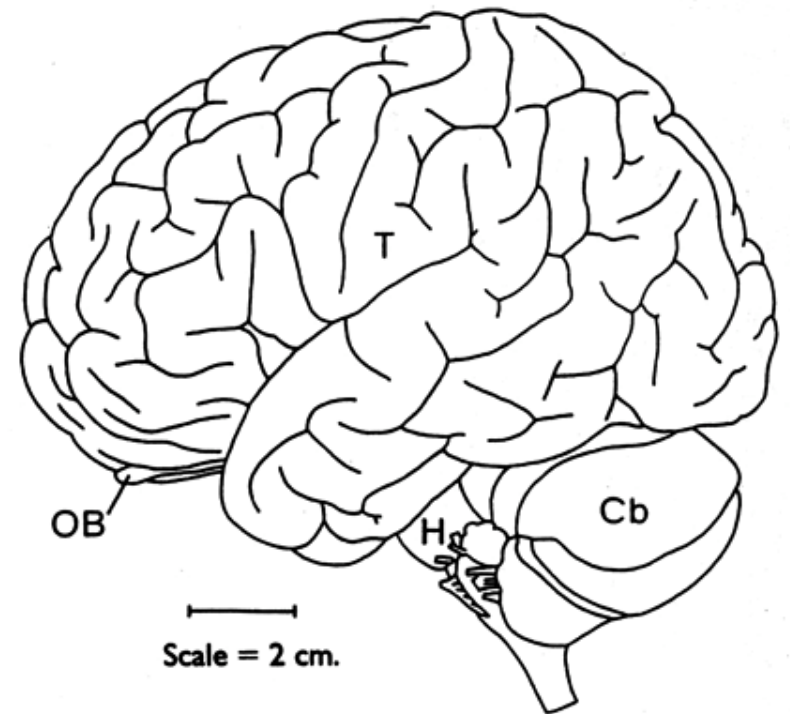
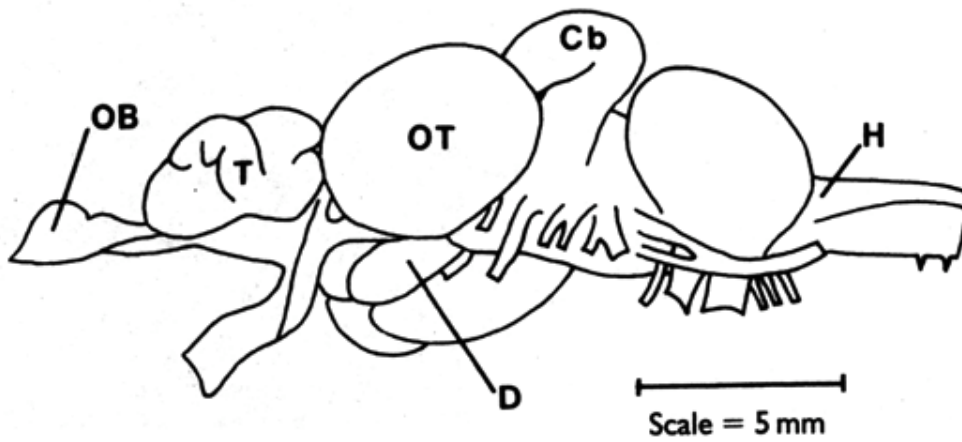
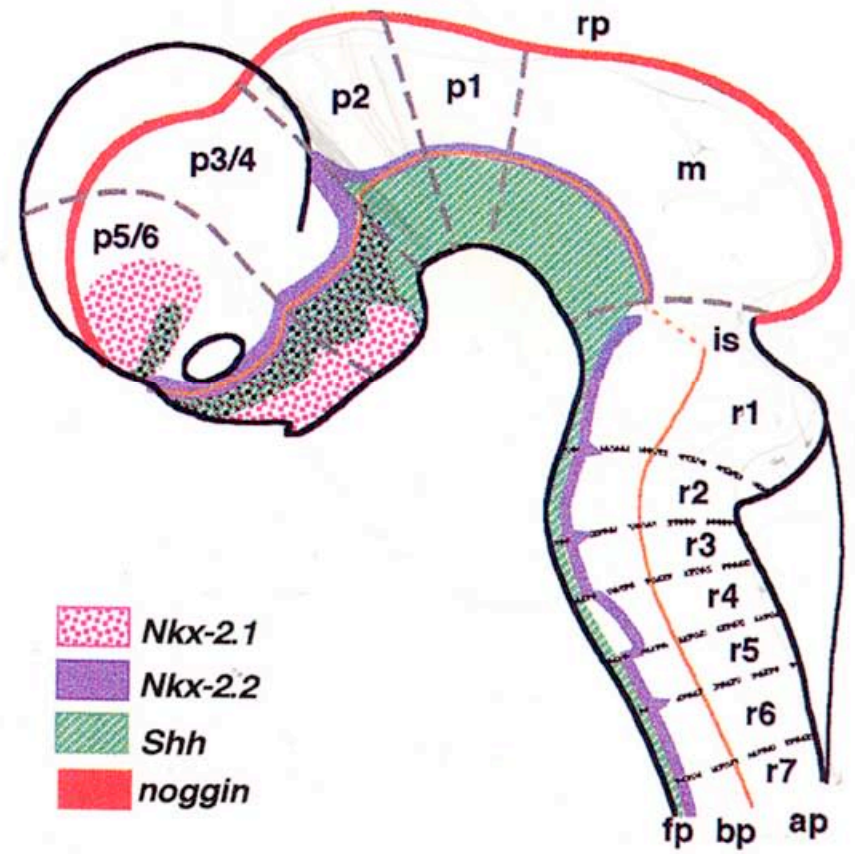
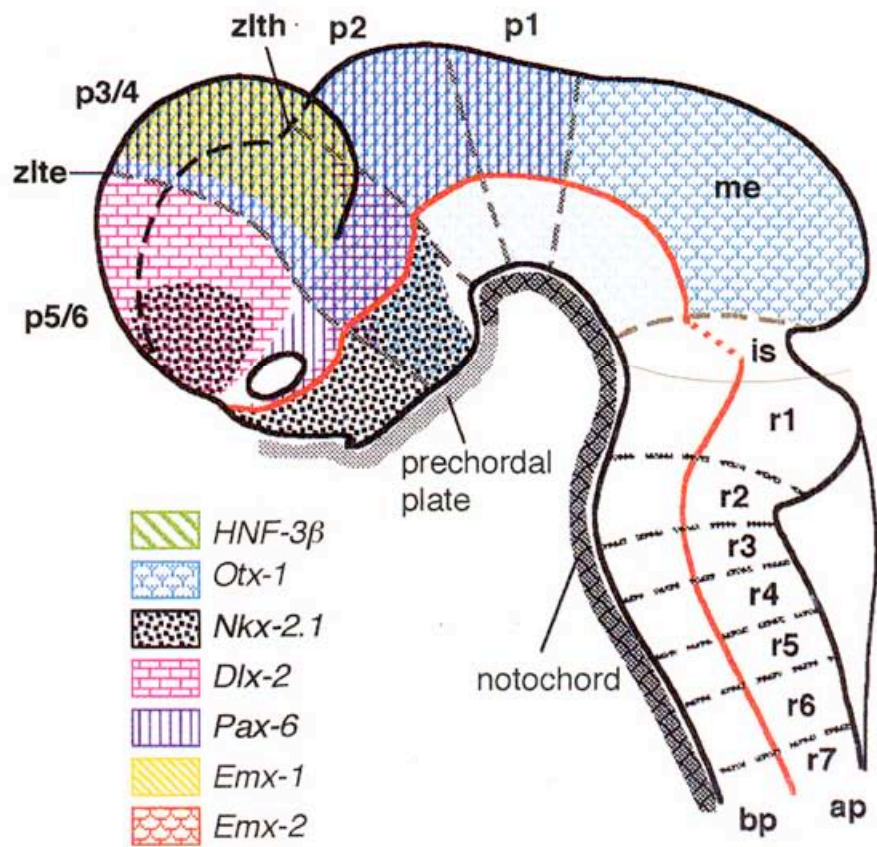


Fish vs human



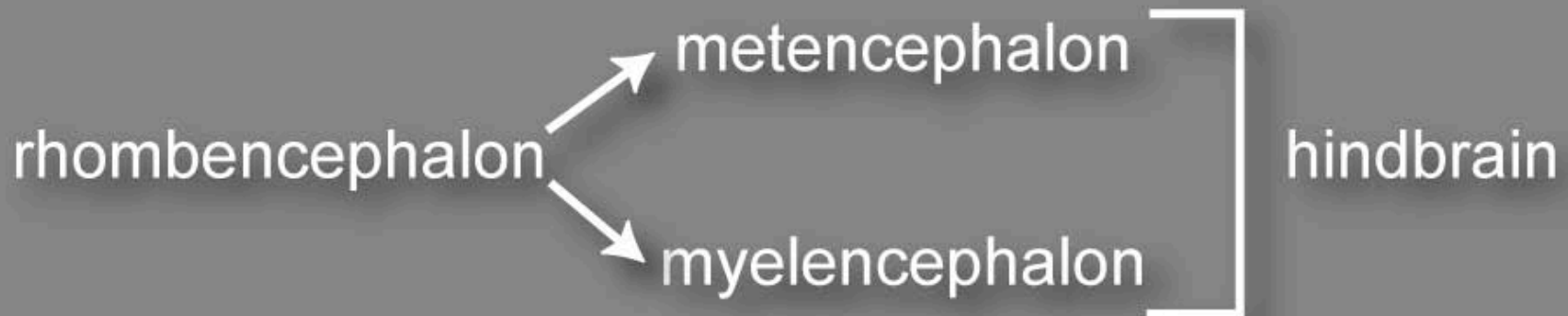
From Butler and Hodos, 1996

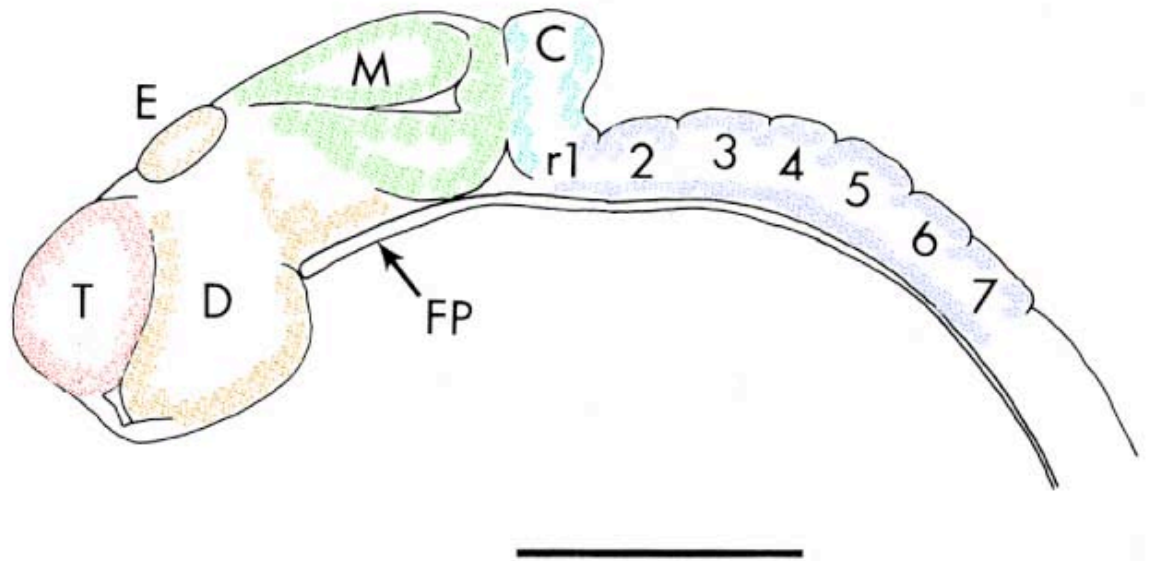
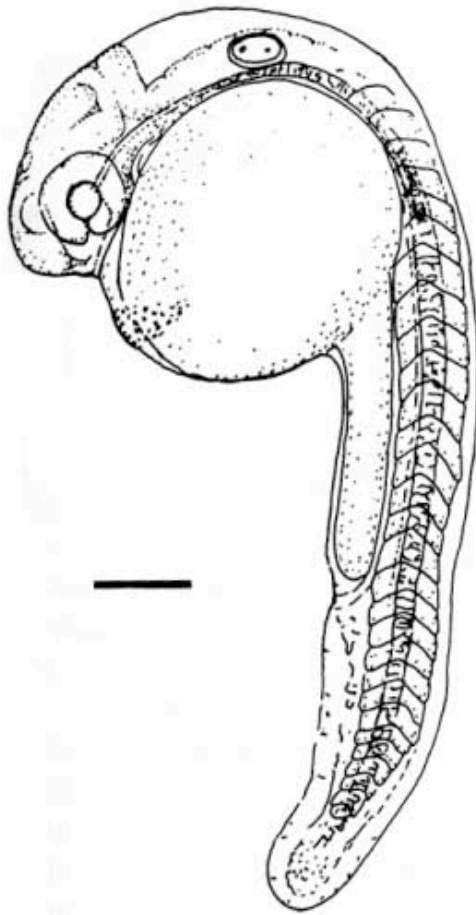
10.5 dpc brain



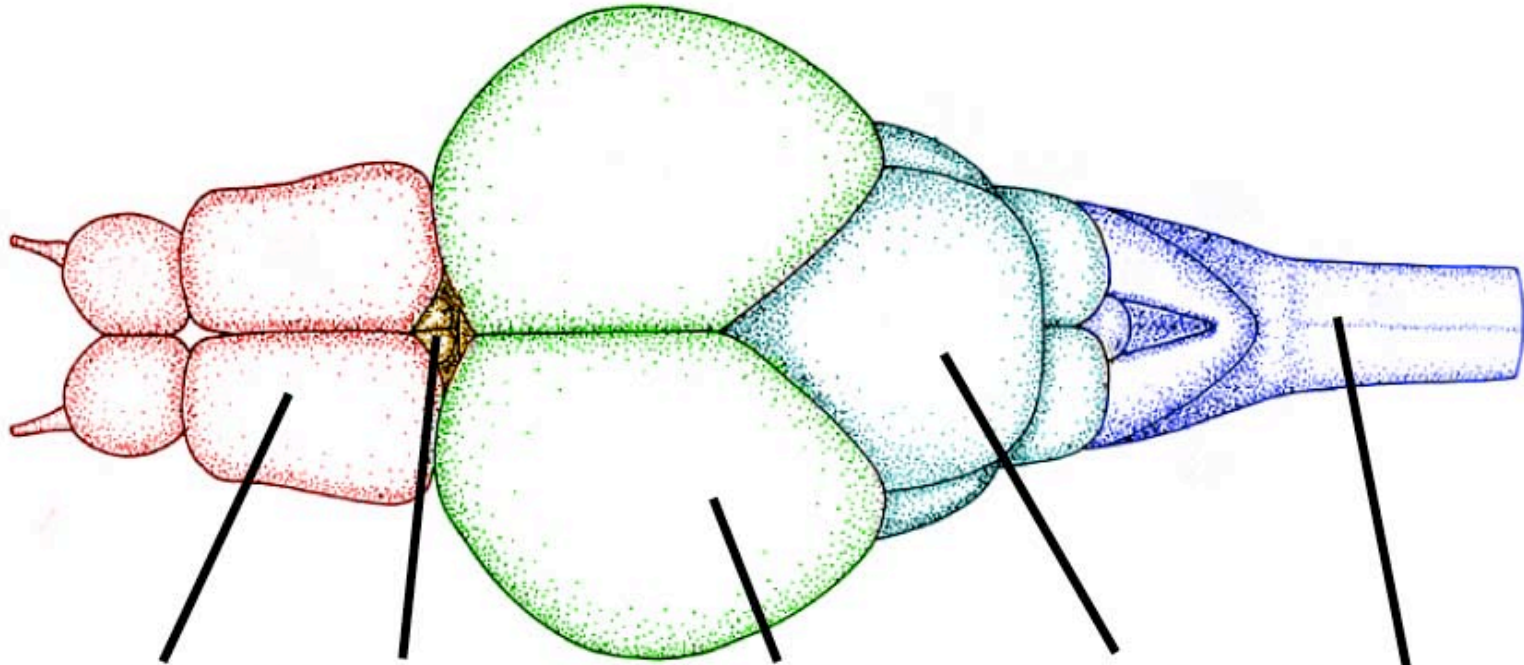
From Rubenstein, 1997

Regional organization of the brain

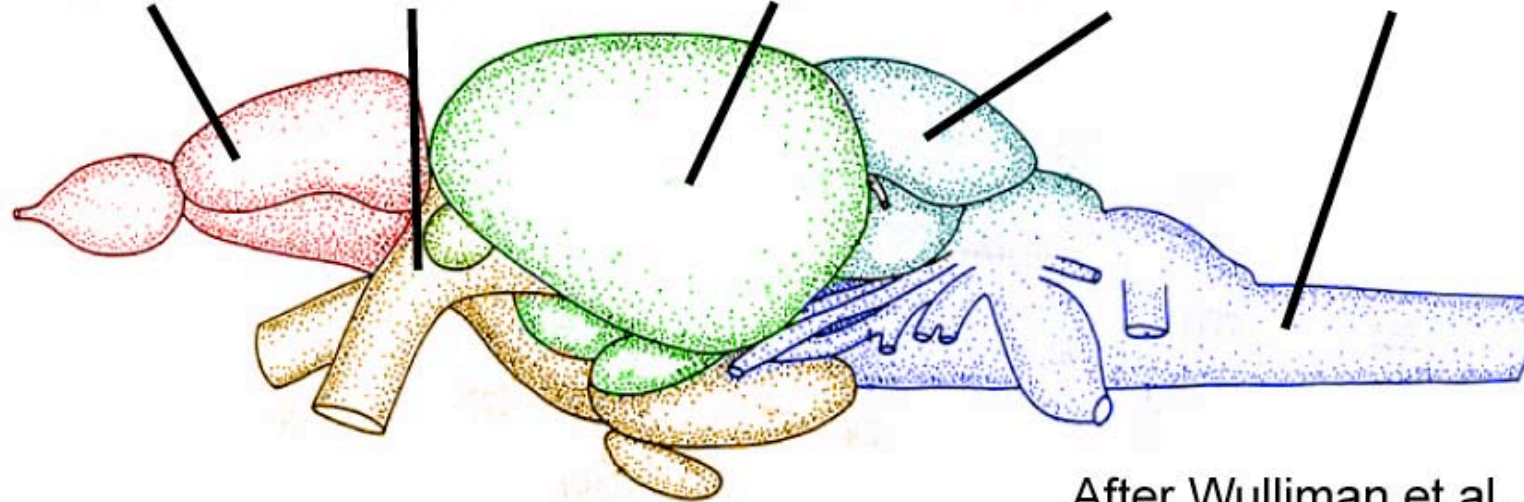




After Kimmel et al, 1995

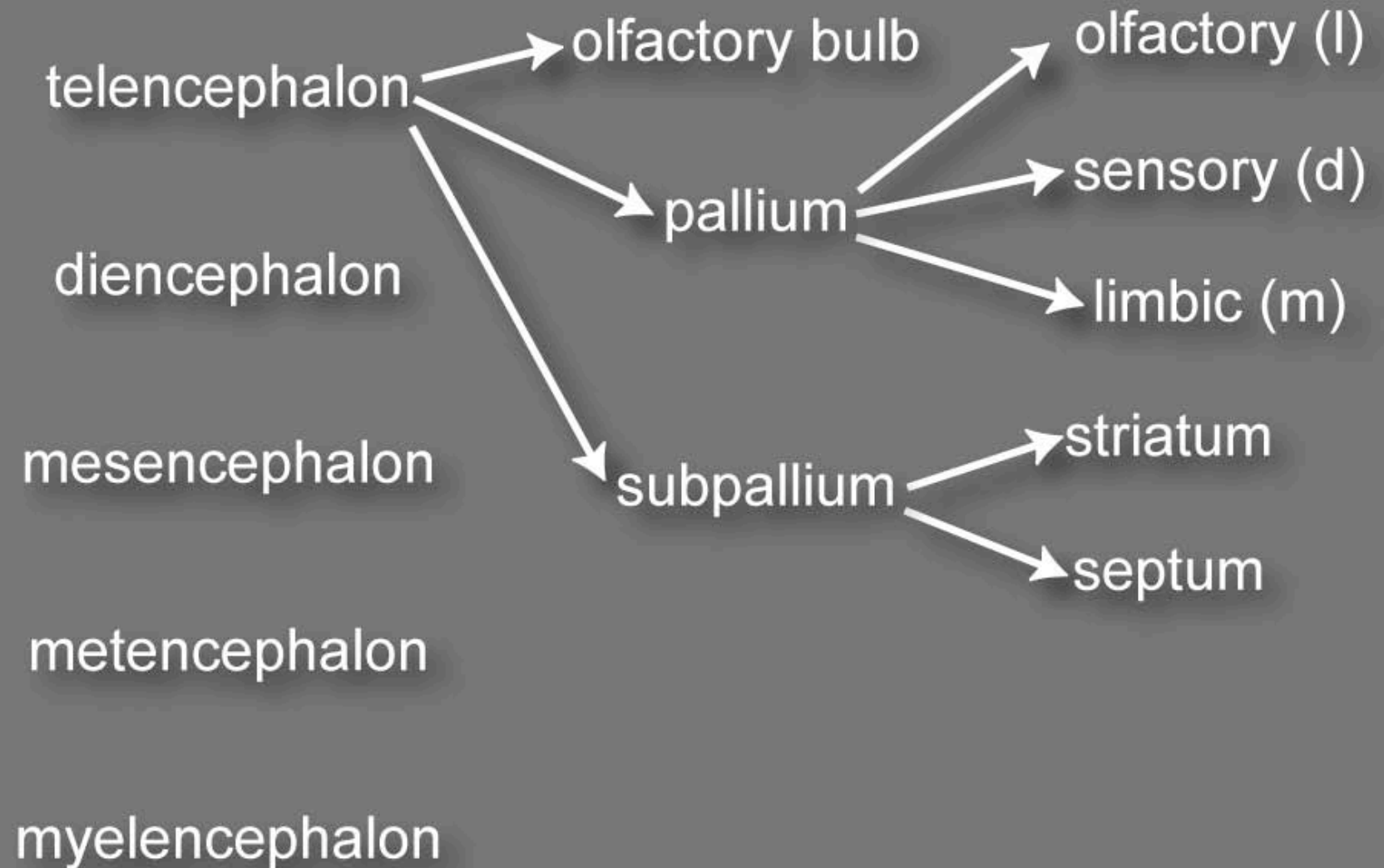


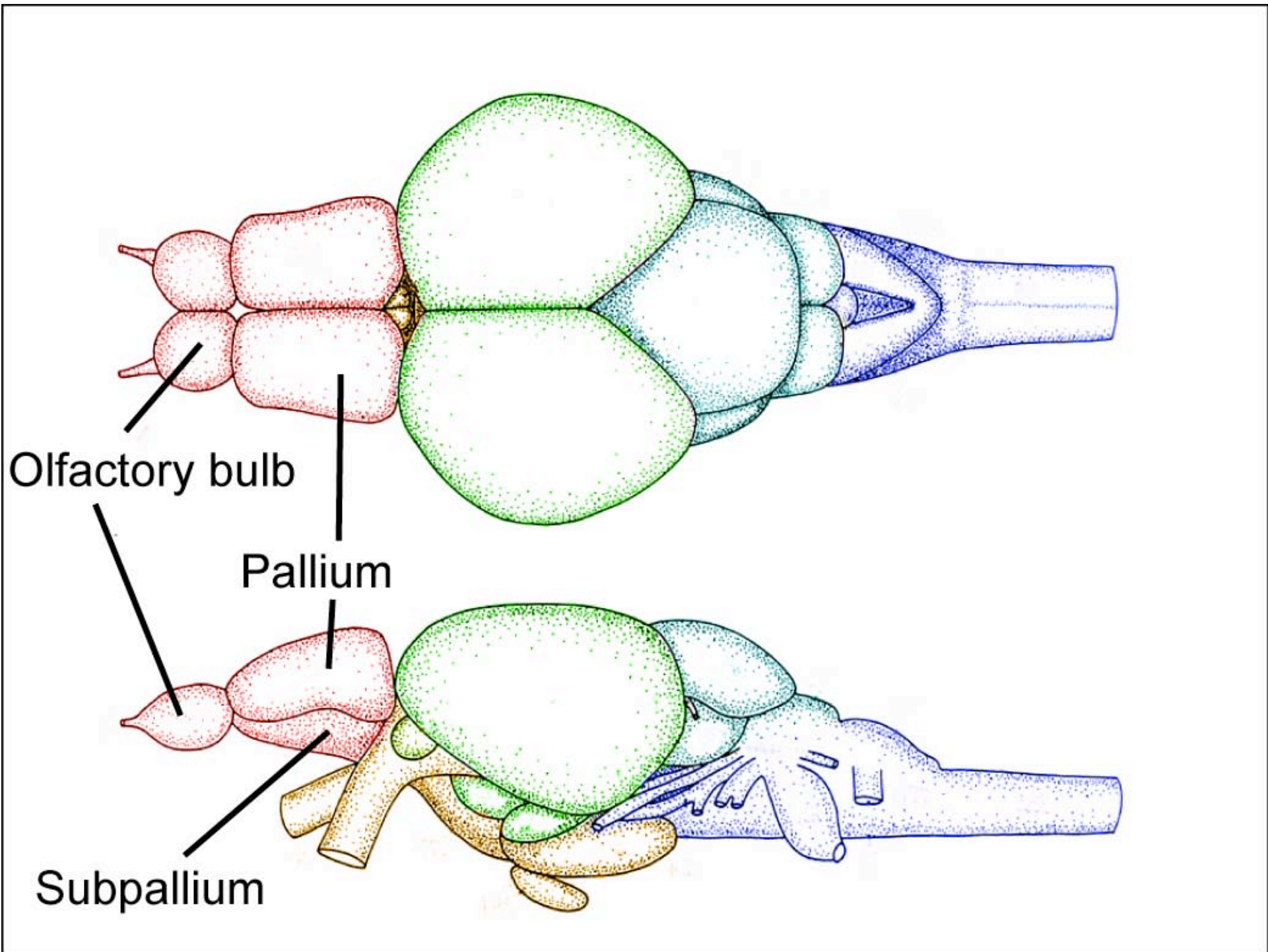
Telencephalon Diencephalon Mesencephalon Cerebellum Rhombencephalon

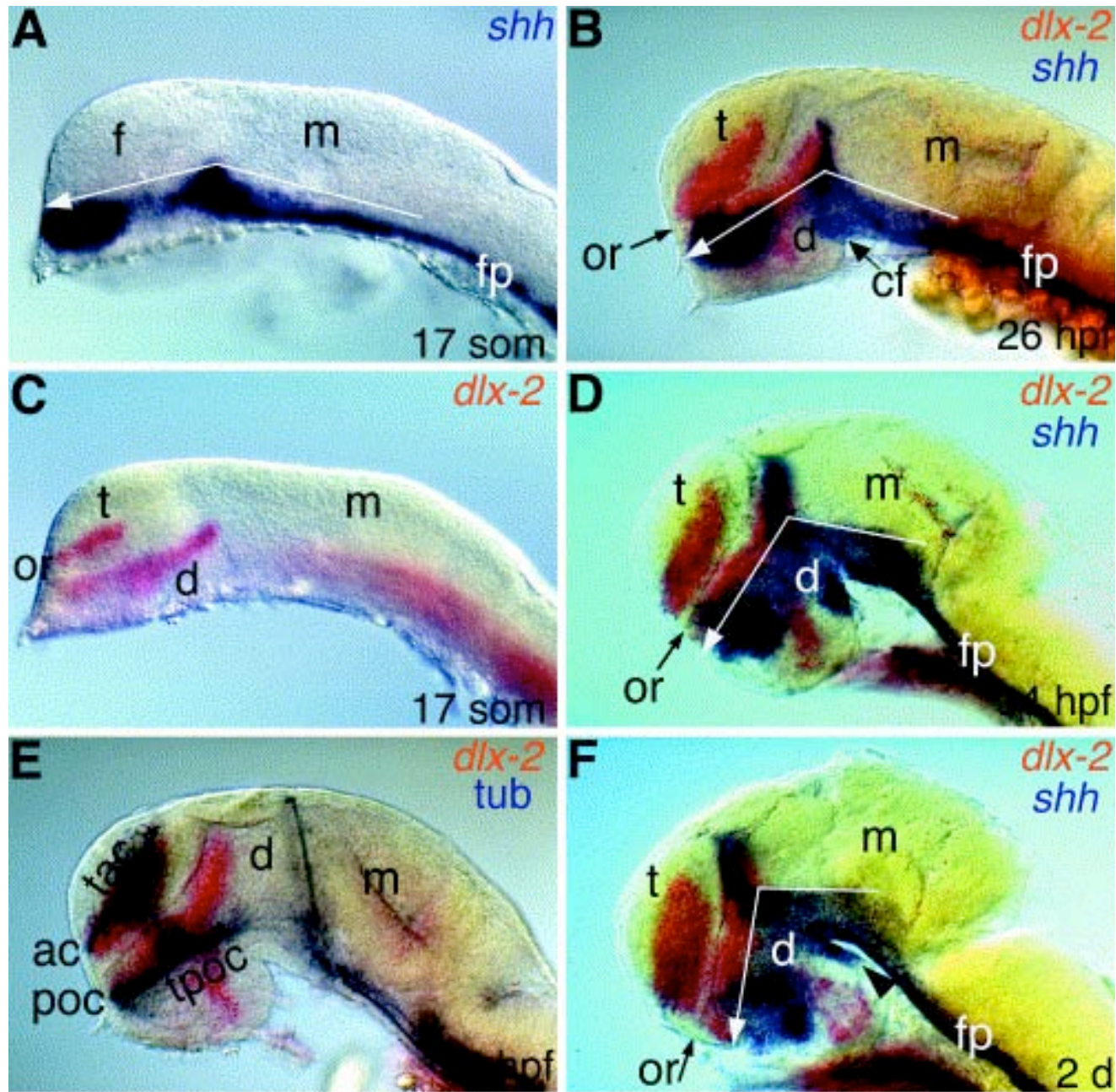


After Wulliman et al., 1996

Generalized Schema

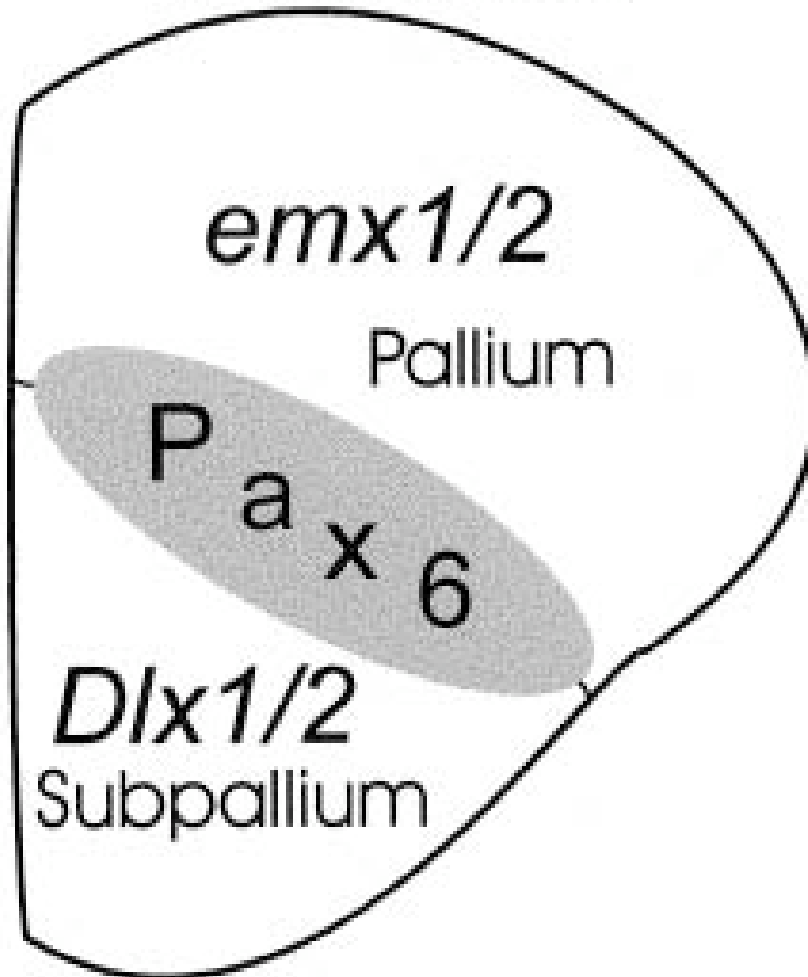


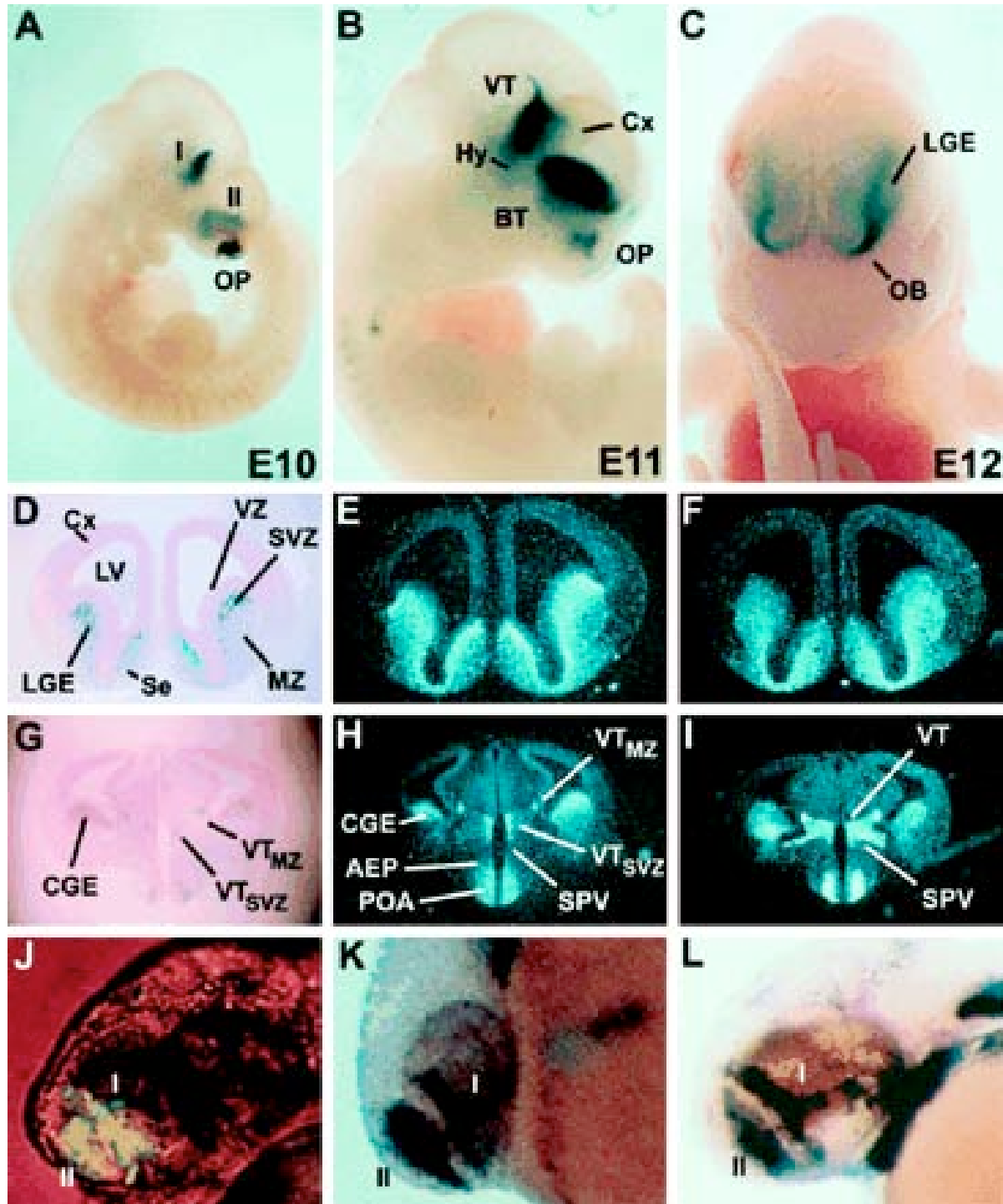


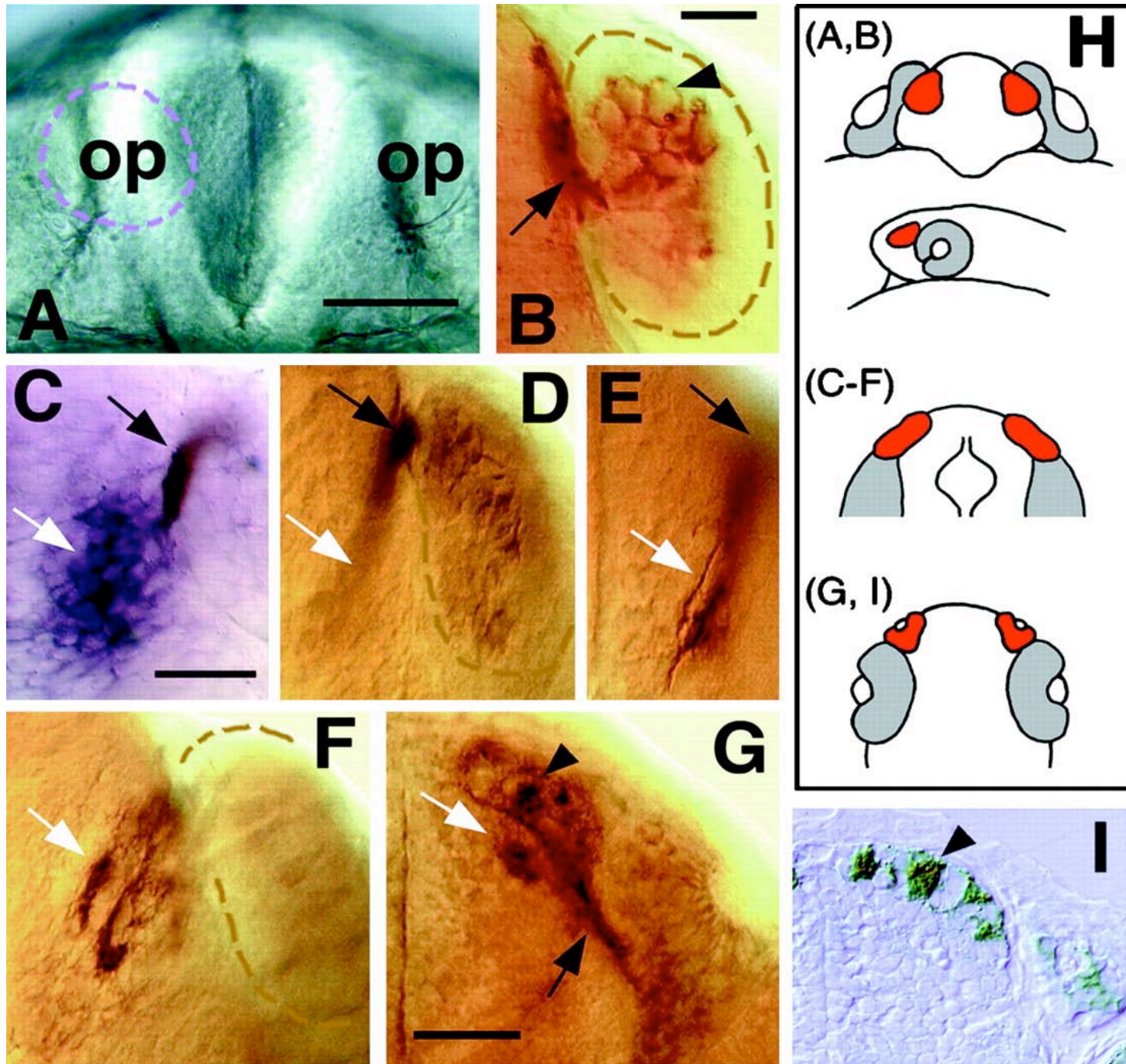


From Hauptmann and Gerster, 2000

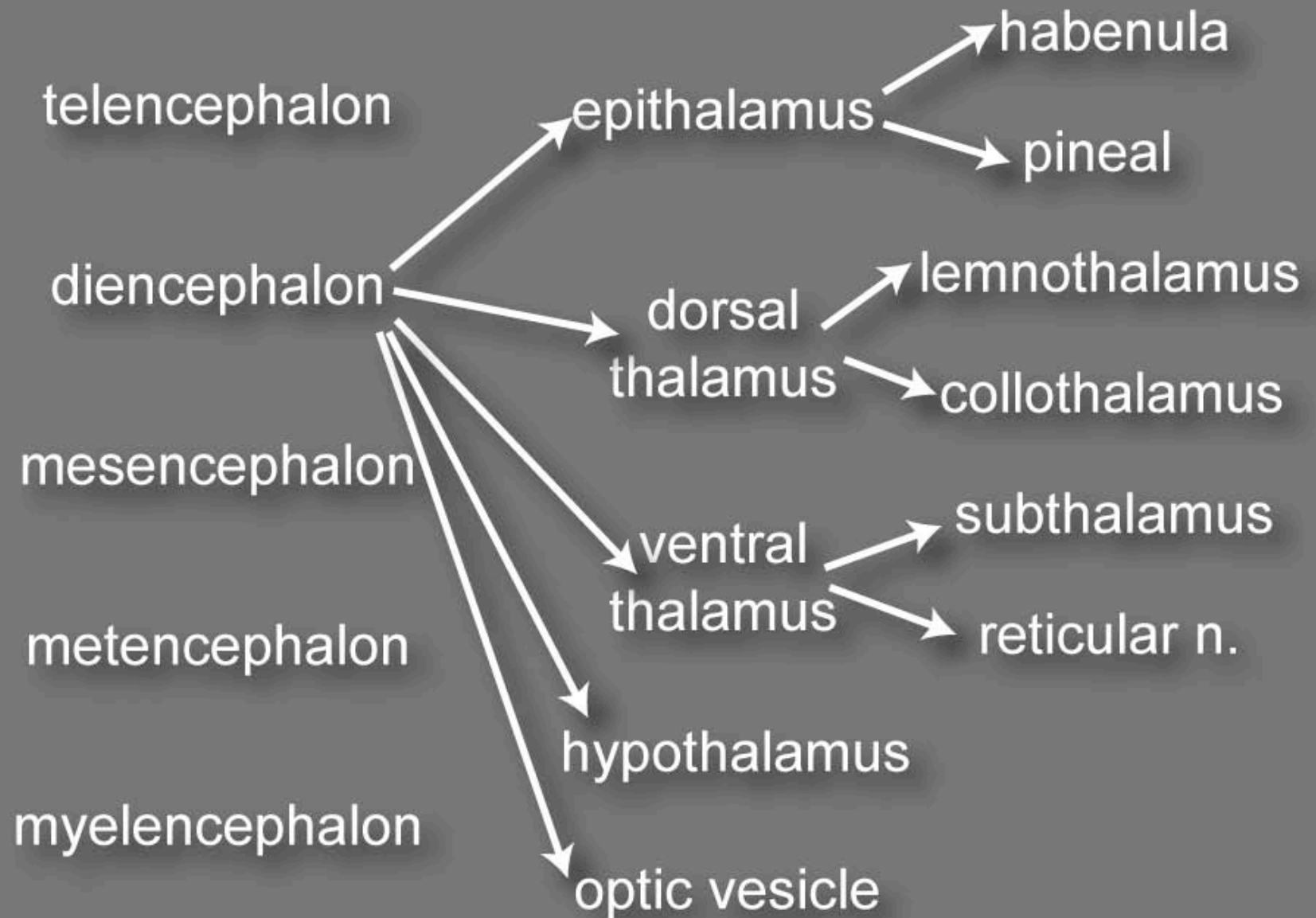
Early Teleostean Telencephalon
Regulatory Genes

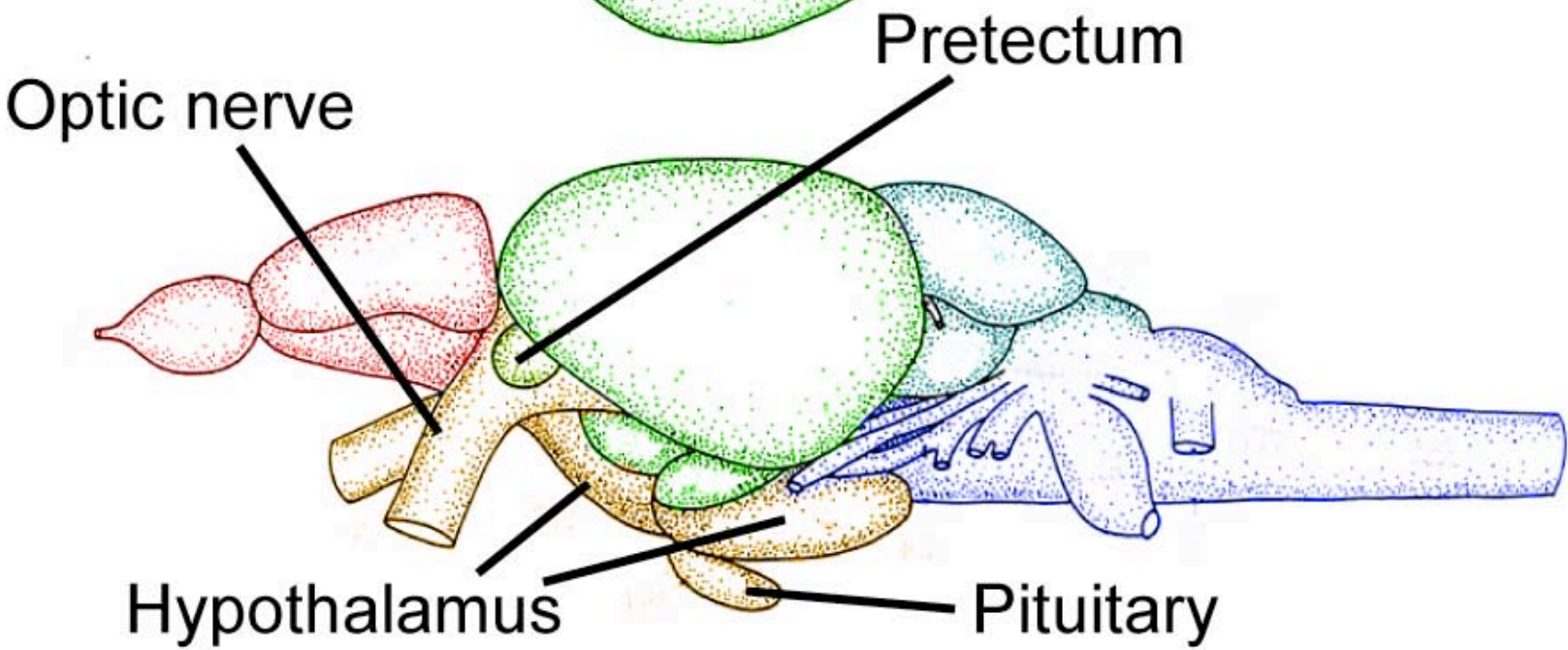
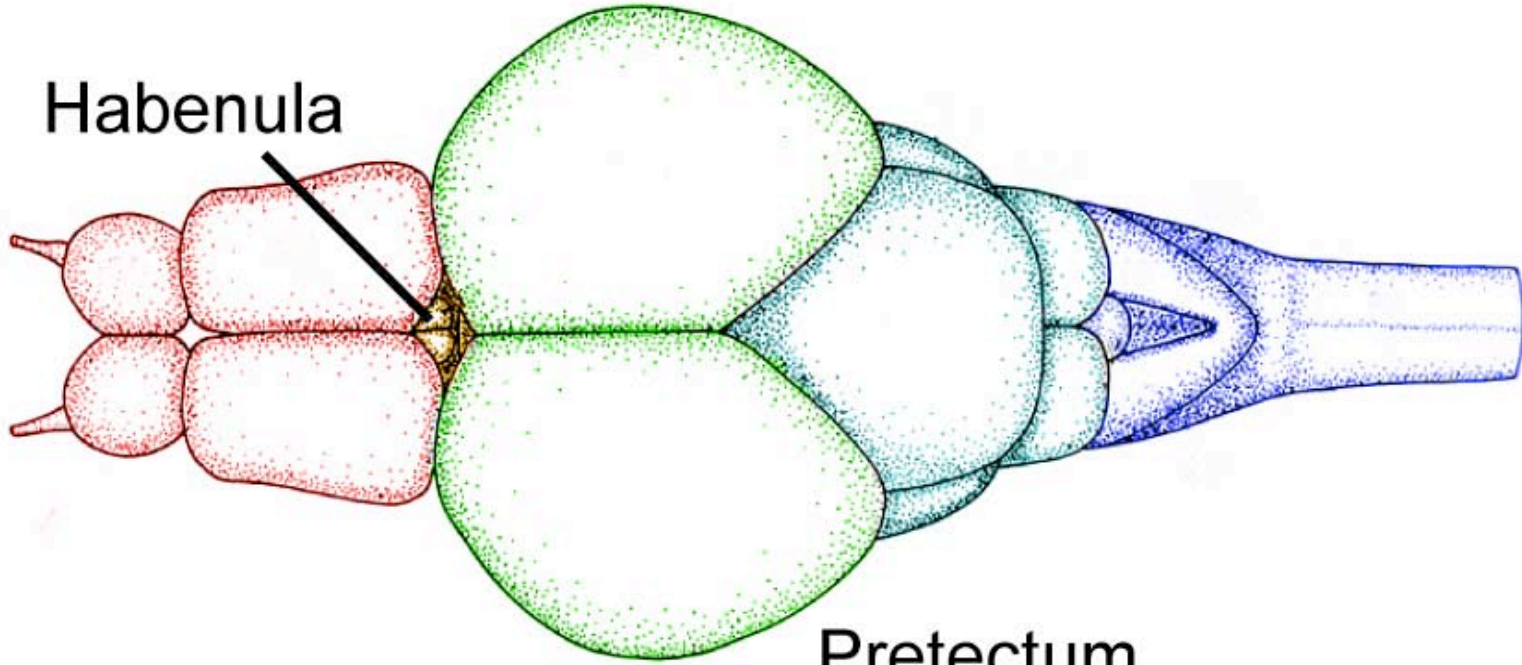




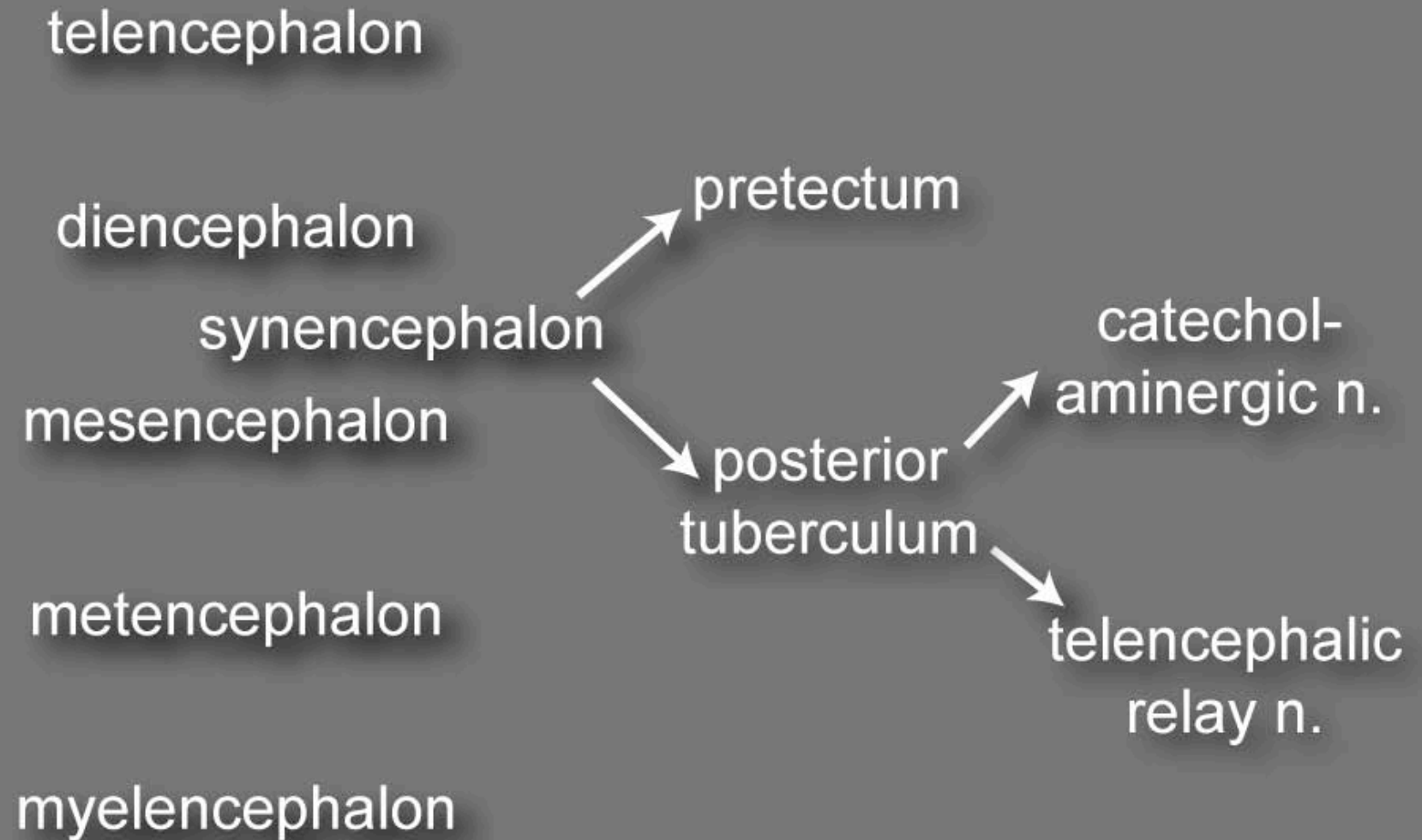


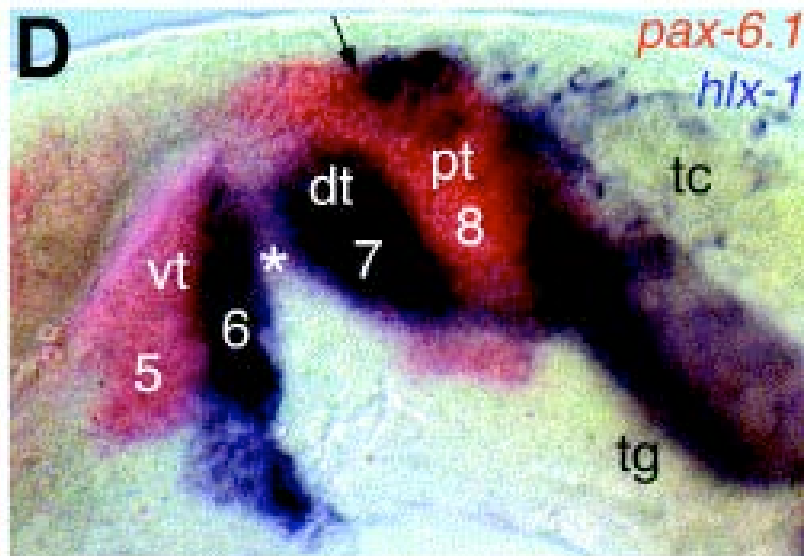
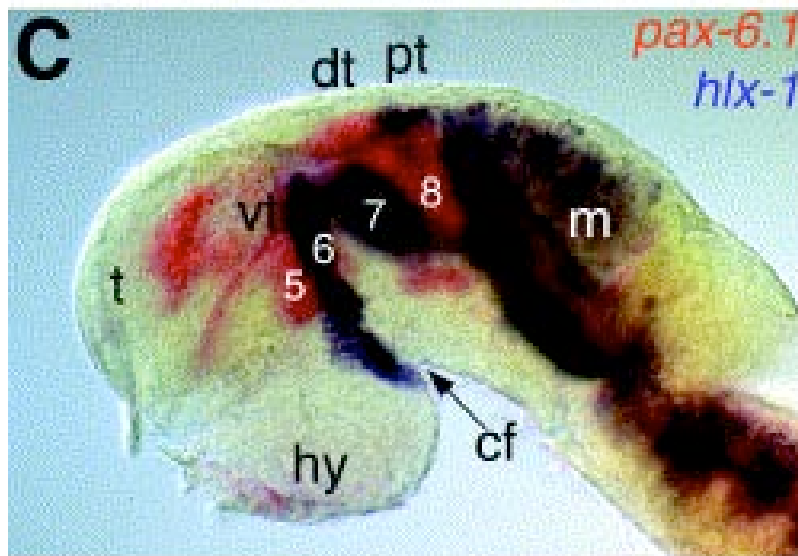
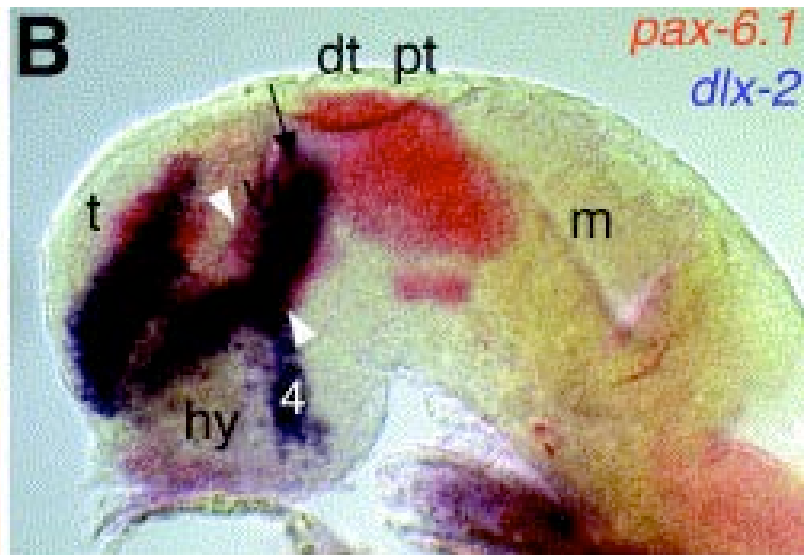
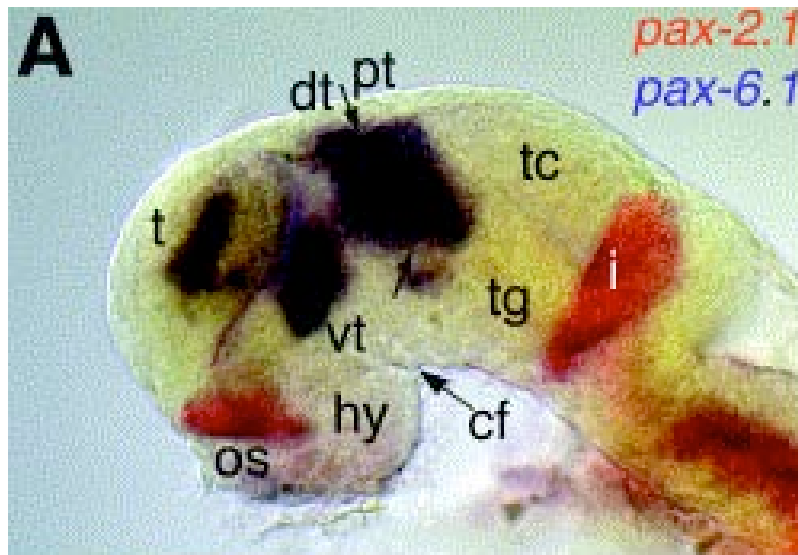
Generalized Schema



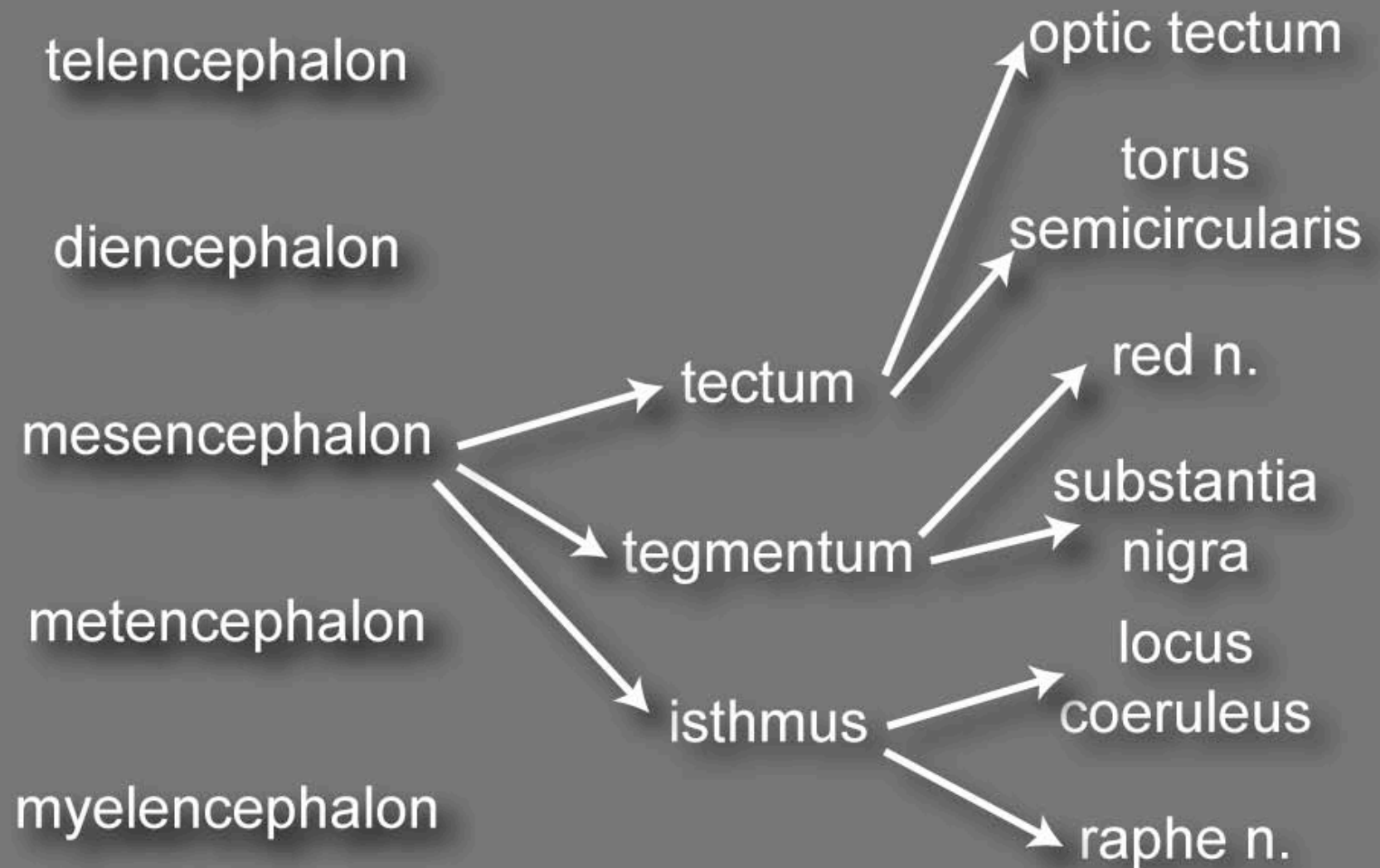


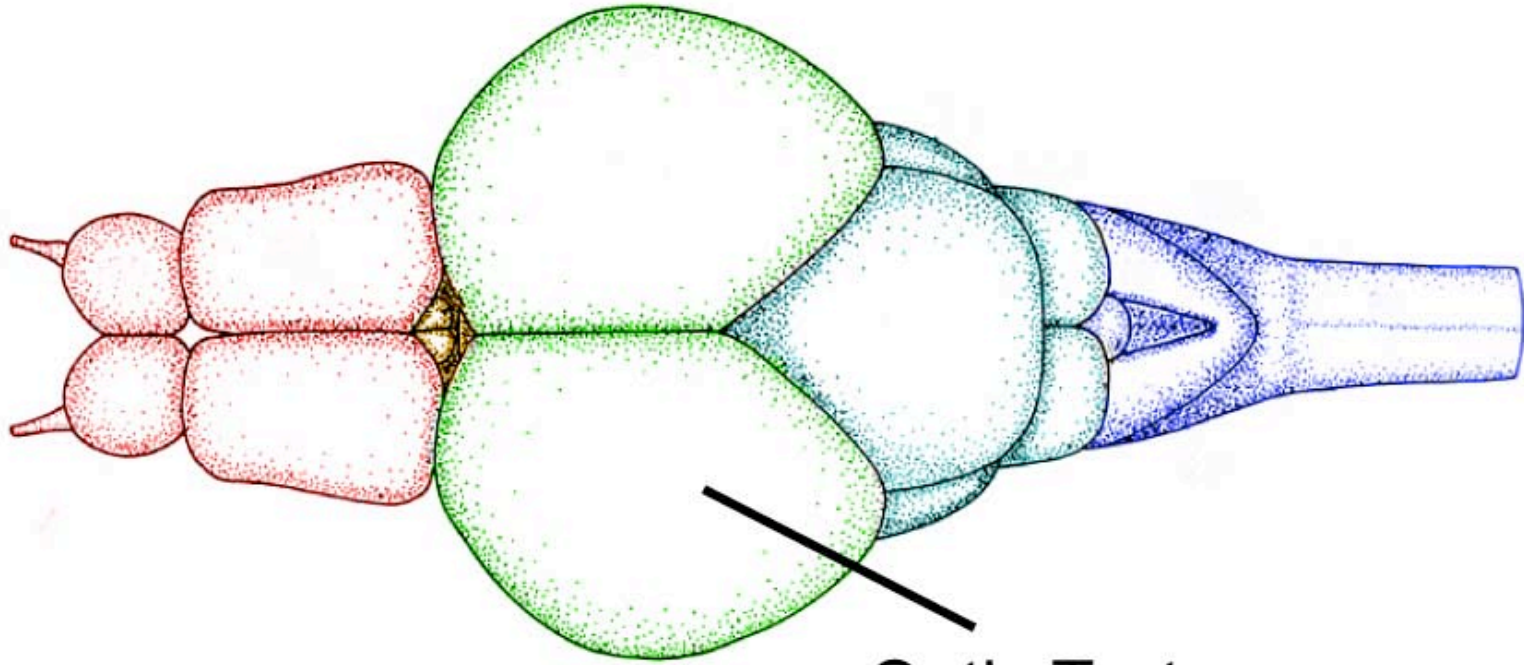
Synencephalon



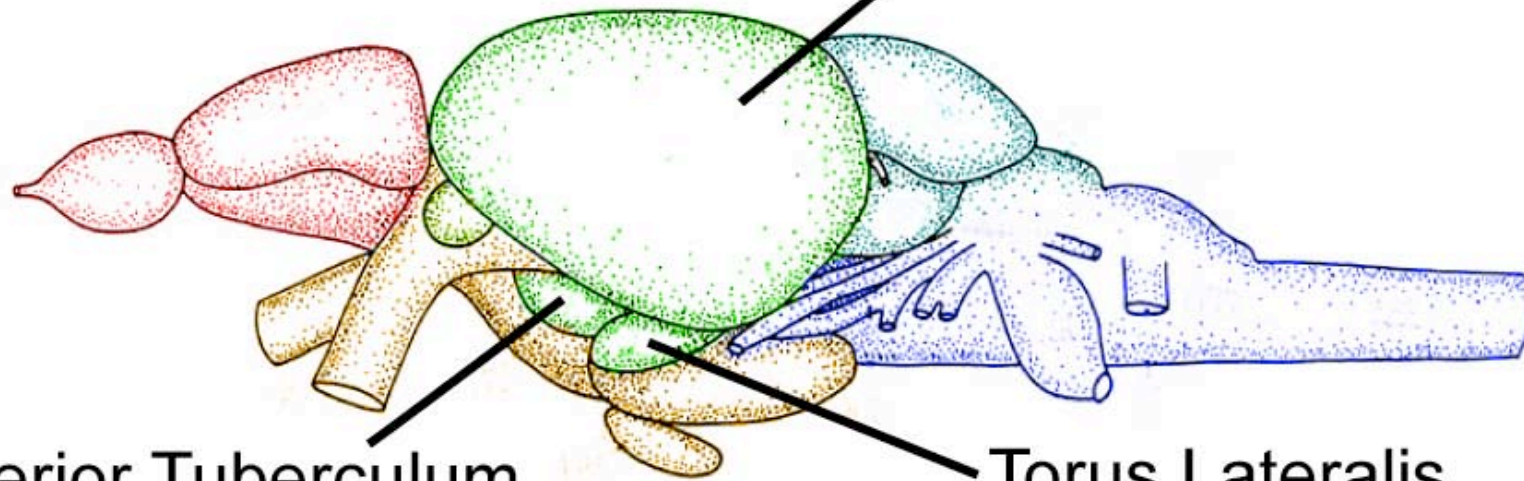


Generalized Schema



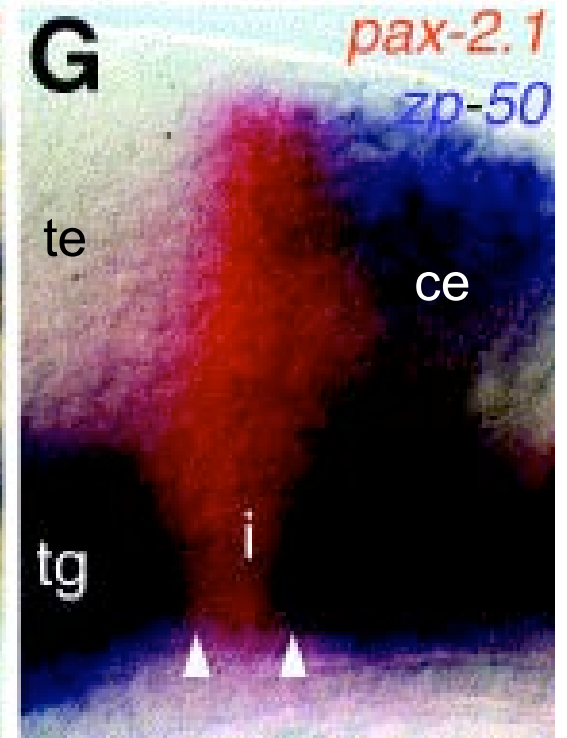
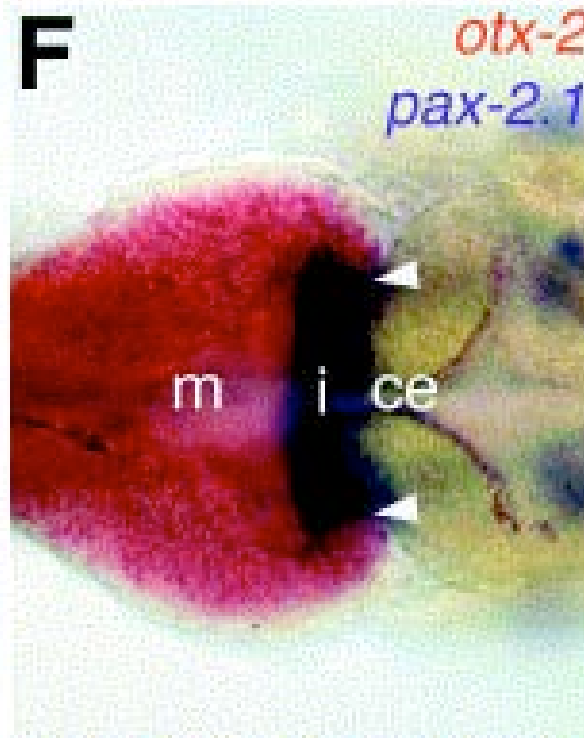
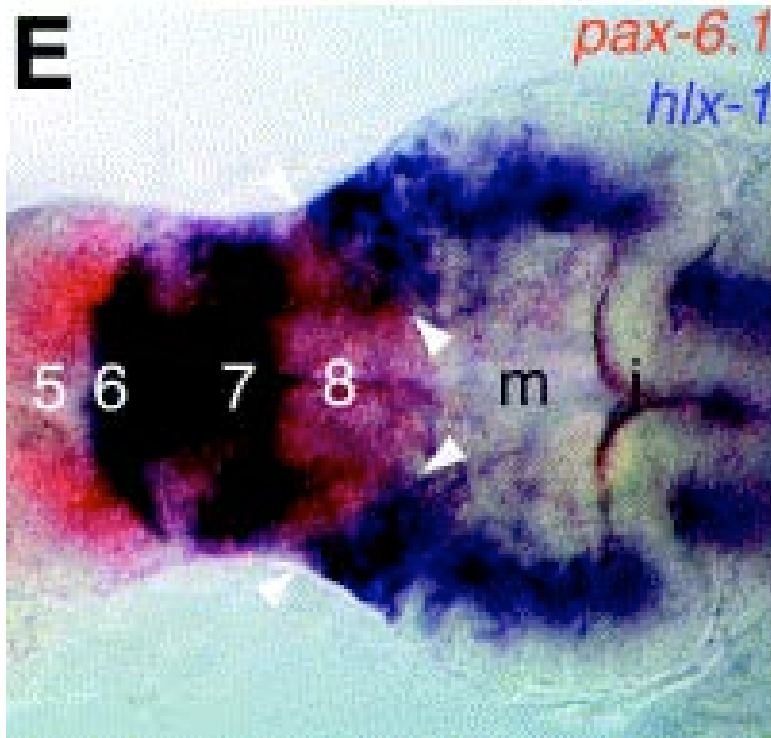


Optic Tectum



Posterior Tuberculum

Torus Lateralis



Generalized Schema

telencephalon

diencephalon

mesencephalon

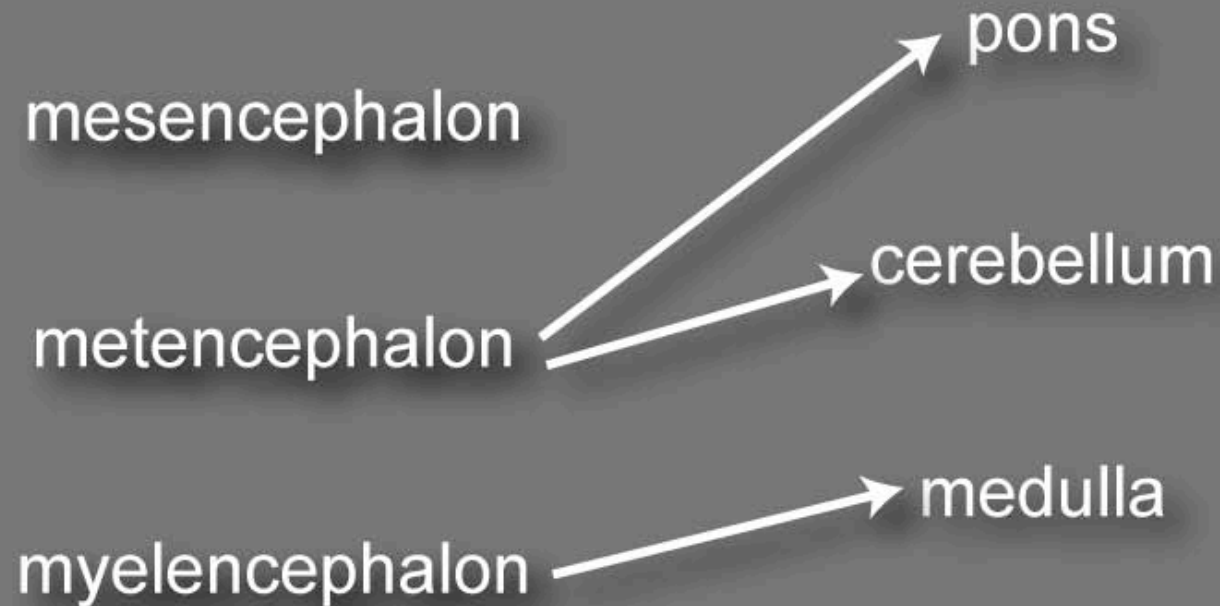
metencephalon

myelencephalon

pons

cerebellum

medulla



Teleost Schema

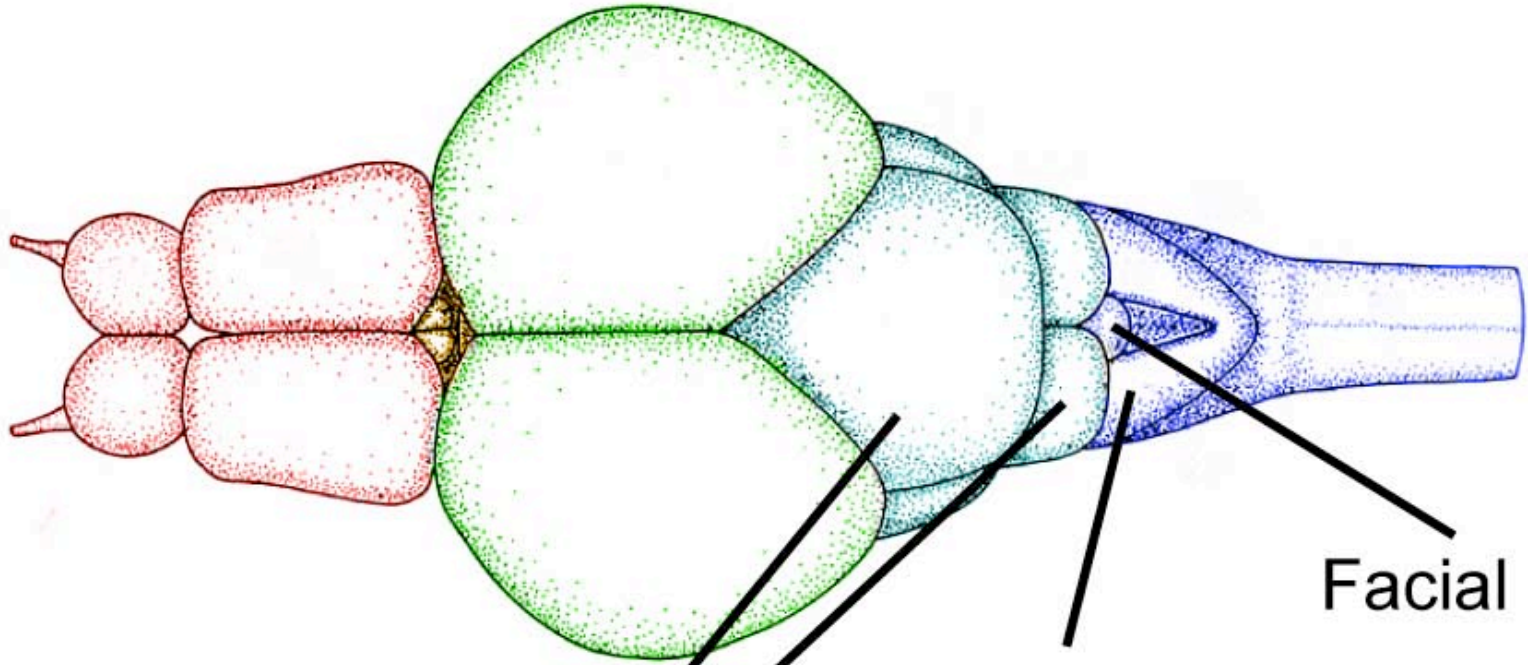
telencephalon

diencephalon

mesencephalon

cerebellum

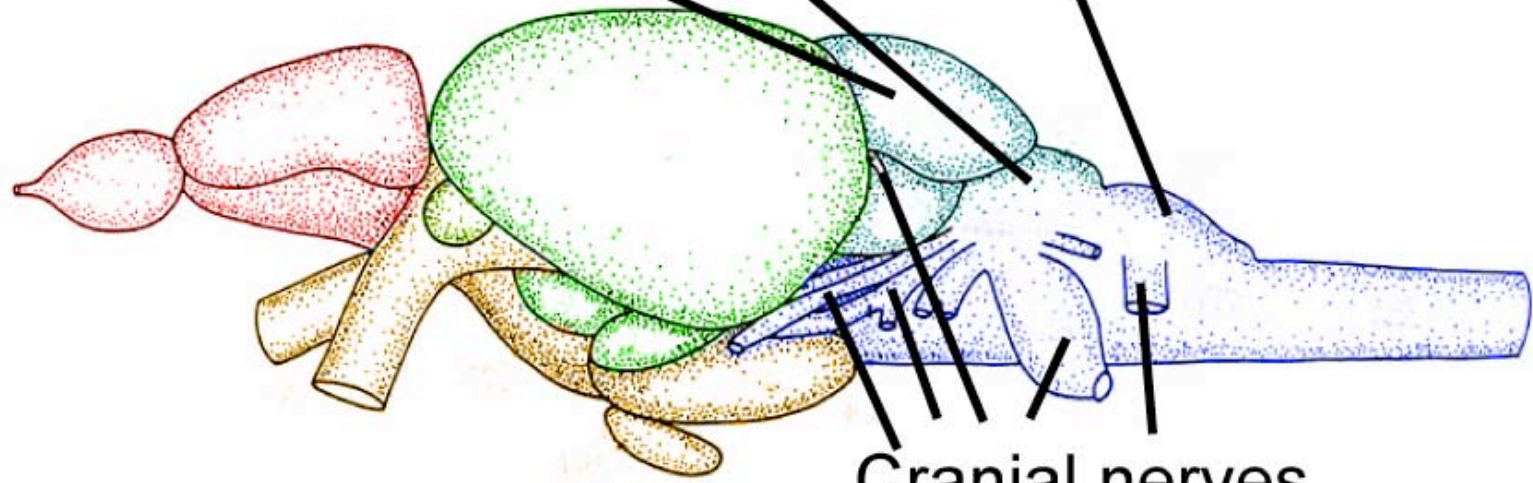
rhombencephalon



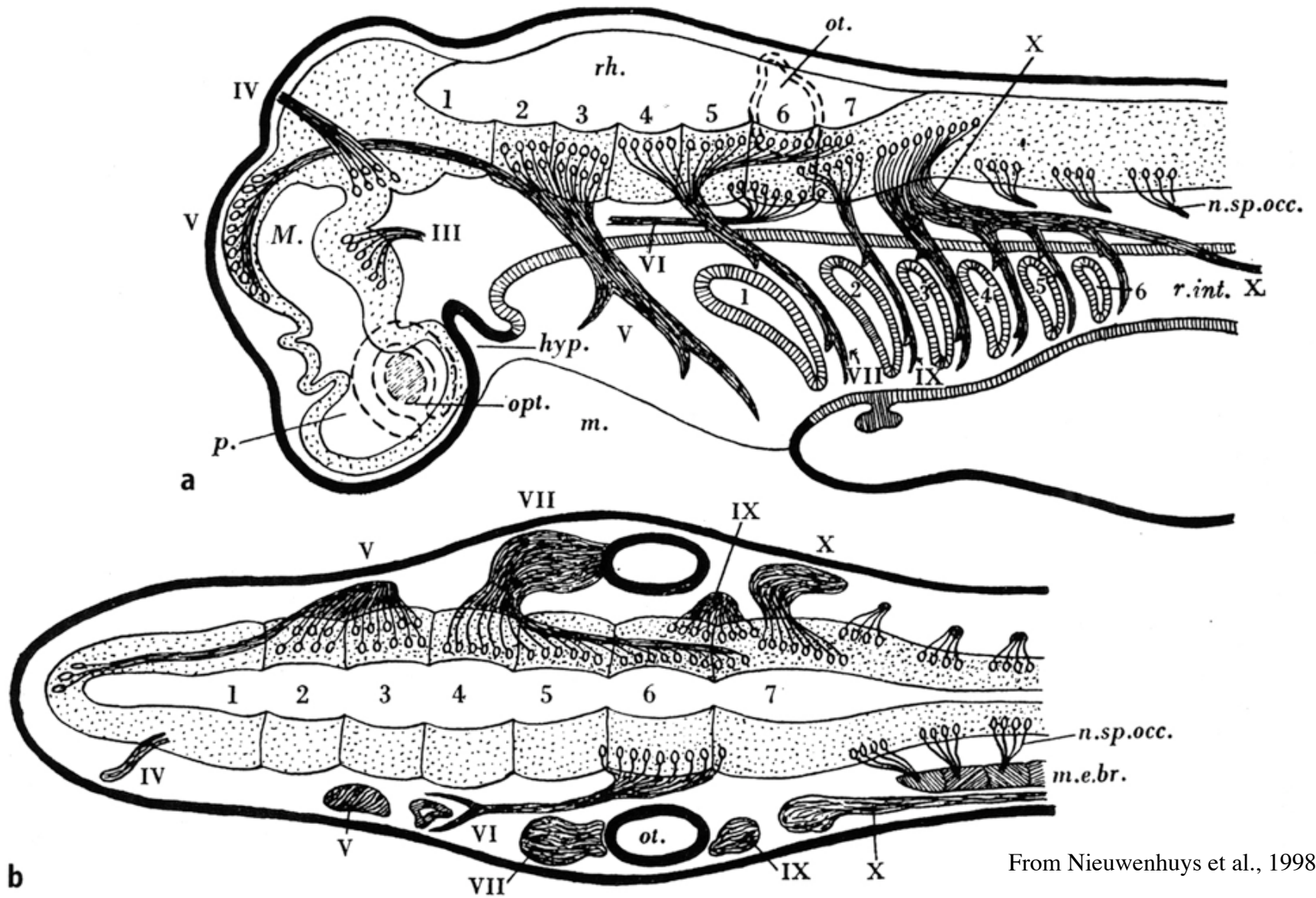
Cerebellum

Vagal lobe

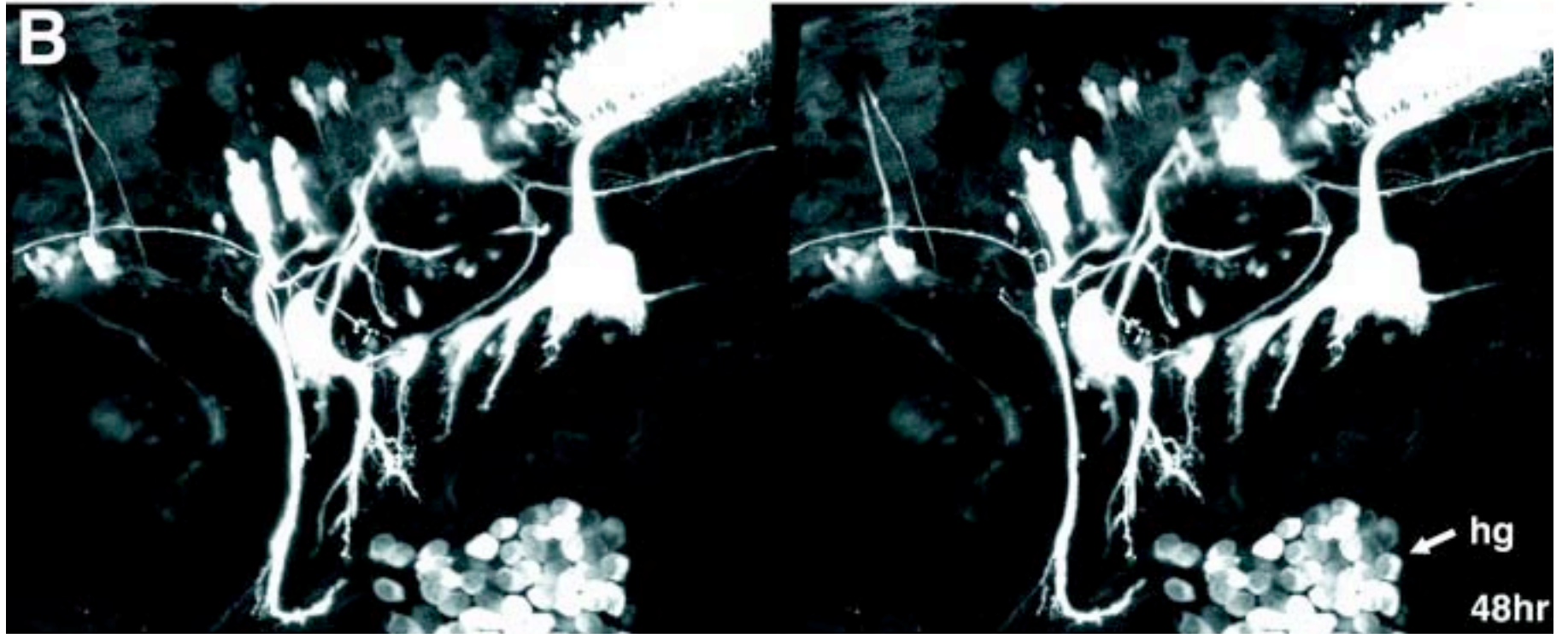
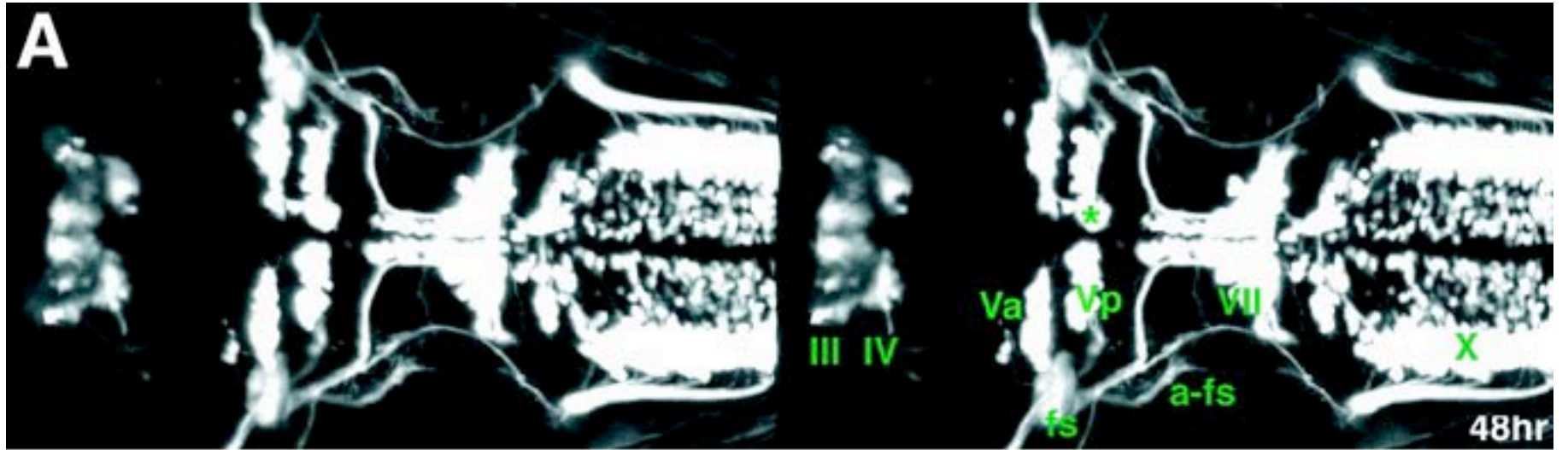
Facial lobe



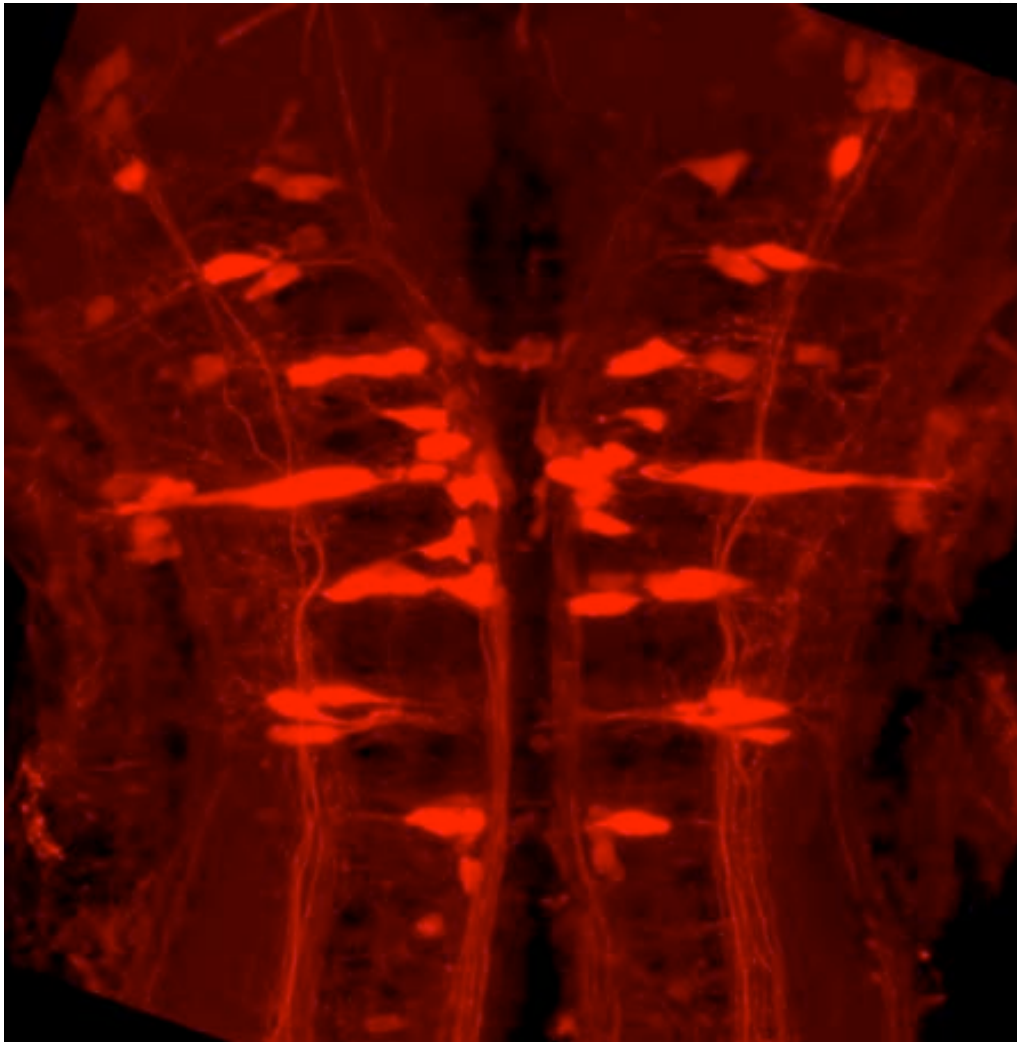
Cranial nerves



From Nieuwenhuys et al., 1998



From Higashijima et al., 2000



Courtesy Cecilia Moens



From Nieuwenhuys et al., 1998

References

- Andermann P, Weinberg ES. Expression of zTlxA, a Hox11-like gene, in early differentiating embryonic neurons and cranial sensory ganglia of the zebrafish embryo. *Dev Dyn*. 2001 Dec;222(4):595-610.
- Andermann, P., Ungos, J. and Raible, D.W. (2002). *Neurogenin1* defines zebrafish sensory ganglia placodes. *Dev. Biol.*, in press.
- Butler and Hodos, 1996. *Comparative Vertebrate Neuroanatomy*. Wiley-Liss, New York.
- Gompel N, Cubedo N, Thisse C, Thisse B, Dambly-Chaudiere C, Ghysen A. Pattern formation in the lateral line of zebrafish. *Mech Dev*. 2001 Jul;105(1-2):69-77.
- Hansen A, Reutter K, Zeiske E. Taste bud development in the zebrafish, *Danio rerio*. *Dev Dyn*. 2002 Apr;223(4):483-96.
- Hauptmann G, Gerster T. Regulatory gene expression patterns reveal transverse and longitudinal subdivisions of the embryonic zebrafish forebrain. *Mech Dev*. 2000 Mar 1;91(1-2):105-18.
- Higashijima S, Hotta Y, Okamoto H. Visualization of cranial motor neurons in live transgenic zebrafish expressing green fluorescent protein under the control of the islet-1 promoter/enhancer. *J Neurosci*. 2000 Jan 1;20(1):206-18.
- Karlstrom RO, Trowe T, Bonhoeffer F. Genetic analysis of axon guidance and mapping in the zebrafish. *Trends Neurosci*. 1997 Jan;20(1):3-8.
- Kimmel CB, Ballard WW, Kimmel SR, Ullmann B, Schilling TF. Stages of embryonic development of the zebrafish. *Dev Dyn*. 1995 Jul;203(3):253-310.
- Mueller T, Wullmann MF. Expression domains of neuroD (nrd) in the early postembryonic zebrafish brain. *Brain Res Bull*. 2002 Feb-Mar 1;57(3-4):377-9.
- R. Nieuwenhuys, H.J. ten Donkelaar, C. Nicholson *The central nervous system of vertebrates* Berlin ; New York : Springer, c1998
- Nolte, John *The human brain : an introduction to its functional anatomy* St. Louis, MO, Mosby, 1999
- Northcutt, R.G. 1995. The forebrain of Gnathostomes: in search of a morphotype. *Brain Behav Evol* 46:275-318.

References continued

- Raible DW, Kruse GJ. Organization of the lateral line system in embryonic zebrafish. *J Comp Neurol.* 2000 May 29;421(2):189-98.
- Rubenstein, J.L.R. in “Molecular and cellular approaches to neural development “, edited by W. Maxwell Cowan, Thomas M. Jessell, S. Lawrence Zipursky New York : Oxford University Press, 1997
- Westerfield M, McMurray JV, Eisen JS. Identified motoneurons and their innervation of axial muscles in the zebrafish. *J Neurosci.* 1986 Aug;6(8):2267-77.
- Williams JA, Holder N. Cell turnover in neuromasts of zebrafish larvae. *Hear Res.* 2000 May;143(1-2):171-81.
- Wilson SW, Brennan C, Macdonald R, Brand M, Holder N. Analysis of axon tract formation in the zebrafish brain: the role of territories of gene expression and their boundaries. *Cell Tissue Res.* 1997 Nov;290(2):189-96.
- Whitfield TT, Riley BB, Chiang MY, Phillips B. Development of the zebrafish inner ear. *Dev Dyn.* 2002 Apr;223(4):427-58.
- Whitlock KE, Westerfield M. A transient population of neurons pioneers the olfactory pathway in the zebrafish. *J Neurosci.* 1998 Nov 1;18(21):8919-27.
- Whitlock KE, Westerfield M. The olfactory placodes of the zebrafish form by convergence of cellular fields at the edge of the neural plate. *Development.* 2000 Sep;127(17):3645-53.
- Wullmann, M.F., Rupp, B. and Reichert, H. (1996). *Neuroanatomy of the zebrafish brain.* Basel:Birkhauser, 144pp.
- Mario F. Wullmann and Elke Rink, 2002. The teleostean forebrain: a comparative and developmental view based on early proliferation, Pax6 activity and catecholaminergic organization, *Brain Research Bulletin*, 57:363-370.
- Zerucha T, Stuhmer T, Hatch G, Park BK, Long Q, Yu G, Gambarotta A, Schultz JR, Rubenstein JL, Ekker M. 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.* 2000 Jan 15;20(2):709-21.