

Section 3: Neuronal Development

Alexis Franklin

COGS 17: Summer I 2019

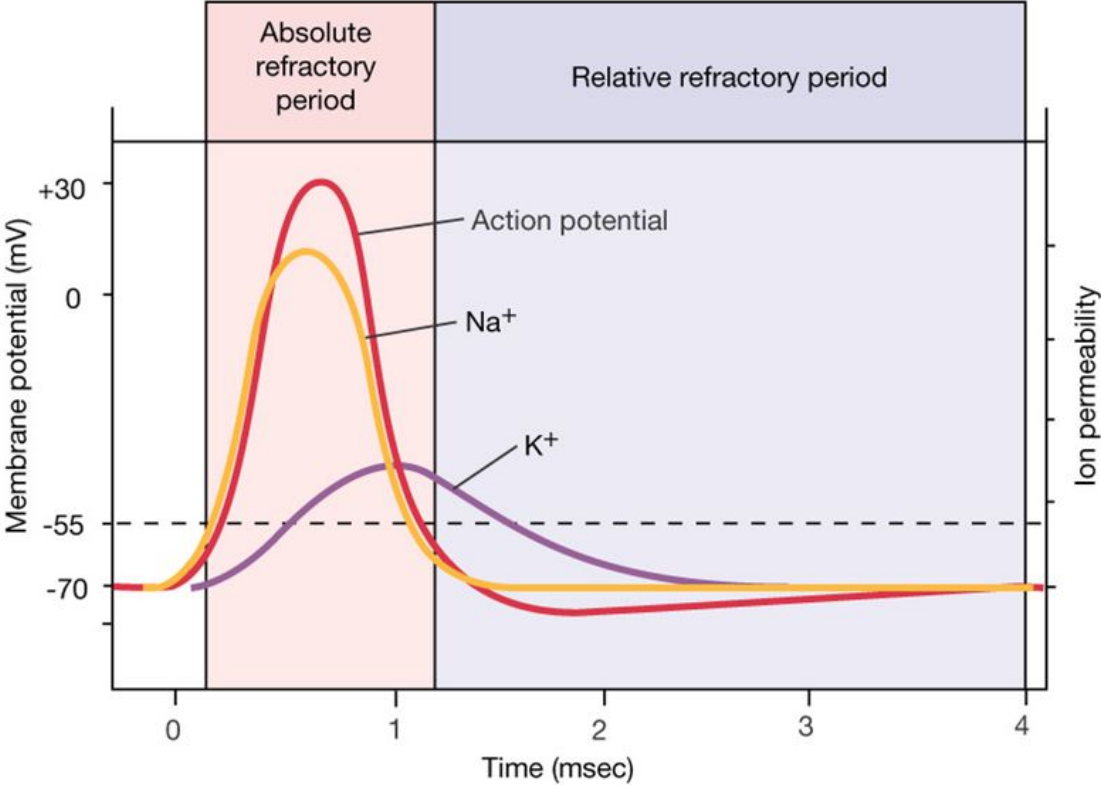
Section 7/3, Week 1

Professor Boyle	mboyle@ucsd.edu	Tues/Wed 6-7pm	CSB 130
Tania	tadelgad@ucsd.edu	TBD	TBD
Lexi	adfrankl@ucsd.edu	Tuesday, 9-10 am	CSB 114

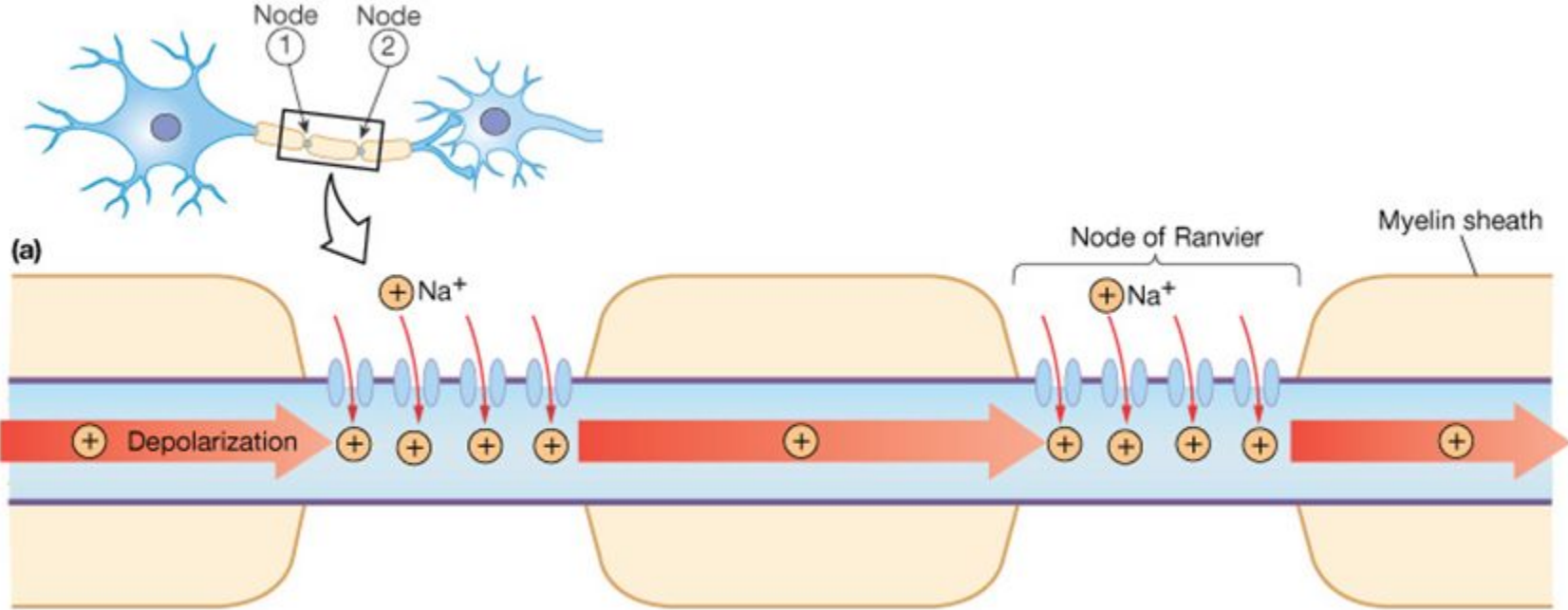
Classification of Neurons

1. By connection
 - a. Sensory, motor, interneuron
2. Length of axon
 - a. Golgi Type 1 = long distance
 - b. Golgi Type 2 = local
3. By Neurotransmitter
 - a. Ex: dopaminergic, glutamatergic
4. Number of Neurites
 - a. Unipolar, pseudo-unipolar, bipolar, multipolar

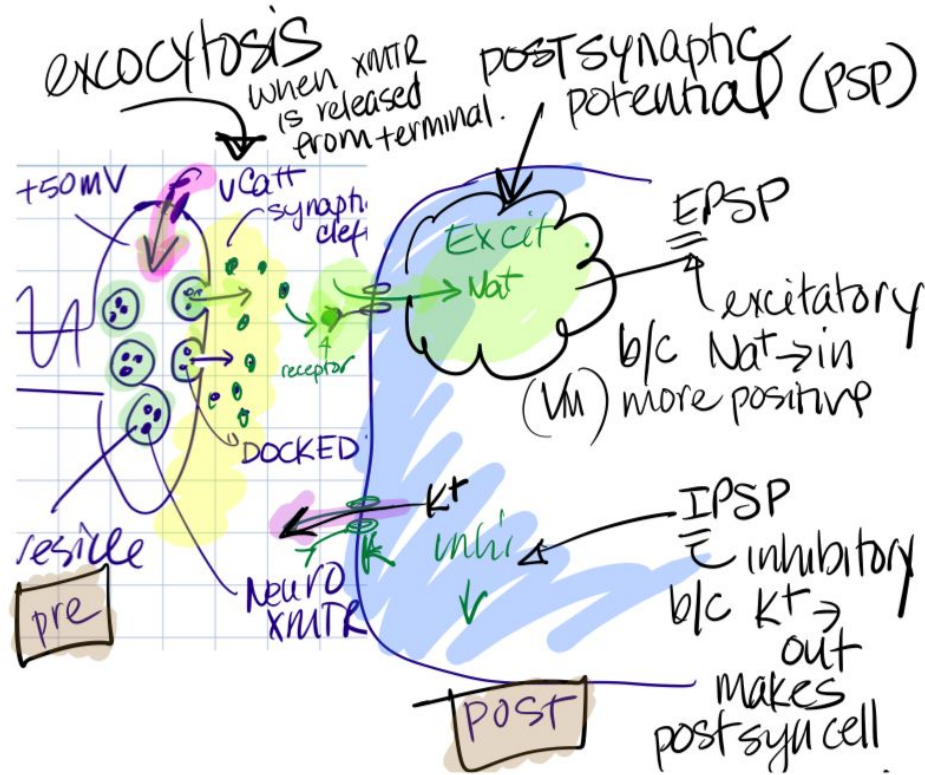
Refractory Period



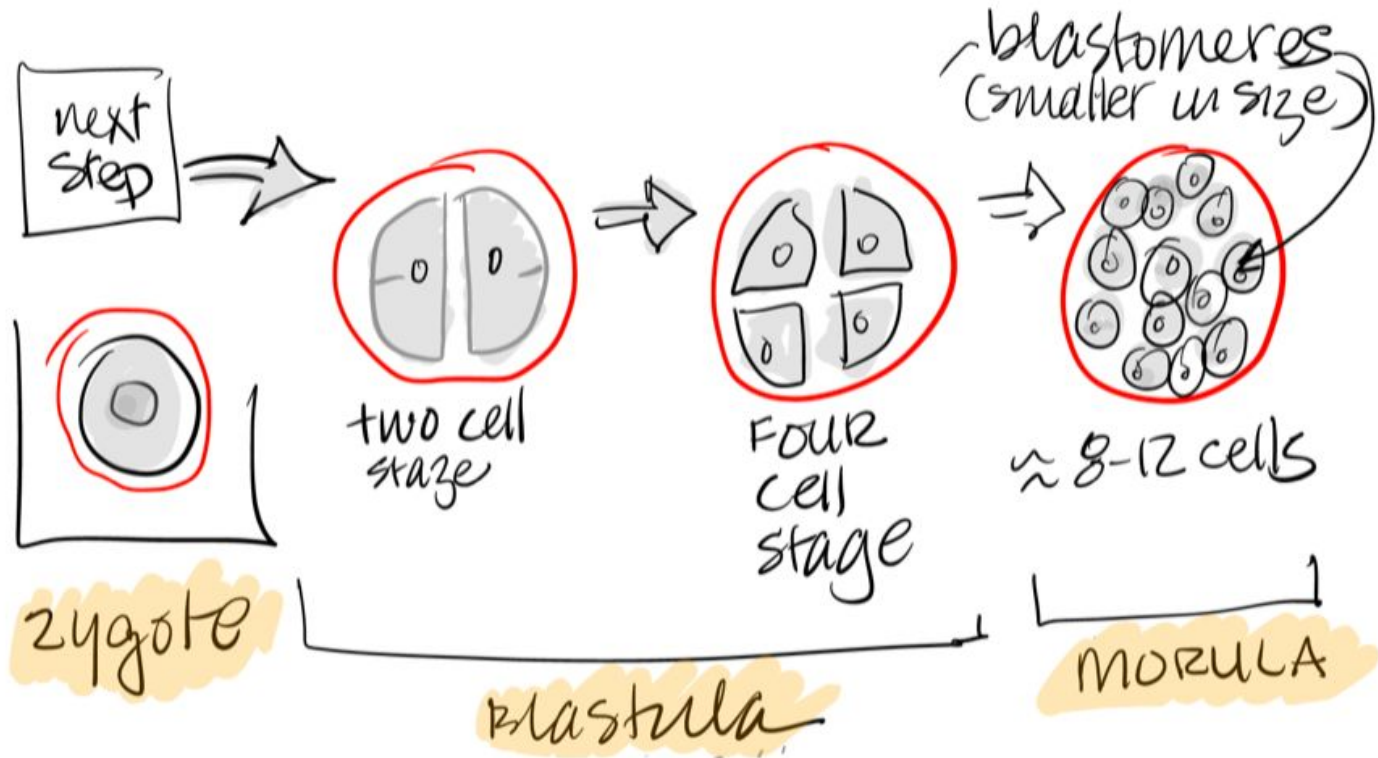
Propagation along Axon



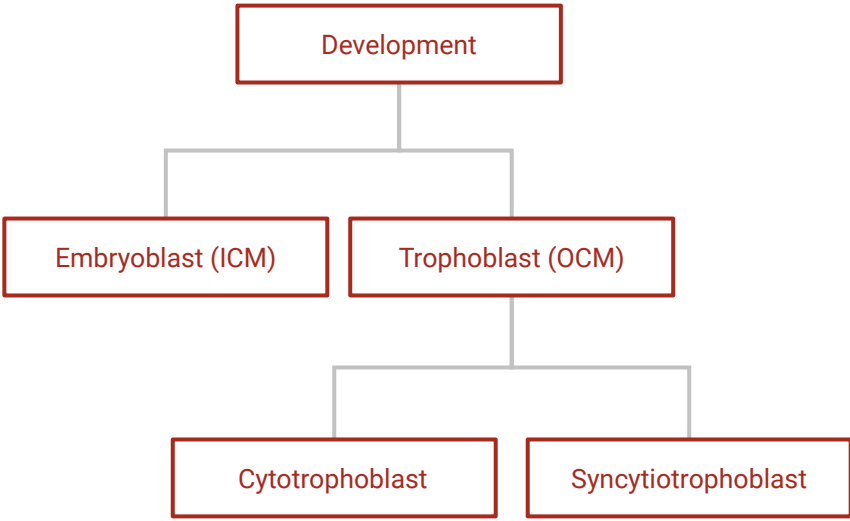
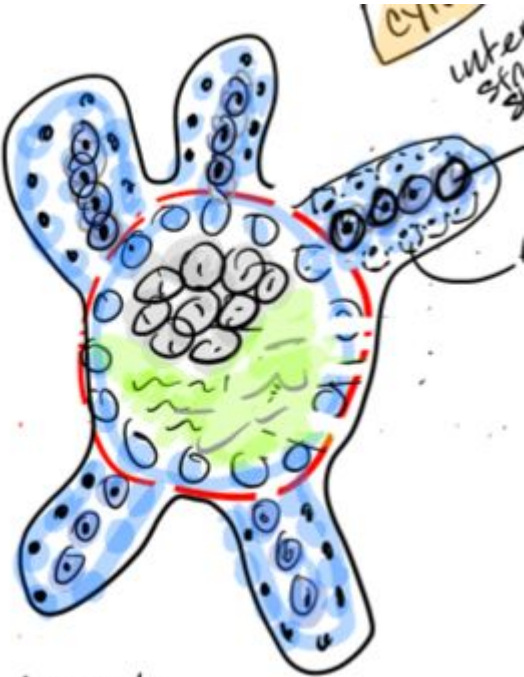
Synaptic Transmission



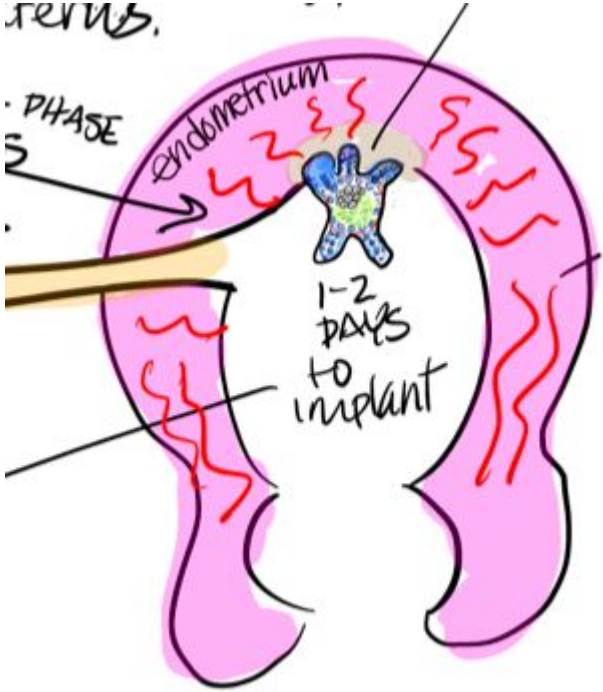
Development Review



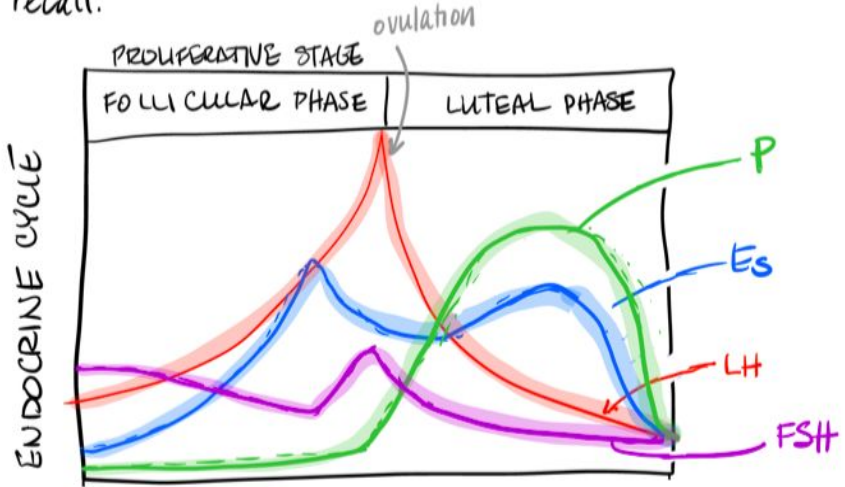
Development Review: Hatching



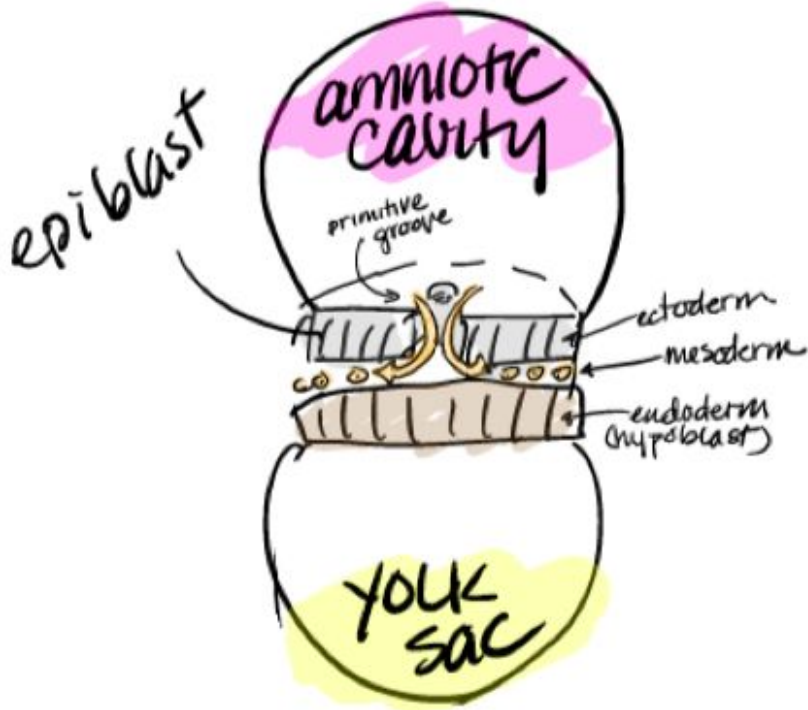
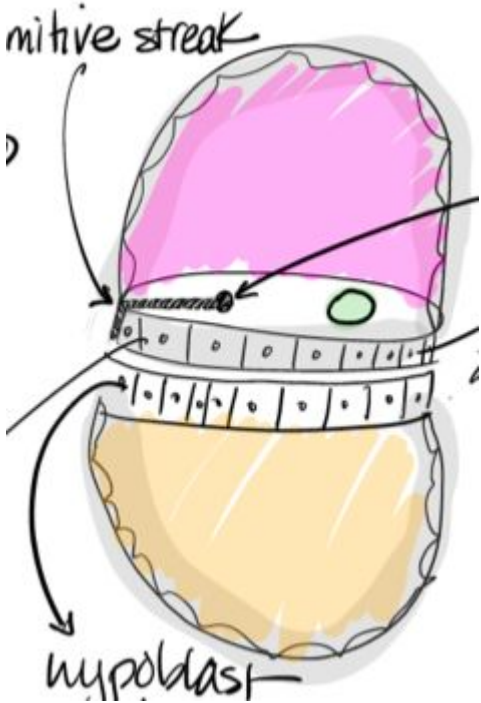
Development Review



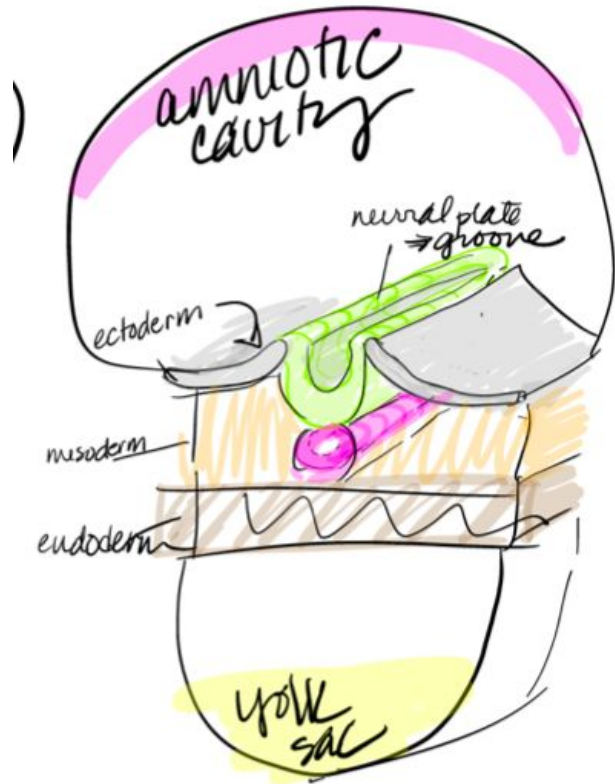
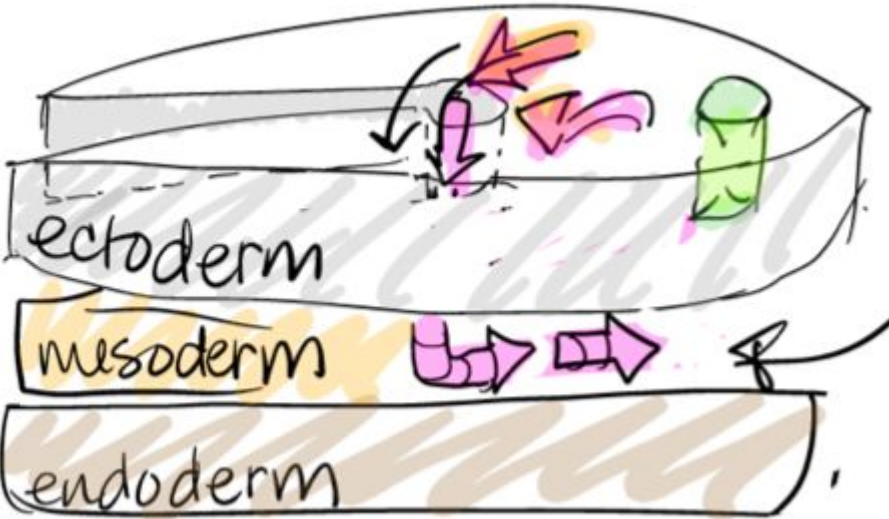
recall:



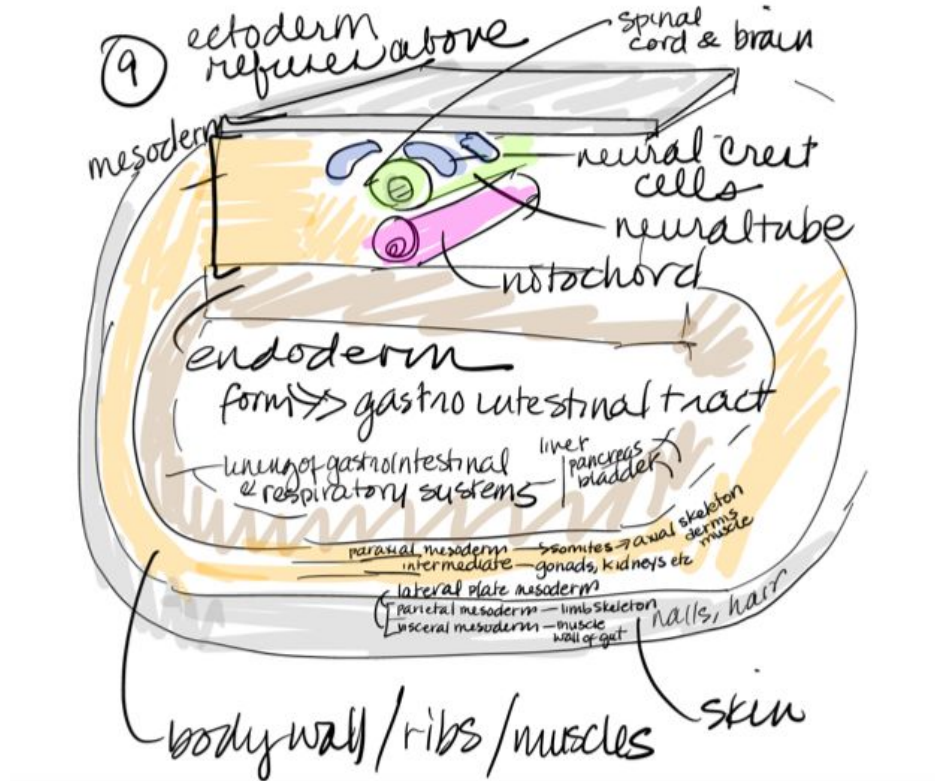
Development of the Bilaminar to Trilaminar Disc



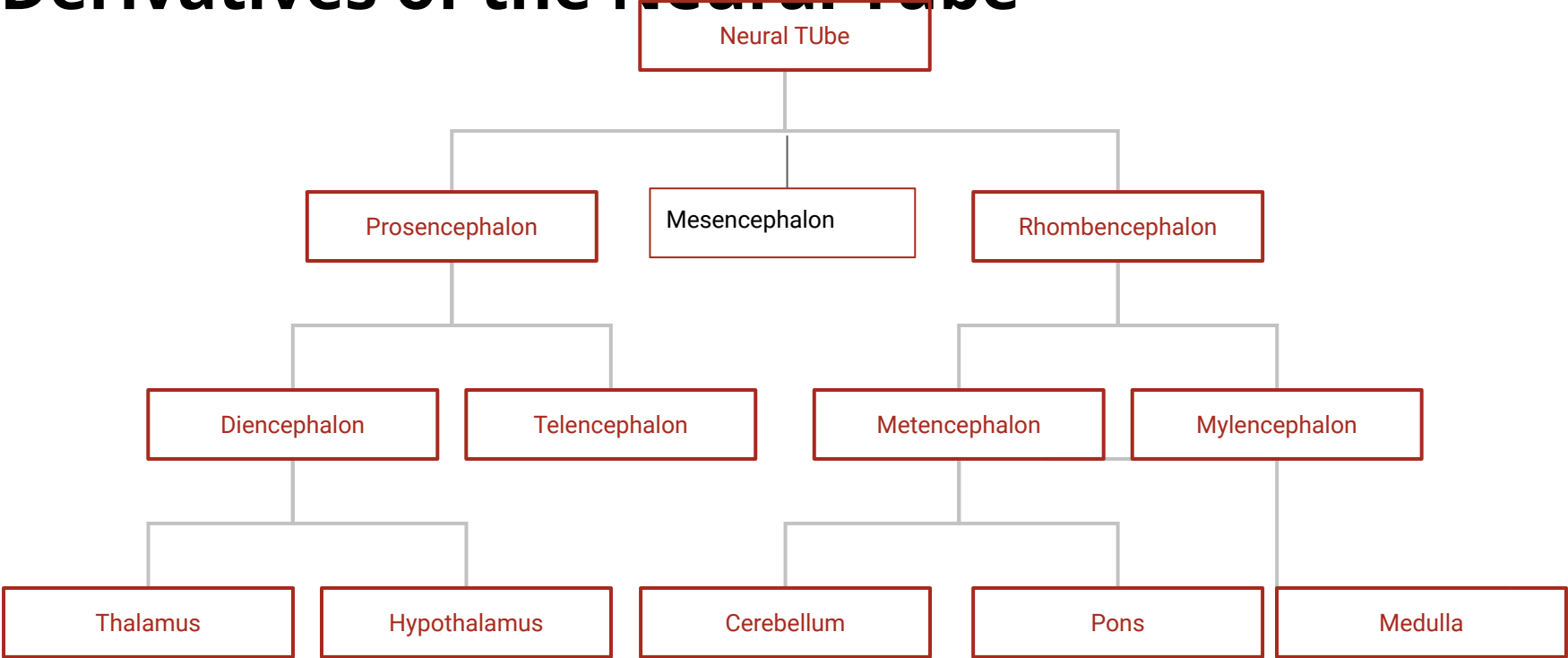
Development of the Notochord and Neural Plate



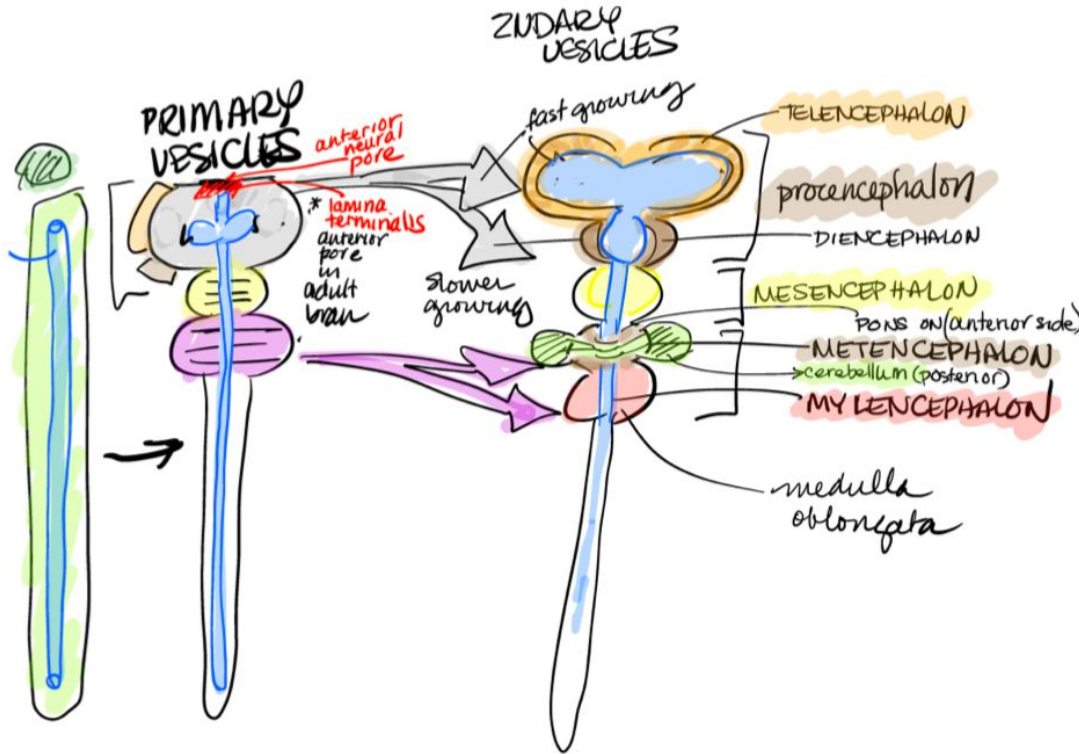
Neurulation and 3 Distinct Layers



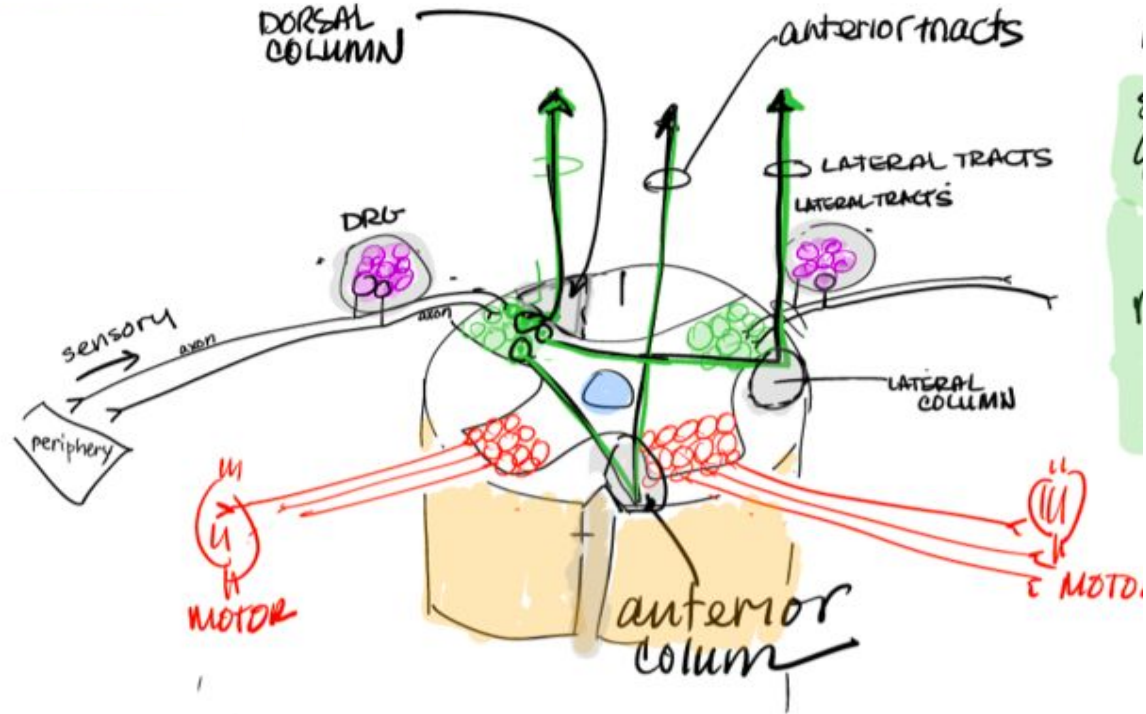
Derivatives of the Neural Tube



Derivatives of the Neural Tube



Spinal Cord

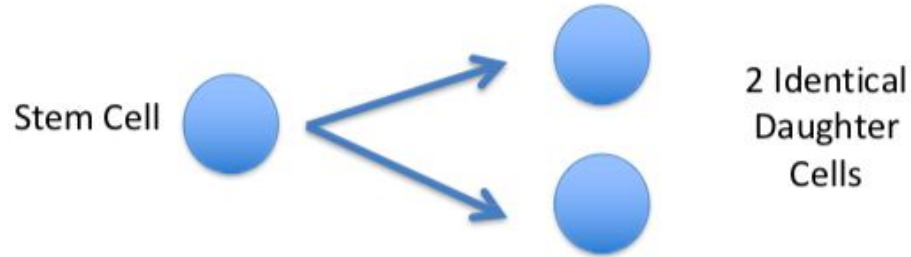


Spinal Cord → Brainstem

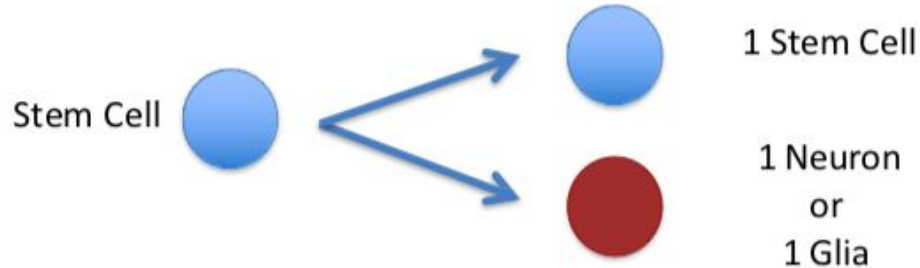


Proliferation of Cells

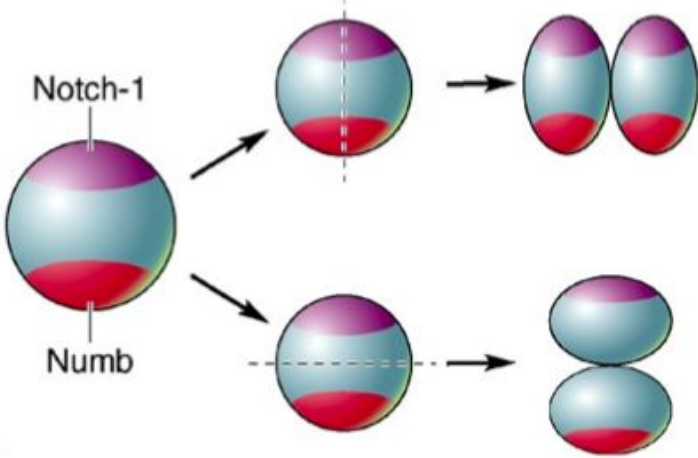
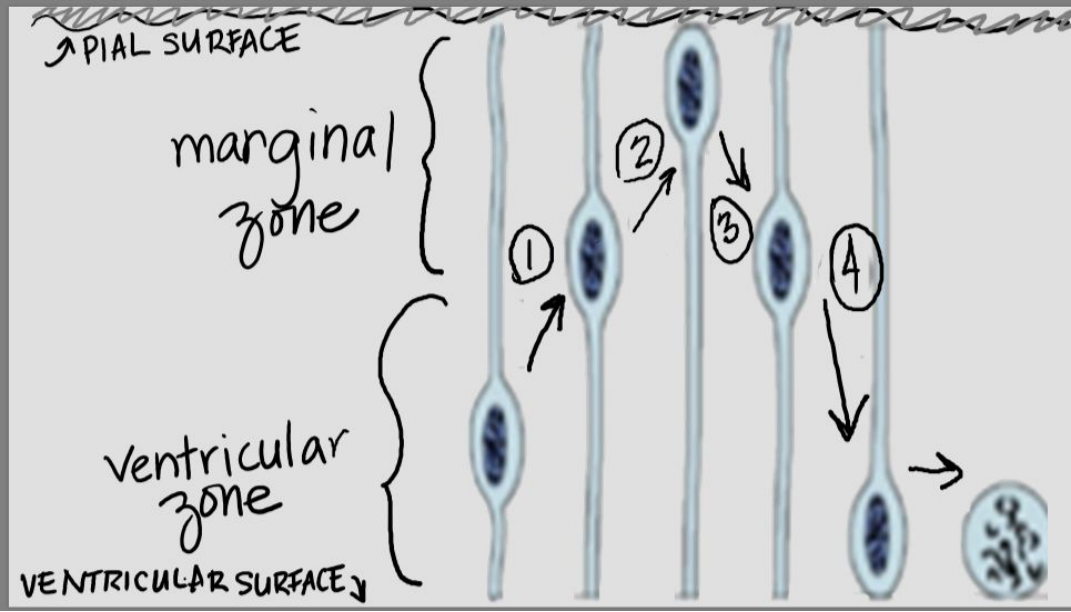
First 7 weeks: **SYMMETRICAL DIVISION**



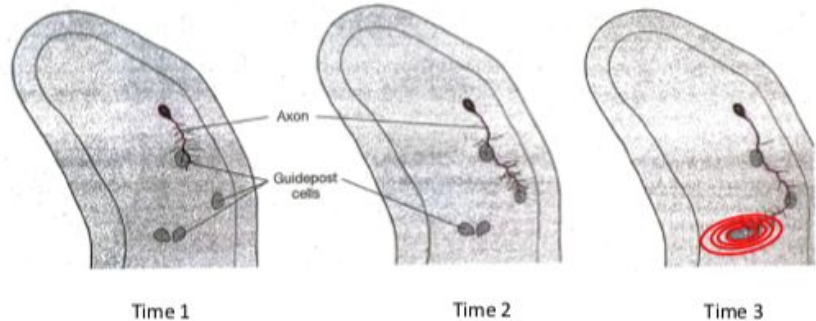
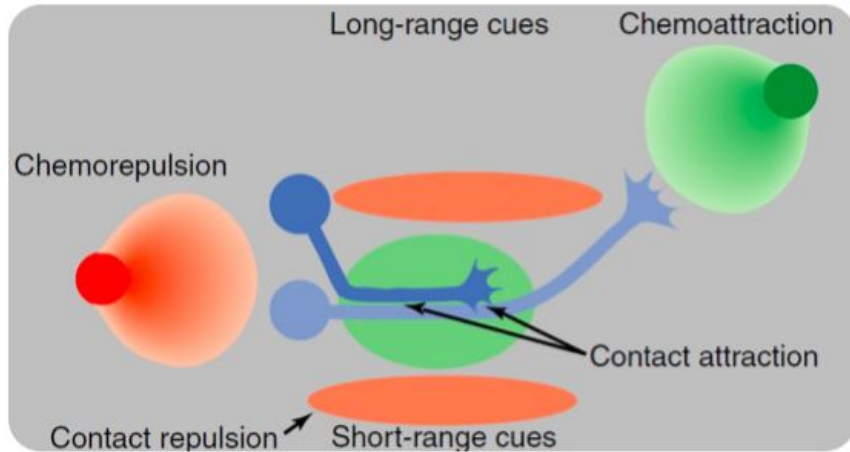
Then switch to **ASSYMMETRICAL DIVISION**



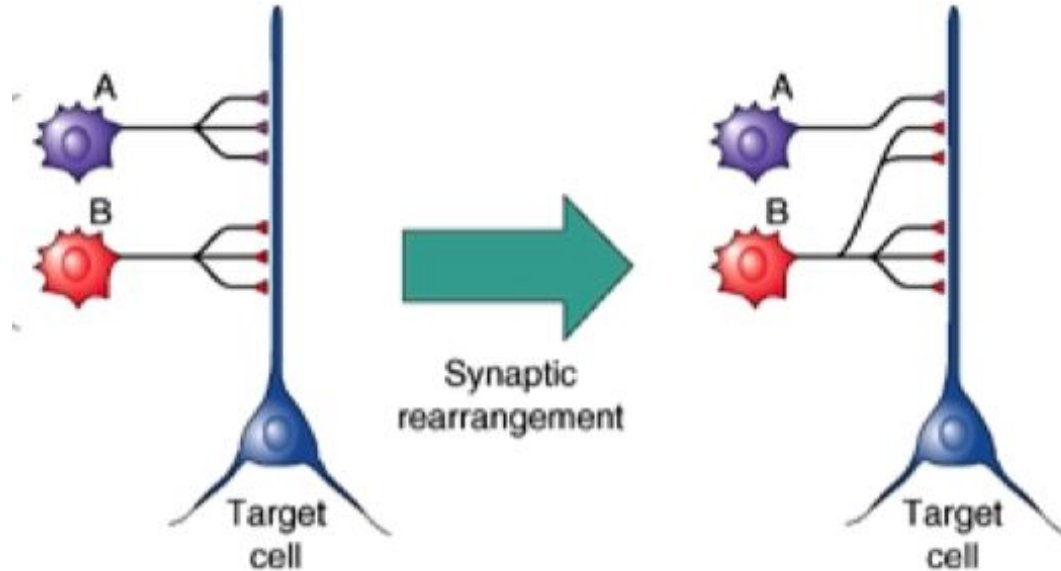
Migration of Cells



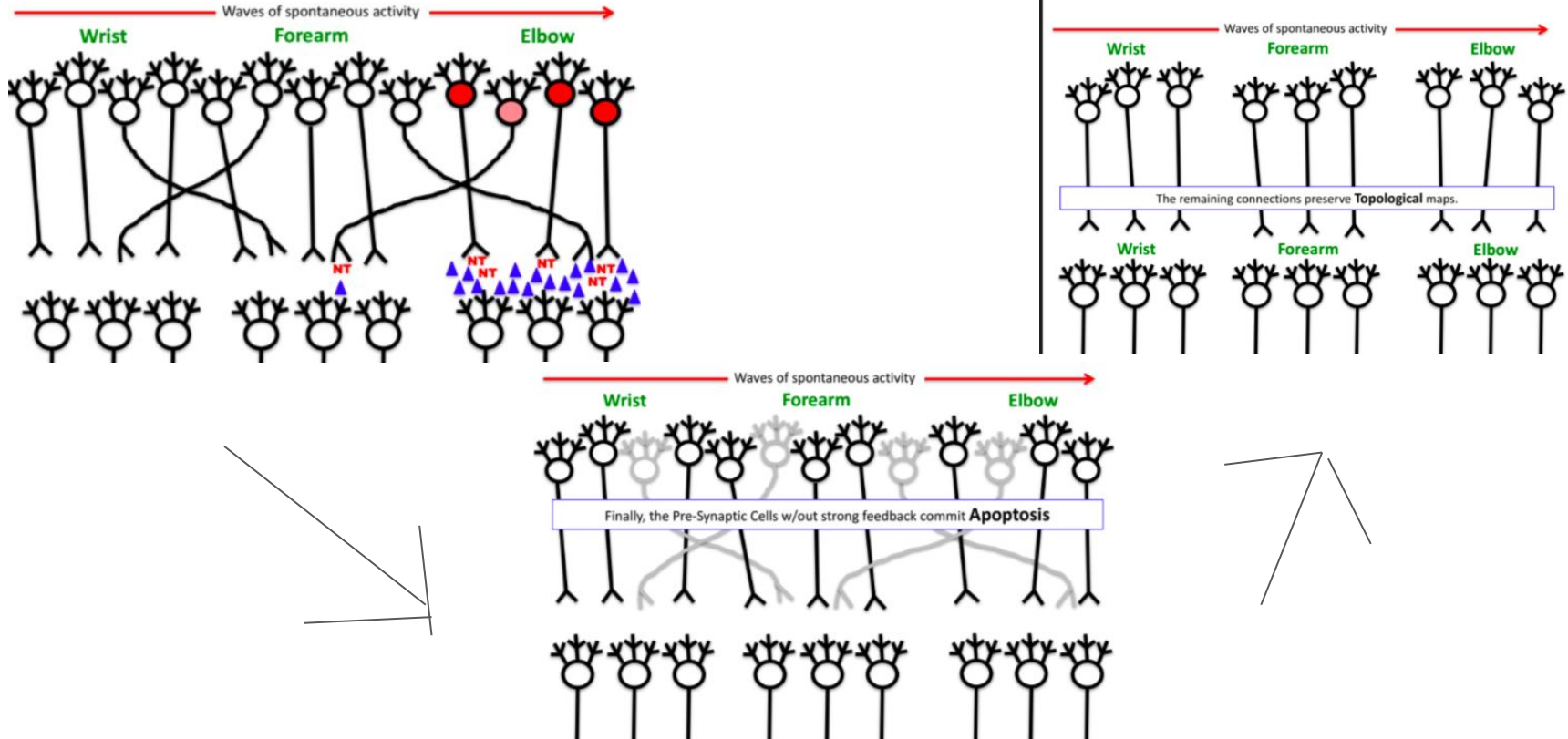
Differentiation of Cells: 4 Types of Guidance Mechanisms



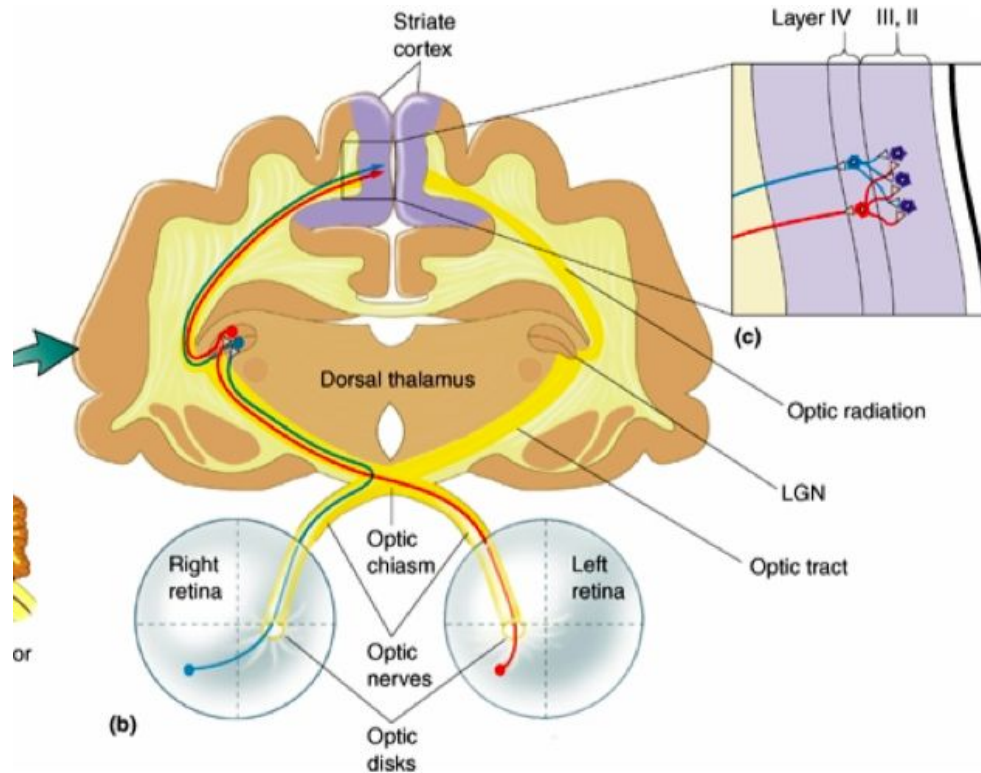
Rearrangement and Segregation



Segregation and Calcium Waves



Ex: Segregated Eye Inputs in LGN



All RGC extend into optic nerve

Retina → LGN → V1

Nasal RGC cross

LGN – sorted by RGC type, eye of origin, retinotopic position

LGN → optic radiations → V1

A17; layer IV; cell type; retinotopic position

Quiz Time!

- No talking, signaling, or communicating of any kind.
- Put away your books, notes, computers, phones, etc.
- Pen or pencil is okay (just make sure it's a black pen and you press hard with a pencil).
- Write your name in the "Name" box, write and circle in your PID, and sign the academic integrity agreement.
- Bubble in this section
- Please have your student ID out when you turn in your quiz!
- **There is a backside!!**