

Model organisms and developmental biology

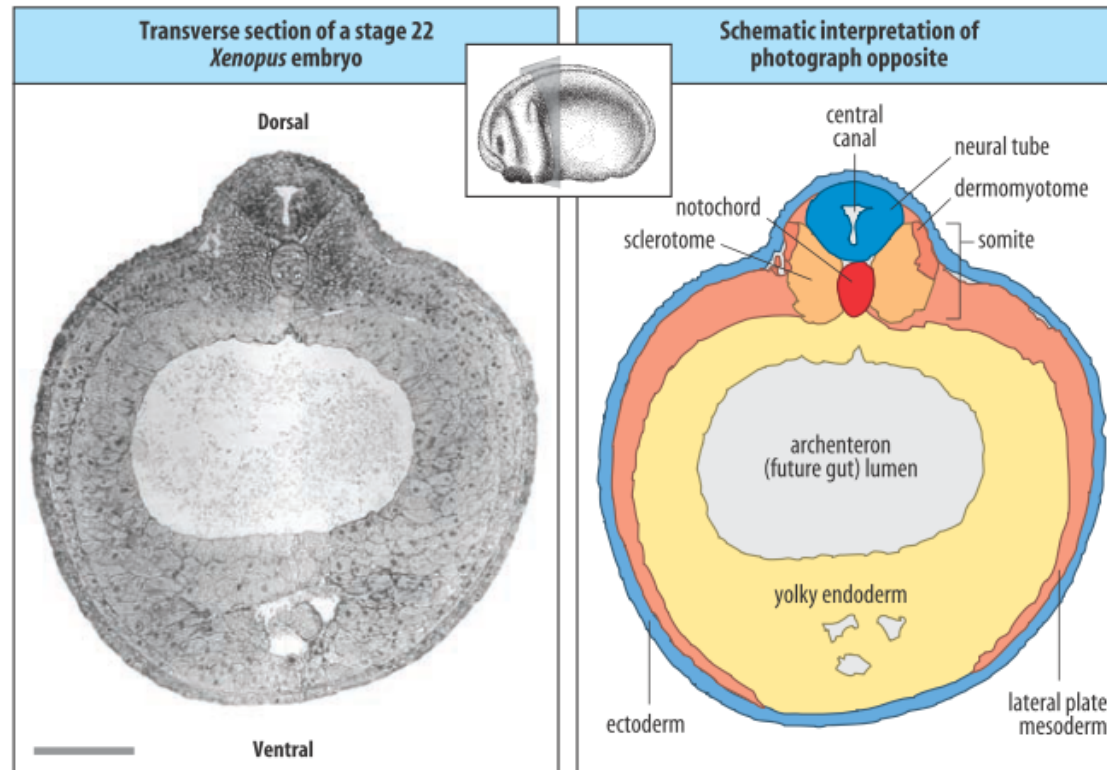
仲寒冰

zhong.hb@sustc.edu.cn

Somites

体节

A cross-section through a *Xenopus* embryo



paraxial mesoderm

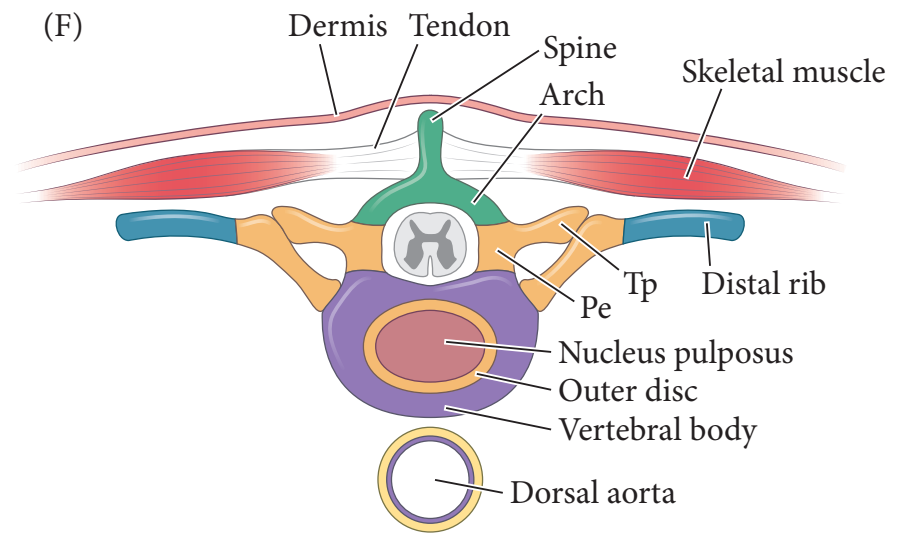
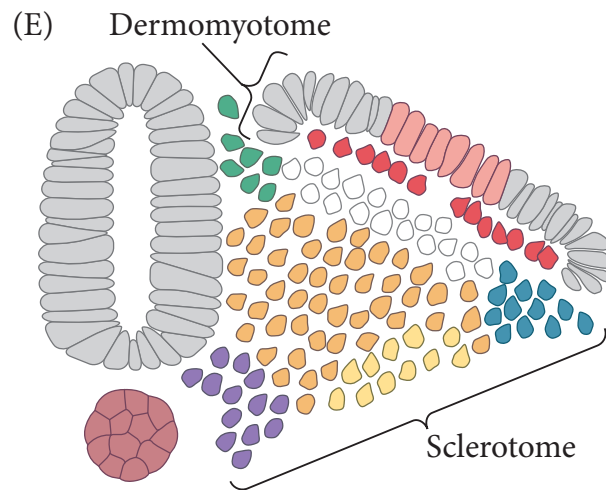
intermediate mesoderm

lateral plate mesoderm

Sclerotome -> cartilage and bone.

Dermomyotome = dermo + myo -> dermis + muscle.

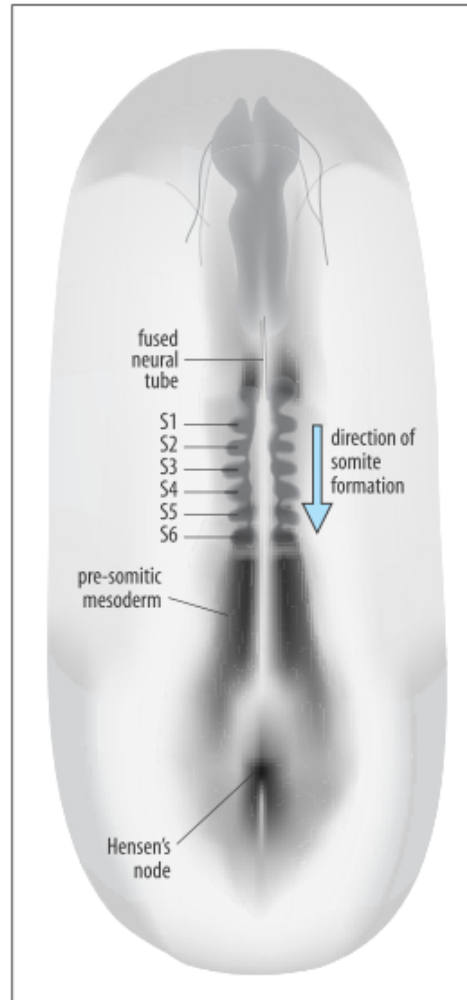
Color-coded schematic of one half of a somite from a 48-hour embryo in cross section



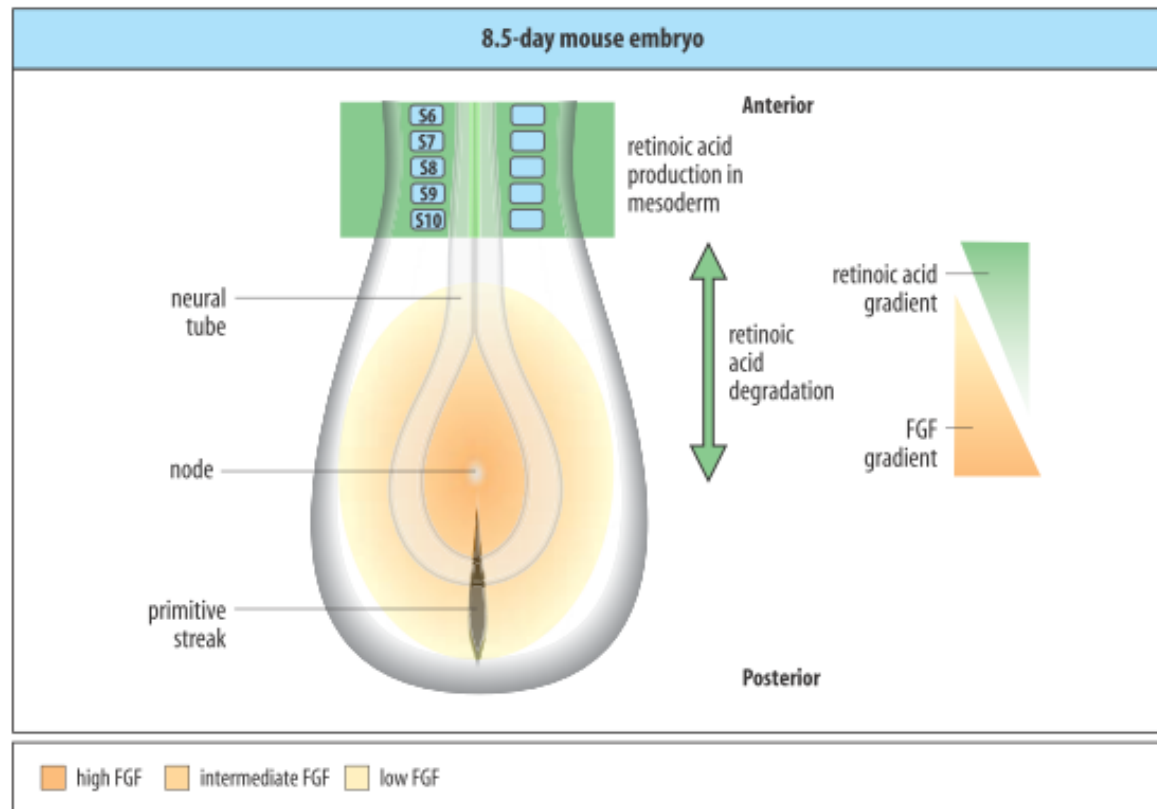
■ Arthrotome: vertebral joints (Pe, Tp), proximal rib, outer disc
■ Dorsomedial sclerotome: spine, arch
■ Ventrolateral sclerotome: distal rib
■ Ventromedial sclerotome: vertebral body
■ Notochord: inner disc/nucleus pulposus

■ Ventral posterior sclerotome: endothelial precursor: outer dorsal aorta
■ Syndetome: tendons
■ Myotome
■ Dermatome: dermis

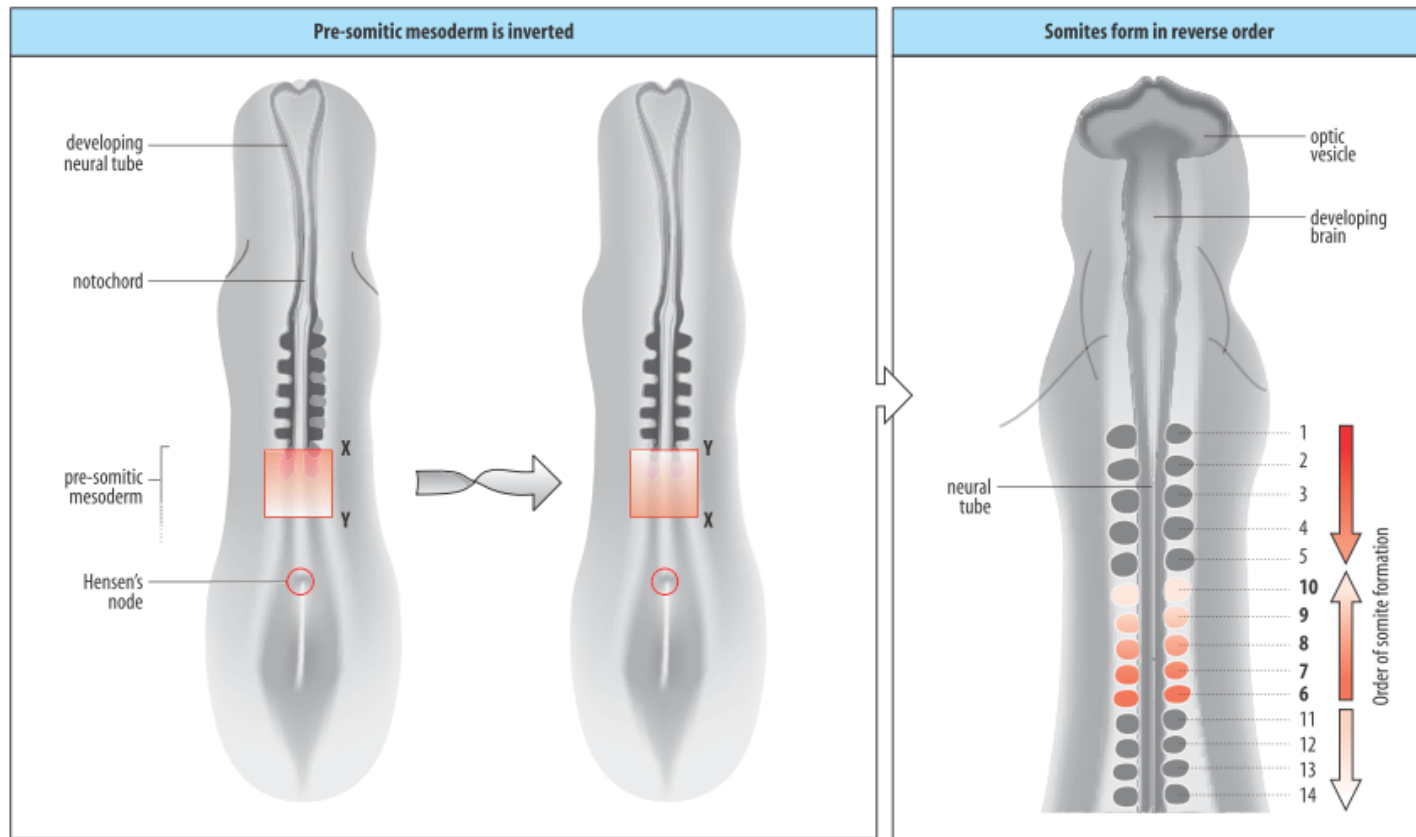
Somites form in pairs from the paraxial mesoderm



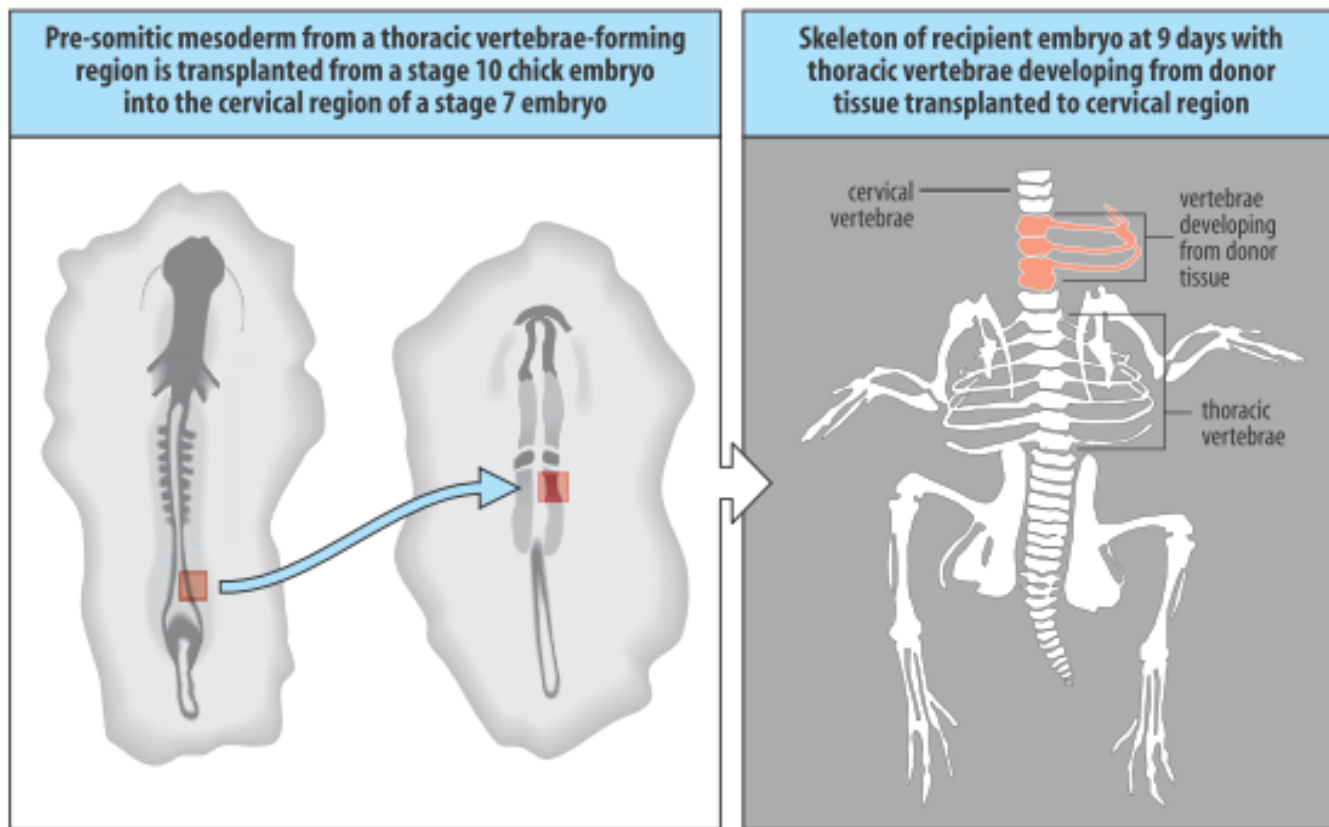
FGF and retinoic acid gradients help to pattern AP axis in the mouse embryo



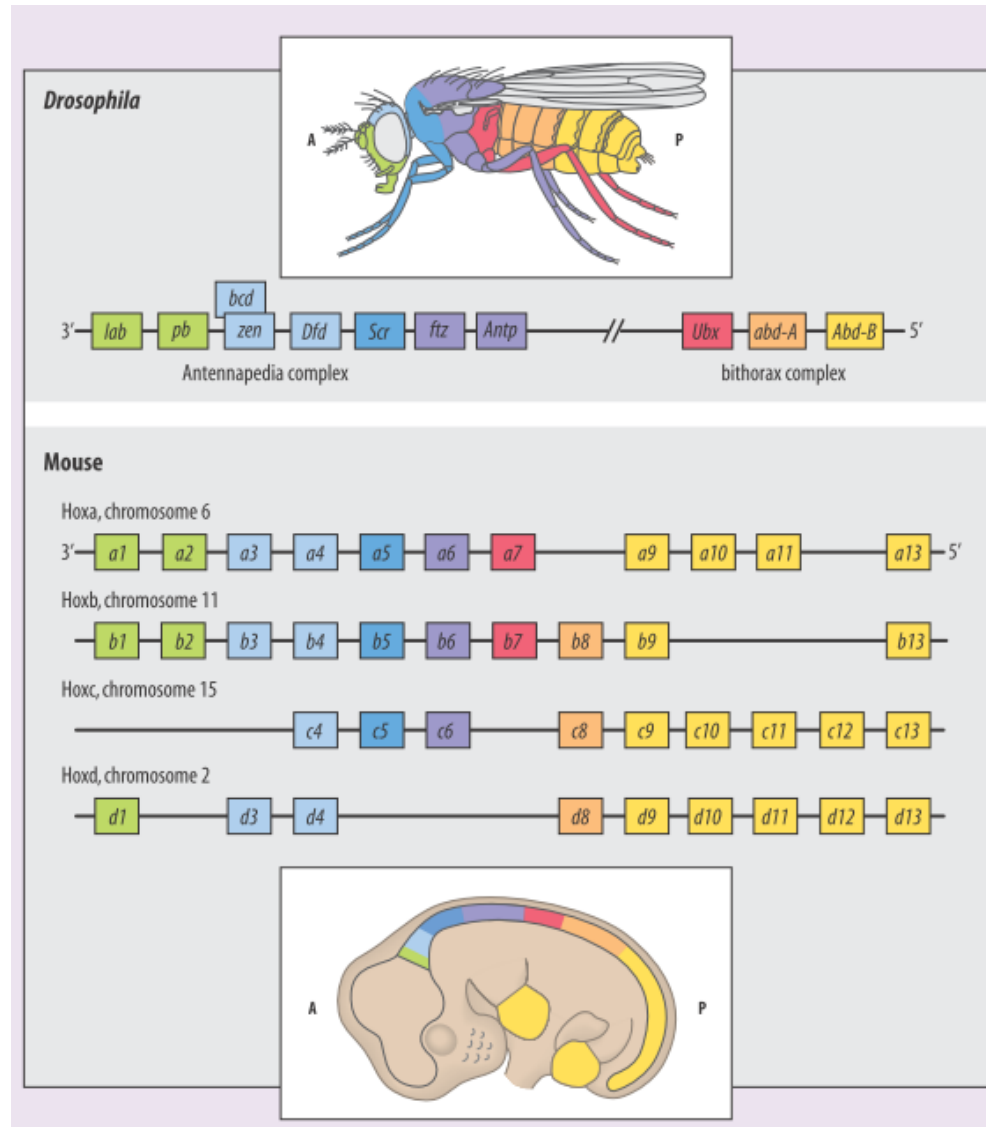
The temporal order of somite formation is specified early in embryonic development



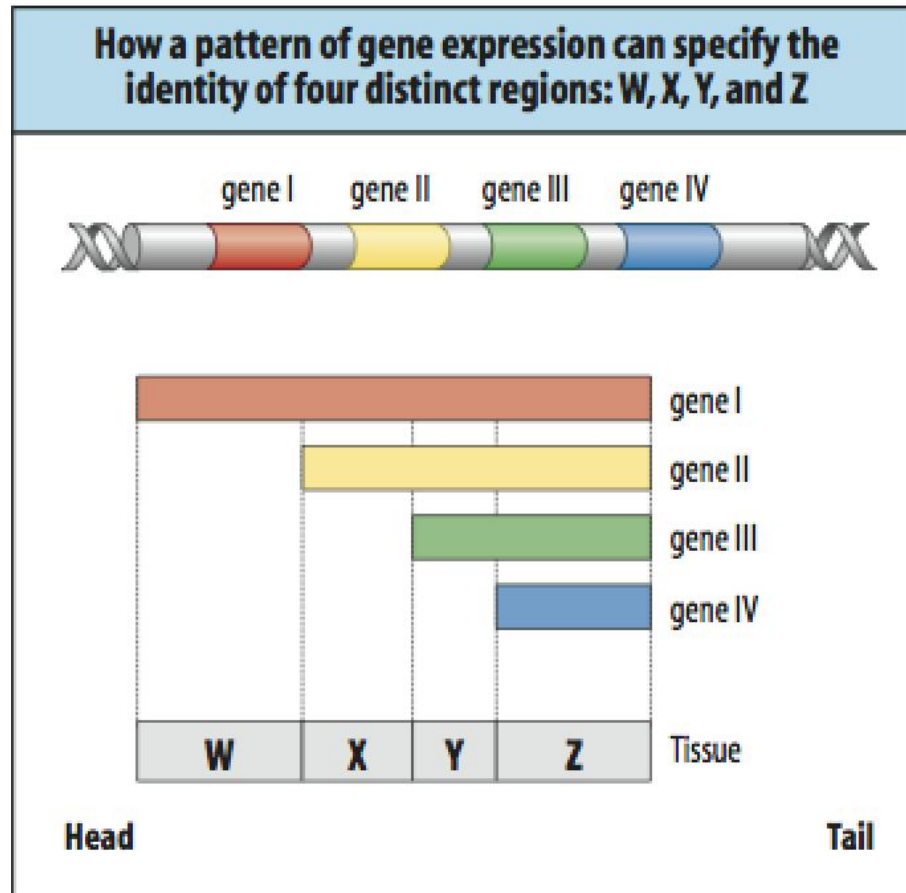
The pre-somatic mesoderm has acquired a positional identity before somite formation



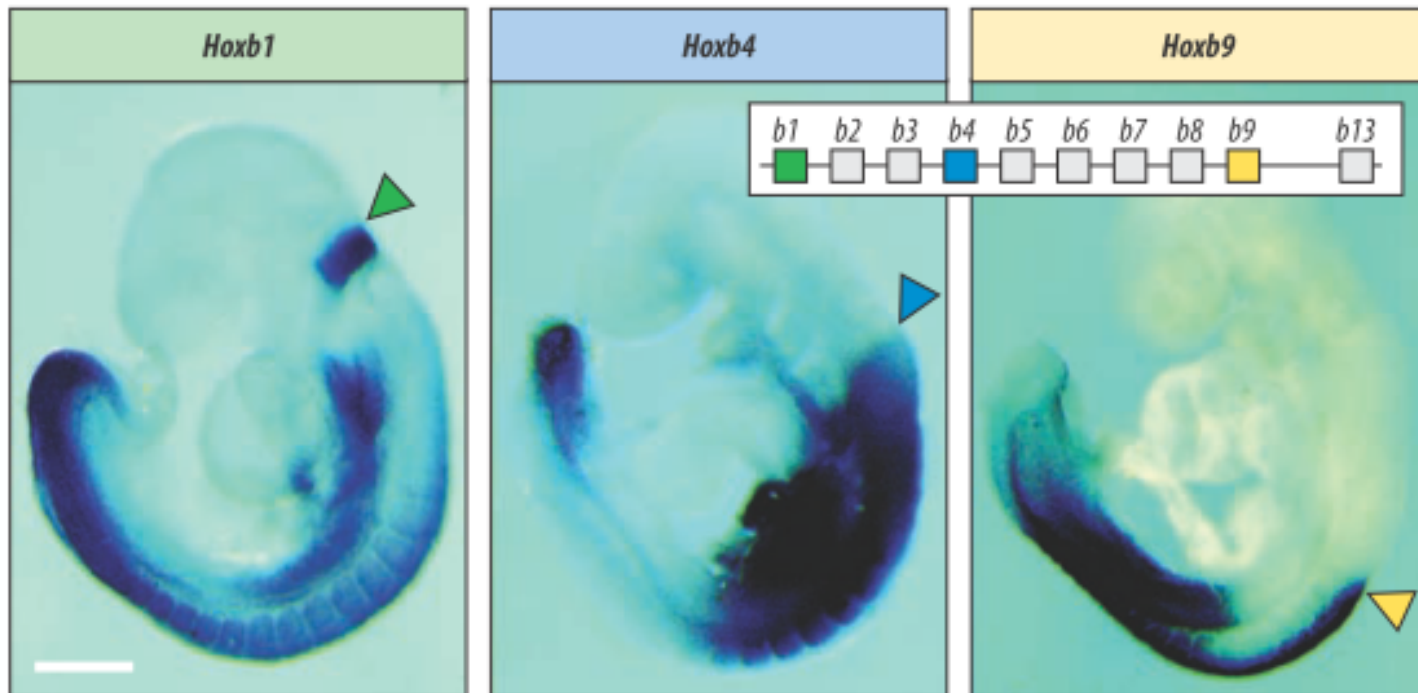
The *Hox* genes



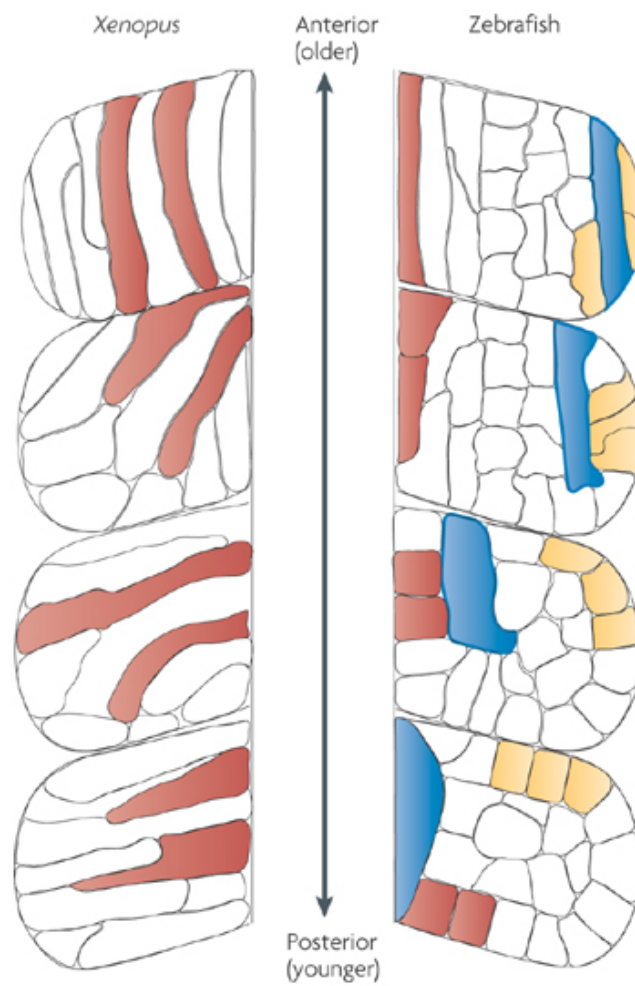
Gene activity can provide positional values



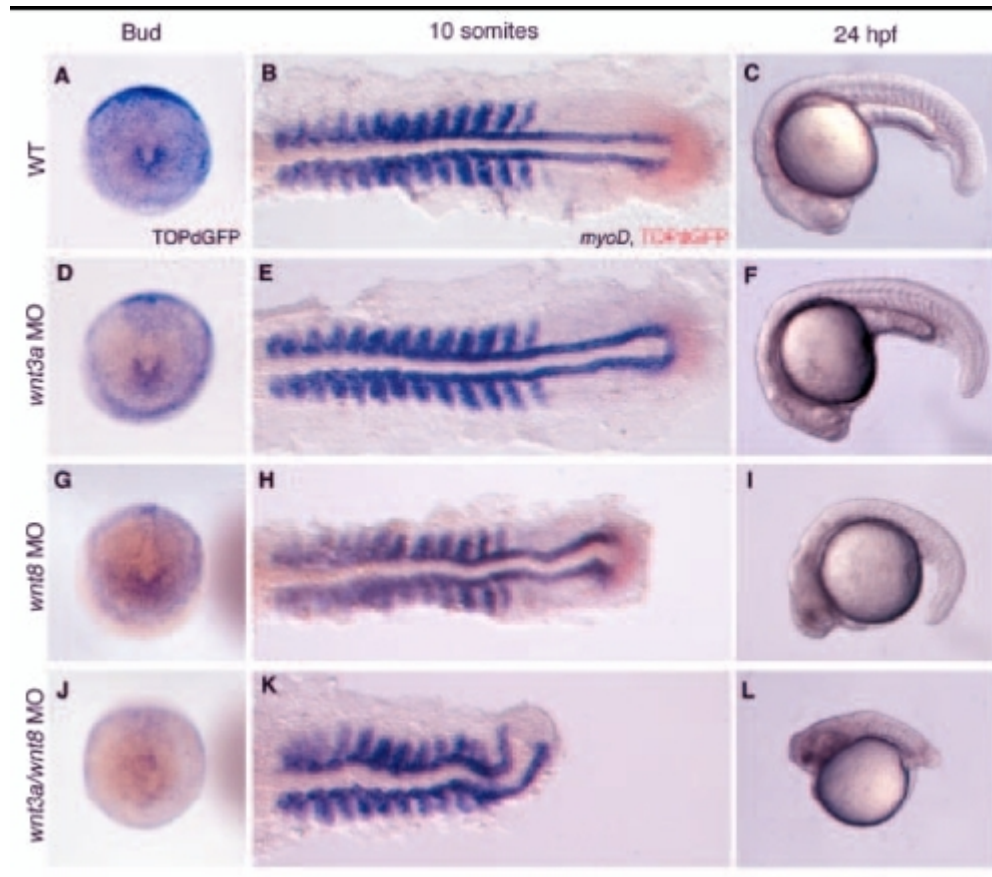
Hox gene expression in the mouse embryo



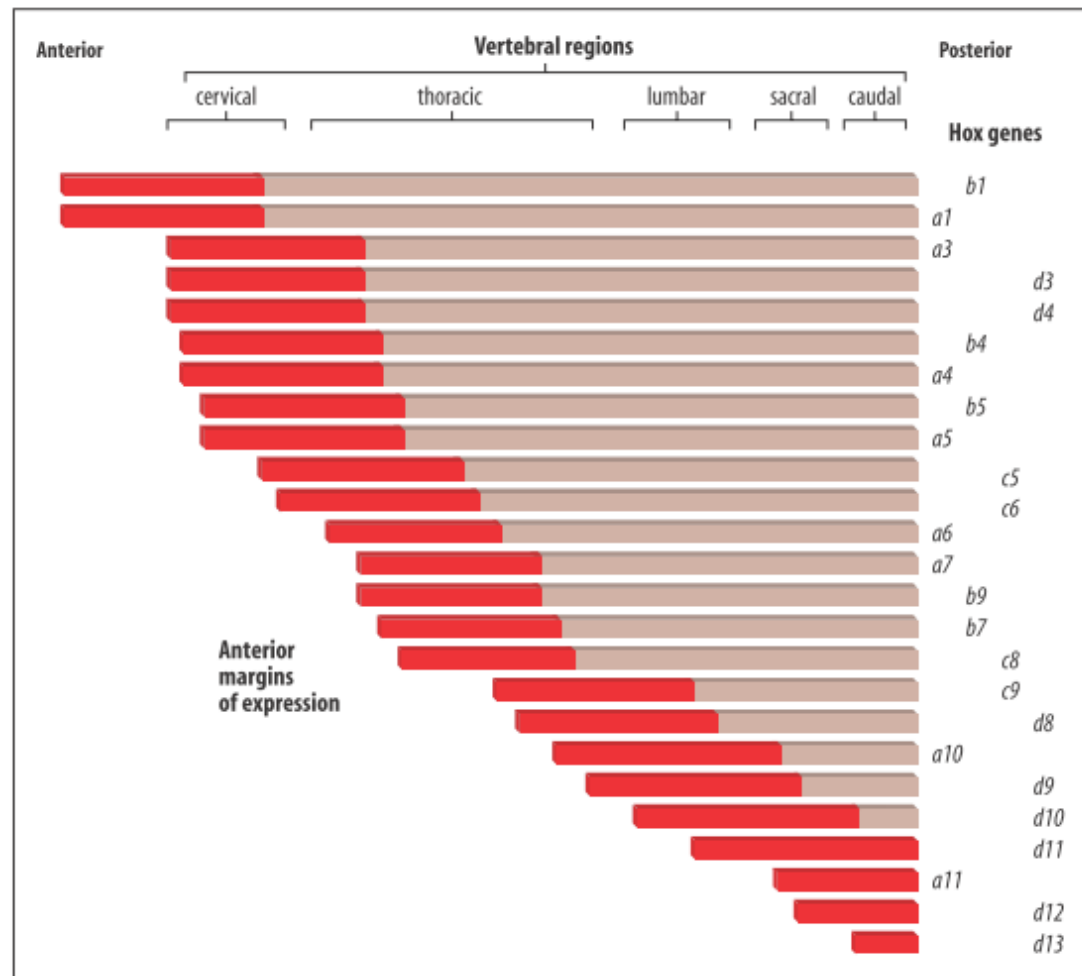
Thanks!



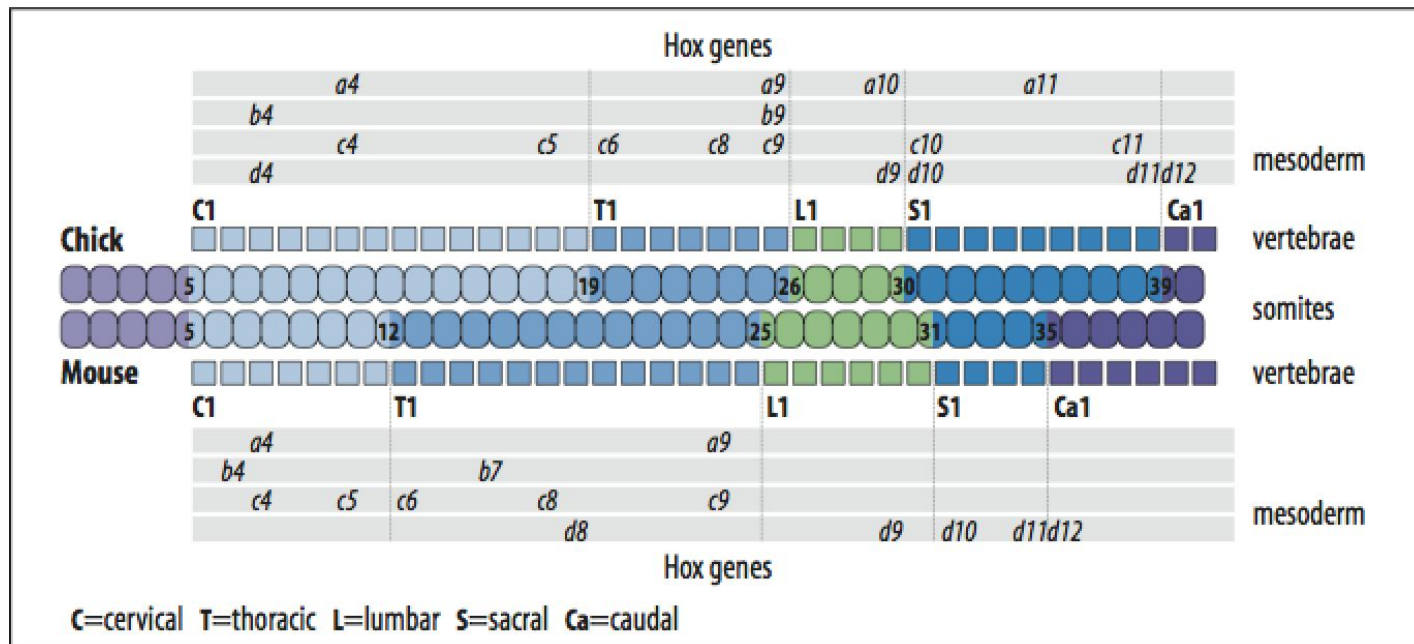
Expression pattern of *myoD*



A summary of *Hox* gene expression in the mouse mesoderm



Patterns of *Hox* gene expression in the chick and mouse embryos



Homeotic transformation of vertebrae due to deletion of *Hoxc8* in the mouse

