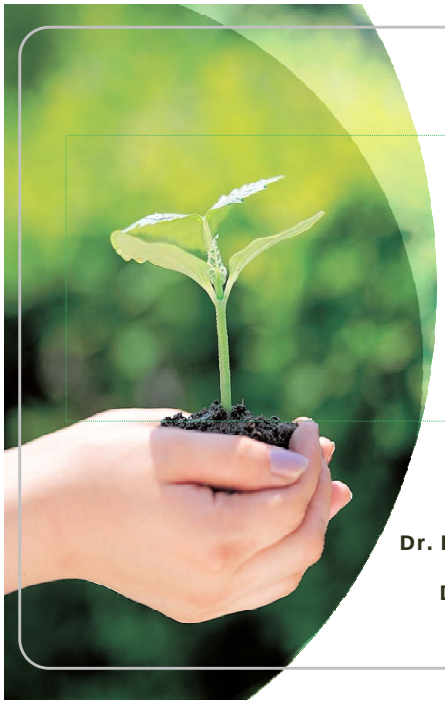


การเจริญของสิ่งมีชีวิต
Development

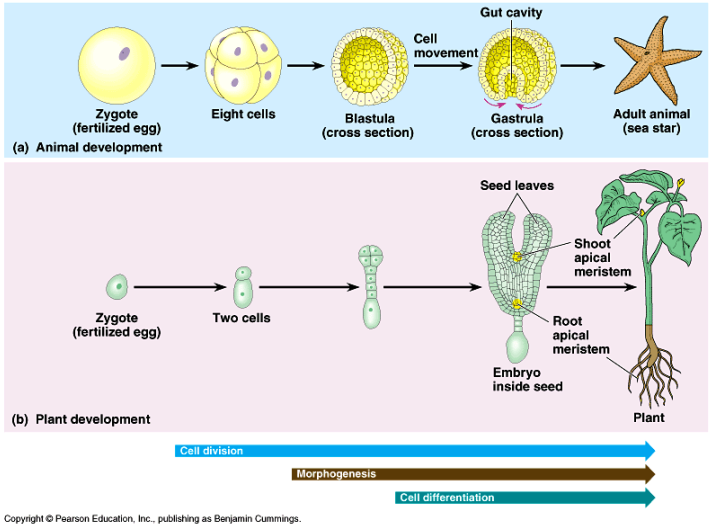
Dr. Boonsatien Boonsoong

Department of Zoology
Faculty of Science
Kasetsart University

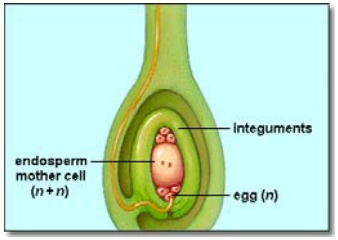
Objectives:

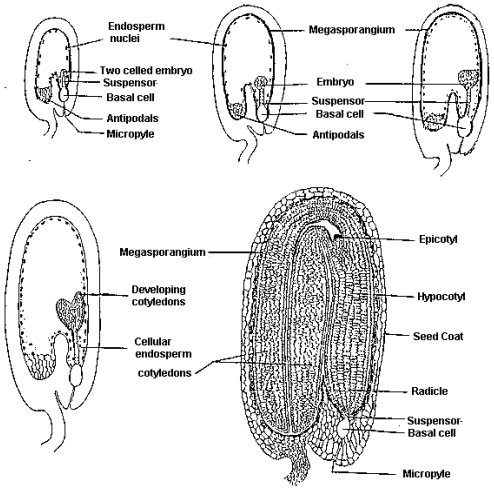
1. ทราบขั้นตอนการเจริญของเอมบริโอทั้งในพืชและสัตว์อย่างสังเขป
2. สามารถอธิบายความแตกต่างในการเจริญของเอมบริโอสัตว์ชนิดต่างๆ

Embryonic Development



Plant Embryonic Development





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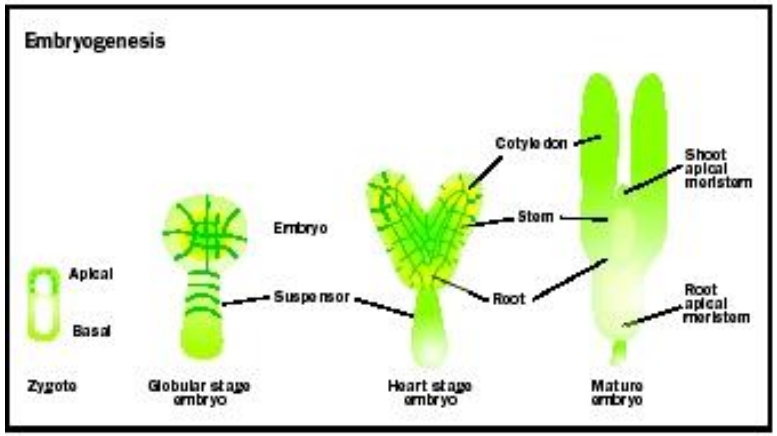
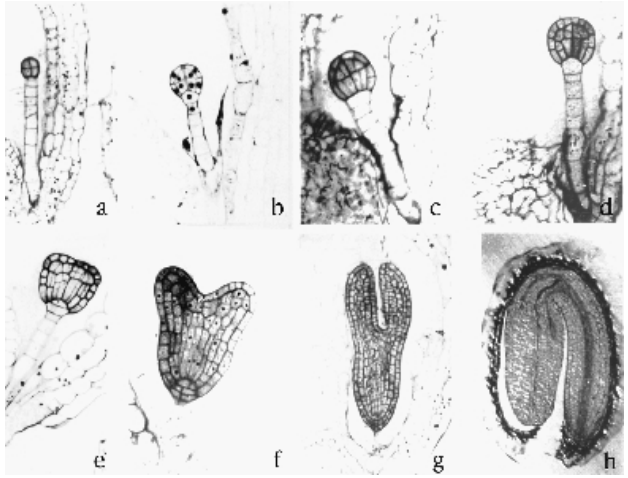
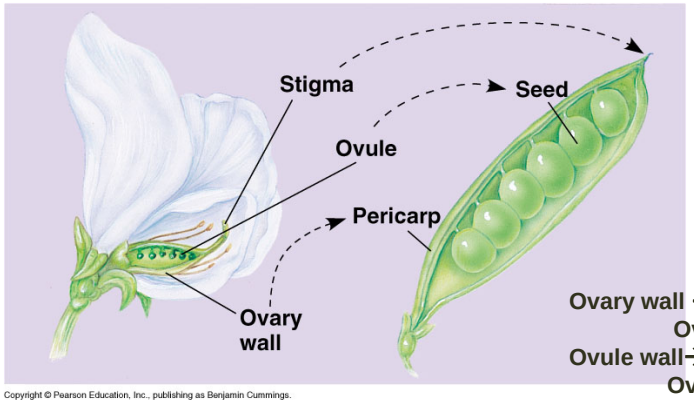


Plant Embryonic Development



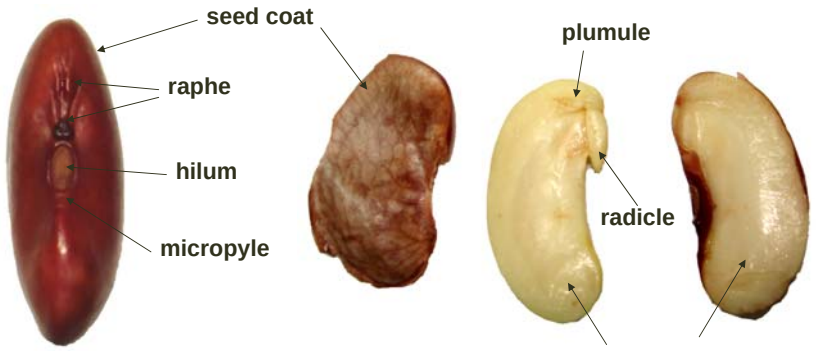
Plant Embryonic Development



Ovary wall → fruit coat
Ovary → fruit
Ovule wall→ seed coat
Ovule → seed

Seed Structure and Anatomy

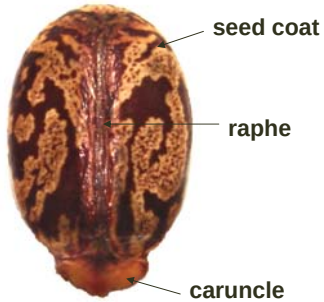
Red kidney bean

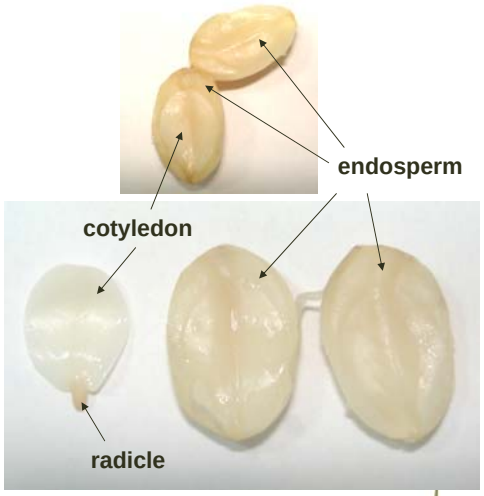


rapid embryonic development

Seed Structure and Anatomy

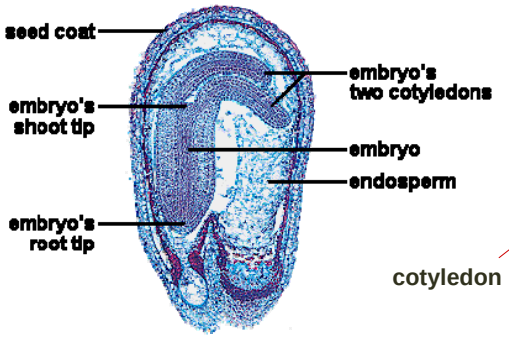
Castor bean

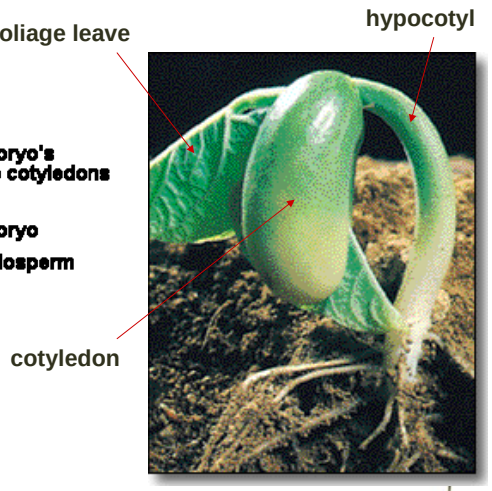




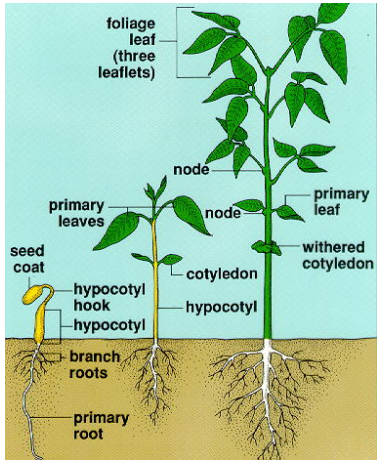
slowly embryonic development

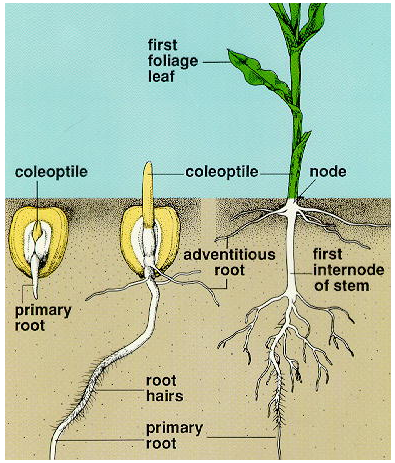
Plant Embryonic Development



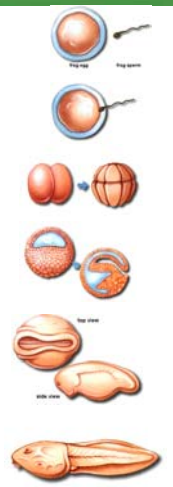


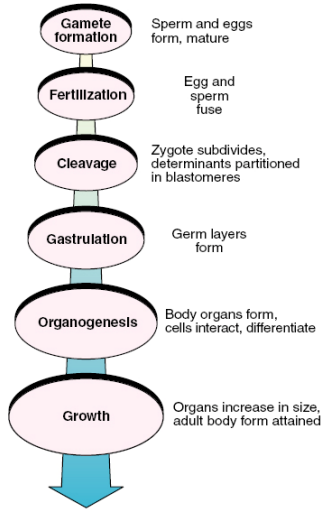
Germination



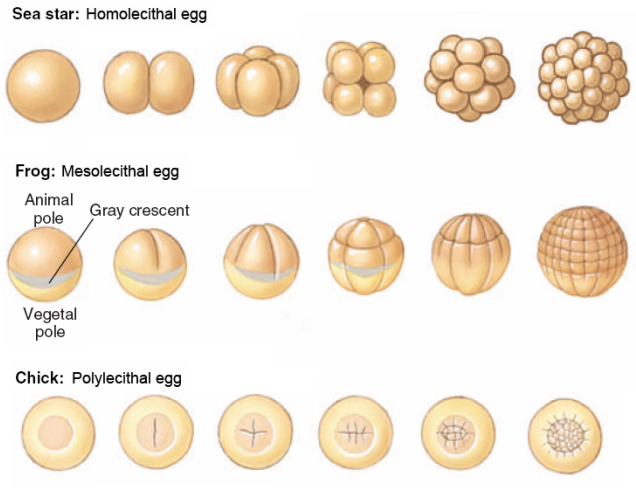


Development in Animal Embryo

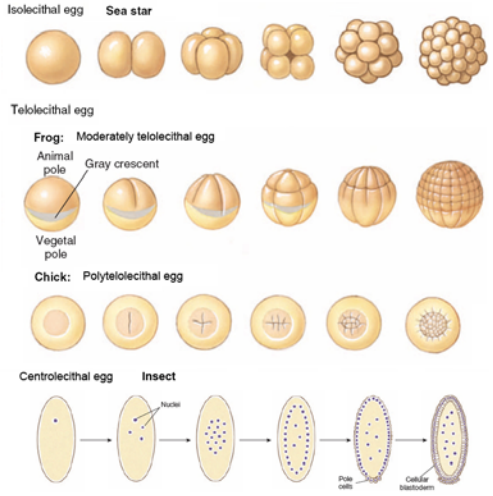




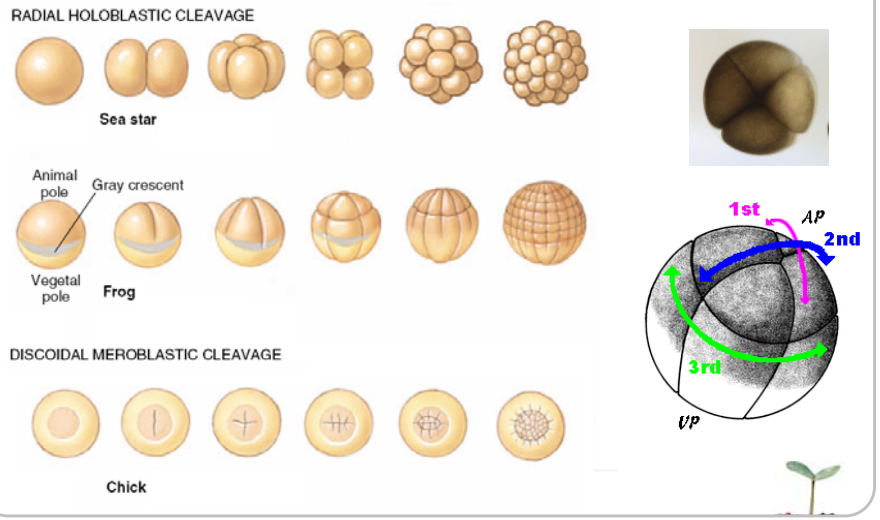
Egg type: amount of yolk



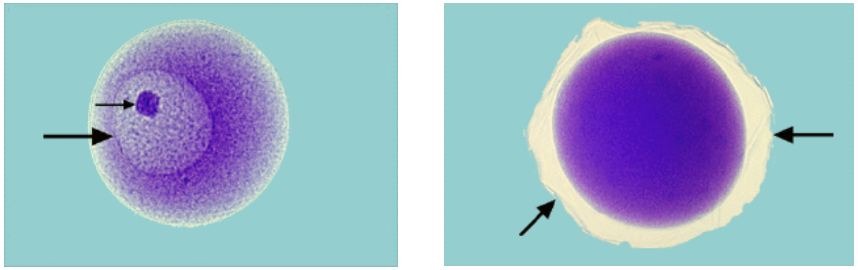
Egg type: distribution of yolk



Embryonic development: Cleavage



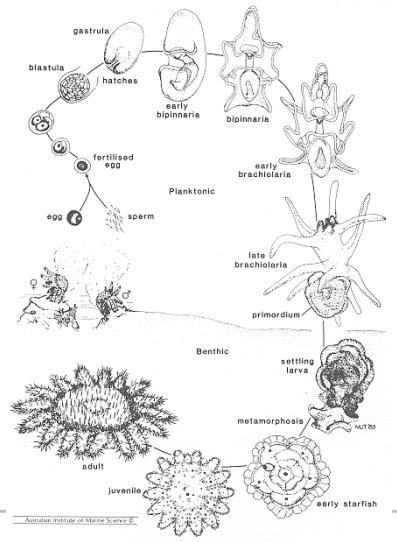
Unfertilized egg or Fertilized egg ?



Remark

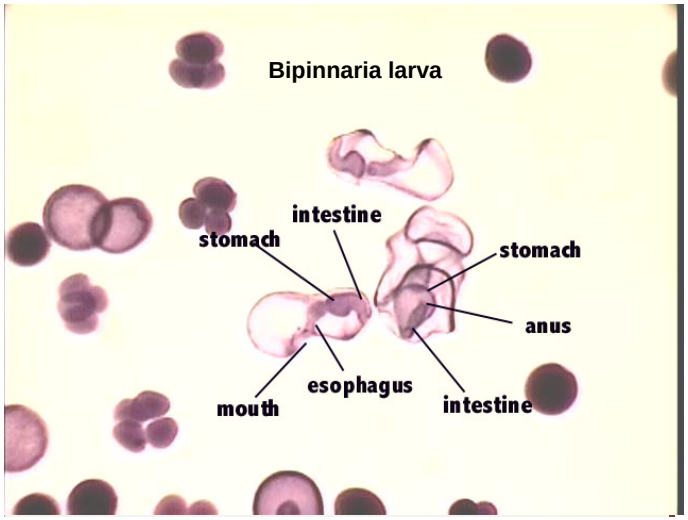
- Nucleus
- Vitelline membrane
- Perivitelline space – *Ascaris* sp.
- Polar body

Starfish embryonic development

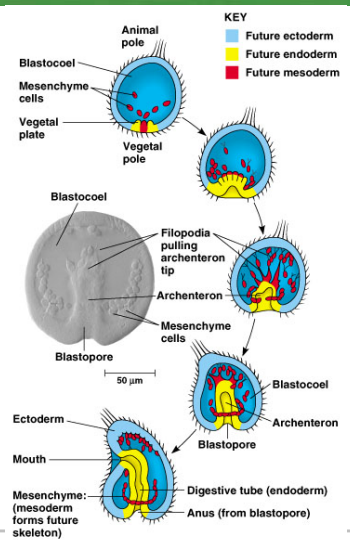


- Homolecithal egg
- Isolecithal egg

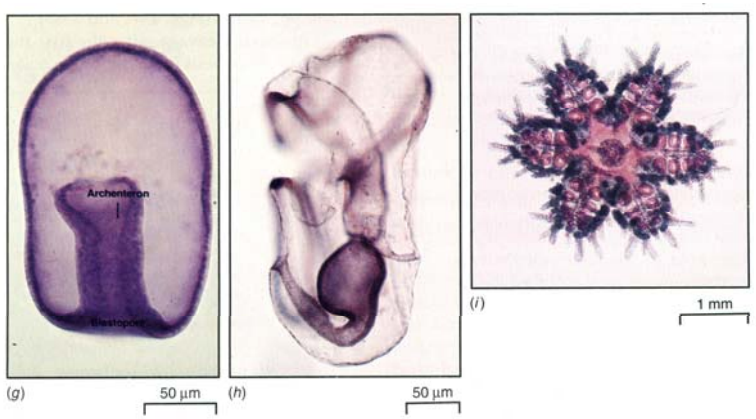
Starfish embryonic development



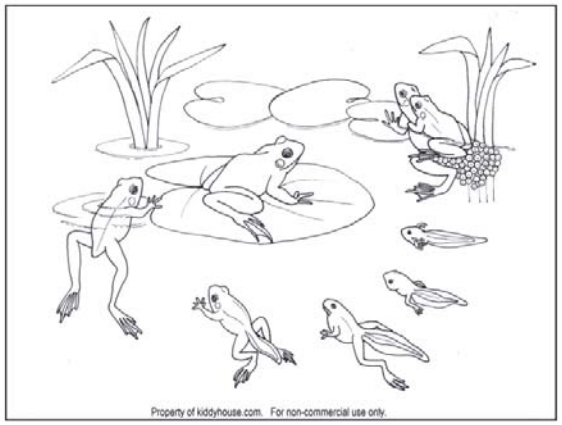
Starfish Embryonic: Gastrulation

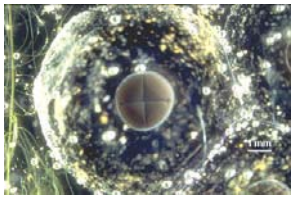


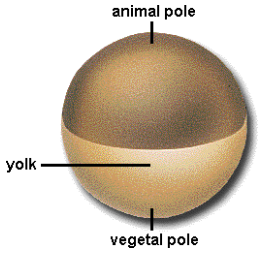
Starfish embryonic development



Embryonic development in Frog

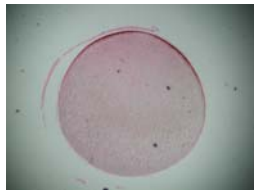


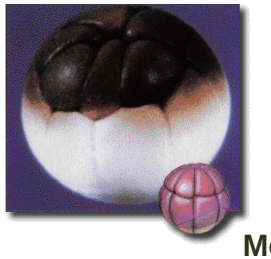


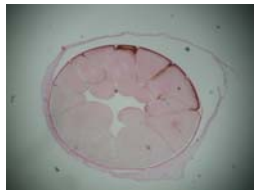


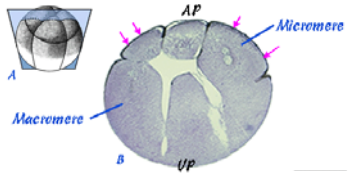
- Mesolecithal egg
- Moderately telolecithal egg

Embryonic development: Cleavage



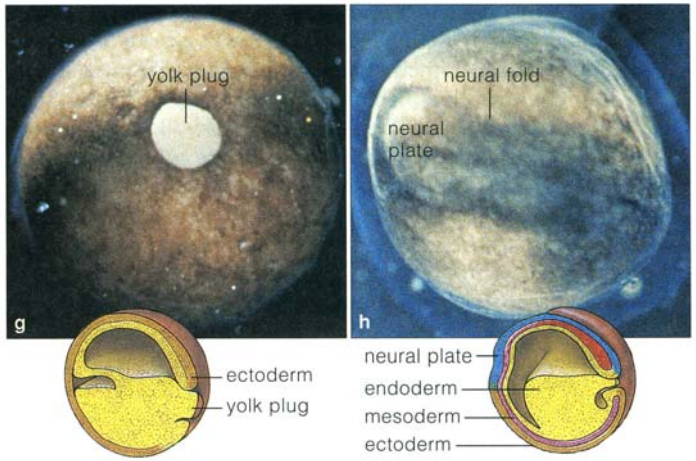




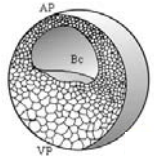


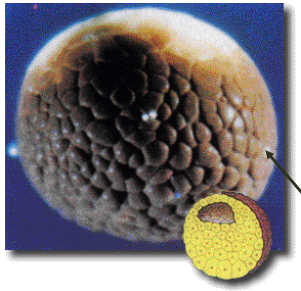
Morula – 32 cell stage

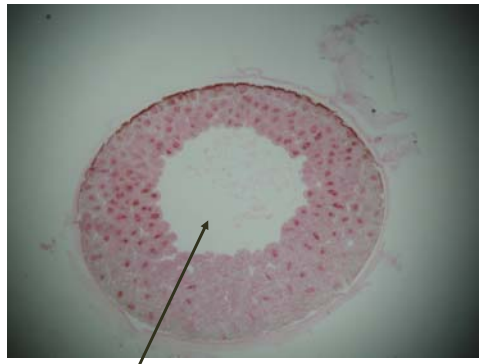
Embryonic development in Frog



Embryonic development: Blastulation





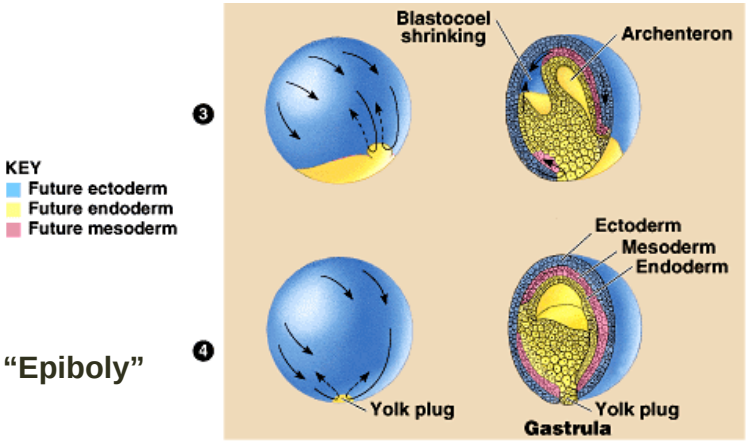


Blastula

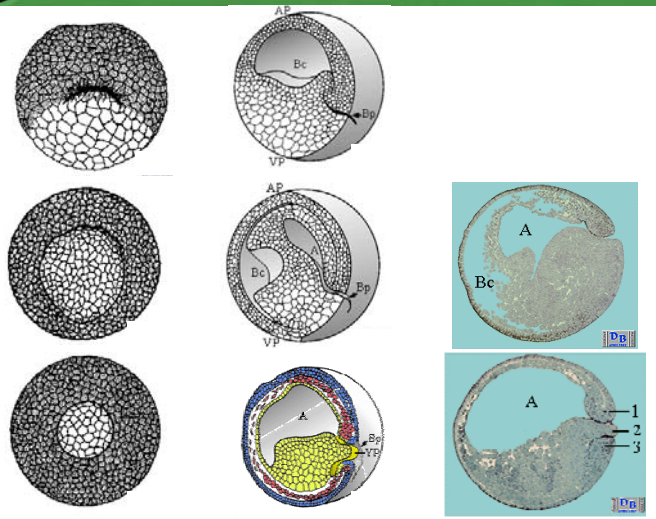
blastocoel

- blastoderm
- blastomere

Embryonic development in Frog



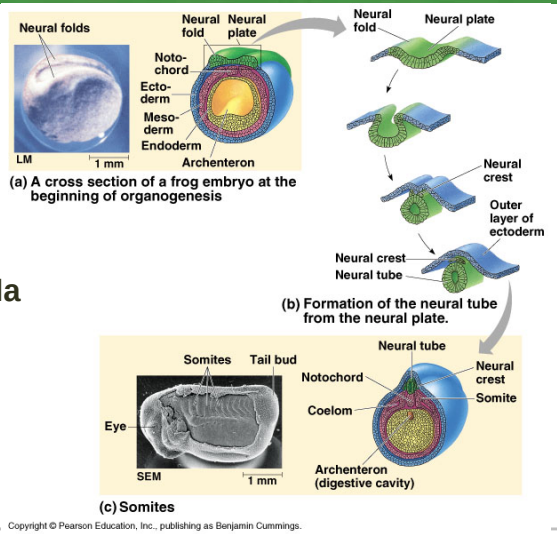
Embryonic development: Gastrulation



Gastrula

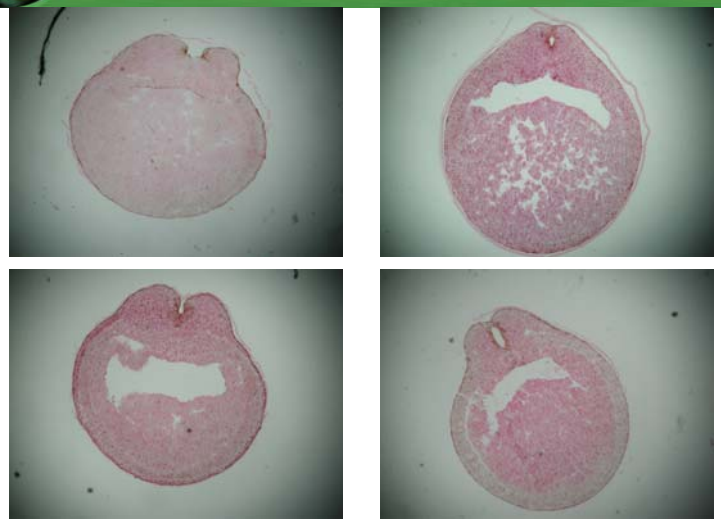
Embryonic development: Organogenesis

Embryonic development: Organogenesis



Neurula

Embryonic development: Neurulation



Differentiation of germ layers