# Principles of Human Physiology
# Biol. 261.01

# If You Do Not Have Canvas Access

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# Valerie Pennington

## The Penguin Prof

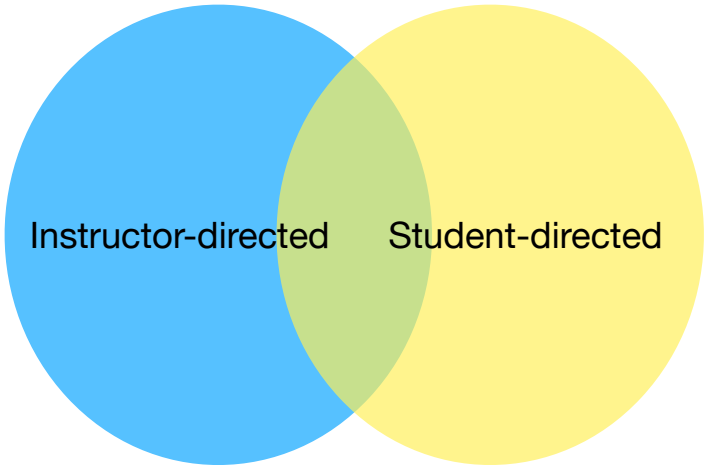
**(she /her /hers)**

I answer to:
*The Penguin Prof*
*Professor Pennington*
*Professor Penguin*
*Kumu*

**SWC Teaching With Technology Faculty Coordinator**
**Fall 2020 - Spring 2022**

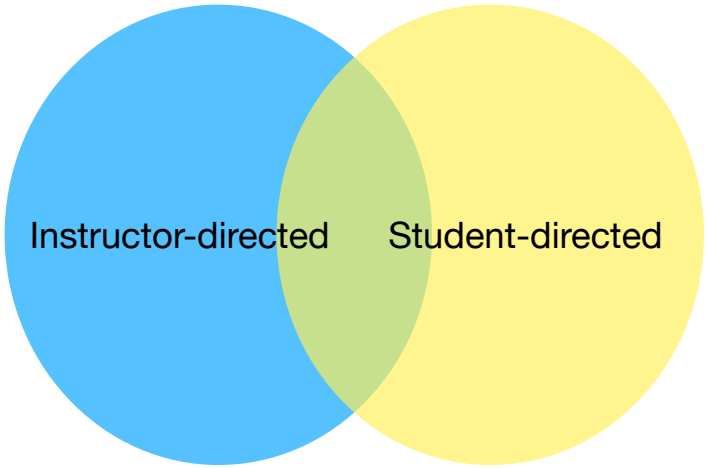
# My Teaching Philosophy

- My goal is to help you to become independent, enthusiastic learners of science
  - My success is determined by YOUR success at the next level
- I am not a fountain of knowledge, here to spout facts upon you
- We are here as collaborators, embarking on a journey together
  - This is all about you, not me


Instructor-directed
Student-directed

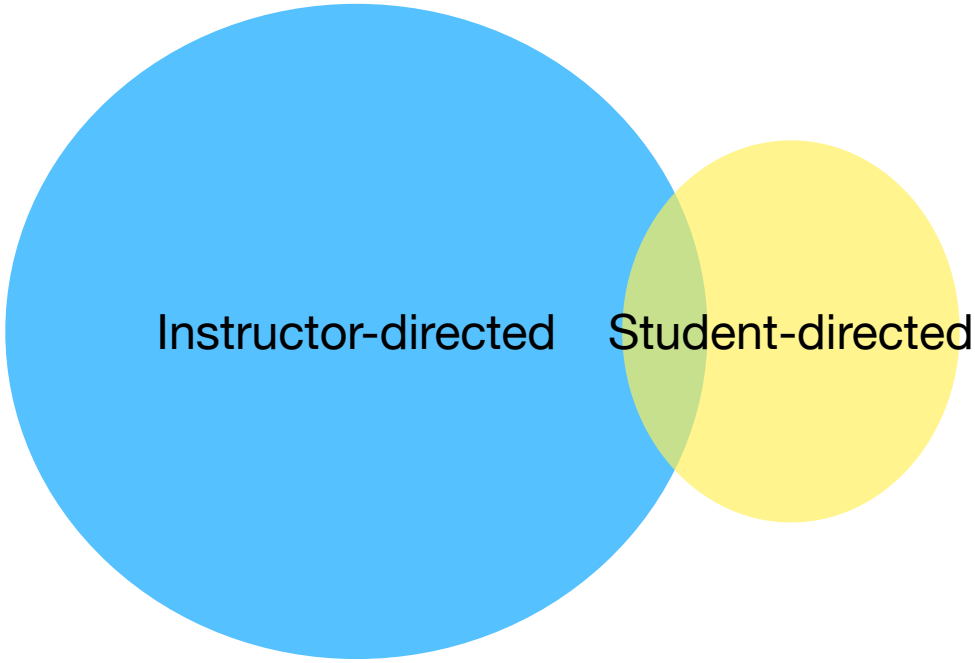
## Instructor-directed

- Instructor-driven
- “I do,” and “we do”
- Presenting information
- Demonstrations
- Guided practice
- Retrieval practice
- Corrective Feedback

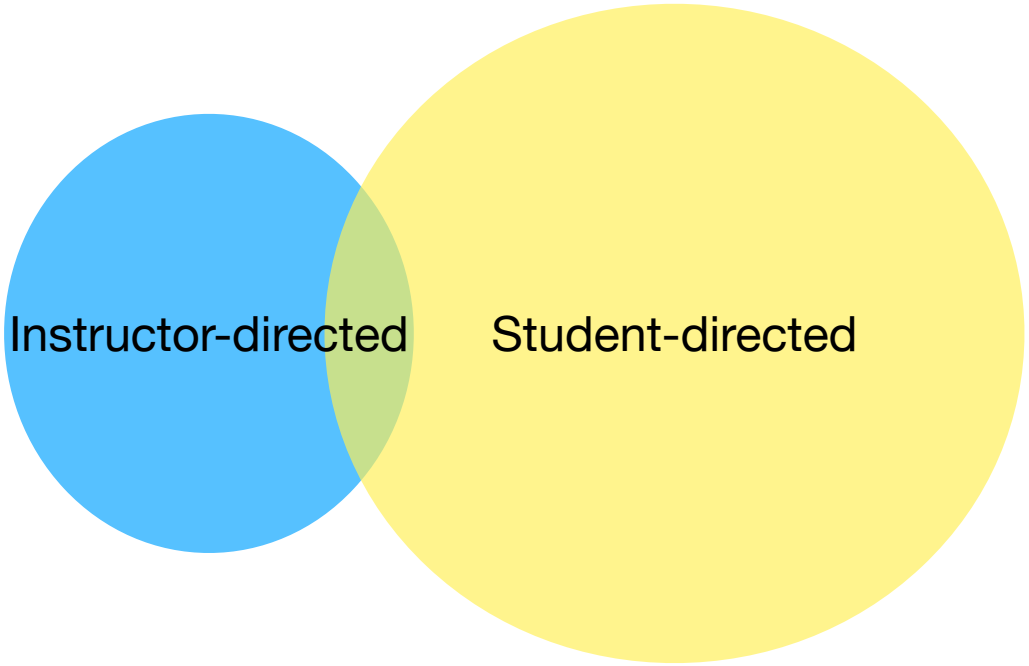



## Student-directed

- Student-driven
- “you do”
- Learner is given more independence
- Instructor is “guide on the side”
- Problem-based
- Inquiry, exploratory
- Experiential




Lessons dealing with very complex or unfamiliar content will be more instructor-directed (especially in the beginning)




Lessons that are based on previously-learned material can be more student-directed

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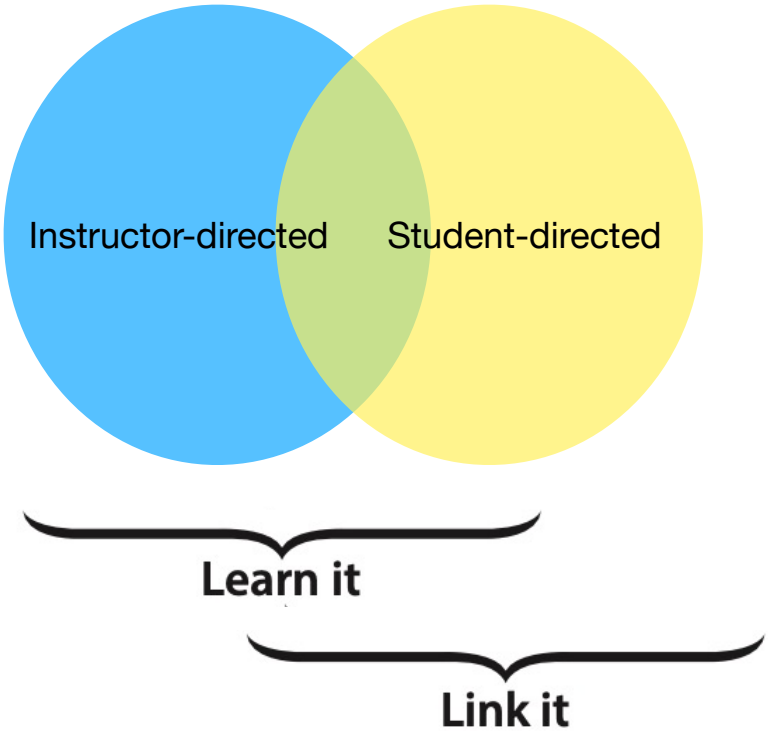


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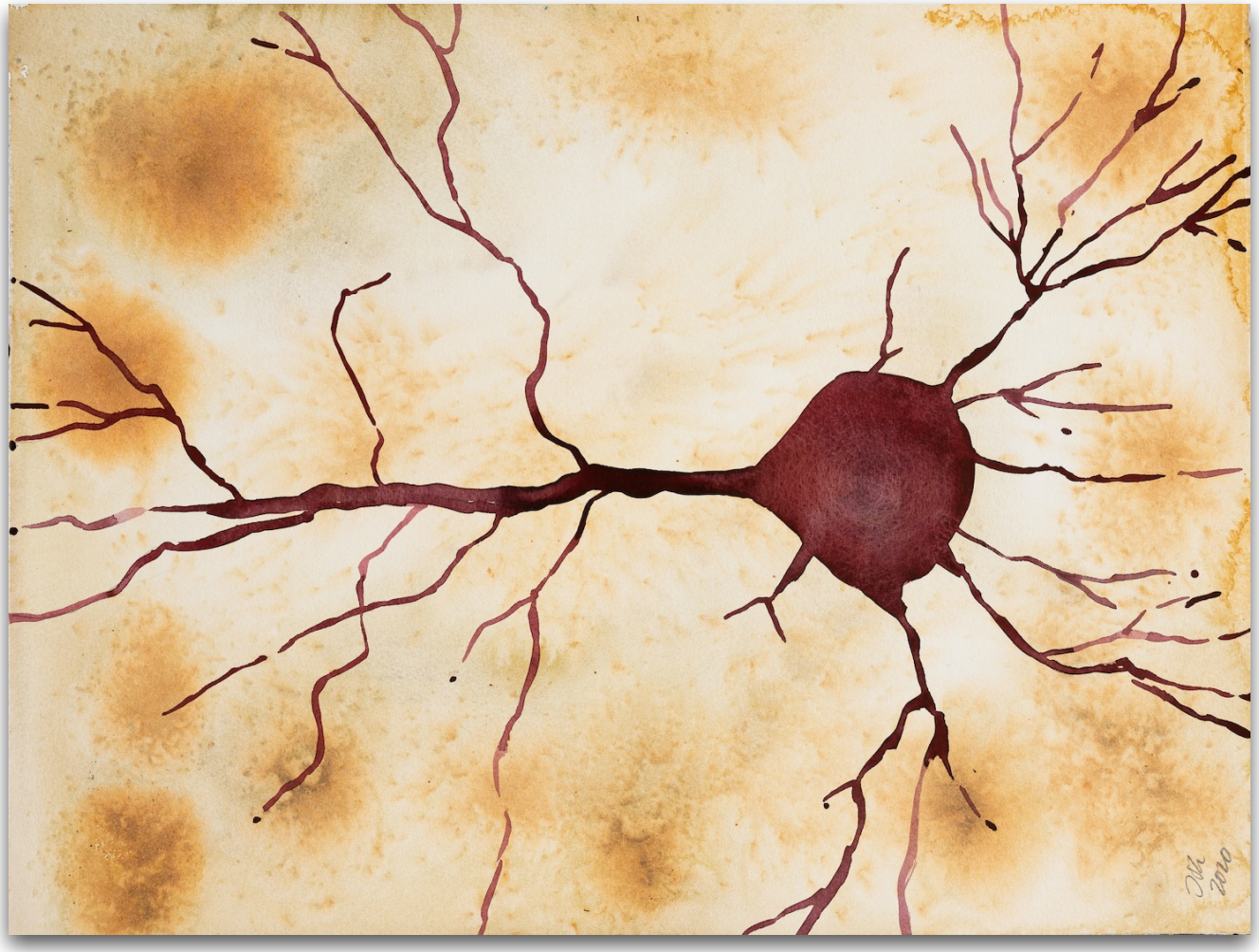
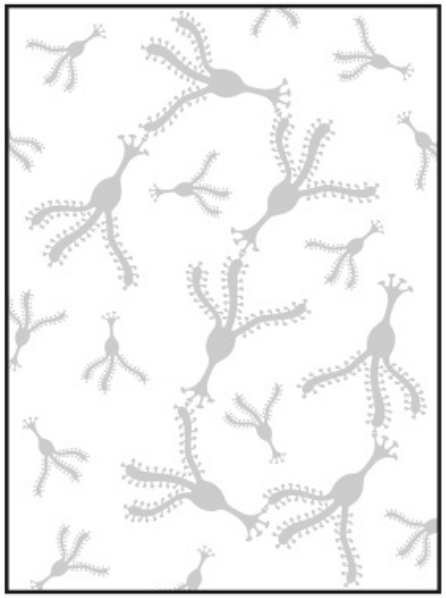
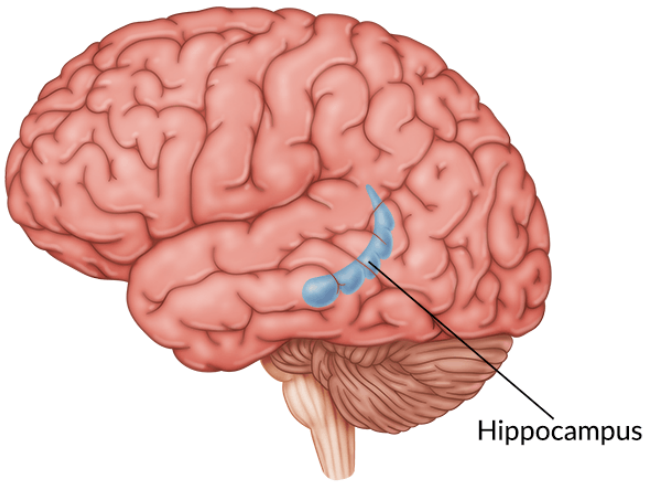


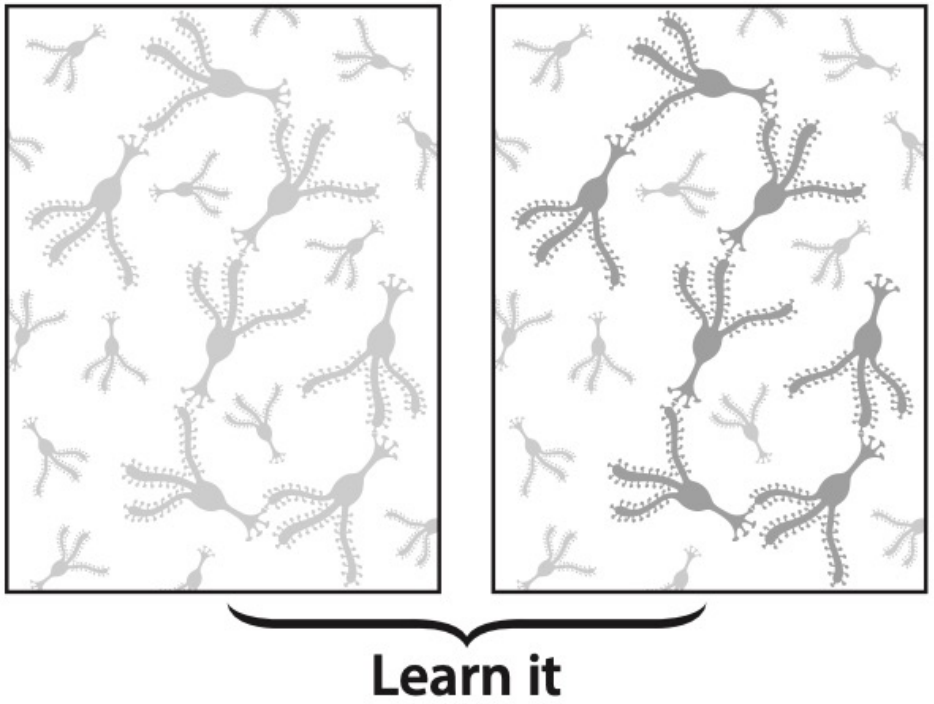
We have about 16 billion cortical neurons, and their interactions with each other forms the basis of learning and memory.

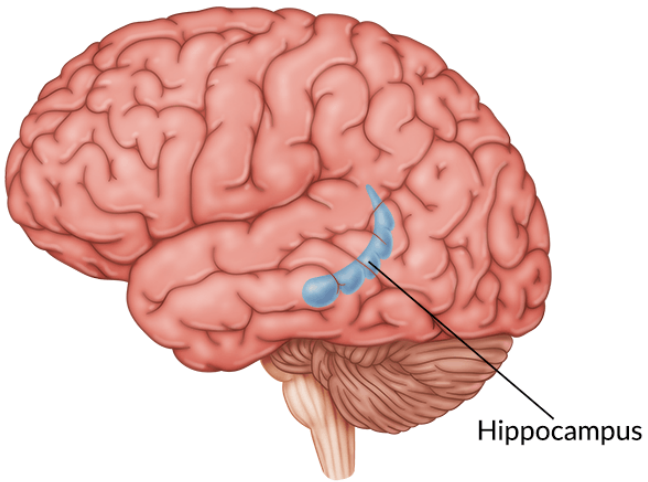


**Learn it**

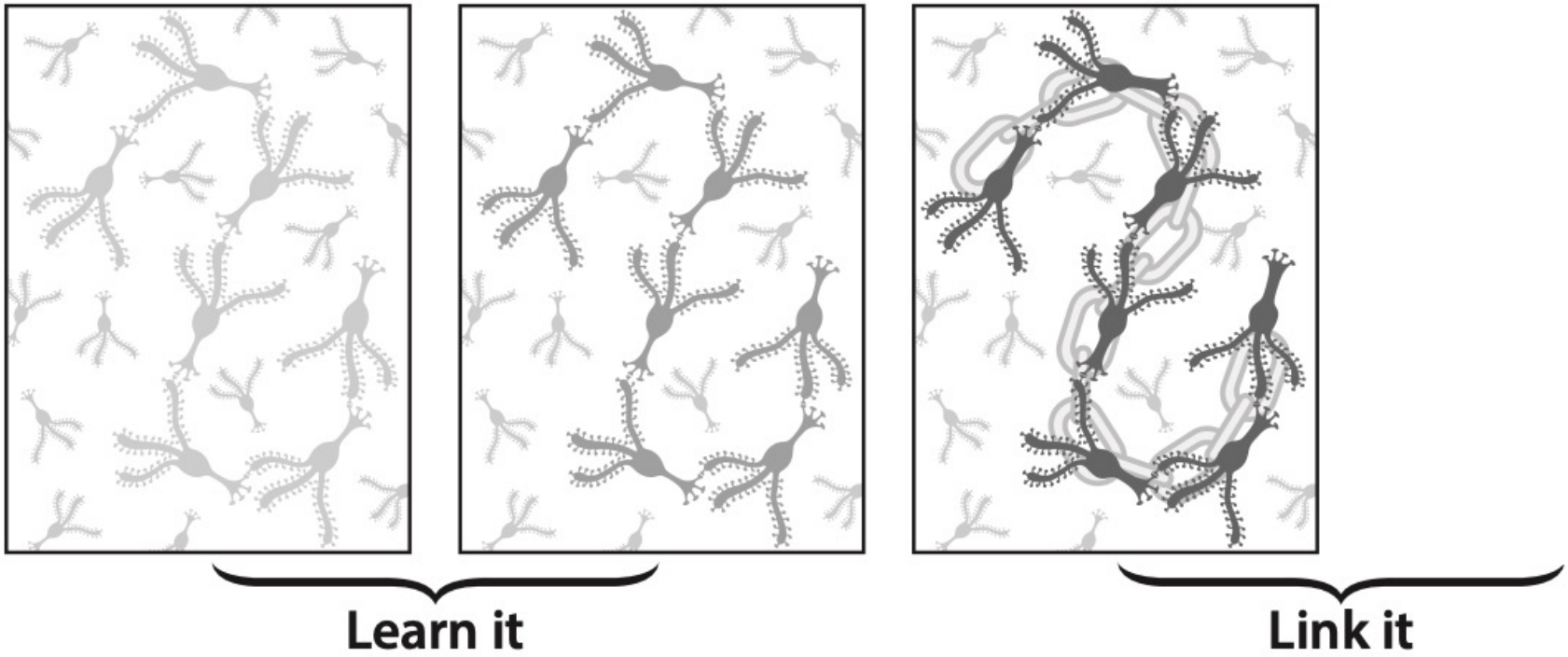
You are introduced to new material (reading, video, lecture etc.) and information lives in short-term memory.



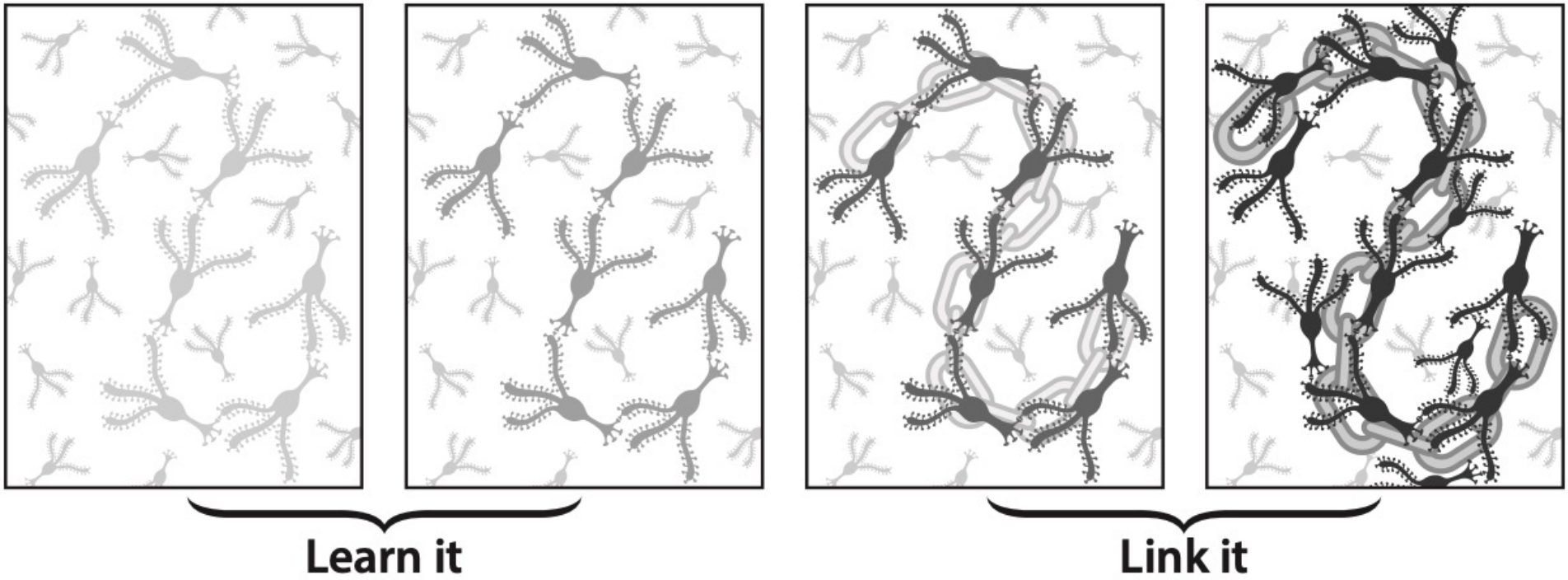


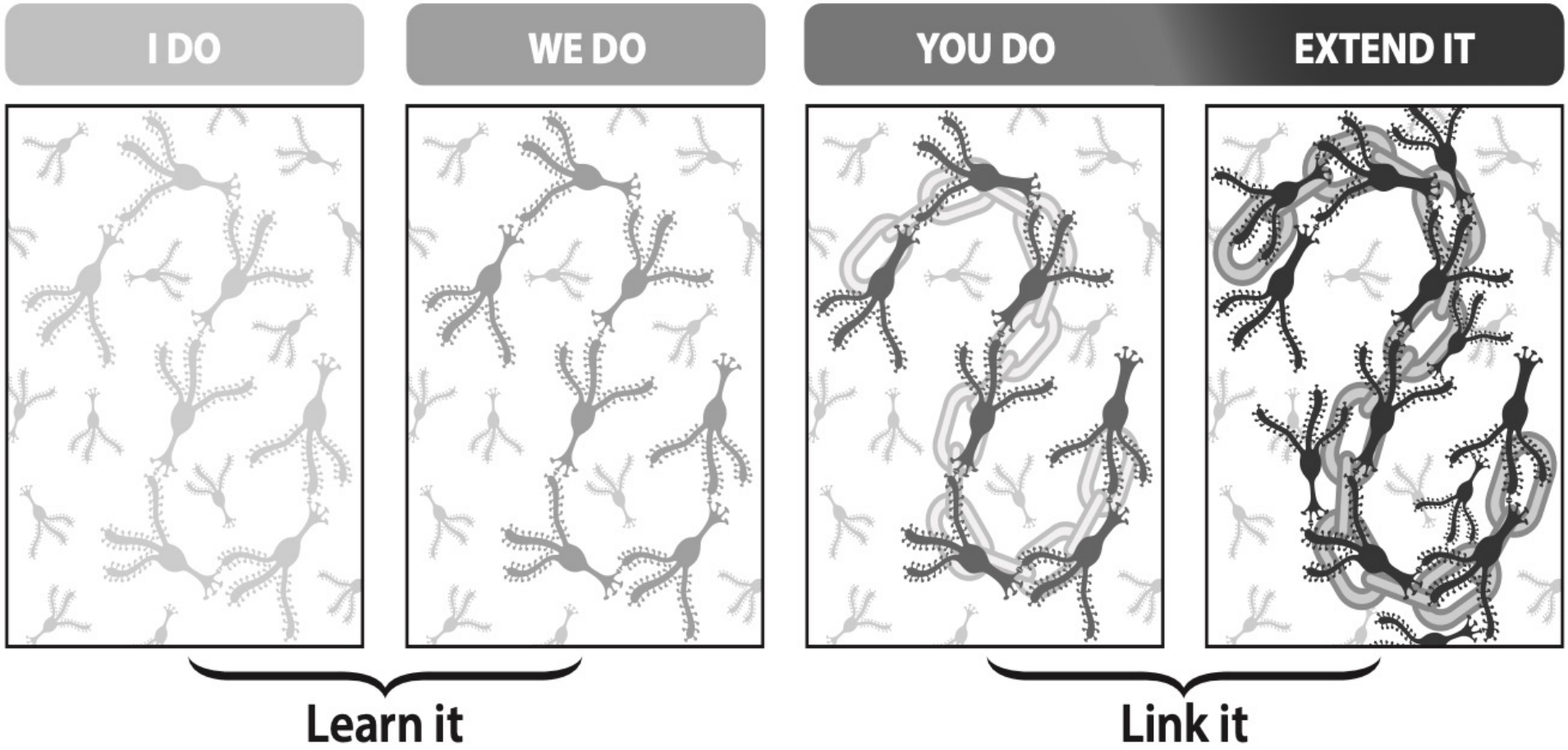

You follow along, practices, takes notes. Knowledge is living in working memory.




You actively works with the new knowledge, usually in peer groups. This is the basis of proficiency and leads to long-term memory.

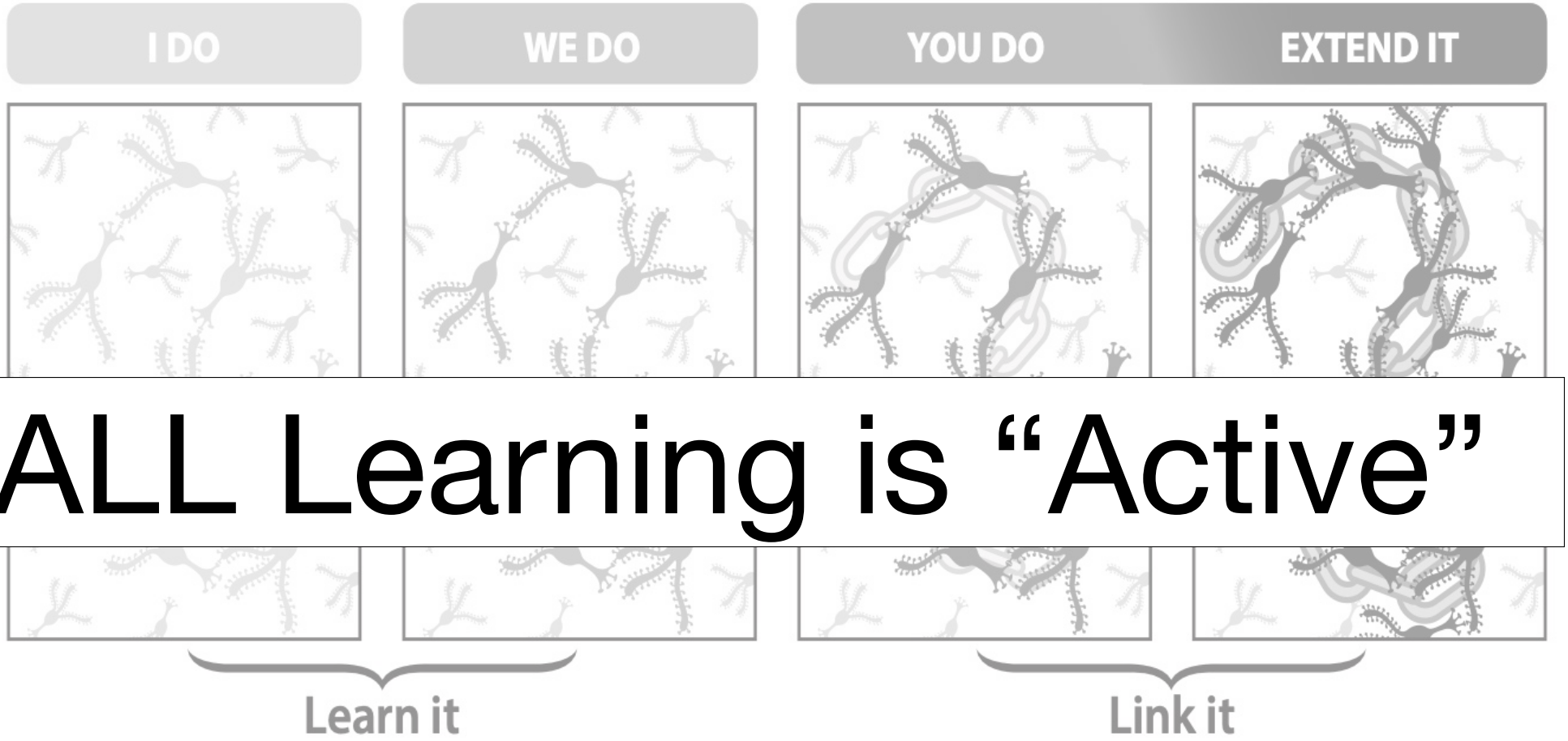



After actively working with the new knowledge over time, long-term storage and integration with other knowledge can occur.



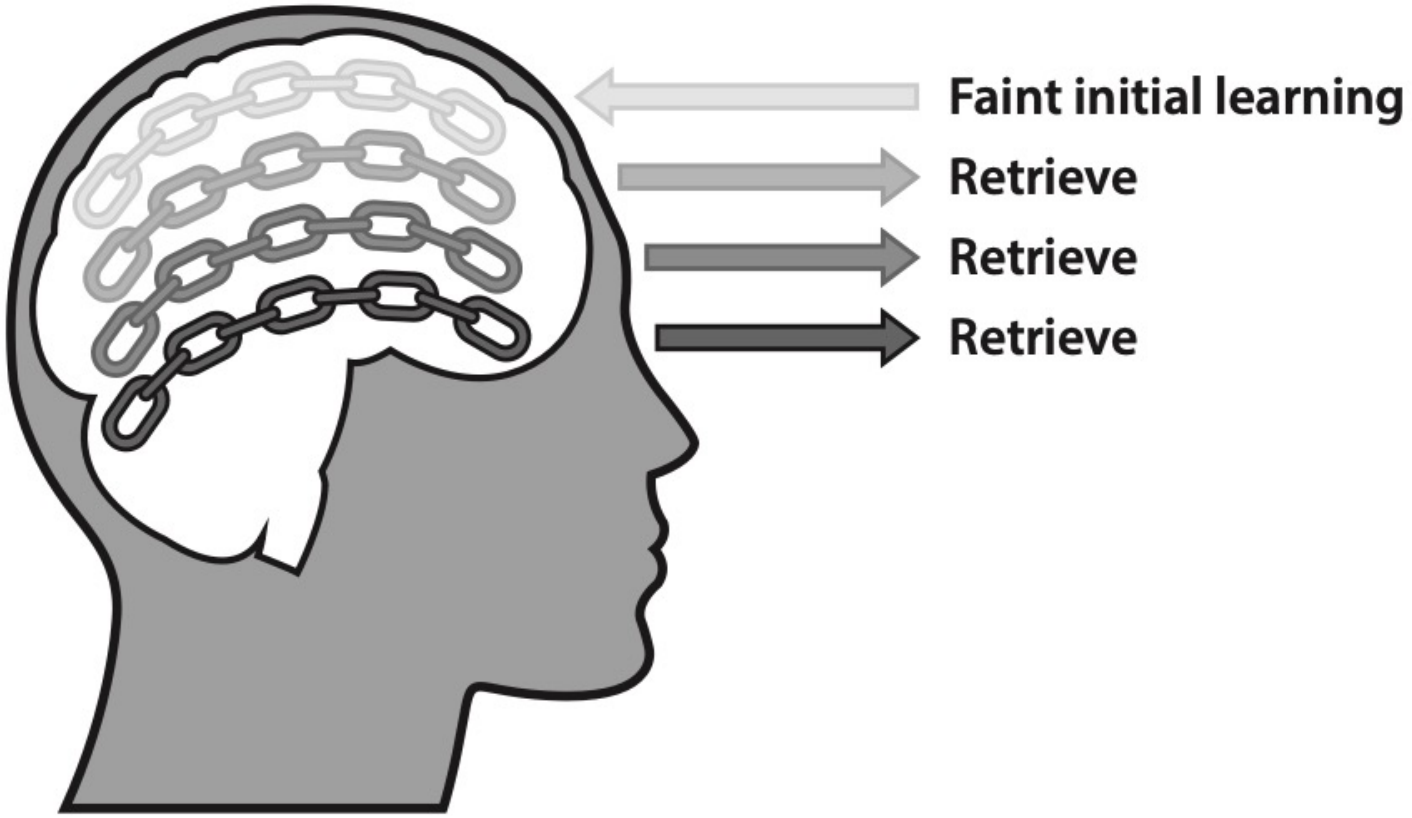

Instructor-directed learning

Student-directed learning




# ALL Learning is “Active”

**Retrieval practice** is one of the best ways to strengthen neural links in long-term memory.

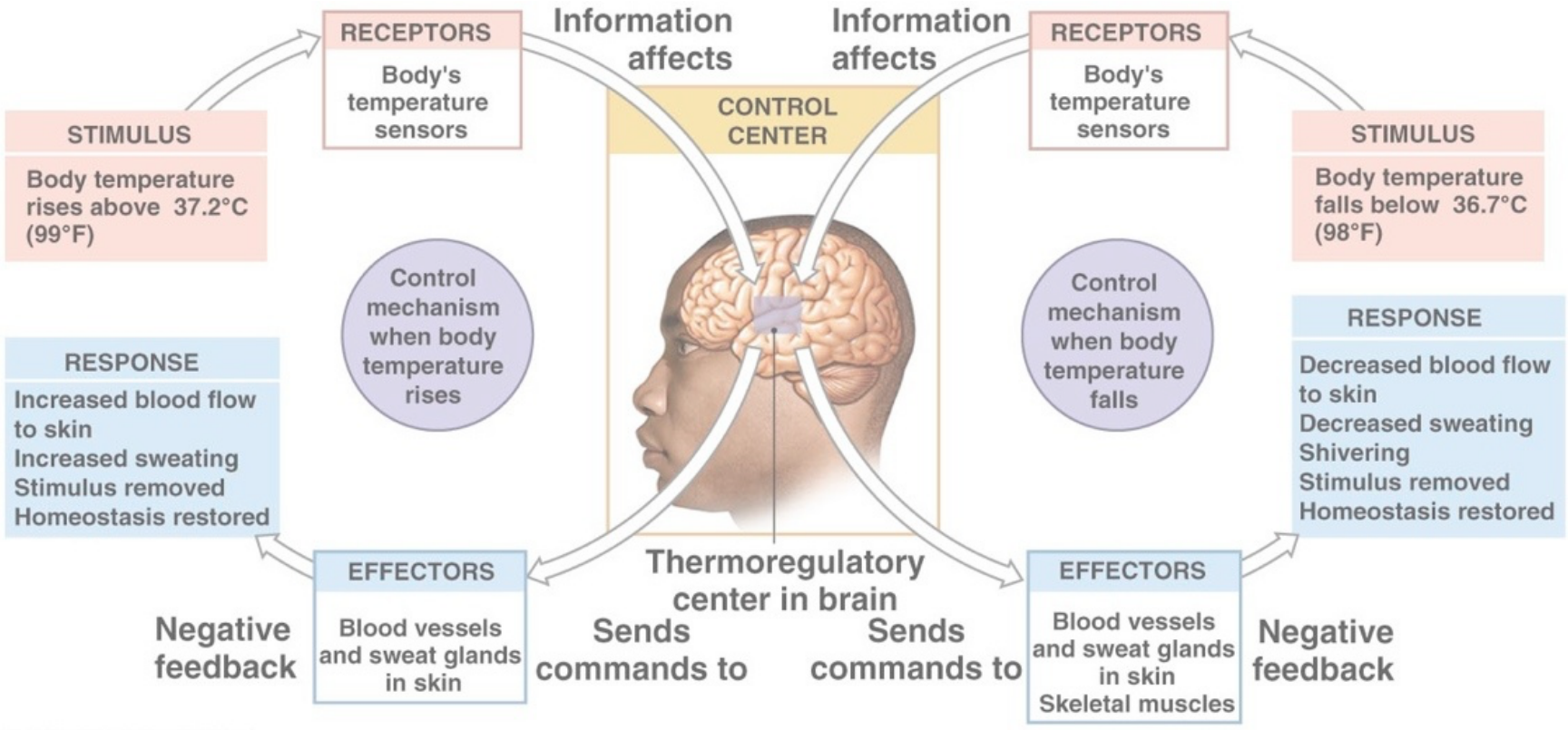



TAKE
GREAT
NOTES
Watch the
Penguin
Prof

# Welcome to Your First Padlet!

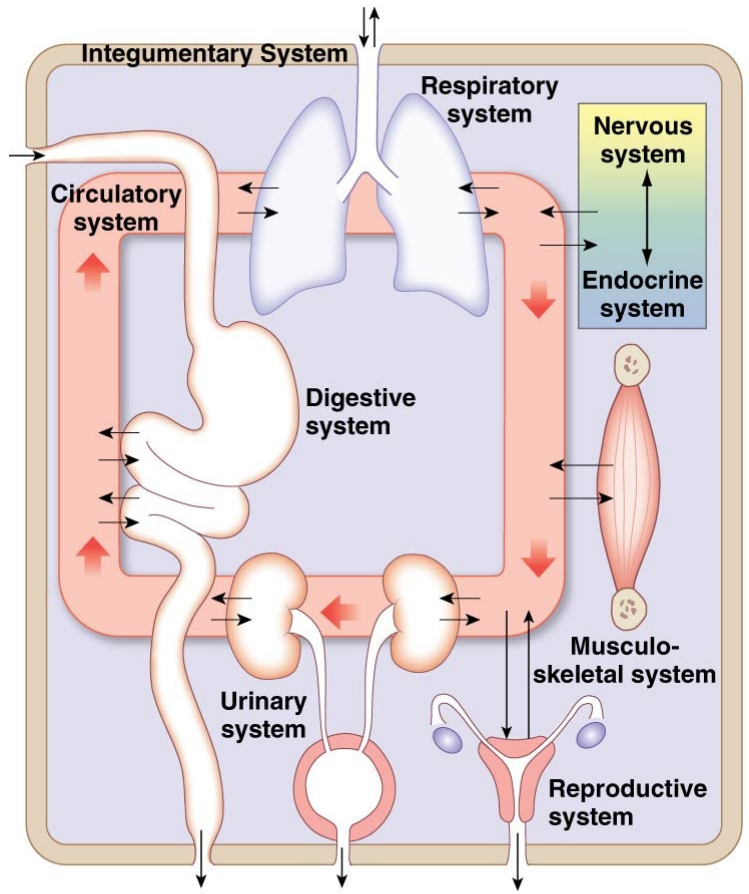
or click here

# Homeostasis and Feedback

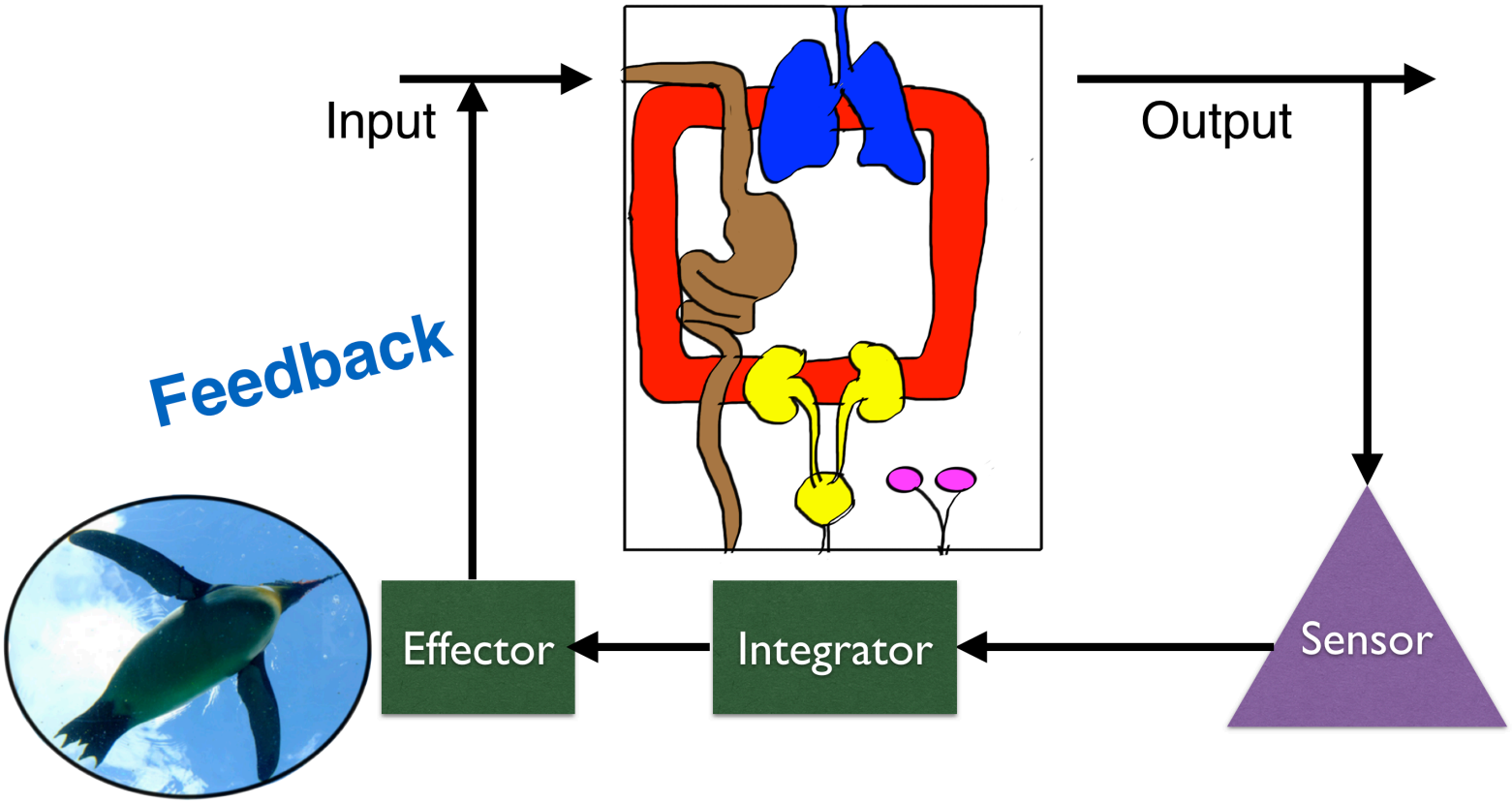


# Homeostasis

- Homeostasis refers to the dynamic constancy of the internal environment.
    - What does that even MEAN?
    - What IS the internal environment exactly?
- What happens if there is no homeostasis?
- How is homeostasis controlled?



# Homeostasis and Feedback



# Feedback

- Feedback is a process in which the effect or output of an action is ‘returned’ (fed-back) to modify the next action (what happens affects what happens next)
- Feedback is essential in the management of all regulatory mechanisms
- Examples?

# Components of a Feedback Loop

1. Sensors (receptors) monitor the variable

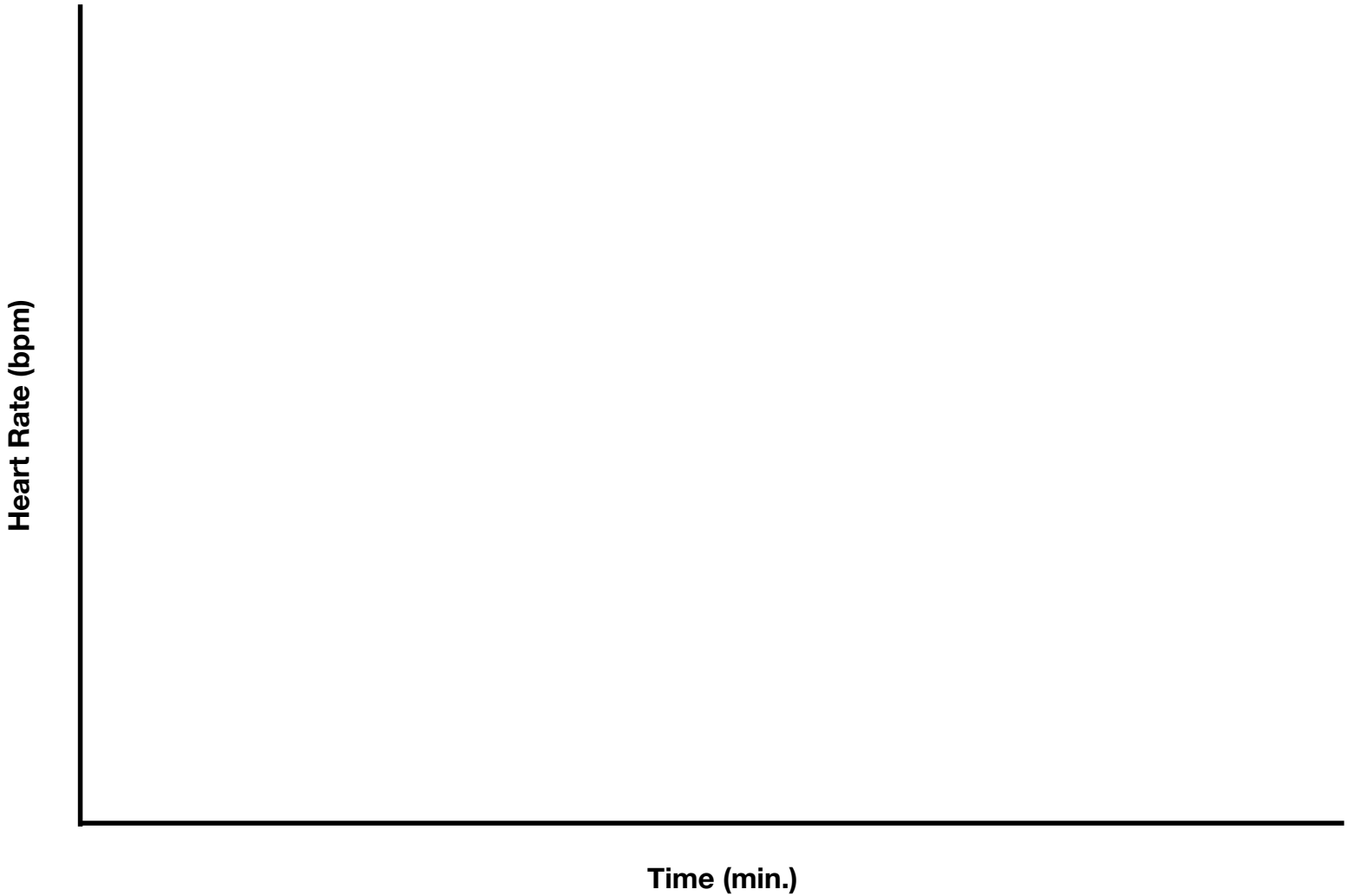
2. Integrators compare the sensor information to the setpoint

3. Effectors cause a change (an effect) on the variable

# Negative Feedback

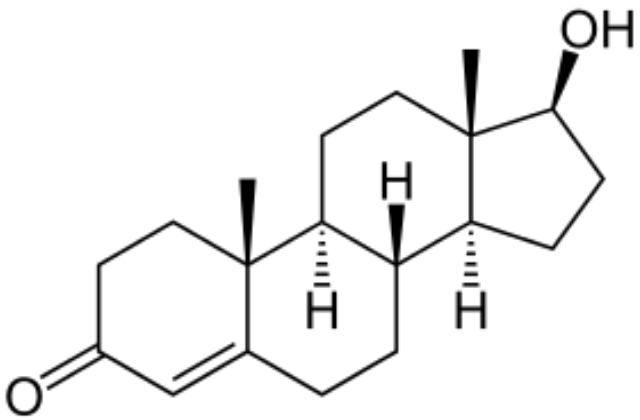
- Negative feedback is stabilizing
- “The more product or result you have...

**Shanghai, China**


Heart Rate (bpm)
Time (min.)

# In physiological systems, is the setpoint fixed?

Hmmmm…..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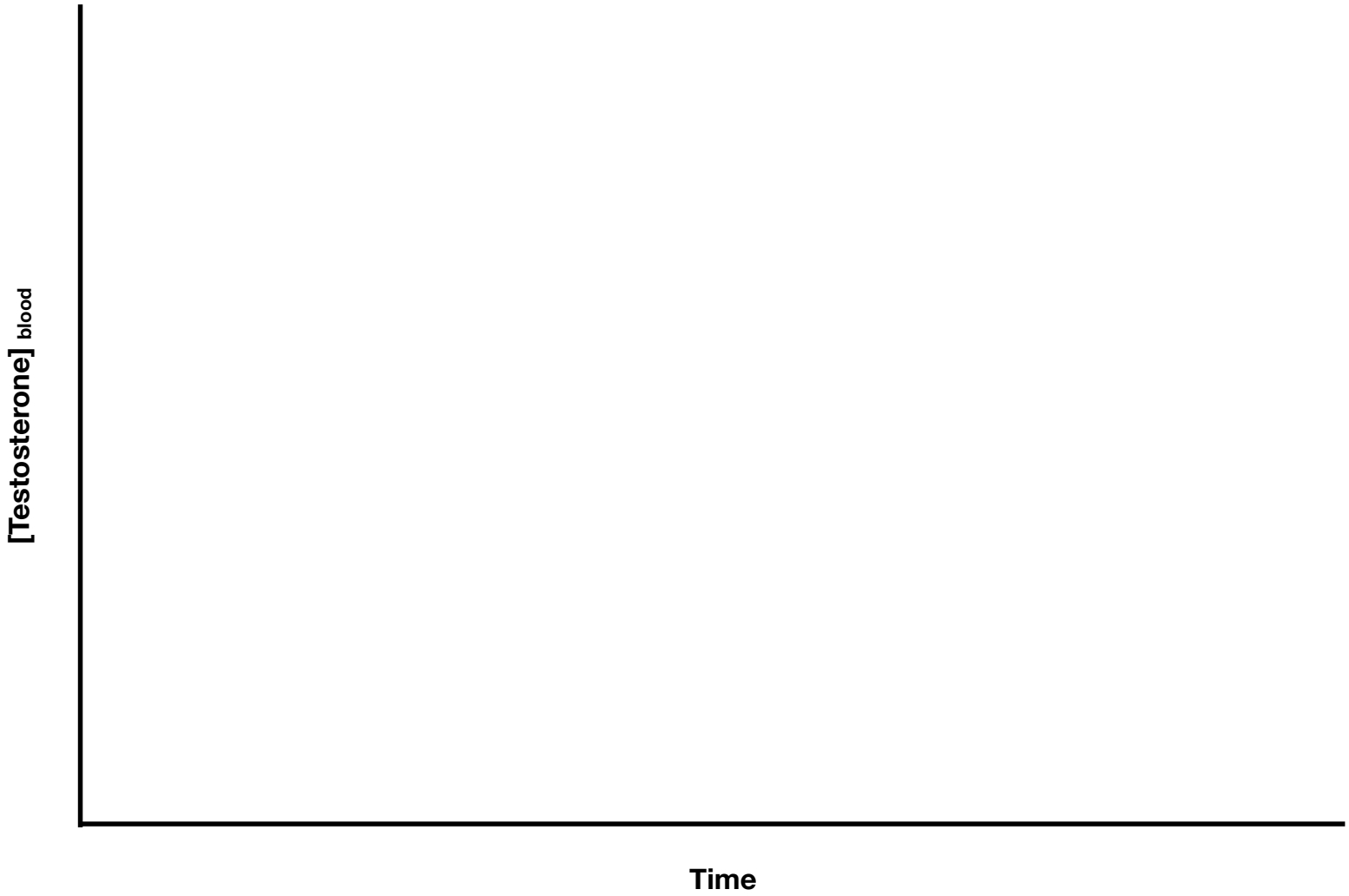
[Testosterone] blood
Time

# Positive Feedback

- Destabilizes the system
- "The more you have...
    - why would you want that?