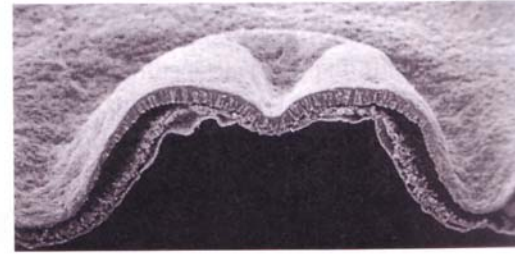
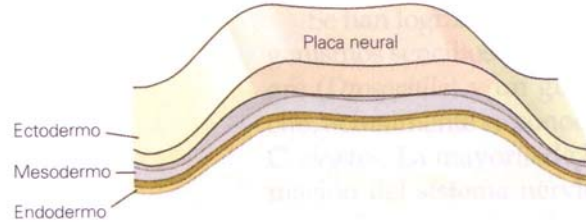


Todo el sistema nervioso procede del ectodermo

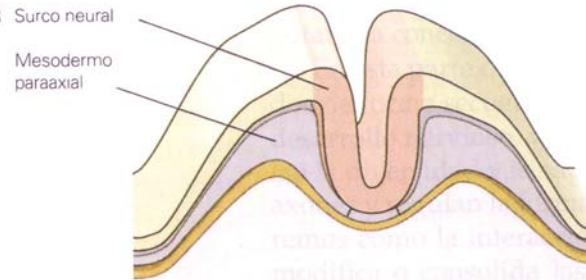
La placa neural
se pliega de
forma secuencial
para formar el
tubo neural.

Fuente: Kandel et al.,
2000. Principles of
Neural Science, 4th
ed. McGraw-Hill.

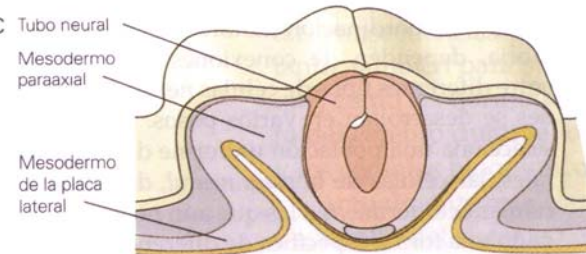
A



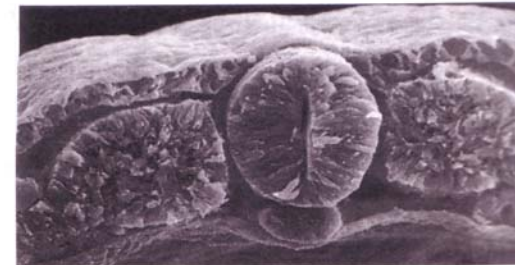
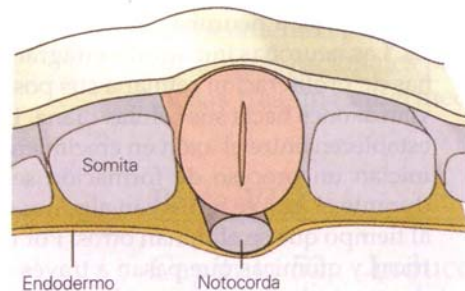
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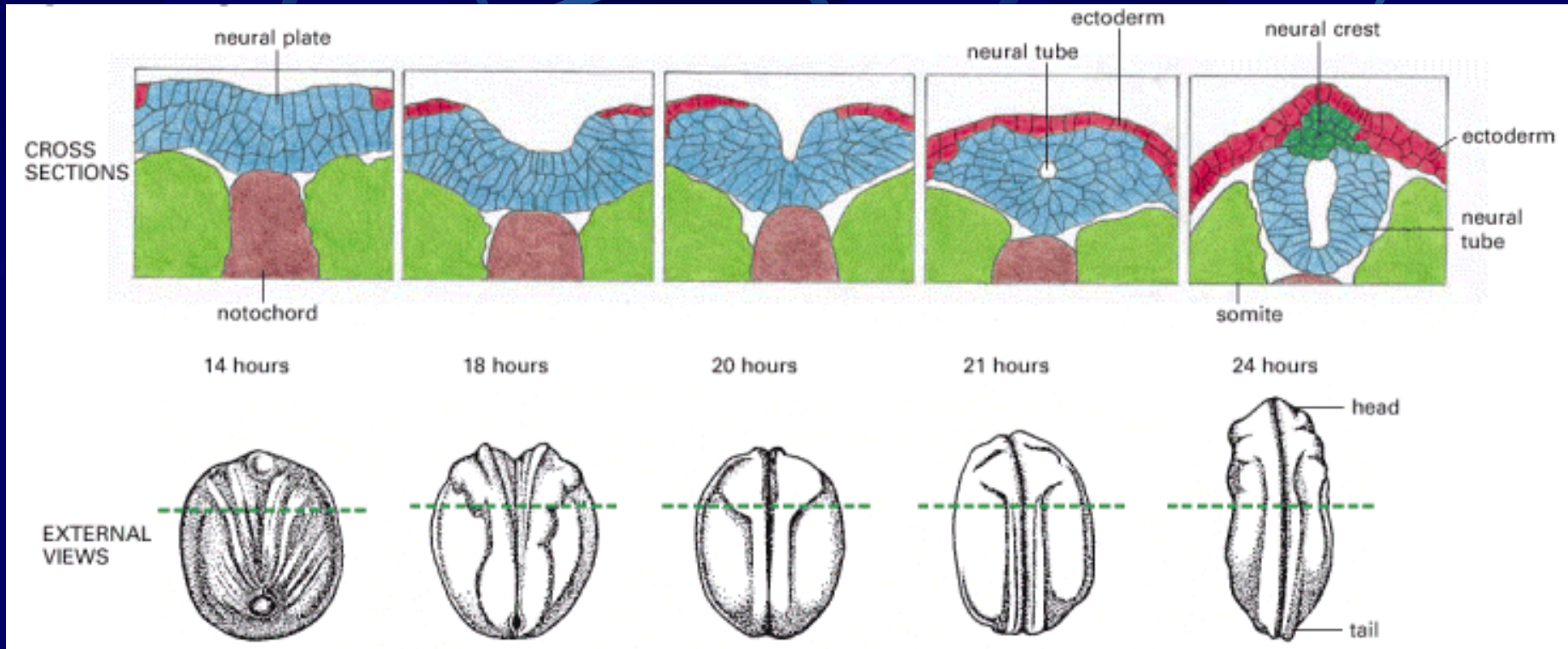


C



D

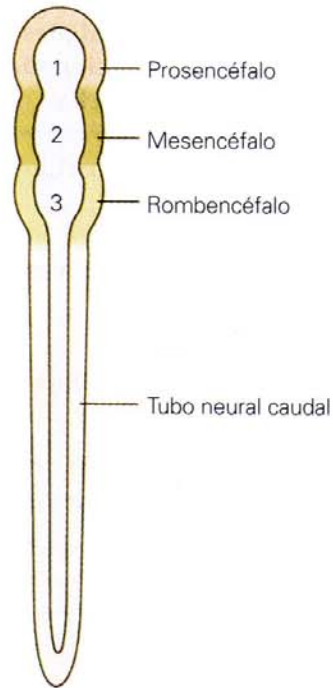




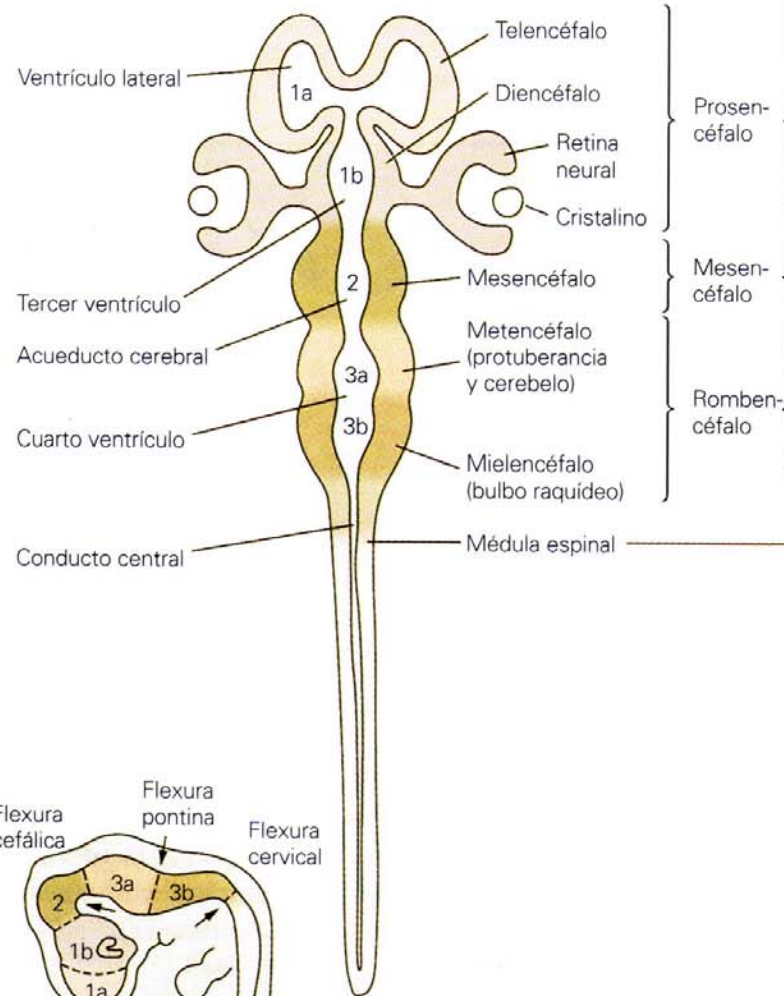
Neural tube formation in *Xenopus*. The external views are from the dorsal aspect. The cross sections are cut in a plane indicated by the *broken lines*. Fuente: Alberts et al., 2002.

Estadios sucesivos del desarrollo del tubo neural

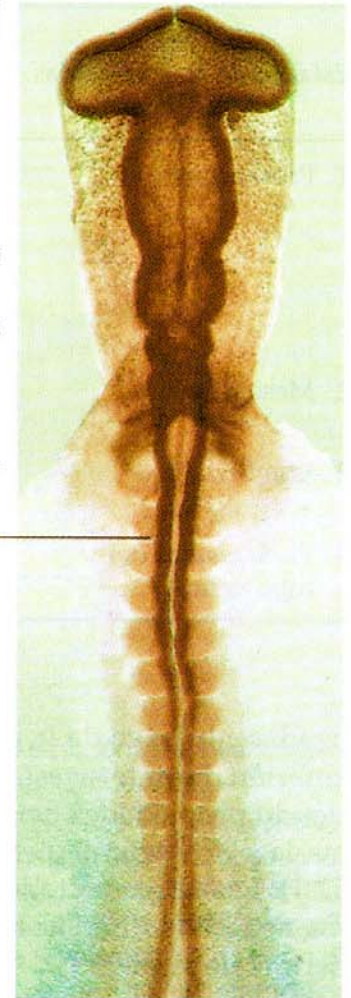
A Estado de tres vesículas



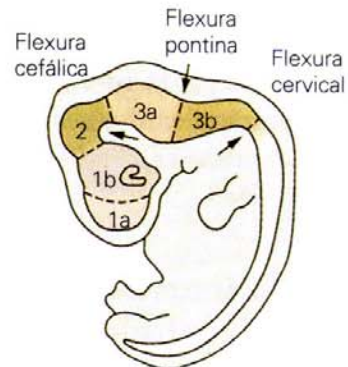
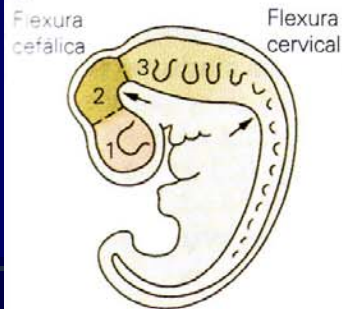
B Estado de cinco vesículas



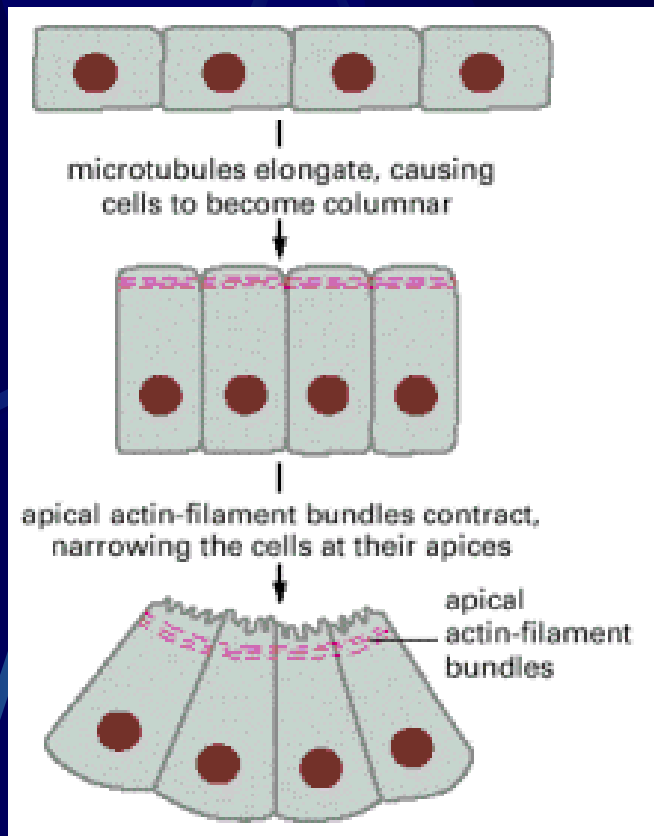
C



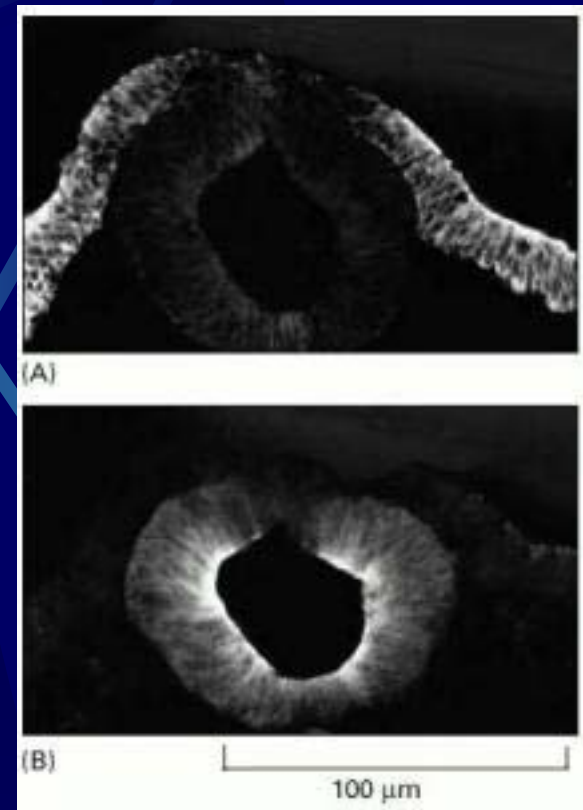
D



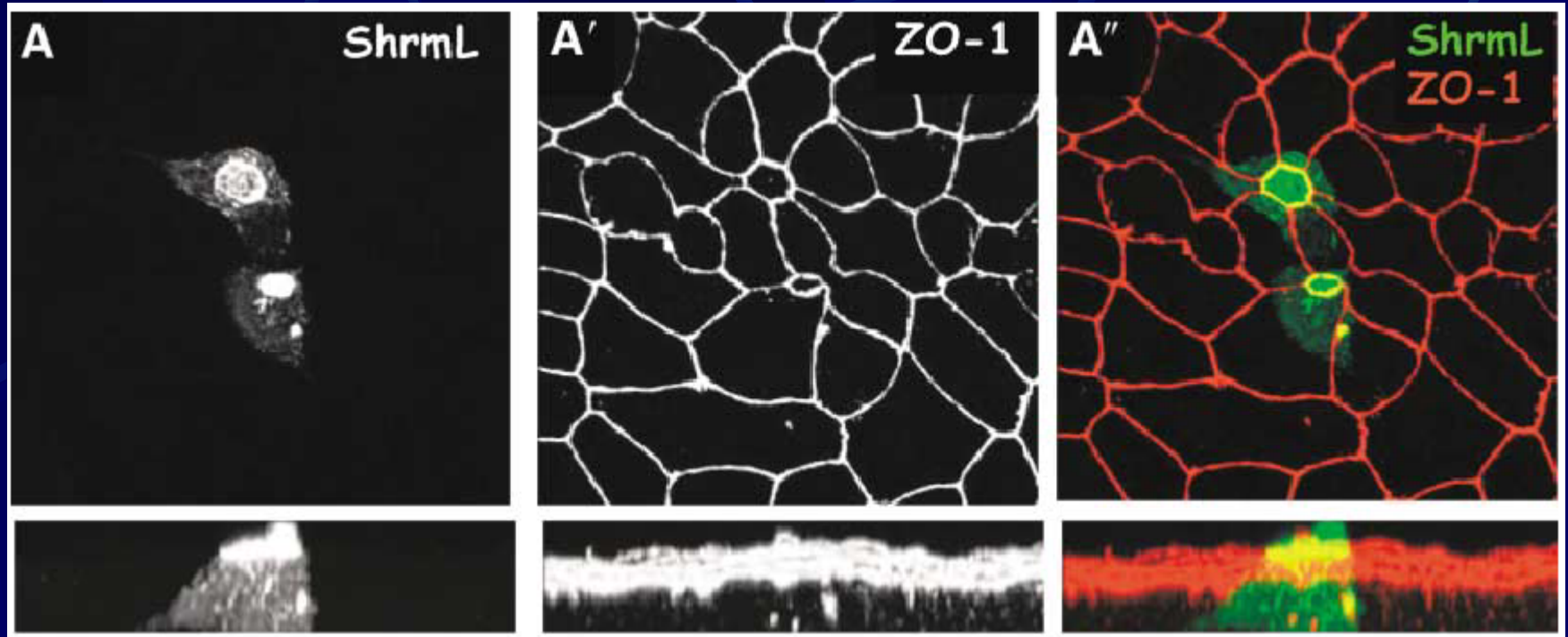
Fuente: Kandel et al., 2000. Principles of Neural Science, 4th ed. McGraw-Hill.



The bending of an epithelium through cell shape changes mediated by microtubules and actin filaments. The diagram is based on observations of neurulation in newts and salamanders, where the epithelium is only one cell layer thick. As the apical ends of the cells become narrower, their upper-surface membrane becomes puckered. Fuente: Alberts et al., 2002.



The distribution of E-cadherin and N-cadherin in the developing nervous system. Immunofluorescence micrographs of a cross section of a chick embryo showing the developing neural tube labeled with antibodies against (A) E-cadherin and (B) N-cadherin. Note that the overlying ectoderm cells express only E-cadherin, while the cells in the neural tube have lost E-cadherin and have acquired N-cadherin. Fuente: Alberts et al., 2002.



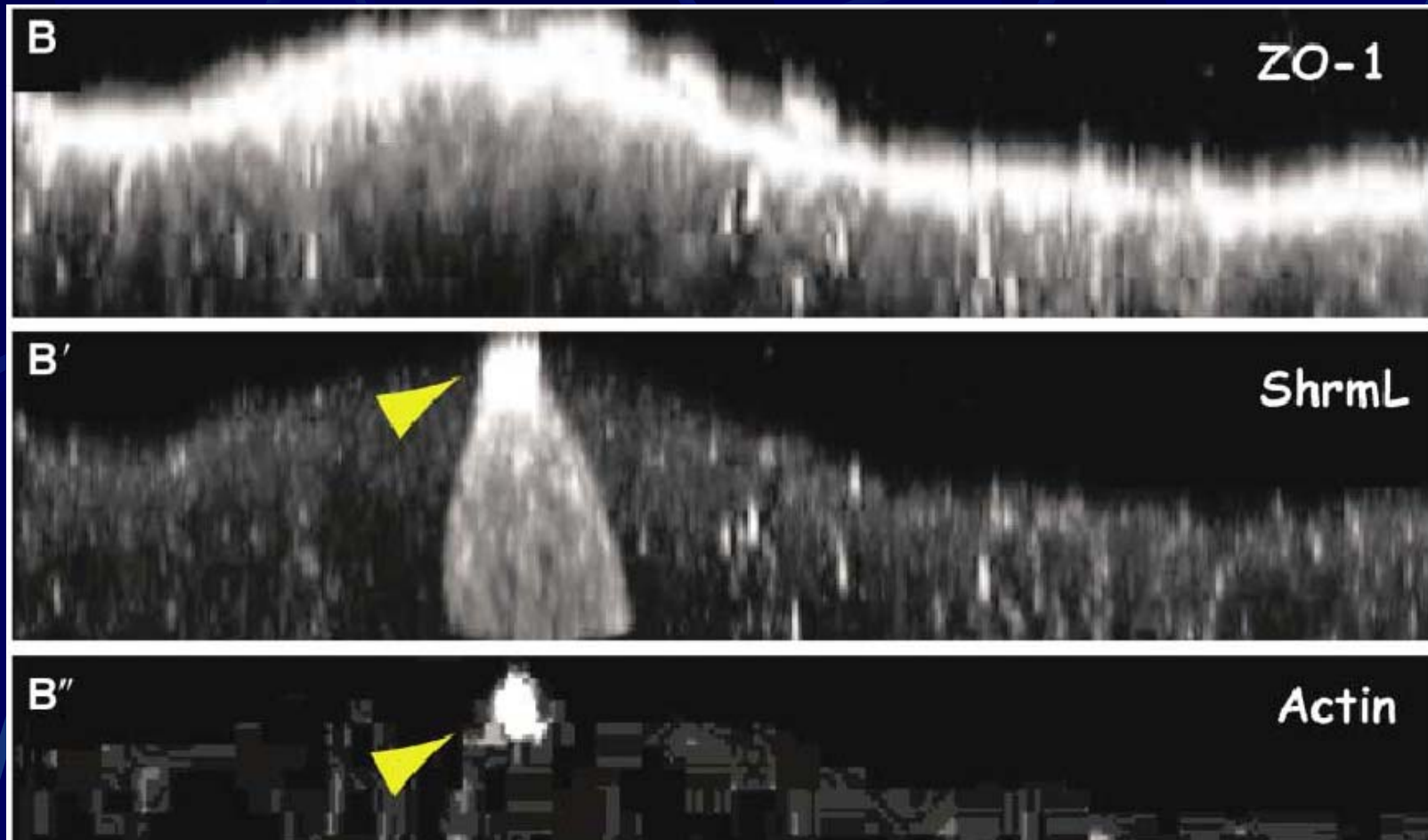
Shroom Induces Apical Constriction in Mammalian Cells

(A) MDCK cells transiently transfected to express ShroomL exhibit apical constriction; lower panel shows a cross-section of the cells reconstructed from optical sections. Shroom-expressing cells, visualized by anti-Shroom antibody, take on a wedge shape.

(A') Same cells as in panel (A), but showing the tight junction marker ZO-1 to highlight the reduced apical surface area in Shroom-expressing cells as compared to nonexpressing cells. Cross-sections demonstrate the normal apical localization of ZO-1.

(A'') Merge of panels (A) and (A') (green Shroom; red ZO-1).

Fuente: Haigo et al., Curr. Biol 13, 2125-2137 (2003)



(B) High-magnification cross-section of MDCK cells stained for ZO-1 to mark the apical surface.

(B') Same cells as in panel (B), but showing the anti-Shroom antibody. The Shroom-expressing cell is wedge-shaped; Shroom protein is restricted to the apical surface (arrowhead).

(B'') Same cells as in panels (B) and (B'), but showing concentrated, ectopic f-actin at the apical surface of the Shroom-expressing cell (arrowhead).

Fuente: Haigo et al., Curr. Biol 13, 2125-2137 (2003)

Configuración del eje dorsoventral

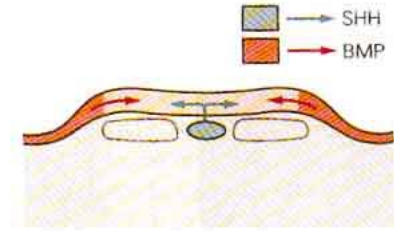
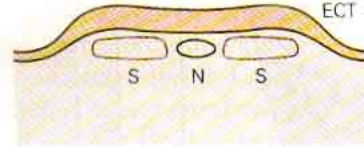
El tubo neural dorsal es configurado por proteínas morfogenéticas óseas (BMP) secretadas por el ectodermo epidérmico y la placa tectal.

El tubo neural ventral es configurado por sonic hedgehog secretado por la notocorda (mesodermo) y por la placa basal

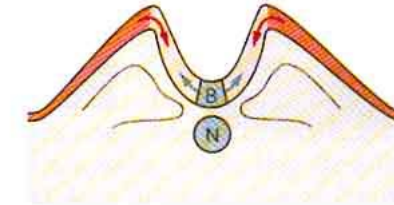
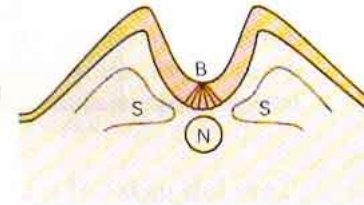
Estadios del desarrollo

B Señales inductoras

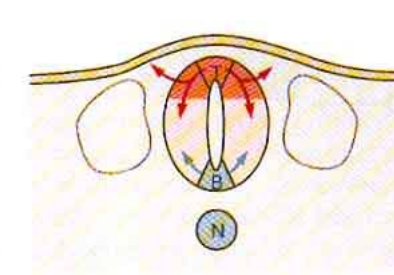
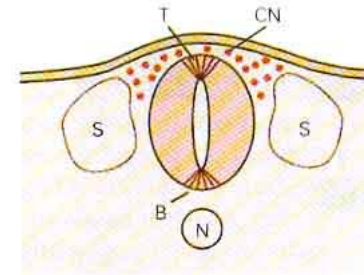
1 Placa neural



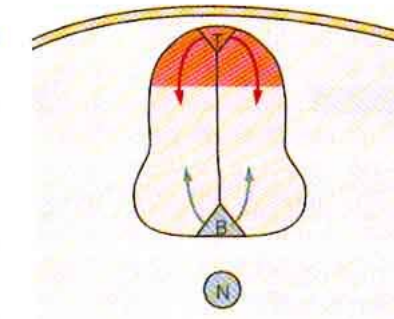
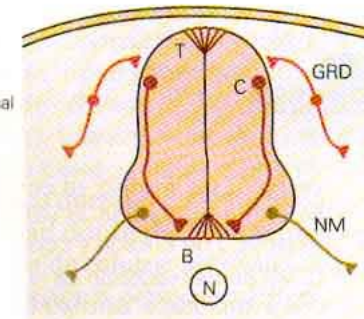
2 Pliegue neural



3 Tubo neural

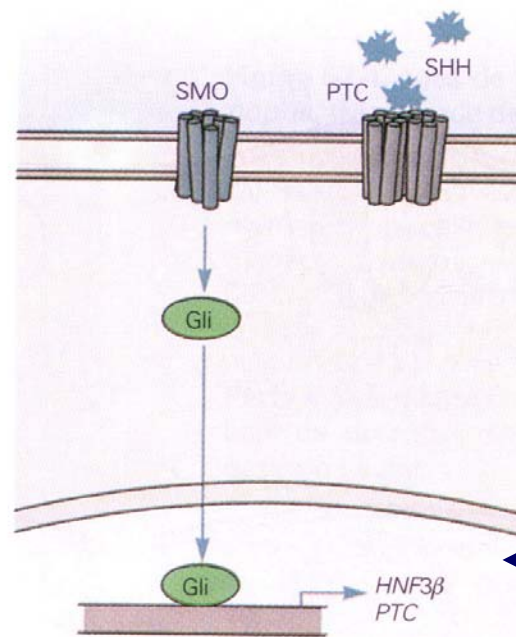
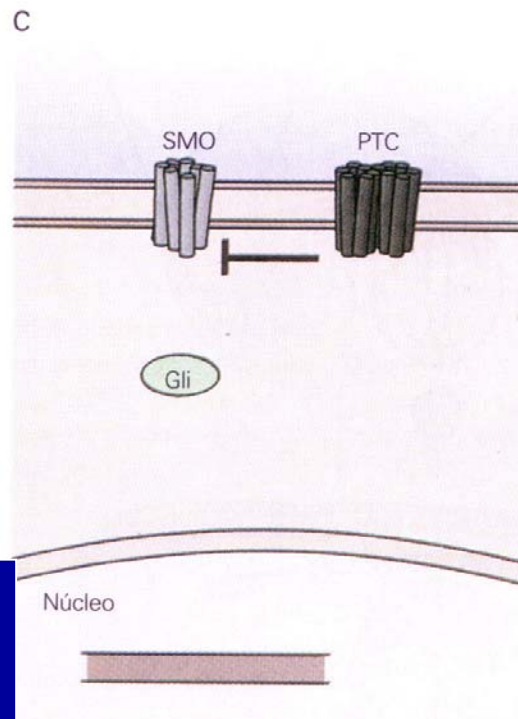
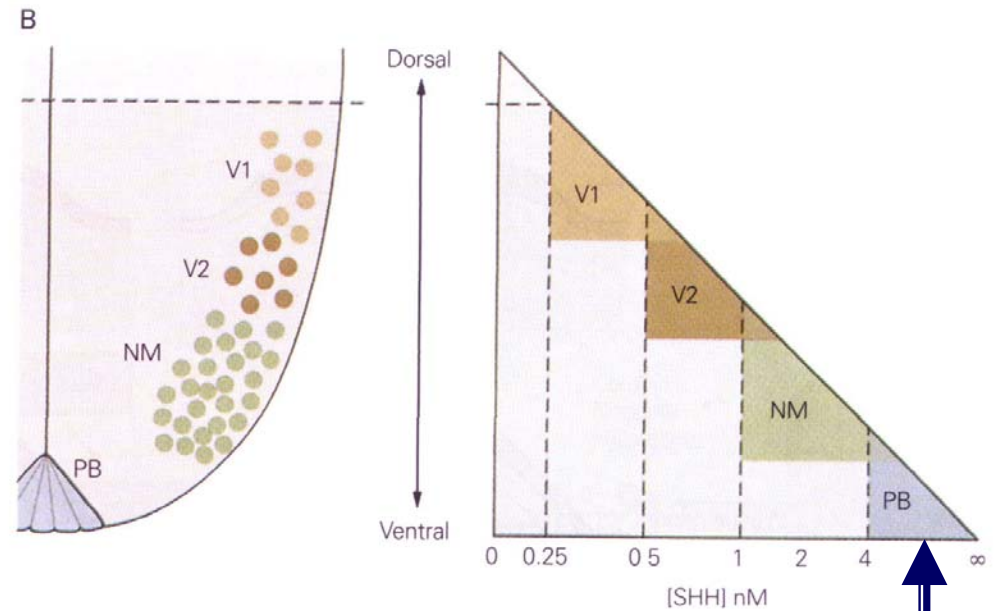


4 Médula espinal



Fuente: Kandel et al., 2000. Principles of Neural Science, 4th ed. McGraw-Hill.

Expresión de shh en la notocarda y la placa basal.

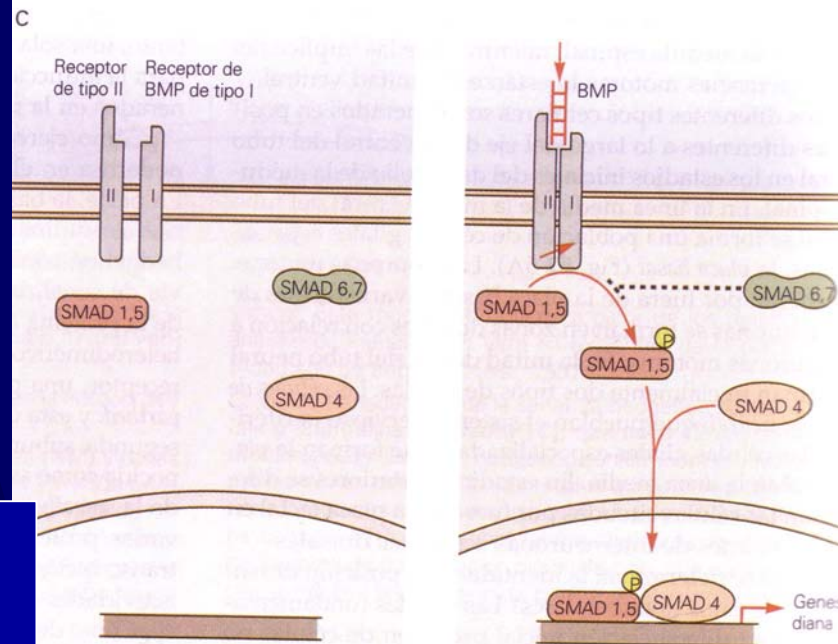
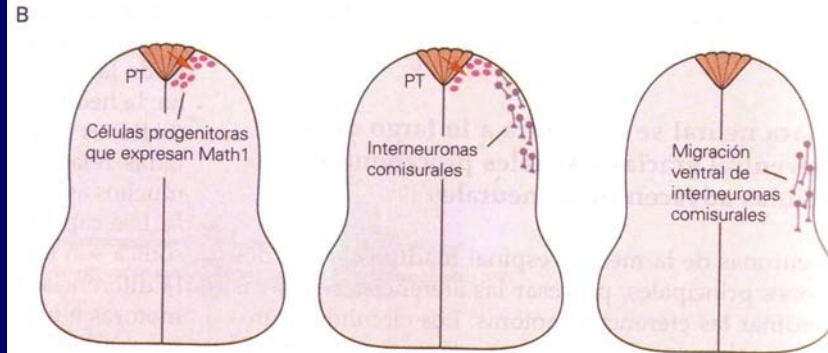
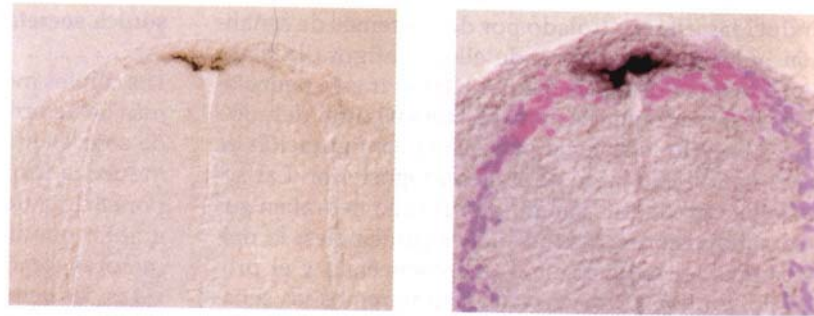


La diferenciación en neuronas motoras o interneuronas depende de la concentración de shh.

Mecanismo de acción de shh

Fuente: Kandel et al., 2000. Principles of Neural Science, 4th ed. McGraw-Hill.

Expresión de BMP en la placa tectal.



Fuente: Kandel et al., 2000. Principles of Neural Science, 4th ed. McGraw-Hill.

Mecanismo de acción de BMP