A-P patterning during neural induction

Retinoic acid
FGFs
Neurulation

- ectoderm
- Neural plate
- Notochord
- Neural tube
- Roof plate
- Floor plate
- Neural crest cells
Steps in D-V patterning of the spinal cord

(a) Neural plate

(b) Neural fold

(c) Neural tube

(d) Spinal cord
Distinct MNs along AP axis in spinal cord
Distinct regions in ventral domain of spinal cord
Christiane Nusslein-Völlhard  
Eric Wieschaus  
Ed Lewis  
Nobel Prize in 1995
Shh expression in notochord and floor plate
Cyclopia
The Hedgehog signaling pathway
Early steps in D/V patterning of spinal cord

Shh signaling
Distinct temporal stages of Shh signaling
D/V patterning in the spinal cord in response to graded Shh signaling
Translation of graded Shh signaling to distinct domains

Class I

Class II
D/V patterning in spinal cord

A Developmental stages
- Neural plate
- Neural fold
- Neural tube

B Inductive signals
- BMPs
- SHH
Cell types in the dorsal domain of the spinal cord
Model for roofplate formation
Distinct MNs along AP axis in spinal cord
Making chick-quail chimeras

Le Dourain
chick tissue  quail tissue
Chick-quail chimeras
Le Dourain
Le Dourain
Future attractions:

Fri 1/27

✦ Patterning lecture
✦ Discussion of paper
   (Hynes et al, 2000)

Tue 1/31

✦ Presentation
   (Fraser et al, 1990)
✦ Neurogenesis lecture
✦ Quiz (induction/patterning)

Fri 2/3

✦ Neurogenesis lecture
✦ Discussion of paper
   (Pearson and Doe, 2003)