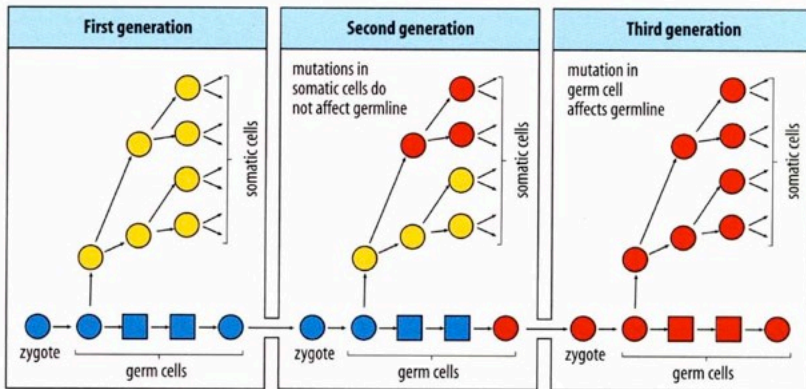


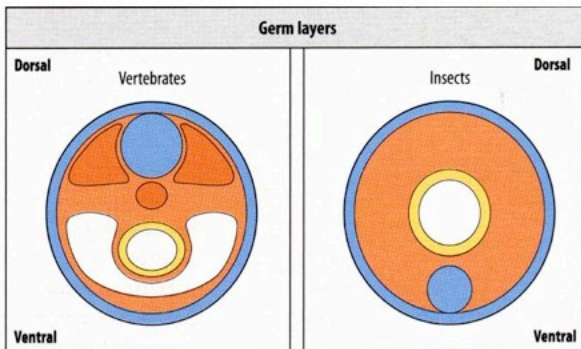
Developmental Biology

A few key concepts

Germ vs. Somatic



Germ layers



Germ layers	Organs	
Endoderm	gut, liver, lungs	gut
Mesoderm	skeleton, muscle, kidney, heart, blood	muscle, heart, blood
Ectoderm	skin, nervous system	cuticle, nervous system

Roux's experiment

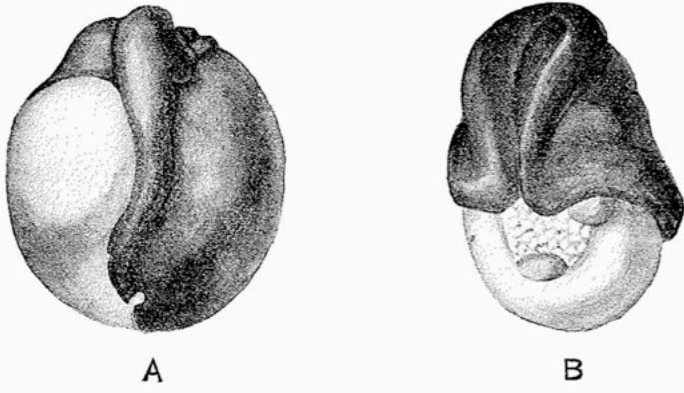
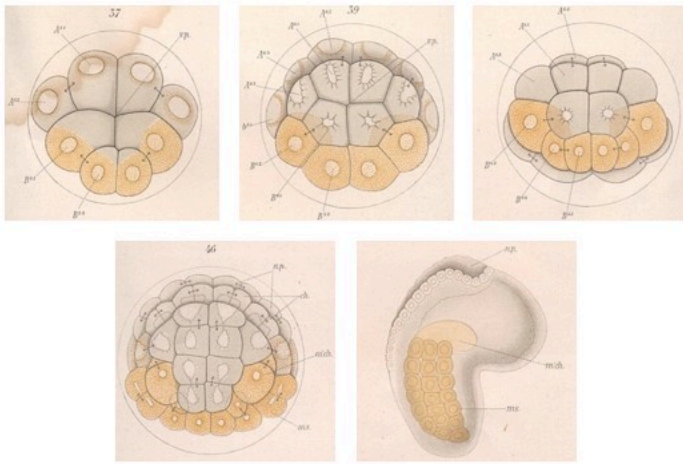
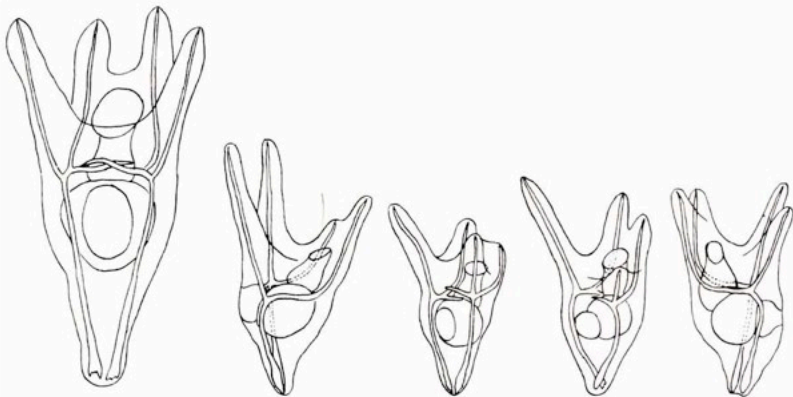


FIG. 31. — A. Hemiembryo lateralis. B. Hemiembryo anterior. (After Roux.)

Conklin and *Ciona*



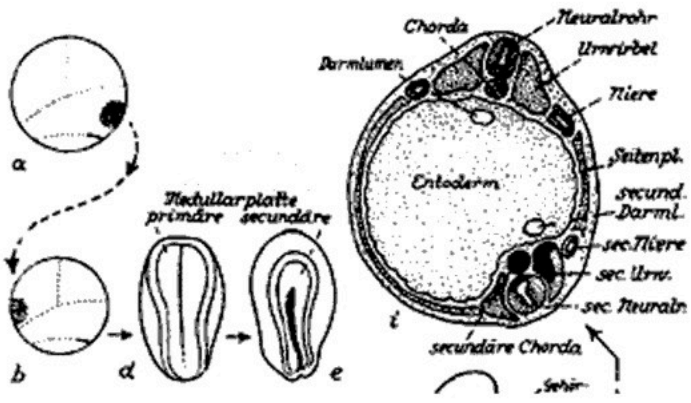
Driesch and regulation



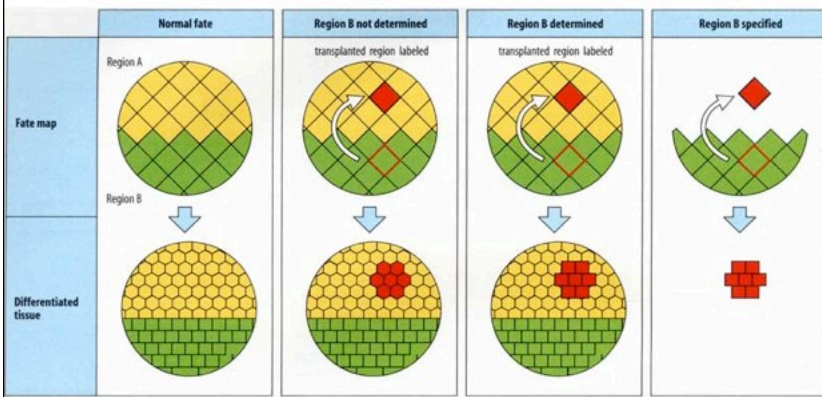
(A) Normal pluteus larva

(B) Plutei developed from single cells of 4-cell embryo

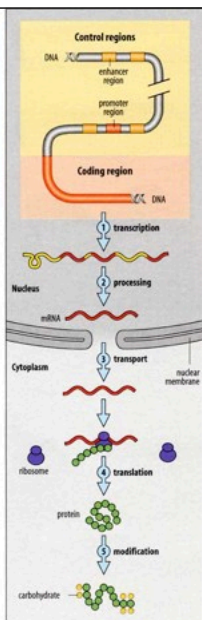
Mangold/Spemann



Fate/Specification/Determination

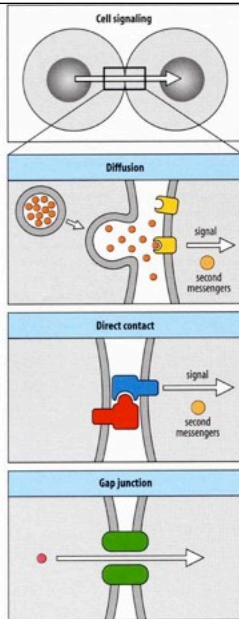


The gene

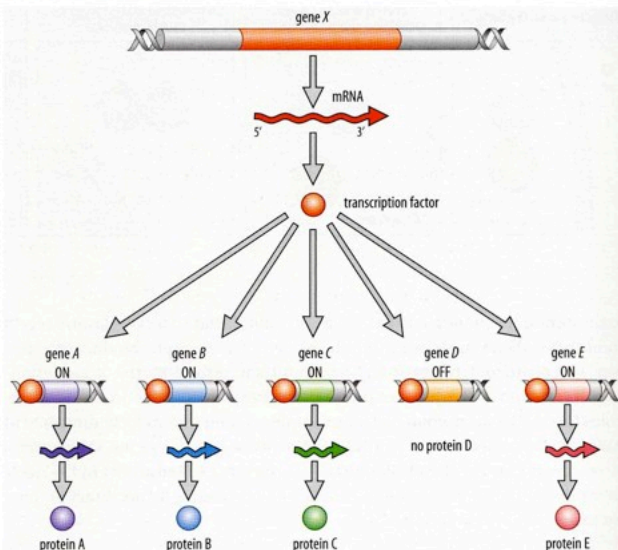


Modern developmental biology is the study of **differential patterns of gene expression** and their effects on cells, tissues, organs, and organisms.

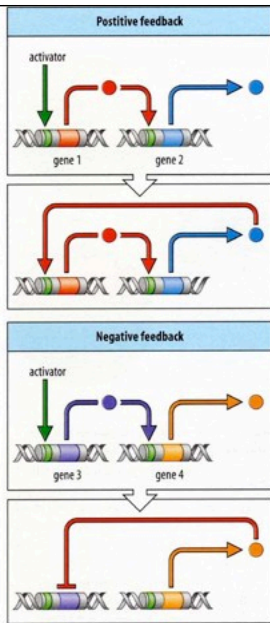
Signaling



Transcription factors



Feedback



Morphogens, gradients

