronal or glial progeny: regional differences in radial glia fate. Neuron 37, 751-764.

Malatesta, P., Hartfuss, E., and Gotz, M., 2000. Isolation of radial glial cells by fluorescent-activated cell sorting reveals a neuronal lineage. Development 127, 5253-5263.

Maltsev, V.A., Rohwedel, J., Hescheler, J., and Wobus, A.M., 1993. Embryonic stem cells differentiate in vitro into cardiomyocytes representing sinusnodal, atrial and ventricular cell types. Mech. Dev. 44, 41-50.

Marcal, N., Patel, H., Dong, Z., Belanger-Jasmin, S., Hoffman, B., Helgason, C.D., Dang, J., and Stifani, S., 2005. Antagonistic effects of Grg6 and Groucho/TLE on the transcription repression activity of brain factor 1/FoxG1 and cortical neuron differentiation. Mol. Cell Biol. 25, 10916-10929.

Marco, S., Perez-Navarro, E., Tolosa, E., Arenas, E., and Alberch, J., 2002. Striatopallidal neurons are selectively protected by neurturin in an excitotoxic model of Huntington's disease. J. Neurobiol. 50, 323-332.

Marin, O., Anderson, S.A., and Rubenstein, J.L., 2000. Origin and molecular specification of striatal interneurons. J. Neurosci. 20, 6063-6076.

Marin, O., Plump, A.S., Flames, N., Sanchez-Camacho, C., Tessier-Lavigne, M., and Rubenstein, J.L., 2003. Directional guidance of interneuron migration to the cerebral cortex relies on subcortical Slit1/2-independent repulsion and cortical attraction. Development 130, 1889-1901.

Marin, O., Yaron, A., Bagri, A., Tessier-Lavigne, M., and Rubenstein, J.L., 2001. Sorting of striatal and cortical interneurons regulated by semaphorin-neuropilin interactions. Science 293, 872-875.

Marklund, M., Sjodal, M., Beehler, B.C., Jessell, T.M., Edlund, T., and Gunhaga, L., 2004. Retinoic acid signalling specifies intermediate character in the developing telencephalon. Development 131, 4323-4332.

Martens, D.J., Tropepe, V., and van der Kooy, D., 2000. Separate proliferation kinetics of fibroblast growth factor-responsive and epidermal growth factor-responsive neural stem cells within the embryonic forebrain germinal zone. J. Neurosci. 20, 1085-1095.

Martin, G.R., 1981. Isolation of a pluripotent cell line from early mouse embryos cultured in medium conditioned by teratocarcinoma stem cells. Proc. Natl. Acad. Sci. U. S. A 78, 7634-7638.

Martin, G.R. and Evans, M.J., 1974. The morphology and growth of a pluripotent teratocarcinoma cell line and its derivatives in tissue culture. Cell 2, 163-172.

Martin-Ibanez, R., Unger, C., Stromberg, A., Baker, D., Canals, J.M., and Hovatta, O., 2008. Novel cryopreservation method for dissociated human embryonic stem cells in the presence of a ROCK inhibitor. Hum. Reprod. 23, 2744-2754.

Martin-Ibanez, R., Urban, N., Sergent-Tanguy, S., Pineda, J.R., Garrido-Clua, N., Alberch, J., and Canals, J.M., 2007. Interplay of leukemia inhibitory factor and retinoic acid on neural differentiation of mouse embryonic stem cells. J. Neurosci. Res. 85, 2686-2701.

Martinez, S., Crossley, P.H., Cobos, I., Rubenstein, J.L., and Martin, G.R., 1999. FGF8 induces formation of an ectopic isthmic organizer and isthmocerebellar development via a repressive effect on Otx2 expression. Development 126, 1189-1200.

Martinez-Serrano, A. and Bjorklund, A., 1997. Immortalized neural progenitor cells for CNS gene transfer and repair. Trends Neurosci. 20, 530-538.

Masai, I., Heisenberg, C.P., Barth, K.A., Macdonald, R., Adamek, S., and Wilson, S.W., 1997. floating head and masterblind regulate neuronal patterning in the roof of the forebrain. Neuron 18, 43-57.

Mason, H.A., Rakowiecki, S.M., Raftopoulou, M., Nery, S., Huang, Y., Gridley, T., and Fishell, G., 2005. Notch signaling coordinates the patterning of striatal compartments. Development 132, 4247-4258.

Mathieu, J., Barth, A., Rosa, F.M., Wilson, S.W., and Peyrieras, N., 2002. Distinct and cooperative roles for Nodal and Hedgehog signals during hypothalamic development. Development 129, 3055-3065.

Matsumata, M., Uchikawa, M., Kamachi, Y., and Kondoh, H., 2005. Multiple N-cadherin enhancers identified by systematic functional screening indicate its Group B1 SOX-dependent regulation in neural and placodal development. Dev. Biol. 286, 601-617.

Matsuno, K., Diederich, R.J., Go, M.J., Blaumueller, C.M., and Artavanis-Tsakonas, S., 1995. Deltex acts as a positive regulator of Notch signaling through interactions with the Notch ankyrin repeats. Development 121, 2633-2644.

Mazo, M., Planat-Benard, V., Abizanda, G., Pelacho, B., Leobon, B., Gavira, J.J., Penuelas, I., Cemborain, A., Penicaud, L., Laharrague, P., Joffre, C., Boisson, M., Ecay, M., Collantes, M., Barba, J., Casteilla, L., and Prosper, F., 2008. Transplantation of adipose derived stromal cells is associated with functional improvement in a rat model of chronic myocardial infarction. Eur. J. Heart Fail. 10, 454-462.

McBurney, M.W., Jones-Villeneuve, E.M., Edwards, M.K., and Anderson, P.J., 1982. Control of muscle and neuronal differentiation in a cultured embryonal carcinoma cell line. Nature 299, 165-167.

McCaffery, P. and Drager, U.C., 1994. High levels of a retinoic acid-generating dehydrogenase in the meso-telencephalic dopamine system. Proc. Natl. Acad. Sci. U. S. A 91, 7772-7776.

McConnell, S.K., 1995. Constructing the cerebral cortex: neurogenesis and fate determination. Neuron 15, 761-768.

McConnell, S.K. and Kaznowski, C.E., 1991. Cell cycle dependence of laminar determination in developing neocortex. Science 254, 282-285.

McGlinn, E., Richman, J.M., Metzis, V., Town, L., Butterfield, N.C., Wainwright, B.J., and Wicking, C., 2008. Expression of the NET family member Zfp503 is regulated by hedgehog and BMP signaling in the limb. Dev. Dyn. 237, 1172-1182.

McGlinn, E., van Bueren, K.L., Fiorenza, S., Mo, R., Poh, A.M., Forrest, A., Soares, M.B., Bonaldo, M.F., Grimmond, S., Hui, C.C., Wainwright, B., and Wicking, C., 2005. Pax9 and Jagged1 act downstream of Gli3 in vertebrate limb development. Mech. Dev. 122, 1218-1233.

McMurray, C.T., 2001. Huntington's disease: new hope for therapeutics. Trends Neurosci 24, S32-S38.

Mehler, M.F. and Mattick, J.S., 2007. Noncoding RNAs and RNA editing in brain development, functional diversification, and neurological disease. Physiol Rev. 87, 799-823.

Meng, L., Ely, J.J., Stouffer, R.L., and Wolf, D.P., 1997. Rhesus monkeys produced by nuclear transfer. Biol. Reprod. 57, 454-459.

Merkle, F.T., Tramontin, A.D., Garcia-Verdugo, J.M., and Alvarez-Buylla, A., 2004. Radial glia give rise to adult neural stem cells in the subventricular zone. Proc. Natl. Acad. Sci. U. S. A 101, 17528-17532.

Meyer, N.P. and Roelink, H., 2003. The amino-terminal region of Gli3 antagonizes the Shh response and acts in dorsoventral fate specification in the developing spinal cord. Dev. Biol. 257, 343-355.

Mezey, E., Chandross, K.J., Harta, G., Maki, R.A., and McKercher, S.R., 2000. Turning blood into brain: cells bearing neuronal antigens generated in vivo from bone marrow. Science 290, 1779-1782.

Mic, F.A., Haselbeck, R.J., Cuenca, A.E., and Duester, G., 2002. Novel retinoic acid generating activities in the neural tube and heart identified by conditional rescue of Raldh2 null mutant mice. Development 129, 2271-2282.

Miller, R.H., 2002. Regulation of oligodendrocyte development in the vertebrate CNS. Prog. Neurobiol. 67, 451-467.

Millet, S., Bloch-Gallego, E., Simeone, A., and Alvarado-Mallart, R.M., 1996. The caudal limit of Otx2 gene expression as a marker of the midbrain/hindbrain boundary: a study using in situ hybridisation and chick/quail homotopic grafts. Development 122, 3785-3797.

Miyata, T., Kawaguchi, A., Saito, K., Kawano, M., Muto, T., and Ogawa, M., 2004. Asymmetric production of surface-dividing and non-surface-dividing cortical progenitor cells. Development 131, 3133-3145.

Mizutani, K., Yoon, K., Dang, L., Tokunaga, A., and Gaiano, N., 2007. Differential Notch signalling distinguishes neural stem cells from intermediate progenitors. Nature 449, 351-355.

Molnar, A. and Georgopoulos, K., 1994. The Ikaros gene encodes a family of functionally diverse zinc finger DNA-binding proteins. Mol. Cell Biol. 14, 8292-8303.

Molotkov, A., Molotkova, N., and Duester, G., 2006. Retinoic acid guides eye morphogenetic movements via paracrine signaling but is unnecessary for retinal dorsoventral patterning. Development 133, 1901-1910.

Molotkova, N., Molotkov, A., and Duester, G., 2007. Role of retinoic acid during forebrain development begins late when Raldh3 generates retinoic acid in the ventral subventricular zone. Dev. Biol. 303, 601-610.

Moon, E.S. and Herkenham, M., 1984. Comparative development of striatal opiate receptors and dopamine revealed by autoradiography and histofluorescence. Brain Res. 305, 27-42.

Morello, M., Reiner, A., Sancesario, G., Karle, E.J., and Bernardi, G., 1997. Ultrastructural study of nitric oxide synthase-containing striatal neurons and their relationship with parvalbumin-containing neurons in rats. Brain Res. 776, 30-39.

Mothe, A.J. and Tator, C.H., 2008. Transplanted neural stem/progenitor cells generate myelinating oligodendrocytes and Schwann cells in spinal cord demyelination and dysmyelination. Exp. Neurol. 213, 176-190.

Muguruma, Y., Reyes, M., Nakamura, Y., Sato, T., Matsuzawa, H., Miyatake, H., Akatsuka, A., Itoh, J., Yahata, T., Ando, K., Kato, S., and Hotta, T., 2003. In vivo and in vitro differentiation of myocytes from human bone marrow-derived multipotent progenitor cells. Exp. Hematol. 31, 1323-1330.

Muhr, J., Andersson, E., Persson, M., Jessell, T.M., and Ericson, J., 2001. Groucho-mediated transcriptional repression establishes progenitor cell pattern and neuronal fate in the ventral neural tube. Cell 104, 861-873.

Murata, K., Hattori, M., Hirai, N., Shinozuka, Y., Hirata, H., Kageyama, R., Sakai, T., and Minato, N., 2005. Hes1 directly controls cell proliferation through the transcriptional repression of p27Kip1. Mol. Cell Biol. 25, 4262-4271.

Myers, R.H., Vonsattel, J.P., Stevens, T.J., Cupples, L.A., Richardson, E.P., Martin, J.B., and Bird, E.D., 1988. Clinical and neuropathologic assessment of severity in Huntington's disease. Neurology 38, 341-347.

Nagy, A., Rossant, J., Nagy, R., bramow-Newerly, W., and Roder, J.C., 1993. Derivation of completely cell culture-derived mice from early-passage embryonic stem cells. Proc. Natl. Acad. Sci. U. S. A 90, 8424-8428.

Nakajima, K., 2007. Control of tangential/non-radial migration of neurons in the developing cerebral cortex. Neurochem. Int. 51, 121-131.

Nakamura, Y., Sakakibara, S., Miyata, T., Ogawa, M., Shimazaki, T., Weiss, S., Kageyama, R., and Okano, H., 2000. The bHLH gene hes1 as a repressor of the neuronal commitment of CNS stem cells. J. Neurosci. 20, 283-293.

Nakashima, K., Yanagisawa, M., Arakawa, H., Kimura, N., Hisatsune, T., Kawabata, M., Miyazono, K., and Taga, T., 1999. Synergistic signaling in fetal brain by STAT3-Smad1 complex bridged by p300. Science 284, 479-482.

Nakatomi, H., Kuriu, T., Okabe, S., Yamamoto, S., Hatano, O., Kawahara, N., Tamura, A., Kirino, T., and Nakafuku, M., 2002. Regeneration of hippocampal pyramidal neurons after ischemic brain injury by recruitment of endogenous neural progenitors. Cell 110, 429-441.

Nakayama, K., Ishida, N., Shirane, M., Inomata, A., Inoue, T., Shishido, N., Horii, I., Loh, D.Y., and Nakayama, K., 1996. Mice lacking p27(Kip1) display increased body size, multiple organ hyperplasia, retinal dysplasia, and pituitary tumors. Cell 85, 707-720.

Nguyen, L., Besson, A., Roberts, J.M., and Guillemot, F., 2006. Coupling cell cycle exit, neuronal differentiation and migration in cortical neurogenesis. Cell Cycle 5, 2314-2318.

Nichogiannopoulou, A., Trevisan, M., Friedrich, C., and Georgopoulos, K., 1998. Ikaros in hemopoietic lineage determination and homeostasis. Semin. Immunol. 10, 119-125.

Nicolas, J.F., Dubois, P., Jakob, H., Gaillard, J., and Jacob, F., 1975. [Mouse teratocarcinoma: differentiation in cultures of a multipotential primitive cell line (author's transl)]. Ann. Microbiol. (Paris) 126, 3-22.

Niederreither, K., Subbarayan, V., Dolle, P., and Chambon, P., 1999. Embryonic retinoic acid synthesis is essential for early mouse post-implantation development. Nat. Genet. 21, 444-448.

Niemann, H., Tian, X.C., King, W.A., and Lee, R.S., 2008. Epigenetic reprogramming in embryonic and foetal development upon somatic cell nuclear transfer cloning. Reproduction. 135, 151-163.

Noctor, S.C., Martinez-Cerdeno, V., Ivic, L., and Kriegstein, A.R., 2004. Cortical neurons arise in symmetric and asymmetric division zones and migrate through specific phases. Nat. Neurosci. 7, 136-144.

Nornes, H.O., Dressler, G.R., Knapik, E.W., Deutsch, U., and Gruss, P., 1990. Spatially and temporally restricted expression of Pax2 during murine neurogenesis. Development 109, 797-809.

Nottebohm, F., 2002. Neuronal replacement in adult brain. Brain Res. Bull. 57, 737-749.

Odeberg, J., Piao, J.H., Samuelsson, E.B., Falci, S., and Akesson, E., 2005. Low immunogenicity of in vitro-expanded human neural cells despite high MHC expression. J. Neuroimmunol. 161, 1-11.

Oertel, W.H. and Mugnaini, E., 1984. Immunocytochemical studies of GABAergic neurons in rat basal ganglia and their relations to other neuronal systems. Neurosci. Lett. 47, 233-238.

Ohkubo, Y., Chiang, C., and Rubenstein, J.L., 2002. Coordinate regulation and synergistic actions of BMP4, SHH and FGF8 in the rostral prosencephalon regulate morphogenesis of the telencephalic and optic vesicles. Neuroscience 111, 1-17.

Ohtsuka, T., Ishibashi, M., Gradwohl, G., Nakanishi, S., Guillemot, F., and Kageyama, R., 1999. Hes1 and Hes5 as notch effectors in mammalian neuronal differentiation. EMBO J. 18, 2196-2207.

Ohtsuka, T., Sakamoto, M., Guillemot, F., and Kageyama, R., 2001. Roles of the basic helix-loop-helix genes Hes1 and Hes5 in expansion of neural stem cells of the developing brain. J. Biol. Chem. 276, 30467-30474.

Okabe, S., Forsberg-Nilsson, K., Spiro, A.C., Segal, M., and McKay, R.D., 1996. Development of neuronal precursor cells and functional postmitotic neurons from embryonic stem cells in vitro. Mech. Dev. 59, 89-102.

Oliver, G., Mailhos, A., Wehr, R., Copeland, N.G., Jenkins, N.A., and Gruss, P., 1995. Six3, a murine homologue of the sine oculis gene, demarcates the most anterior border of the developing neural plate and is expressed during eye development. Development 121, 4045-4055.

Olsson, M., Bjorklund, A., and Campbell, K., 1998. Early specification of striatal projection neurons and interneuronal subtypes in the lateral and medial ganglionic eminence. Neuroscience 84, 867-876.

Ory, D.S., Neugeboren, B.A., and Mulligan, R.C., 1996. A stable human-derived packaging cell line for production of high titer retrovirus/vesicular stomatitis virus G pseudotypes. Proc. Natl. Acad. Sci. U. S. A 93, 11400-11406.

Osborne, J.G., Kindy, M.S., Spruce, B.A., and Hauser, K.F., 1993. Ontogeny of proenkephalin mRNA and enkephalin peptide expression in the cerebellar cortex of the rat: spatial and temporal patterns of expression follow maturational gradients in the external granular layer and in Purkinje cells. Brain Res. Dev. Brain Res. 76, 1-12.

Ouimet, C.C., LaMantia, A.S., Goldman-Rakic, P., Rakic, P., and Greengard, P., 1992. Immunocytochemical localization of DARPP-32, a dopamine and cyclic-AMP-regulated phosphoprotein, in the primate brain. J. Comp Neurol. 323, 209-218.

Panchision, D.M., Pickel, J.M., Studer, L., Lee, S.H., Turner, P.A., Hazel, T.G., and McKay, R.D., 2001. Sequential actions of BMP receptors control neural precursor cell production and fate. Genes Dev. 15, 2094-2110.

Papaioannou, V.E., McBurney, M.W., Gardner, R.L., and Evans, M.J., 1975. Fate of teratocarcinoma cells injected into early mouse embryos. Nature 258, 70-73.

Parent, A., Cote, P.Y., and Lavoie, B., 1995. Chemical anatomy of primate basal ganglia. Prog. Neurobiol. 46, 131-197.

Parent, J.M., Vexler, Z.S., Gong, C., Derugin, N., and Ferriero, D.M., 2002. Rat forebrain neurogenesis and striatal neuron replacement after focal stroke. Ann. Neurol. 52, 802-813.

Paris, M., Wang, W.H., Shin, M.H., Franklin, D.S., and Andrisani, O.M., 2006. Homeodomain transcription factor Phox2a, via cyclic AMP-mediated activation, induces p27Kip1 transcription, coordinating neural progenitor cell cycle exit and differentiation. Mol. Cell Biol. 26, 8826-8839.

Park, H.C. and Appel, B., 2003. Delta-Notch signaling regulates oligodendrocyte specification. Development 130, 3747-3755.

Park, I.H., Zhao, R., West, J.A., Yabuuchi, A., Huo, H., Ince, T.A., Lerou, P.H., Lensch, M.W., and Daley, G.Q., 2008. Reprogramming of human somatic cells to pluripotency with defined factors. Nature 451, 141-146.

Park, K.I., Ourednik, J., Ourednik, V., Taylor, R.M., Aboody, K.S., Auguste, K.I., Lachyankar, M.B., Redmond, D.E., and Snyder, E.Y., 2002. Global gene and cell replacement strategies via stem cells. Gene Ther. 9, 613-624.

Park, S.H., Park, S.H., Kook, M.C., Kim, E.Y., Park, S., and Lim, J.H., 2004. Ultrastructure of human embryonic stem cells and spontaneous and retinoic acid-induced differentiating cells. Ultrastruct. Pathol. 28, 229-238.

Parkhurst, S.M., 1998. Groucho: making its Marx as a transcriptional co-repressor. Trends Genet. 14, 130-132.

Paroush, Z., Finley, R.L., Jr., Kidd, T., Wainwright, S.M., Ingham, P.W., Brent, R., and Ish-Horowicz, D., 1994. Groucho is required for Drosophila neurogenesis, segmentation, and sex determination and interacts directly with hairy-related bHLH proteins. Cell 79, 805-815.

Parr, A.M., Kulbatski, I., Zahir, T., Wang, X., Yue, C., Keating, A., and Tator, C.H., 2008. Transplanted adult spinal cord-derived neural stem/progenitor cells promote early functional recovery after rat spinal cord injury. Neuroscience 155, 760-770.

Parras, C.M., Galli, R., Britz, O., Soares, S., Galichet, C., Battiste, J., Johnson, J.E., Nakafuku, M., Vescovi, A., and Guillemot, F., 2004. Mash1 specifies neurons and oligodendrocytes in the postnatal brain. EMBO J. 23, 4495-4505.

Parras, C.M., Hunt, C., Sugimori, M., Nakafuku, M., Rowitch, D., and Guillemot, F., 2007. The proneural gene Mash1 specifies an early population of telencephalic oligodendrocytes. J. Neurosci. 27, 4233-4242.

Parras, C.M., Schuurmans, C., Scardigli, R., Kim, J., Anderson, D.J., and Guillemot, F., 2002. Divergent functions of the proneural genes Mash1 and Ngn2 in the specification of neuronal subtype identity. Genes Dev. 16, 324-338.

Pechnick, R.N., Zonis, S., Wawrowsky, K., Pourmorady, J., and Chesnokova, V., 2008. p21Cip1 restricts neuronal proliferation in the subgranular zone of the dentate gyrus of the hippocampus. Proc. Natl. Acad. Sci. U. S. A 105, 1358-1363.

Penny, G.R., Afsharpour, S., and Kitai, S.T., 1986. The glutamate decarboxylase-, leucine enkephalin-, methionine enkephalin- and substance P-immunoreactive neurons in the neostriatum of the rat and cat: evidence for partial population overlap. Neuroscience 17, 1011-1045.

Pera, M.F., Andrade, J., Houssami, S., Reubinoff, B., Trounson, A., Stanley, E.G., Ward-van Oostwaard,.D., and Mummery, C., 2004. Regulation of human embryonic stem cell differentiation by BMP-2 and its antagonist noggin. J. Cell Sci. 117, 1269-1280.

Perdomo, J., Holmes, M., Chong, B., and Crossley, M., 2000. Eos and pegasus, two members of the Ikaros family of proteins with distinct DNA binding activities. J. Biol. Chem. 275, 38347-38354.

Perera, M., Merlo, G.R., Verardo, S., Paleari, L., Corte, G., and Levi, G., 2004. Defective neuronogenesis in the absence of Dlx5. Mol. Cell Neurosci. 25, 153-161.

Perez-Navarro, E., Alberch, J., Arenas, E., Calvo, N., and Marsal, J., 1994. Nerve growth factor and basic fibroblast growth factor protect cholinergic neurons against quinolinic acid excitotoxicity in rat neostriatum. Eur. J. Neurosci. 6, 706-711.

Persichetti, F., Ambrose, C.M., Ge, P., McNeil, S.M., Srinidhi, J., Anderson, M.A., Jenkins, B., Barnes, G.T., Duyao, M.P., Kanaley, L., et al., 1995. Normal and expanded Huntington's disease gene alleles produce distinguishable proteins due to translation across the CAG repeat. Mol. Med. 1, 374-383.

Persson, M., Stamataki, D., te, W.P., Andersson, E., Bose, J., Ruther, U., Ericson, J., and Briscoe, J., 2002. Dorsal-ventral patterning of the spinal cord requires Gli3 transcriptional repressor activity. Genes Dev. 16, 2865-2878.

Pesce, M., Anastassiadis, K., and Scholer, H.R., 1999. Oct-4: lessons of totipotency from embryonic stem cells. Cells Tissues. Organs 165, 144-152.

Peschanski, M., Bachoud-Levi, A.C., and Hantraye, P., 2004. Integrating fetal neural transplants into a therapeutic strategy: the example of Huntington's disease. Brain 127, 1219-1228.

Petersen, A., Mani, K., and Brundin, P., 1999. Recent advances on the pathogenesis of Huntington's disease. Exp. Neurol. 157, 1-18.

Peterson, D.A., 2002. Stem cells in brain plasticity and repair. Curr. Opin. Pharmacol. 2, 34-42.

Petryniak, M.A., Potter, G.B., Rowitch, D.H., and Rubenstein, J.L., 2007. Dlx1 and Dlx2 control neuronal versus oligodendroglial cell fate acquisition in the developing forebrain. Neuron 55, 417-433.

Philpott, L.M., Kopyov, O.V., Lee, A.J., Jacques, S., Duma, C.M., Caine, S., Yang, M., and Eagle, K.S., 1997. Neuropsychological functioning following fetal striatal transplantation in Huntington's chorea: three case presentations. Cell Transplant. 6, 203-212.

Piao, J.H., Odeberg, J., Samuelsson, E.B., Kjaeldgaard, A., Falci, S., Seiger, A., Sundstrom, E., and Akesson, E., 2006. Cellular composition of long-term human spinal cord- and forebrain-derived neurosphere cultures. J. Neurosci. Res. 84, 471-482.

Piccini, P., 2002. Dyskinesias after transplantation in Parkinson's disease. Lancet Neurol. 1, 472.

Pineda, J.R., Canals, J.M., Bosch, M., Adell, A., Mengod, G., Artigas, F., Ernfors, P., and Alberch, J., 2005. Brain-derived neurotrophic factor modulates dopaminergic deficits in a transgenic mouse model of Huntington's disease. J. Neurochem. 93, 1057-1068.

Pineda, J.R., Rubio, N., Akerud, P., Urban, N., Badimon, L., Arenas, E., Alberch, J., Blanco, J., and Canals, J.M., 2007. Neuroprotection by GDNF-secreting stem cells in a Huntington's disease model: optical neuroimage tracking of brain-grafted cells. Gene Ther. 14, 118-128.

Poitras, L., Ghanem, N., Hatch, G., and Ekker, M., 2007. The proneural determinant MASH1 regulates forebrain Dlx1/2 expression through the I12b intergenic enhancer. Development 134, 1755-1765.

Polejaeva, I.A., Chen, S.H., Vaught, T.D., Page, R.L., Mullins, J., Ball, S., Dai, Y., Boone, J., Walker, S., Ayares, D.L., Colman, A., and Campbell, K.H., 2000. Cloned pigs produced by nuclear transfer from adult somatic cells. Nature 407, 86-90.

Polgar, S., Morris, M.E., Reilly, S., Bilney, B., and Sanberg, P.R., 2003. Reconstructive neurosurgery for Parkinson's disease: a systematic review and preliminary meta-analysis. Brain Res. Bull. 60, 1-24.

Pomp, O., Brokhman, I., Ben-Dor, I., Reubinoff, B., and Goldstein, R.S., 2005. Generation of peripheral sensory and sympathetic neurons and neural crest cells from human embryonic stem cells. Stem Cells 23, 923-930.

Porteus, M.H., Bulfone, A., Liu, J.K., Puelles, L., Lo, L.C., and Rubenstein, J.L., 1994. DLX-2, MASH-1, and MAP-2 expression and bromodeoxyuridine incorporation define molecularly distinct cell populations in the embryonic mouse forebrain. J. Neurosci. 14, 6370-6383.

Pozas, E. and Ibanez, C.F., 2005. GDNF and GFRalpha1 promote differentiation and tangential migration of cortical GABAergic neurons. Neuron 45, 701-713.

Prelle, K., Vassiliev, I.M., Vassilieva, S.G., Wolf, E., and Wobus, A.M., 1999. Establishment of pluripotent cell lines from vertebrate species--present status and future prospects. Cells Tissues. Organs 165, 220-236.

Pringle, N.P. and Richardson, W.D., 1993. A singularity of PDGF alpha-receptor expression in the dorsoventral axis of the neural tube may define the origin of the oligodendrocyte lineage. Development 117, 525-533.

Puelles, L. and Rubenstein, J.L., 1993. Expression patterns of homeobox and other putative regulatory genes in the embryonic mouse forebrain suggest a neuromeric organization. Trends Neurosci. 16, 472-479.

Puelles, L. and Rubenstein, J.L., 2003. Forebrain gene expression domains and the evolving prosomeric model. Trends Neurosci. 26, 469-476.

Qi, H. and Pei, D., 2007. The magic of four: induction of pluripotent stem cells from somatic cells by Oct4, Sox2, Myc and Klf4. Cell Res. 17, 578-580.

Qian, X., Shen, Q., Goderie, S.K., He, W., Capela, A., Davis, A.A., and Temple, S., 2000. Timing of CNS cell generation: a programmed sequence of neuron and glial cell production from isolated murine cortical stem cells. Neuron 28, 69-80.

Qiu, M., Bulfone, A., Ghattas, I., Meneses, J.J., Christensen, L., Sharpe, P.T., Presley, R., Pedersen, R.A., and Rubenstein, J.L., 1997. Role of the Dlx homeobox genes in proximodistal patterning of the branchial arches: mutations of Dlx-1, Dlx-2, and Dlx-1 and -2 alter morphogenesis of proximal skeletal and soft tissue structures derived from the first and second arches. Dev. Biol. 185, 165-184.

Quinn, S.M., Walters, W.M., Vescovi, A.L., and Whittemore, S.R., 1999. Lineage restriction of neuroepithelial precursor cells from fetal human spinal cord. J. Neurosci. Res. 57, 590-602.

Rajaii, F., Bitzer, Z.T., Xu, Q., and Sockanathan, S., 2008. Expression of the dominant negative retinoid receptor, RAR403, alters telencephalic progenitor proliferation, survival, and cell fate specification. Dev. Biol. 316, 371-382.

Rakic, P., 1971. Guidance of neurons migrating to the fetal monkey neocortex. Brain Res. 33, 471-476.

Rakic, P., 1972. Mode of cell migration to the superficial layers of fetal monkey neocortex. J. Comp Neurol. 145, 61-83.

Rallu, M., Machold, R., Gaiano, N., Corbin, J.G., McMahon, A.P., and Fishell, G., 2002. Dorsoventral patterning is established in the telencephalon of mutants lacking both Gli3 and Hedgehog signaling. Development 129, 4963-4974.

Ramain, P., Khechumian, K., Seugnet, L., Arbogast, N., Ackermann, C., and Heitzler, P., 2001. Novel Notch alleles reveal a Deltex-dependent pathway repressing neural fate. Curr. Biol. 11, 1729-1738.

Ramalho-Santos, M., Yoon, S., Matsuzaki, Y., Mulligan, R.C., and Melton, D.A., 2002. "Stemness": transcriptional profiling of embryonic and adult stem cells. Science 298, 597-600.

Ramirez-Castillejo, C., Sanchez-Sanchez, F., Andreu-Agullo, C., Ferron, S.R., Aroca-Aguilar, J.D., Sanchez, P., Mira, H., Escribano, J., and Farinas, I., 2006. Pigment epithelium-derived factor is a niche signal for neural stem cell renewal. Nat. Neurosci. 9, 331-339.

Rebollo, A. and Schmitt, C., 2003. Ikaros, Aiolos and Helios: transcription regulators and lymphoid malignancies. Immunol. Cell Biol. 81, 171-175.

Reddy, P.H., Williams, M., and Tagle, D.A., 1999. Recent advances in understanding the pathogenesis of Huntington's disease. Trends Neurosci 22, 248-255.

Reijntjes, S., Blentic, A., Gale, E., and Maden, M., 2005. The control of morphogen signalling: regulation of the synthesis and catabolism of retinoic acid in the developing embryo. Dev. Biol. 285, 224-237.

Reiner, A., Albin, R.L., Anderson, K.D., D'Amato, C.J., Penney, J.B., and Young, A.B., 1988. Differential loss of striatal projection neurons in Huntington disease. Proc. Natl. Acad. Sci. U. S. A 85, 5733-5737.

Resibois, A. and Rogers, J.H., 1992. Calretinin in rat brain: an immunohistochemical study. Neuroscience 46, 101-134.

Reubinoff, B.E., Itsykson, P., Turetsky, T., Pera, M.F., Reinhartz, E., Itzik, A., and Ben-Hur, T., 2001. Neural progenitors from human embryonic stem cells. Nat. Biotechnol. 19, 1134-1140.

Reya, T., Duncan, A.W., Ailles, L., Domen, J., Scherer, D.C., Willert, K., Hintz, L., Nusse, R., and Weissman, I.L., 2003. A role for Wnt signalling in self-renewal of haematopoietic stem cells. Nature 423, 409-414.

Reyes, M., Lund, T., Lenvik, T., Aguiar, D., Koodie, L., and Verfaillie, C.M., 2001. Purification and ex vivo expansion of postnatal human marrow mesodermal progenitor cells. Blood 98, 2615-2625.

Ribak, C.E., Vaughn, J.E., and Roberts, E., 1979. The GABA neurons and their axon terminals in rat corpus striatum as demonstrated by GAD immunocytochemistry. J. Comp Neurol. 187, 261-283.

Ribes, V., Wang, Z., Dolle, P., and Niederreither, K., 2006. Retinaldehyde dehydrogenase 2 (RALDH2)-mediated retinoic acid synthesis regulates early mouse embryonic forebrain development by controlling FGF and sonic hedgehog signaling. Development 133, 351-361.

Richardson, W.D., Smith, H.K., Sun, T., Pringle, N.P., Hall, A., and Woodruff, R., 2000. Oligodendrocyte lineage and the motor neuron connection. Glia 29, 136-142.

Richfield, E.K., Maguire-Zeiss, K.A., Vonkeman, H.E., and Voorn, P., 1995. Preferential loss of preproenkephalin versus preprotachykinin neurons from the striatum of Huntington's disease patients. Ann. Neurol. 38, 852-861.

Rigamonti, D., Bauer, J.H., De Fraja, C., Conti, L., Sipione, S., Sciorati, C., Clementi, E., Hackam, A., Hayden, M.R., Li, Y., Cooper, J.K., Ross, C.A., Govoni, S., Vincenz, C., and Cattaneo, E., 2000. Wild-type huntingtin protects from apoptosis upstream of caspase-3. J. Neurosci. 20, 3705-3713.

Rosser, A.E., Barker, R.A., Harrower, T., Watts, C., Farrington, M., Ho, A.K., Burnstein, R.M., Menon, D.K., Gillard, J.H., Pickard, J., and Dunnett, S.B., 2002. Unilateral transplantation of human primary fetal tissue in four patients with Huntington's disease: NEST-UK safety report ISRCTN no 36485475. J. Neurol. Neurosurg. Psychiatry 73, 678-685.

Rossi, F. and Cattaneo, E., 2002. Opinion: neural stem cell therapy for neurological diseases: dreams and reality. Nat. Rev. Neurosci. 3, 401-409.

Roy, N.S., Chandler-Militello, D., Lu, G., Wang, S., and Goldman, S.A., 2007. Retrovirally mediated telomerase immortalization of neural progenitor cells. Nat. Protoc. 2, 2815-2825.

Ruberte, E., Friederich, V., Chambon, P., and Morriss-Kay, G., 1993. Retinoic acid receptors and cellular retinoid binding proteins. III. Their differential transcript distribution during mouse nervous system development. Development 118, 267-282.

Runko, A.P. and Sagerstrom, C.G., 2003. Nlz belongs to a family of zinc-finger-containing repressors and controls segmental gene expression in the zebrafish hindbrain. Dev. Biol. 262, 254-267.

Runko, A.P. and Sagerstrom, C.G., 2004. Isolation of nlz2 and characterization of essential domains in Nlz family proteins. J. Biol. Chem. 279, 11917-11925.

Ryder, E.F., Snyder, E.Y., and Cepko, C.L., 1990. Establishment and characterization of multipotent neural cell lines using retrovirus vector-mediated oncogene transfer. J. Neurobiol. 21, 356-375.

Sampath, K., Rubinstein, A.L., Cheng, A.M., Liang, J.O., Fekany, K., Solnica-Krezel, L., Korzh, V., Halpern, M.E., and Wright, C.V., 1998. Induction of the zebrafish ventral brain and floorplate requires cyclops/nodal signalling. Nature 395, 185-189.

Samuel, G.N., Kerridge, I.H., and O'Brien, T.A., 2008. Umbilical cord blood banking: public good or private benefit? Med. J. Aust. 188, 533-535.

Santa-Olalla, J., Baizabal, J.M., Fregoso, M., del Carmen, C.M., and Covarrubias, L., 2003. The in vivo positional identity gene expression code is not preserved in neural stem cells grown in culture. Eur. J. Neurosci. 18, 1073-1084.

Sasai, Y., Kageyama, R., Tagawa, Y., Shigemoto, R., and Nakanishi, S., 1992. Two mammalian helix-loop-helix factors structurally related to Drosophila hairy and Enhancer of split. Genes Dev. 6, 2620-2634.

Sasai, Y., Lu, B., Steinbeisser, H., Geissert, D., Gont, L.K., and De Robertis, E.M., 1994. Xenopus chordin: a novel dorsalizing factor activated by organizer-specific homeobox genes. Cell 79, 779-790.

Schaeren-Wiemers, N. and Gerfin-Moser, A., 1993. A single protocol to detect transcripts of various types and expression levels in neural tissue and cultured cells: in situ hybridization using digoxigenin-labelled cRNA probes. Histochemistry 100, 431-440.

Schmahl, W., Knoedlseder, M., Favor, J., and Davidson, D., 1993. Defects of neuronal migration and the pathogenesis of cortical malformations are associated with Small eye (Sey) in the mouse, a point mutation at the Pax-6-locus. Acta Neuropathol. 86, 126-135.

Schober, A., Peterziel, H., von Bartheld, C.S., Simon, H., Krieglstein, K., and Unsicker, K., 2007. GDNF applied to the MPTP-lesioned nigrostriatal system requires TGF-beta for its neuroprotective action. Neurobiol. Dis. 25, 378-391.

Scholer, H.R., Balling, R., Hatzopoulos, A.K., Suzuki, N., and Gruss, P., 1989. Octamer binding proteins confer transcriptional activity in early mouse embryogenesis. EMBO J. 8, 2551-2557.

Schuldiner, M., Eiges, R., Eden, A., Yanuka, O., Itskovitz-Eldor, J., Goldstein, R.S., and Benvenisty, N., 2001. Induced neuronal differentiation of human embryonic stem cells. Brain Res. 913, 201-205.

Schuurmans, C. and Guillemot, F., 2002. Molecular mechanisms underlying cell fate specification in the developing telencephalon. Curr. Opin. Neurobiol. 12, 26-34.

Schwartz, P.H., Bryant, P.J., Fuja, T.J., Su, H., O'Dowd, D.K., and Klassen, H., 2003. Isolation and characterization of neural progenitor cells from post-mortem human cortex. J. Neurosci. Res. 74, 838-851.

Sekiya, T. and Zaret, K.S., 2007. Repression by Groucho/TLE/Grg proteins: genomic site recruitment generates compacted chromatin in vitro and impairs activator binding in vivo. Mol. Cell 28, 291-303.

Seri, B., Garcia-Verdugo, J.M., McEwen, B.S., and Alvarez-Buylla, A., 2001. Astrocytes give rise to new neurons in the adult mammalian hippocampus. J. Neurosci. 21, 7153-7160.

Sestan, N., Artavanis-Tsakonas, S., and Rakic, P., 1999. Contact-dependent inhibition of cortical neurite growth mediated by notch signaling. Science 286, 741-746.

Shamblott, M.J., Axelman, J., Wang, S., Bugg, E.M., Littlefield, J.W., Donovan, P.J., Blumenthal, P.D., Huggins, G.R., and Gearhart, J.D., 1998. Derivation of pluripotent stem cells from cultured human primordial germ cells. Proc. Natl. Acad. Sci. U. S. A 95, 13726-13731.

Sharpe, N.A. and Tepper, J.M., 1998. Postnatal development of excitatory synaptic input to the rat neostriatum: an electron microscopic study. Neuroscience 84, 1163-1175.

Sher, F., Balasubramaniyan, V., Boddeke, E., and Copray, S., 2008a. Oligodendrocyte differentiation and implantation: new insights for remyelinating cell therapy. Curr. Opin. Neurol. 21, 607-614.

Sher, F., Rossler, R., Brouwer, N., Balasubramaniyan, V., Boddeke, E., and Copray, S., 2008b. Differentiation of neural stem cells into oligodendrocytes: involvement of the polycomb group protein Ezh2. Stem Cells 26, 2875-2883.

Sherr, C.J. and Roberts, J.M., 1999. CDK inhibitors: positive and negative regulators of G1-phase progression. Genes Dev. 13, 1501-1512.

Shi, R.Z. and Li, Q.P., 2008. Improving outcome of transplanted mesenchymal stem cells for ischemic heart disease. Biochem. Biophys. Res. Commun. 376, 247-250.

Shimamura, K., Hartigan, D.J., Martinez, S., Puelles, L., and Rubenstein, J.L., 1995. Longitudinal organization of the anterior neural plate and neural tube. Development 121, 3923-3933.

Shimamura, K. and Rubenstein, J.L., 1997. Inductive interactions direct early regionalization of the mouse forebrain. Development 124, 2709-2718.

Shimazaki, T., Arsenijevic, Y., Ryan, A.K., Rosenfeld, M.G., and Weiss, S., 1999. A role for the POU-III transcription factor Brn-4 in the regulation of striatal neuron precursor differentiation. EMBO J. 18, 444-456.

Shin, S., Dalton, S., and Stice, S.L., 2005. Human motor neuron differentiation from human embryonic stem cells. Stem Cells Dev. 14, 266-269.

Shin, S., Mitalipova, M., Noggle, S., Tibbitts, D., Venable, A., Rao, R., and Stice, S.L., 2006. Long-term proliferation of human embryonic stem cell-derived neuroepithelial cells using defined adherent culture conditions. Stem Cells 24, 125-138.

Shin, T., Kraemer, D., Pryor, J., Liu, L., Rugila, J., Howe, L., Buck, S., Murphy, K., Lyons, L., and Westhusin, M., 2002. A cat cloned by nuclear transplantation. Nature 415, 859.

Simeone, A., Acampora, D., Nigro, V., Faiella, A., D'Esposito, M., Stornaiuolo, A., Mavilio, F., and Boncinelli, E., 1991. Differential regulation by retinoic acid of the homeobox genes of the four HOX loci in human embryonal carcinoma cells. Mech. Dev. 33, 215-227.

Simeone, A., Gulisano, M., Acampora, D., Stornaiuolo, A., Rambaldi, M., and Boncinelli, E., 1992. Two vertebrate homeobox genes related to the Drosophila empty spiracles gene are expressed in the embryonic cerebral cortex. EMBO J. 11, 2541-2550.

Skogh, C., Parmar, M., and Campbell, K., 2003. The differentiation potential of precursor cells from the mouse lateral ganglionic eminence is restricted by in vitro expansion. Neuroscience 120, 379-385.

Smirnova, L., Grafe, A., Seiler, A., Schumacher, S., Nitsch, R., and Wulczyn, F.G., 2005. Regulation of miRNA expression during neural cell specification. Eur. J. Neurosci. 21, 1469-1477.

Smith, G.H., 2005. Label-retaining epithelial cells in mouse mammary gland divide asymmetrically and retain their template DNA strands. Development 132, 681-687.

Smith, K.M., Matson, S., Matson, W.R., Cormier, K., Del Signore, S.J., Hagerty, S.W., Stack, E.C., Ryu, H., and Ferrante, R.J., 2006. Dose ranging and efficacy study of high-dose coenzyme Q10 formulations in Huntington's disease mice. Biochim. Biophys. Acta 1762, 616-626.

Smith, W.C., Knecht, A.K., Wu, M., and Harland, R.M., 1993. Secreted noggin protein mimics the Spemann organizer in dorsalizing Xenopus mesoderm. Nature 361, 547-549.

Smukler, S.R., Runciman, S.B., Xu, S., and van der Kooy D., 2006. Embryonic stem cells assume a primitive neural stem cell fate in the absence of extrinsic influences. J. Cell Biol. 172, 79-90.

Snyder, E.Y., Deitcher, D.L., Walsh, C., Arnold-Aldea, S., Hartwieg, E.A., and Cepko, C.L., 1992. Multipotent neural cell lines can engraft and participate in development of mouse cerebellum. Cell 68, 33-51.

Snyder, E.Y., Yoon, C., Flax, J.D., and Macklis, J.D., 1997. Multipotent neural precursors can differentiate toward replacement of neurons undergoing targeted apoptotic degeneration in adult mouse neocortex. Proc. Natl. Acad. Sci. U. S. A 94, 11663-11668.

Solter, D. and Knowles, B.B., 1978. Monoclonal antibody defining a stage-specific mouse embryonic antigen (SSEA-1). Proc. Natl. Acad. Sci. U. S. A 75, 5565-5569.

Sommer, L., Ma, Q., and Anderson, D.J., 1996. neurogenins, a novel family of atonal-related bHLH transcription factors, are putative mammalian neuronal determination genes that reveal progenitor cell heterogeneity in the developing CNS and PNS. Mol. Cell Neurosci. 8, 221-241.

Song, D.D. and Harlan, R.E., 1994a. Genesis and migration patterns of neurons forming the patch and matrix compartments of the rat striatum. Brain Res. Dev. Brain Res. 83, 233-245.

Song, D.D. and Harlan, R.E., 1994b. The development of enkephalin and substance P neurons in the basal ganglia: insights into neostriatal compartments and the extended amygdala. Brain Res. Dev. Brain Res. 83, 247-261.

Song, M.R. and Ghosh, A., 2004. FGF2-induced chromatin remodeling regulates CNTF-mediated gene expression and astrocyte differentiation. Nat. Neurosci. 7, 229-235.

Spalding, K.L., Bhardwaj, R.D., Buchholz, B.A., Druid, H., and Frisen, J., 2005. Retrospective birth dating of cells in humans. Cell 122, 133-143.

Spassky, N., Olivier, C., Perez-Villegas, E., Goujet-Zalc, C., Martinez, S., Thomas, J., and Zalc, B., 2000. Single or multiple oligodendroglial lineages: a controversy. Glia 29, 143-148.

Spoelgen, R., Hammes, A., Anzenberger, U., Zechner, D., Andersen, O.M., Jerchow, B., and Willnow, T.E., 2005. LRP2/megalin is required for patterning of the ventral telencephalon. Development 132, 405-414.

Stamataki, D., Ulloa, F., Tsoni, S.V., Mynett, A., and Briscoe, J., 2005. A gradient of Gli activity mediates graded Sonic Hedgehog signaling in the neural tube. Genes Dev. 19, 626-641.

Stenman, J., Toresson, H., and Campbell, K., 2003. Identification of two distinct progenitor populations in the lateral ganglionic eminence: implications for striatal and olfactory bulb neurogenesis. J. Neurosci. 23, 167-174.

Stevens, L.C., 1967. Origin of testicular teratomas from primordial germ cells in mice. J. Natl. Cancer Inst. 38, 549-552.

Storck, S., Delbos, F., Stadler, N., Thirion-Delalande, C., Bernex, F., Verthuy, C., Ferrier, P., Weill, J.C., and Reynaud, C.A., 2005. Normal immune system development in mice lacking the Deltex-1 RING finger domain. Mol. Cell Biol. 25, 1437-1445.

Stumm, R.K., Zhou, C., Ara, T., Lazarini, F., Dubois-Dalcq, M., Nagasawa, T., Hollt, V., and Schulz, S., 2003. CXCR4 regulates interneuron migration in the developing neocortex. J. Neurosci. 23, 5123-5130.

Sullivan, M.J., 2008. Banking on cord blood stem cells. Nat. Rev. Cancer 8, 555-563.

Sun, L., Liu, A., and Georgopoulos, K., 1996. Zinc finger-mediated protein interactions modulate Ikaros activity, a molecular control of lymphocyte development. EMBO J. 15, 5358-5369.

Sun, Y., Goderie, S.K., and Temple, S., 2005. Asymmetric distribution of EGFR receptor during mitosis generates diverse CNS progenitor cells. Neuron 45, 873-886.

Sun, Y., Nadal-Vicens, M., Misono, S., Lin, M.Z., Zubiaga, A., Hua, X., Fan, G., and Greenberg, M.E., 2001. Neurogenin promotes neurogenesis and inhibits glial differentiation by independent mechanisms. Cell 104, 365-376.

Suslov, O.N., Kukekov, V.G., Ignatova, T.N., and Steindler, D.A., 2002. Neural stem cell heterogeneity demonstrated by molecular phenotyping of clonal neurospheres. Proc. Natl. Acad. Sci. U. S. A 99, 14506-14511.

Tabayashi, T., Ishimaru, F., Takata, M., Kataoka, I., Nakase, K., Kozuka, T., and Tanimoto, M., 2007. Characterization of the short isoform of Helios overexpressed in patients with T-cell malignancies. Cancer Sci. 98, 182-188.

Takahashi, H. and Liu, F.C., 2006. Genetic patterning of the mammalian telencephalon by morphogenetic molecules and transcription factors. Birth Defects Res. C. Embryo. Today 78, 256-266.

Takahashi, K., Liu, F.C., Hirokawa, K., and Takahashi, H., 2003. Expression of Foxp2, a gene involved in speech and language, in the developing and adult striatum. J. Neurosci. Res. 73, 61-72.

Takahashi, K. and Yamanaka, S., 2006. Induction of pluripotent stem cells from mouse embryonic and adult fibroblast cultures by defined factors. Cell 126, 663-676.

Takahashi, T., Nowakowski, R.S., and Caviness, V.S. Jr., 1995. The cell cycle of the pseudostratified ventricular epithelium of the embryonic murine cerebral wall. J. Neurosci. 15, 6046-6057.

Takemoto, T., Uchikawa, M., Kamachi, Y., and Kondoh, H., 2006. Convergence of Wnt and FGF signals in the genesis of posterior neural plate through activation of the Sox2 enhancer N-1. Development 133, 297-306.

Takeyama, K., Aguiar, R.C., Gu, L., He, C., Freeman, G.J., Kutok, J.L., Aster, J.C., and Shipp, M.A., 2003. The BAL-binding protein BBAP and related Deltex family members exhibit ubiquitin-protein isopeptide ligase activity. J. Biol. Chem. 278, 21930-21937.

Takizawa, T., Nakashima, K., Namihira, M., Ochiai, W., Uemura, A., Yanagisawa, M., Fujita, N., Nakao, M., and Taga, T., 2001. DNA methylation is a critical cell-intrinsic determinant of astrocyte differentiation in the fetal brain. Dev. Cell 1, 749-758.

Tanabe, Y., William, C., and Jessell, T.M., 1998. Specification of motor neuron identity by the MNR2 homeodomain protein. Cell 95, 67-80.

Tanaka, S., Kamachi, Y., Tanouchi, A., Hamada, H., Jing, N., and Kondoh, H., 2004. Interplay of SOX and POU factors in regulation of the Nestin gene in neural primordial cells. Mol. Cell Biol. 24, 8834-8846.

Tanigaki, K. and Honjo, T., 2007. Regulation of lymphocyte development by Notch signaling. Nat. Immunol. 8, 451-456.

Tao, W. and Lai, E., 1992. Telencephalon-restricted expression of BF-1, a new member of the HNF-3/fork head gene family, in the developing rat brain. Neuron 8, 957-966.

Tekki-Kessaris, N., Woodruff, R., Hall, A.C., Gaffield, W., Kimura, S., Stiles, C.D., Rowitch, D.H., and Richardson, W.D., 2001. Hedgehog-dependent oligodendrocyte lineage specification in the telencephalon. Development 128, 2545-2554.

Temple, S., 2001. The development of neural stem cells. Nature 414, 112-117.

Temple, S. and Raff, M.C., 1986. Clonal analysis of oligodendrocyte development in culture: evidence for a developmental clock that counts cell divisions. Cell 44, 773-779.

Teramoto, T., Qiu, J., Plumier, J.C., and Moskowitz, M.A., 2003. EGF amplifies the replacement of parvalbumin-expressing striatal interneurons after ischemia. J. Clin. Invest 111, 1125-1132.

Thomas, P. and Beddington, R., 1996. Anterior primitive endoderm may be responsible for patterning the anterior neural plate in the mouse embryo. Curr. Biol. 6, 1487-1496.

Thomson, J.A., Itskovitz-Eldor, J., Shapiro, S.S., Waknitz, M.A., Swiergiel, J.J., Marshall, V.S., and Jones, J.M., 1998. Embryonic stem cell lines derived from human blastocysts. Science 282, 1145-1147.

Tikoo, R., Casaccia-Bonnefil, P., Chao, M.V., and Koff, A., 1997. Changes in cyclin-dependent kinase 2 and p27kip1 accompany glial cell differentiation of central glia-4 cells. J. Biol. Chem. 272, 442-447.

Timsit, S.G., Bally-Cuif, L., Colman, D.R., and Zalc, B., 1992. DM-20 mRNA is expressed during the embryonic development of the nervous system of the mouse. J. Neurochem. 58, 1172-1175.

Tokunaga, A., Kohyama, J., Yoshida, T., Nakao, K., Sawamoto, K., and Okano, H., 2004. Mapping spatio-temporal activation of Notch signaling during neurogenesis and gliogenesis in the developing mouse brain. J. Neurochem. 90, 142-154.

Tomita, K., Nakanishi, S., Guillemot, F., and Kageyama, R., 1996. Mash1 promotes neuronal differentiation in the retina. Genes Cells 1, 765-774.

Toresson, H. and Campbell, K., 2001. A role for Gsh1 in the developing striatum and olfactory bulb of Gsh2 mutant mice. Development 128, 4769-4780.

Toresson, H., Mata de Urquiza, A., Fagerstrom, C., Perlmann, T., and Campbell, K., 1999. Retinoids are produced by glia in the lateral ganglionic eminence and regulate striatal neuron differentiation. Development 126, 1317-1326.

Toresson, H., Parmar, M., and Campbell, K., 2000a. Expression of Meis and Pbx genes and their protein products in the developing telencephalon: implications for regional differentiation. Mech. Dev. 94, 183-187.

Toresson, H., Potter, S.S., and Campbell, K., 2000b. Genetic control of dorsal-ventral identity in the telencephalon: opposing roles for Pax6 and Gsh2. Development 127, 4361-4371.

Toyooka, Y., Tsunekawa, N., Akasu, R., and Noce, T., 2003. Embryonic stem cells can form germ cells in vitro. Proc. Natl. Acad. Sci. U. S. A 100, 11457-11462.

Tropepe, V., Hitoshi, S., Sirard, C., Mak, T.W., Rossant, J., and van der Kooy D., 2001. Direct neural fate specification from embryonic stem cells: a primitive mammalian neural stem cell stage acquired through a default mechanism. Neuron 30, 65-78.

Tropepe, V., Sibilia, M., Ciruna, B.G., Rossant, J., Wagner, E.F., and van der Kooy, D., 1999. Distinct neural stem cells proliferate in response to EGF and FGF in the developing mouse telencephalon. Dev. Biol. 208, 166-188.

Tucker, E.S., Segall, S., Gopalakrishna, D., Wu, Y., Vernon, M., Polleux, F., and LaMantia, A.S., 2008. Molecular specification and patterning of progenitor cells in the lateral and medial ganglionic eminences. J. Neurosci. 28, 9504-9518.

Unger, C., Skottman, H., Blomberg, P., Dilber, M.S., and Hovatta, O., 2008. Good manufacturing practice and clinical-grade human embryonic stem cell lines. Hum. Mol. Genet. 17, R48-R53.

Urbanek, K., Cesselli, D., Rota, M., Nascimbene, A., De, A.A., Hosoda, T., Bearzi, C., Boni, A., Bolli, R., Kajstura, J., Anversa, P., and Leri, A., 2006. Stem cell niches in the adult mouse heart. Proc. Natl. Acad. Sci. U. S. A 103, 9226-9231.

Vallstedt, A., Klos, J.M., and Ericson, J., 2005. Multiple dorsoventral origins of oligodendrocyte generation in the spinal cord and hindbrain. Neuron 45, 55-67.

Van der Kooy, D. and Fishell, G., 1987. Neuronal birthdate underlies the development of striatal compartments. Brain Res. 401, 155-161.

Van Lookeren, C.M. and Gill, R., 1998. Tumor-suppressor p53 is expressed in proliferating and newly formed neurons of the embryonic and postnatal rat brain: comparison with expression of the cell cycle regulators p21Waf1/Cip1, p27Kip1, p57Kip2, p16Ink4a, cyclin G1, and the proto-oncogene Bax. J. Comp Neurol. 397, 181-198.

Van Praag, H., Kempermann, G., and Gage, F.H., 2000. Neural consequences of environmental enrichment. Nat. Rev. Neurosci 1, 191-198.

Vincent, S.R., Staines, W.A., and Fibiger, H.C., 1983. Histochemical demonstration of separate populations of somatostatin and cholinergic neurons in the rat striatum. Neurosci. Lett. 35, 111-114.

Viti, J., Feathers, A., Phillips, J., and Lillien, L., 2003. Epidermal growth factor receptors control competence to interpret leukemia inhibitory factor as an astrocyte inducer in developing cortex. J. Neurosci. 23, 3385-3393.

Von, O.T., Syu, L.J., and Mellerick, D.M., 2007. Conserved properties of the Drosophila homeodomain protein, Ind. Mech. Dev. 124, 925-934.

Vonsattel, J.P., Myers, R.H., Stevens, T.J., Ferrante, R.J., Bird, E.D., and Richardson, E.P. Jr., 1985. Neuropathological classification of Huntington's disease. J. Neuropathol. Exp. Neurol. 44, 559-577.

Voorn, P., Kalsbeek, A., Jorritsma-Byham, B., and Groenewegen, H.J., 1988. The pre- and postnatal development of the dopaminergic cell groups in the ventral mesencephalon and the dopaminergic innervation of the striatum of the rat. Neuroscience 25, 857-887.

Waclaw, R.R., Wang, B., and Campbell, K., 2004. The homeobox gene Gsh2 is required for retinoid production in the embryonic mouse telencephalon. Development 131, 4013-4020.

Wang, H.F. and Liu, F.C., 2001. Developmental restriction of the LIM homeodomain transcription factor Islet-1 expression to cholinergic neurons in the rat striatum. Neuroscience 103, 999-1016.

Wang, S., Sdrulla, A.D., diSibio, G., Bush, G., Nofziger, D., Hicks, C., Weinmaster, G., and Barres, B.A., 1998. Notch receptor activation inhibits oligodendrocyte differentiation. Neuron 21, 63-75.

Watanabe, K., Kamiya, D., Nishiyama, A., Katayama, T., Nozaki, S., Kawasaki, H., Watanabe, Y., Mizuseki, K., and Sasai, Y., 2005. Directed differentiation of telencephalic precursors from embryonic stem cells. Nat. Neurosci. 8, 288-296.

Watts, C. and Dunnett, S.B., 2000. Towards a protocol for the preparation and delivery of striatal tissue for clinical trials of transplantation in Huntington's disease. Cell Transplant. 9, 223-234.

Weinstock-Guttman, B., Ramanathan, M., and Zivadinov, R., 2008. Interferon-beta treatment for relapsing multiple sclerosis. Expert. Opin. Biol. Ther. 8, 1435-1447.

Weissman, I.L., 2000. Translating stem and progenitor cell biology to the clinic: barriers and opportunities. Science 287, 1442-1446.

Willett, C.E., Kawasaki, H., Amemiya, C.T., Lin, S., and Steiner, L.A., 2001. Ikaros expression as a marker for lymphoid progenitors during zebrafish development. Dev. Dyn. 222, 694-698.

Williams, R.L., Hilton, D.J., Pease, S., Willson, T.A., Stewart, C.L., Gearing, D.P., Wagner, E.F., Metcalf, D., Nicola, N.A., and Gough, N.M., 1988. Myeloid leukaemia inhibitory factor maintains the developmental potential of embryonic stem cells. Nature 336, 684-687.

Wilson, L. and Maden, M., 2005. The mechanisms of dorsoventral patterning in the vertebrate neural tube. Dev. Biol. 282, 1-13.

Wilson, S.W. and Houart, C., 2004. Early steps in the development of the forebrain. Dev. Cell 6, 167-181.

Winandy, S., Wu, P., and Georgopoulos, K., 1995. A dominant mutation in the Ikaros gene leads to rapid development of leukemia and lymphoma. Cell 83, 289-299.

Wobus, A.M., Holzhausen, H., Jakel, P., and Schoneich, J., 1984. Characterization of a pluripotent stem cell line derived from a mouse embryo. Exp. Cell Res. 152, 212-219.

Wonders, C.P. and Anderson, S.A., 2006. The origin and specification of cortical interneurons. Nat. Rev. Neurosci. 7, 687-696.

Xu, T. and Artavanis-Tsakonas, S., 1990. deltex, a locus interacting with the neurogenic genes, Notch, Delta and mastermind in Drosophila melanogaster. Genetics 126, 665-677.

Yamada, T., 1994. Caudalization by the amphibian organizer: brachyury, convergent extension and retinoic acid. Development 120, 3051-3062.

Yamamoto, N., Yamamoto, S., Inagaki, F., Kawaichi, M., Fukamizu, A., Kishi, N., Matsuno, K., Nakamura, K., Weinmaster, G., Okano, H., and Nakafuku, M., 2001. Role of Deltex-1 as a transcriptional regulator downstream of the Notch receptor. J. Biol. Chem. 276, 45031-45040.

Yao, J., Lai, E., and Stifani, S., 2001. The winged-helix protein brain factor 1 interacts with groucho and hes proteins to repress transcription. Mol. Cell Biol. 21, 1962-1972.

Yao, J., Liu, Y., Husain, J., Lo, R., Palaparti, A., Henderson, J., and Stifani, S., 1998. Combinatorial expression patterns of individual TLE proteins during cell determination and differentiation suggest non-redundant functions for mammalian homologs of Drosophila Groucho. Dev. Growth Differ. 40, 133-146.

Ying, Q.L. and Smith, A.G., 2003. Defined conditions for neural commitment and differentiation. Methods Enzymol. 365, 327-341.

Yoshida, T., Ng, S.Y., Zuniga-Pflucker, J.C., and Georgopoulos, K., 2006. Early hematopoietic lineage restrictions directed by Ikaros. Nat. Immunol. 7, 382-391.

Young, K.M., Fogarty, M., Kessaris, N., and Richardson, W.D., 2007. Subventricular zone stem cells are heterogeneous with respect to their embryonic origins and neurogenic fates in the adult olfactory bulb. J. Neurosci. 27, 8286-8296.

Yun, K., Fischman, S., Johnson, J., Hrabe de, A.M., Weinmaster, G., and Rubenstein, J.L., 2002. Modulation of the notch signaling by Mash1 and Dlx1/2 regulates sequential specification and differentiation of progenitor cell types in the subcortical telencephalon. Development 129, 5029-5040.

Yun, K., Garel, S., Fischman, S., and Rubenstein, J.L., 2003. Patterning of the lateral ganglionic eminence by the Gsh1 and Gsh2 homeobox genes regulates striatal and olfactory bulb histogenesis and the growth of axons through the basal ganglia. J. Comp Neurol. 461, 151-165.

Yun, K., Potter, S., and Rubenstein, J.L., 2001. Gsh2 and Pax6 play complementary roles in dorsoventral patterning of the mammalian telencephalon. Development 128, 193-205.

Zerucha, T., Stuhmer, T., Hatch, G., Park, B.K., Long, Q., Yu, G., Gambarotta, A., Schultz, J.R., Rubenstein, J.L., and Ekker, M., 2000. A highly conserved enhancer in the Dlx5/Dlx6 intergenic region is the site of cross-regulatory interactions between Dlx genes in the embryonic forebrain. J. Neurosci. 20, 709-721.

Zetterstrom, R.H., Simon, A., Giacobini, M.M., Eriksson, U., and Olson, L., 1994. Localization of cellular retinoid-binding proteins suggests specific roles for retinoids in the adult central nervous system. Neuroscience 62, 899-918.

Zhang, J., Niu, C., Ye, L., Huang, H., He, X., Tong, W.G., Ross, J., Haug, J., Johnson, T., Feng, J.Q., Harris, S., Wiedemann, L.M., Mishina, Y., and Li, L., 2003. Identification of the haematopoietic stem cell niche and control of the niche size. Nature 425, 836-841.

Zhang, S.C., Wernig, M., Duncan, I.D., Brustle, O., and Thomson, J.A., 2001. In vitro differentiation of transplantable neural precursors from human embryonic stem cells. Nat. Biotechnol. 19, 1129-1133.

Zhang, Z., Swindle, C.S., Bates, J.T., Ko, R., Cotta, C.V., and Klug, C.A., 2007. Expression of a non-DNA-binding isoform of Helios induces T-cell lymphoma in mice. Blood 109, 2190-2197.

Zhou, Q. and Anderson, D.J., 2002. The bHLH transcription factors OLIG2 and OLIG1 couple neuronal and glial subtype specification. Cell 109, 61-73.

Zhu, C.C., Dyer, M.A., Uchikawa, M., Kondoh, H., Lagutin, O.V., and Oliver, G., 2002. Six3-mediated auto repression and eye development requires its interaction with members of the Groucho-related family of co-repressors. Development 129, 2835-2849.

Zhu, Y., Li, H., Zhou, L., Wu, J.Y., and Rao, Y., 1999. Cellular and molecular guidance of GABAergic neuronal migration from an extracortical origin to the neocortex. Neuron 23, 473-485.

Zigova, T., Pencea, V., Wiegand, S.J., and Luskin, M.B., 1998. Intraventricular administration of BDNF increases the number of newly generated neurons in the adult olfactory bulb. Mol. Cell Neurosci 11, 234-245.

Zuccato, C., Ciammola, A., Rigamonti, D., Leavitt, B.R., Goffredo, D., Conti, L., MacDonald, M.E., Friedlander, R.M., Silani, V., Hayden, M.R., Timmusk, T., Sipione, S., and Cattaneo, E., 2001. Loss of huntingtin-mediated BDNF gene transcription in Huntington's disease. Science 293, 493-498.