

# Developmental Biology Lecture 18 (Week 11, Tuesday) 11/04/2014

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Slide 1) know the two pathways of development from this slide. The first pathway starts with the common lymphoid progenitor box and the second pathway starts in the box next to it, with the common myeloid progenitor.

Slide 2)

(missing) The yolk sac

(missing) Liver (fetus)

(missing) In adults, bone marrow is the source of all blood cells.

An important signaling pathway for this slide is Wnt signaling.

Slide 3)

(missing) Form tubes and fuse

Slide 4) EPO is produced in the kidneys and produces red blood cells.

Slide 5)

(incomplete) Different hemoglobins expressed at different times during development.

As shown in the picture, there are different hemoglobins active at the embryo stage, the fetal stage, and the adult stage. This is an example of differential gene expression.

Slide 6) Each gene has its own control region. The blue regions are exons, and the silver regions are introns. Only blue regions are coding regions.

**Clicker!**

**Why would an endurance athlete take EPO?**

B) To increase his number of red blood cells

Slide 8)

(incomplete) The region that binds the antigen is “variable”

Slide 9)

(missing) Irreversible rearrangement of DNA provides variability.

Slide 10)

Skin has two cellular layers:

- Epidermis
- Dermis

There are also melanocytes in the epidermis (pigment cells). Dust is our dead skin cells.

Slide 11)

(missing) Give mechanical strength

Desmosomes include intermediate filaments and cadherins. Integrin levels help stem cells maintain connection and maintain their stem cell properties.

### **Clicker Question!**

**Where do cells of the dermis come from?**

- A) Ectoderm
- B) Neural crest cells
- C) Bone marrow
- D) Basal stem cells of epidermis
- E) Somites

Answer is **E!** Somites

Slide 13)

(missing) Wnt signaling is essential for stem cell proliferation.

Slide 15)

(incomplete) Muscle cells are derived from the somites.

(incomplete) Myoblast: Cell committed to forming a new muscle cell.

Slide 16) This occurs over about 24 hours.

Slide 17) Involves a helix-loop-helix transcription factors

Slide 18)

(missing) MyoD and Myf5 are phosphorylated by CDK's.

- Targeting MyoD for degradation

**Clicker!**

**Which of the following types of cells are replaced from a source of stem cells in adults?**

- A) Blood cells
- B) Cells of the epidermis
- C) Gut epithelial cells
- D) Two of the above
- E) Three of the above (A, B, C)

Answer is **E!**