

Developmental Biology Lecture 16 (Week 10, Tuesday) 10/28/2014

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Slide 1)

(missing bullet) Involuntary; control of internal organs.

There are three categorizations under this: sympathetic, parasympathetic, and enteric nervous systems. The sympathetic is the fight or flight nervous system. Parasympathetic is rest and digestion. Enteric is the nervous system of the gut.

Slide 2)

Give rise to:

- Neurons: PNS
- Schwann cells (PNS)
- Pigment cells (melanocytes)
- Medullary cells (produce adrenaline)
- Chondrocytes
- Osteoblasts

Both chondrocytes and osteoblasts come from the anterior region and are involved in the head area.

Slide 4) Know this slide. The cranial region gives rise to chondrocytes and osteoblasts. The vagal and the sacral regions come together to give rise to the enteric nervous system (migrate together). The trunk gives rise to the sympathetic ganglia, DRG sensory neurons, and melanocytes.

Slide 5) Osteoblasts and chondrocytes are involved in the forming of bone and cartilage of the jaw, inner ear, and neck.

The diagram shows Hox gene expression.

Clicker!

Which of the following is part of the peripheral nervous system?

- A) sensory neurons
- B) parasympathetic neurons
- C) enteric neurons
- D) all of the above

Answer is D! All of the above.

Slide 7) Dorso-lateral pathway: Gives rise to mainly pigment cells (melanocytes). This pathway migrates over the somites.

Ventro-lateral pathway: migrate through/into the somite (only the anterior portion). Kind of forms a sort of segmentation.

Slide 8) Know this slide.

(Incomplete) Cells mainly give rise to pigment cells (melanocytes).

Give rise to:

- Sympathetic
- Dorsal root ganglion (DRG)
- Medullary cells

Slide 9)

(missing) Ephrin B1 is expressed in the posterior of somites.

Remember ephrin interacts with Eph.

Slide 12)

(incomplete bullet) Blocking integrin function can inhibit cell migrations.

Slide 13) Dictyostelium Aggregation: it's a slime mold, typically found in amoeba form. Eats bacteria- in absence of bacteria organisms come together to form a slug so they can move to a different region. This movement involves chemotaxis, meaning the slug is following a chemical gradient in the environment that guides migration. This particular organism uses a gradient of cAMP and moves up the gradient.

Clicker!

Why do some neural crest cells migrate through a specific region of the somite?

- A) The neural crest cells are attracted to anterior somite cells.
- B) The neural crest cells are repelled by anterior somite cells.
- C) The neural crest cells are attracted to posterior somite cells.
- D) The neural crest cells are repelled by posterior somite cells.
- E) The neural crest cells follow a specific track of integrin molecules in the ECM.

Answer is D! The neural crest cells are repelled by posterior somite cells.

Slide 17) Define notochord? A long rod like transient structure that provides support- sort of acts as a backbone for development. Also involved in important signaling functions.

(missing) Notochord expansion occurs along its length.
This organism here is called a sea squirt!

Slide 19)