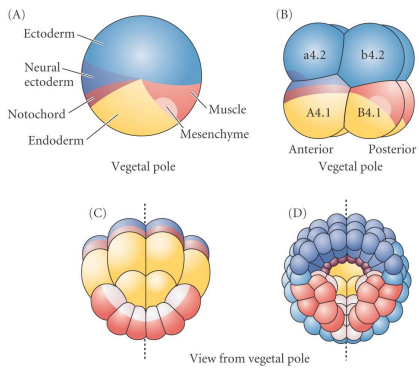


Autonomous Specification in
Tunicate development

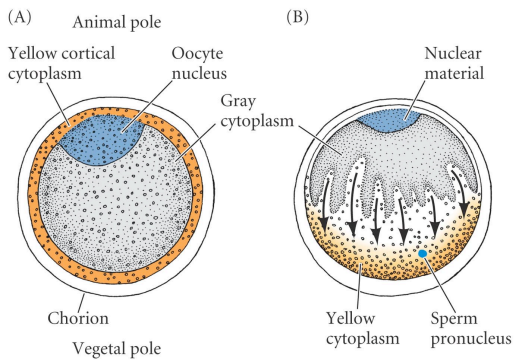
Autonomous & Conditional Specification in
C. elegans Embryonic Development

Figure 8.36 Bilateral Symmetry in the Egg of the Tunicate *Styela partita*



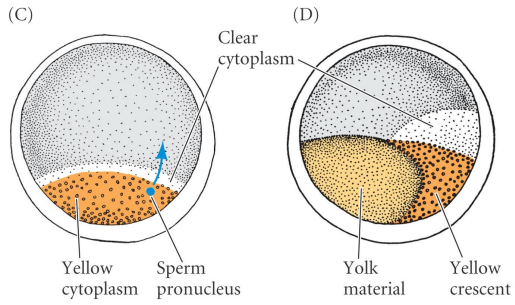
DEVELOPMENTAL BIOLOGY, Seventh Edition, Figure 8.36 © 2005 Sinauer Associates, Inc.

Fig. 8.37 Cytoplasmic Rearrangement in the Fertilized Egg of *Styela partita*



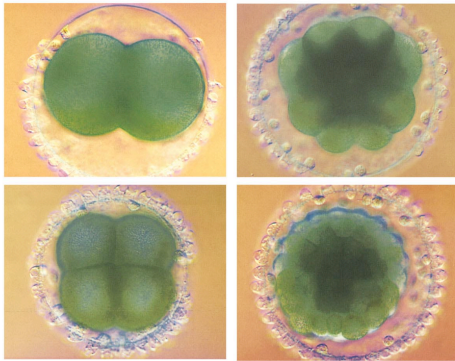
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Fig. 8.37 Cytoplasmic Rearrangement in the Fertilized Egg of *Styela partita*



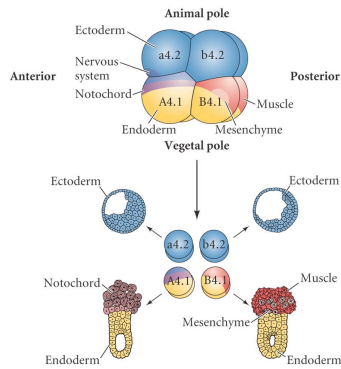
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Figure 8.38(1) Cytoplasmic Segregation in the Egg of *Styela partita*.



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Figure 3.8 Autonomous Specification in the Early Tunicate Embryo



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Figure 3.9 Acetylcholinesterase in Progeny of Muscle Lineage Blastomeres

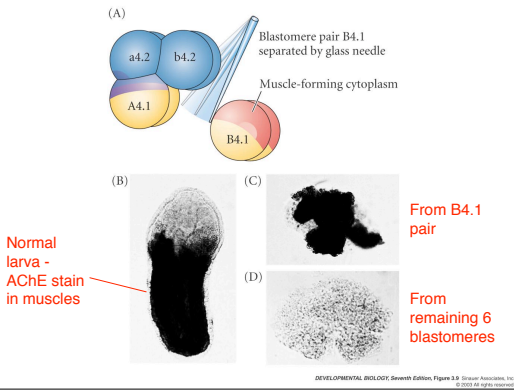


Figure 3.10 Microsurgery on Tunicate Eggs

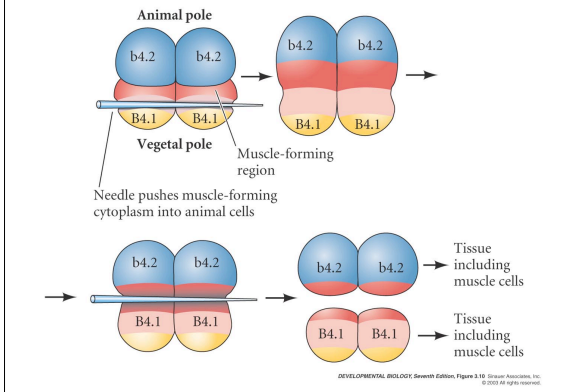


Figure 8.39 Autonomous Specification by a Morphogenetic Factor

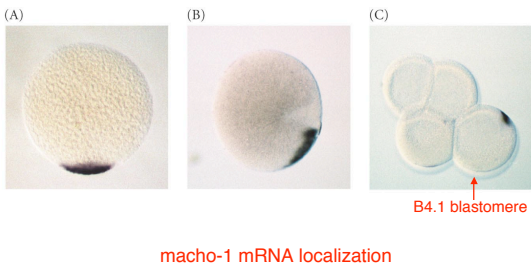


Figure 8.41 Comparison of Normal Tunicate Embryos and Embryos from which Posterior Vegetal Cytoplasm has been Removed

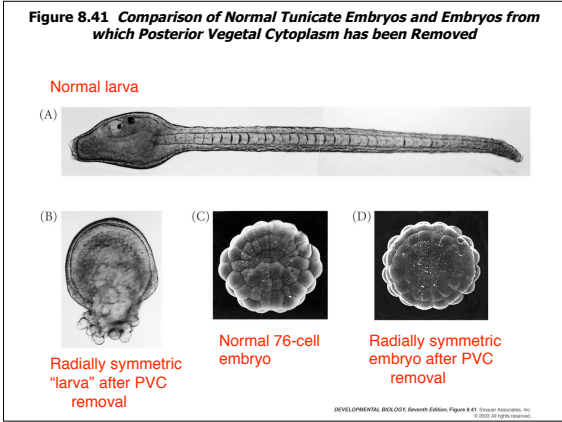


Figure 8.40 Antibody Staining of β -catenin Protein Shows Its Involvement with Endoderm Formation

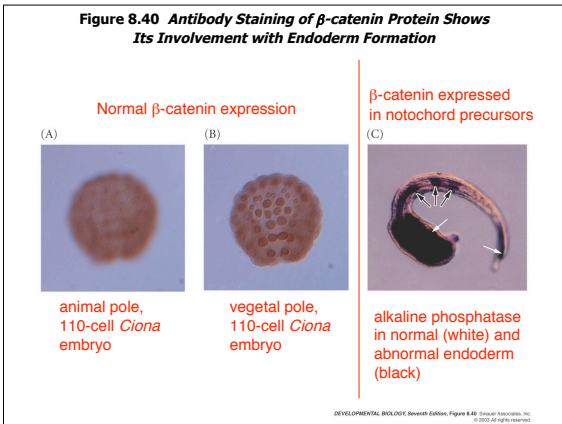
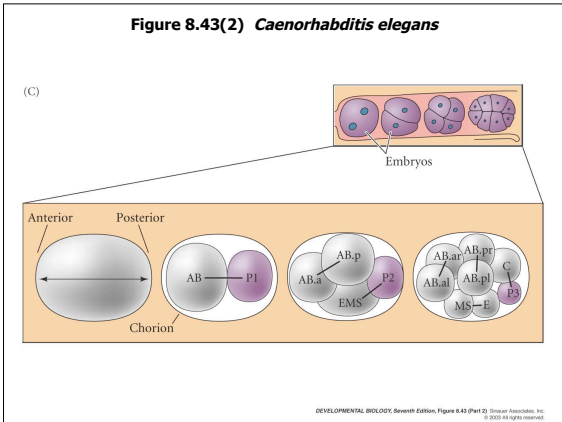


Figure 8.43(2) *Caenorhabditis elegans*



Caenorhabditis elegans embryonic development

Autonomous specification:

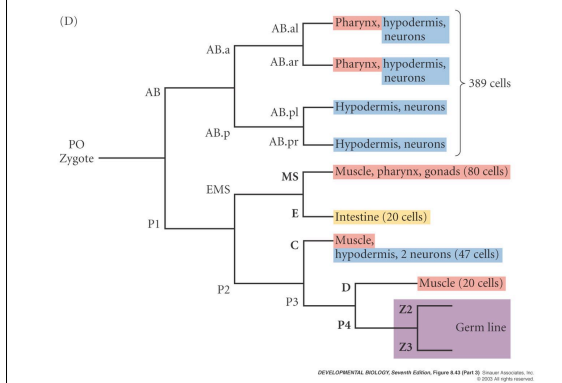
P granule segregation

Endomesoderm specification
- *skn-1* gene function

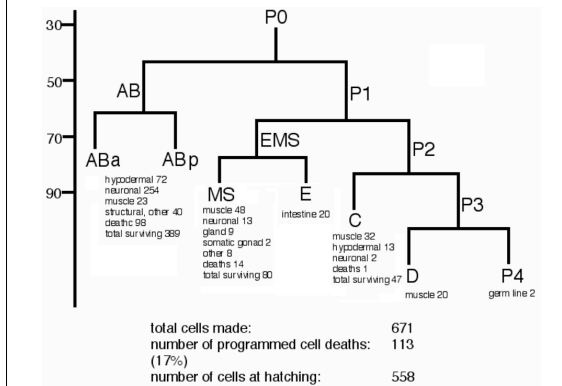
Conditional specification:

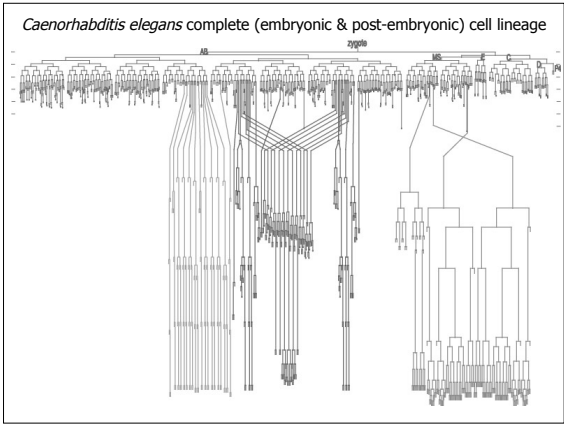
Endomesoderm specification
- Wnt signaling

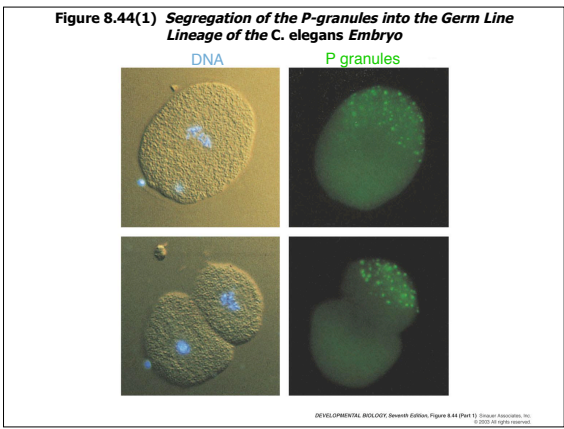
Figure 8.43(3) *Caenorhabditis elegans* early embryonic cell lineage

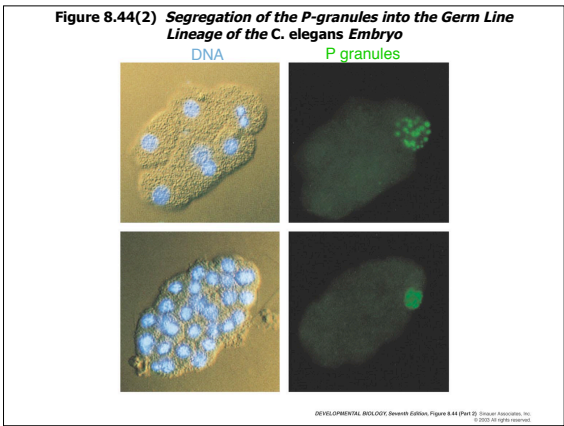


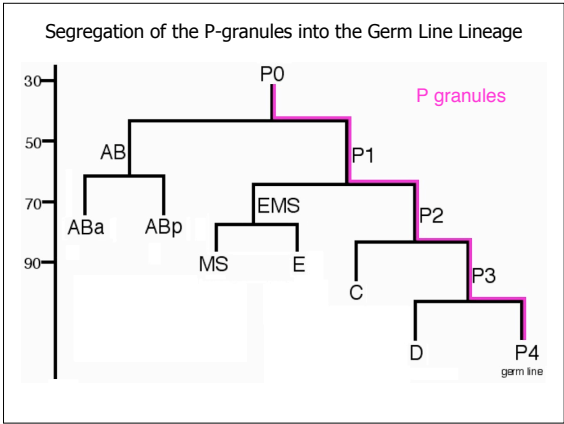
NOT Figure 8.43(3) *Caenorhabditis elegans* early embryonic cell lineage

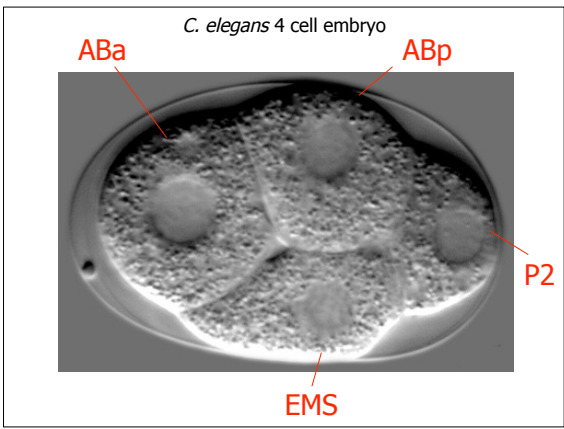












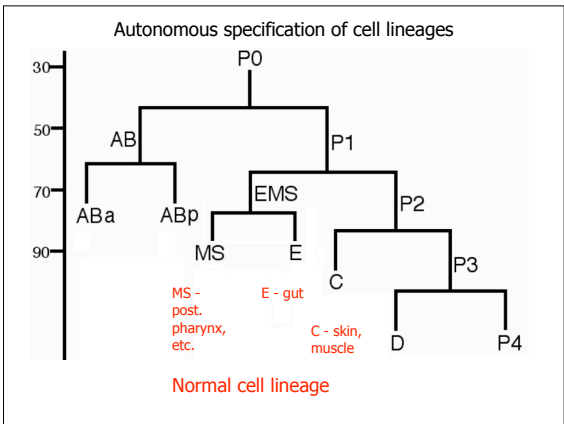
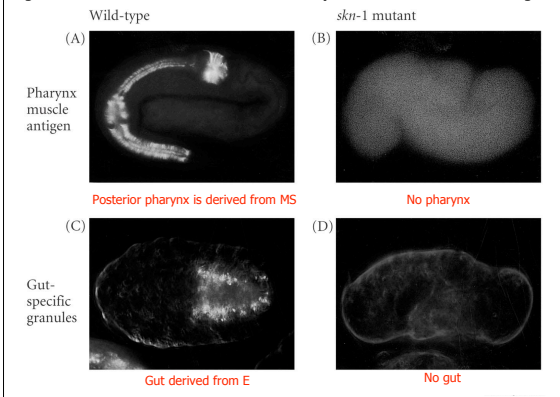
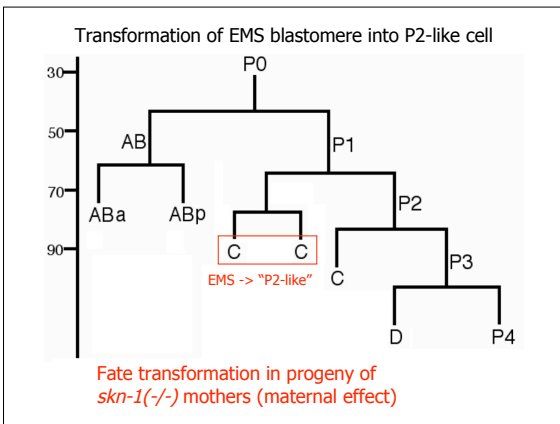
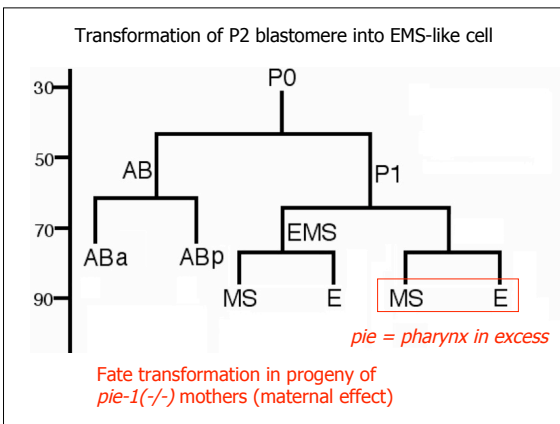


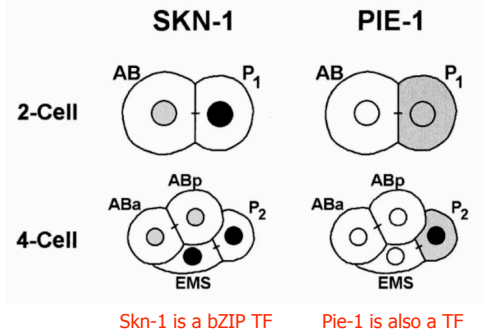
Figure 8.45 Deficiencies of Intestine and Pharynx in *Skn-1* Mutants of *C. elegans*



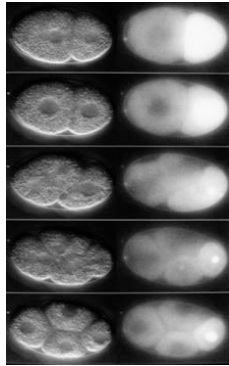




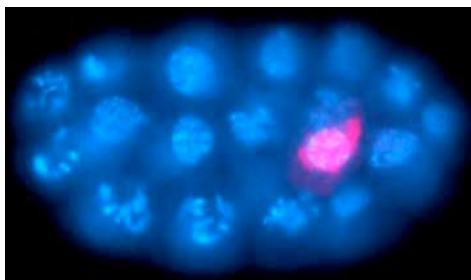
Normal segregation of Skn-1 & Pie-1 proteins in EMS & P2



Segregation of Pie-1 protein into P cell germ line precursors

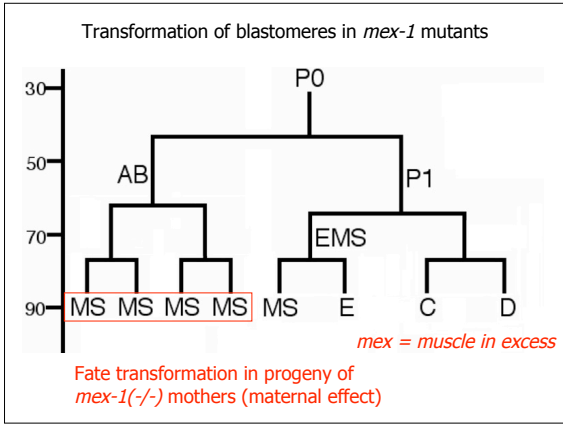


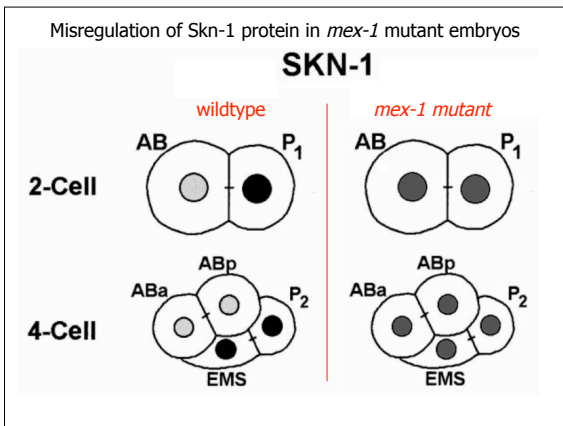
Segregation of Pie-1 protein into P cell germ line precursors



Blue: DAPI (nuclei) Red: Pie-1 protein

Pie-1 is a component of P granules

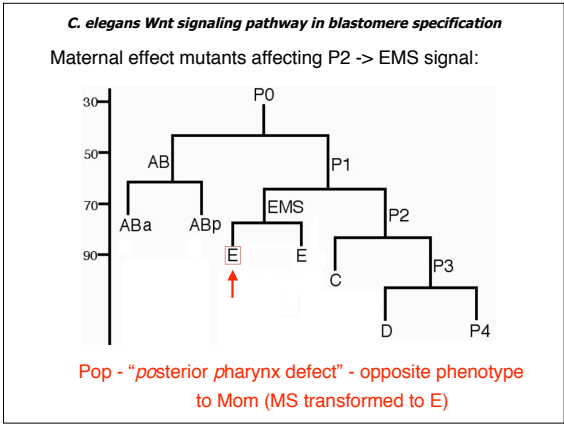


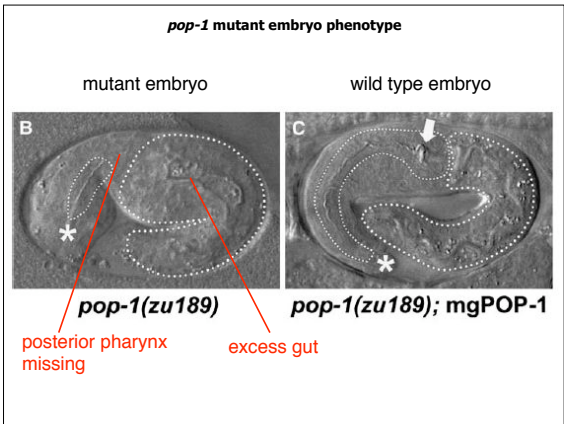


Caenorhabditis elegans embryonic development

Endomesoderm specification
also depends on cell-cell signaling

P2 signals EMS to promote endoderm
formation in one of its progeny (E)





C. elegans Wnt signaling pathway in blastomere specification

P2 to EMS signal uses a Wnt signaling pathway

Mom-2	Wnt-like (secreted signal from P2)
Mom-5	Frizzled (receptor)
Gsk-3	GSK3 (kinase)
Wrm-1	β -catenin (transcription factor)
Pop-1	TCF (transcription factor)

No apparent Dishevelled (Dsh) homolog

