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Introduction to neuroscience
The regulatory role of nervous system

Contact

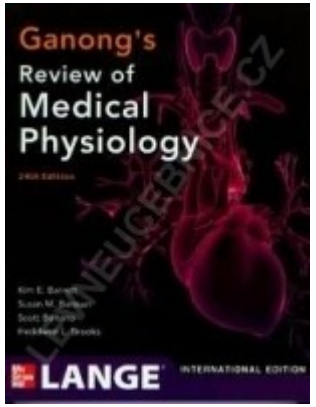
Kamil Ďuriš
Department of Pathological Physiology (A18)
kduris@med.muni.cz

The objetives

Basic understanding of the role and function of nervous system

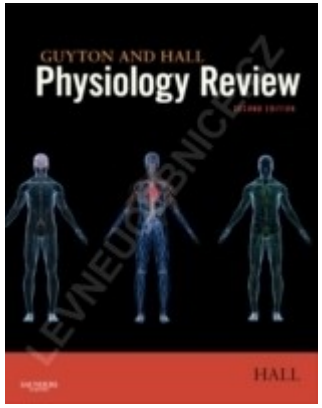
Literature

- Ganong's Review of Medical Physiology



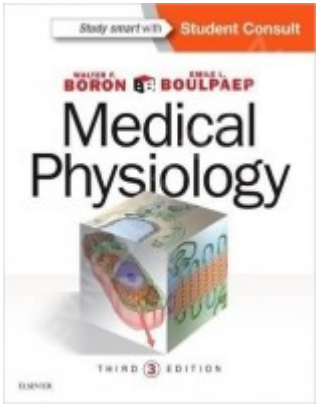
https://www.levneucebnice.cz/p/ganong-s-review-of-medical-physiology-9781259009624/

- Guyton - Physiology Review



https://www.levneucebnice.cz/p/guyton-and-hall-physiology-review/

- Boron - Medical Physiology



https://www.levneucebnice.cz/p/medical-physiology-3rd-ed//

The other sources

- Neuroscience Online
- http://neuroscience.uth.tmc.edu/toc.htm

The other sources

- CNS online
- http://www.cnsonline.cz/

ÚVOD DO CENTRÁLNÍ NERVOVÉ SOUSTAVY

Online kurz

1. ZÁKLADY
2. NERVOVÁ TKÁŇ
3. DRÁHY A STRUKTURY CNS
4. KOMORY, CÉVY A PLENY
5. ZÁKLADY PERIFERNÍHO NERVOVÉHO SYSTÉMU
6. SMYSLY
7. MOTORIKA
8. INTEGRACE I – EMOCE A

ÚVOD DO CENTRÁLNÍ NERVOVÉ SOUSTAVY

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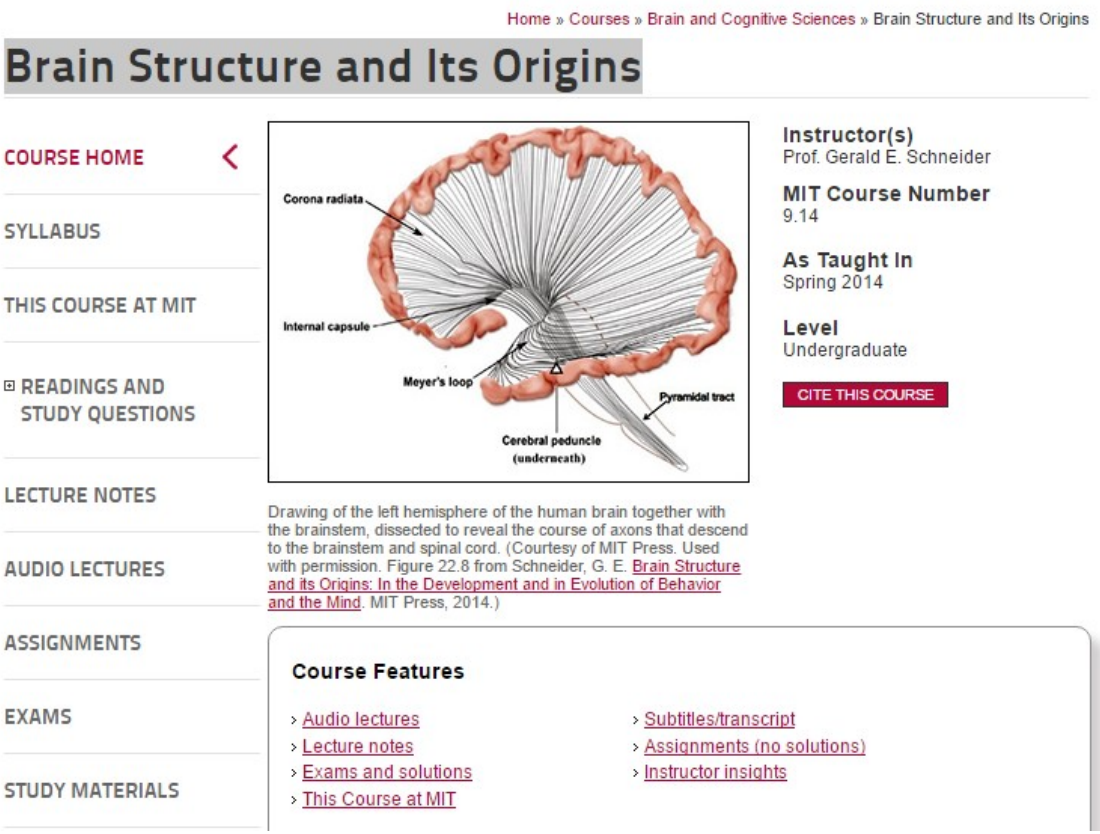
The other sources

- MIT - Brain Structure and Its Origins
- http://ocw.mit.edu/courses/brain-and-cognitive-sciences/9-14-brain-structure-and-its-origins-spring-2014/#



Why and how to STUDY neuroscience

Neuroscience: Brain

Why and how to STUDY neuroscience

Three States of Cognition

Philosophy : Mind behind Mind

PS Deb

Neuroscience: Brain

Psychology : Mind

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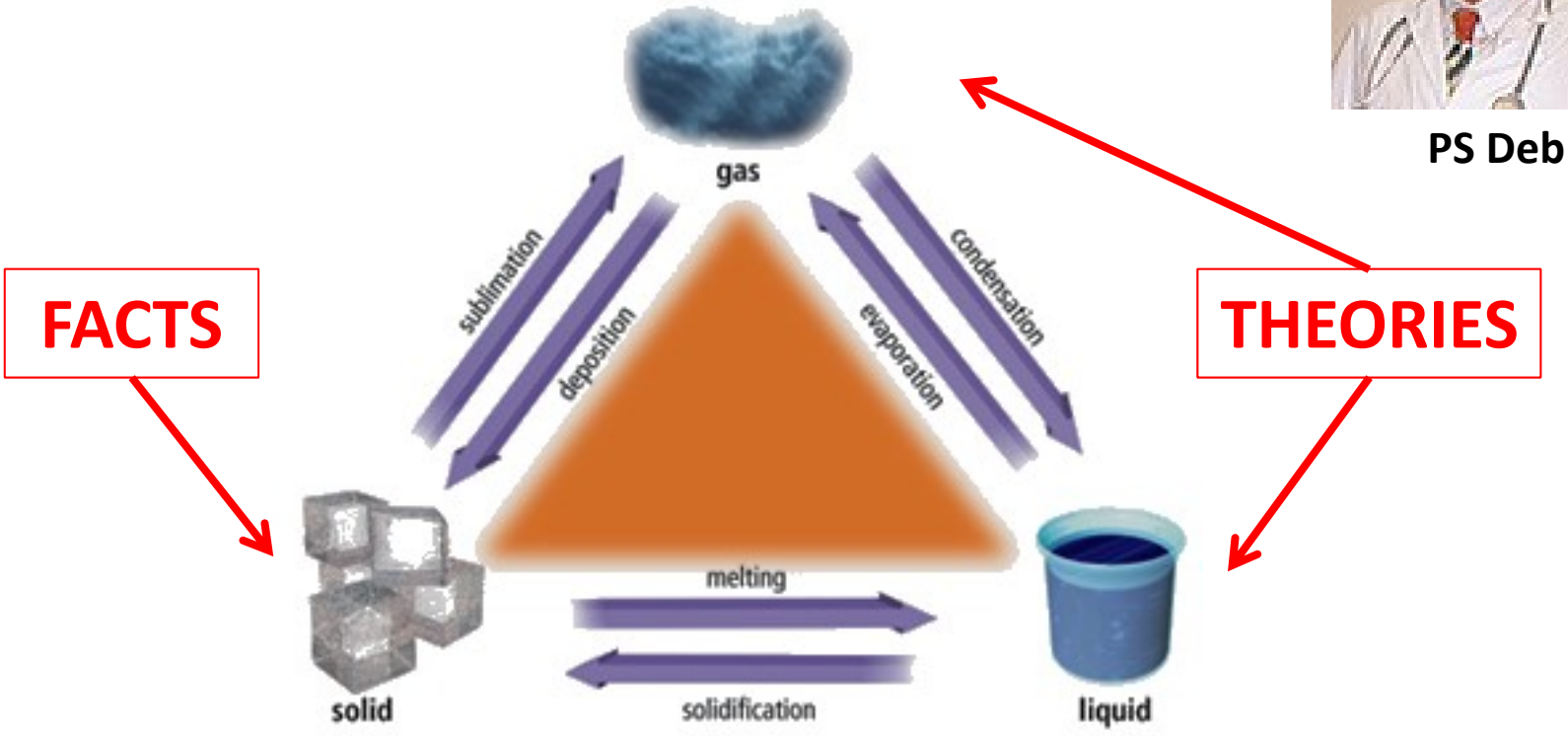


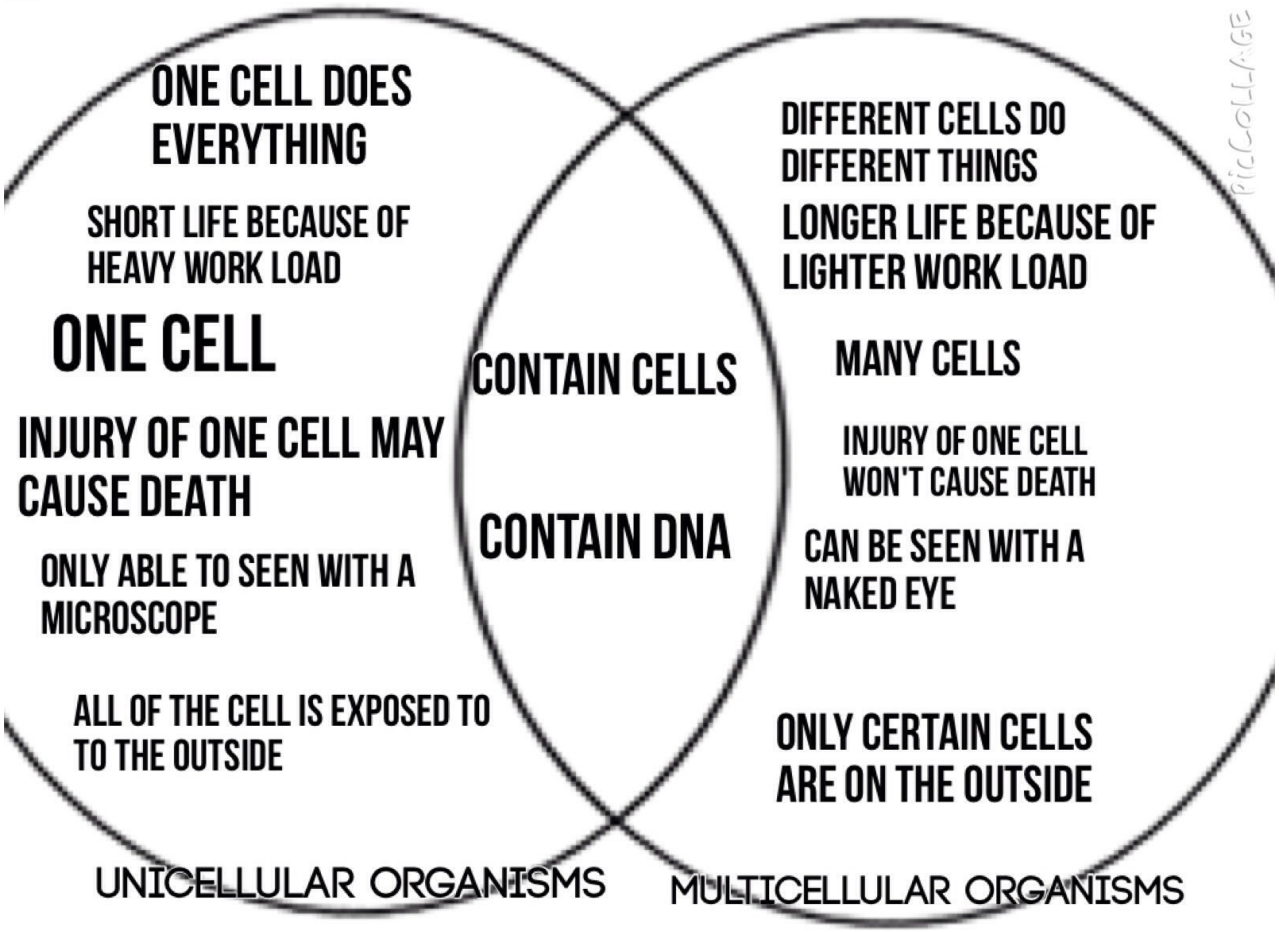
Neuroscience: Brain

Psychology : Mind

http://www.slideshare.net/drpsdeb/presentations

What is nervous system good for?

The role of nervous system



http://edublog.amdsb.ca/

Main points

Unicellular organism

- One cell has to do everything- lower effectivity
- Total dependence on environment
- High level of stress
- Short life time

Multicellular organism

- Functional specialization of particular cells – higher effectivity
- Inner environment – homeostasis
- Lower level of stress
- Longer life time

Compartmentalization

- Cellular specialization leads to compartmentalization on several levels
  - Tissue level
  - Organ level
  - Organ system level

Compartmentalization

- Cellular specialization leads to compartmentalization on several levels
  - Tissue level
  - Organ level
  - Organ system level
- There are barriers in between compartments
- Properties/content may vary among different compartments

The role of nervous system

- Essentials for survival of multicellular organism
  - To maintain homeostatis
  - To coordinate bodily functions

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- Maintaining homeostasis
  - The composition of inner environment
  - The integrity of organ/ bodily barriers

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  - To receive signals from outer and inner environment
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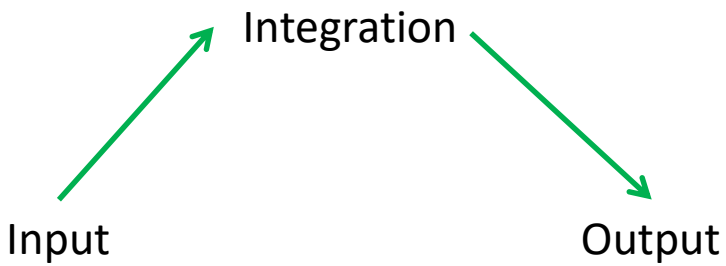

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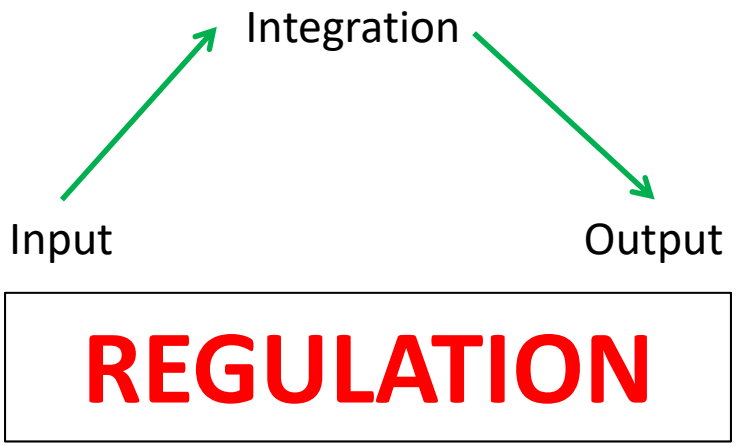

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- Regulation
  - Nervous
  - Humoral

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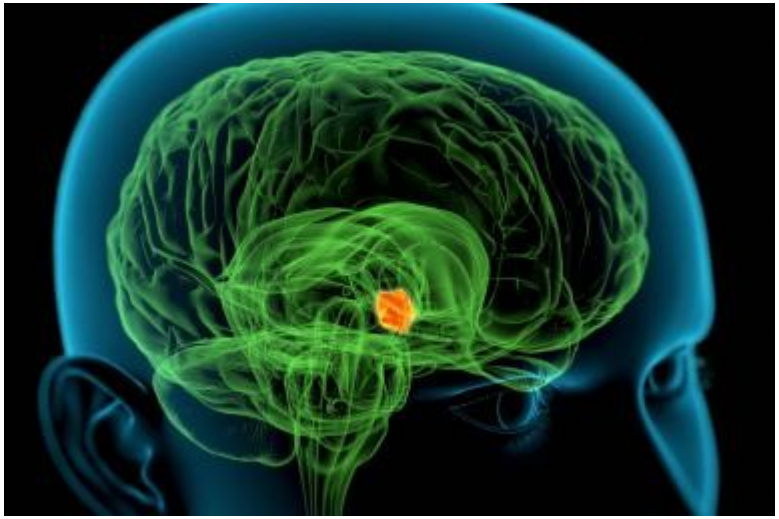


http://biology.about.com/od/anatomy/p/Hypothalamus.htm

Central nervous systém control/influence all the types of regulations

The role of nervous system

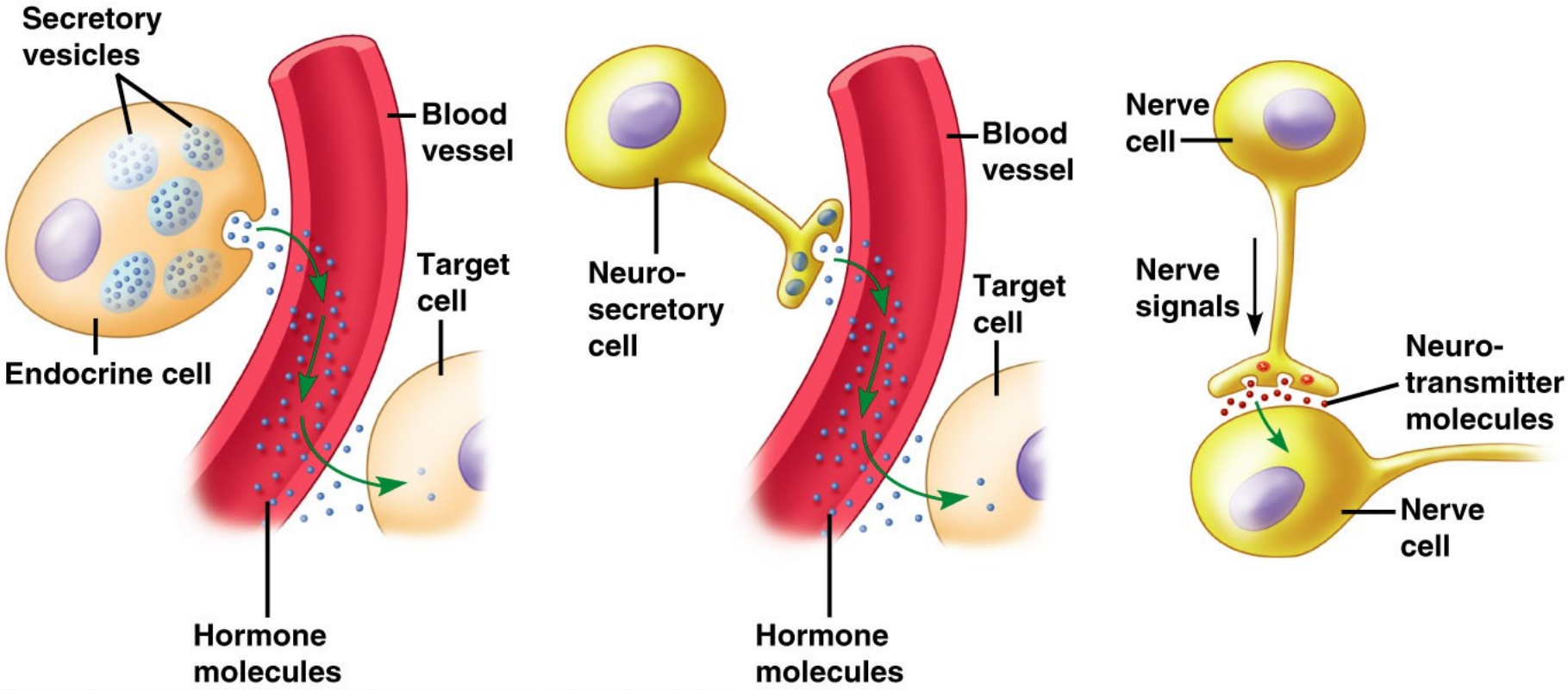
Humoral regulations

- Hormone
- Non-specific channel of conduction (blood stream)
- Target site defined by specific receptor
- Low energetical demands
- Slow speed
- Long duration

Nervous regylations

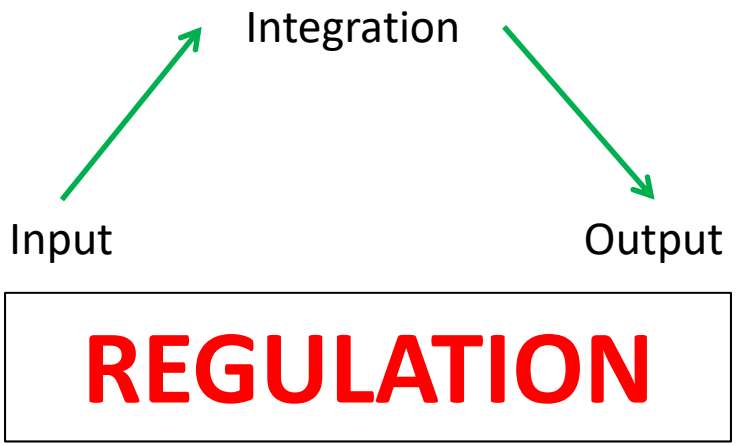
- Neurtransmitters
- Specific channel of conduction
- Target site defined by infrastructure
- High energetical demands
- Fast speed
- Short duration

Hormonal and nervous regulations



http://www.austincc.edu/

The role of nervous system



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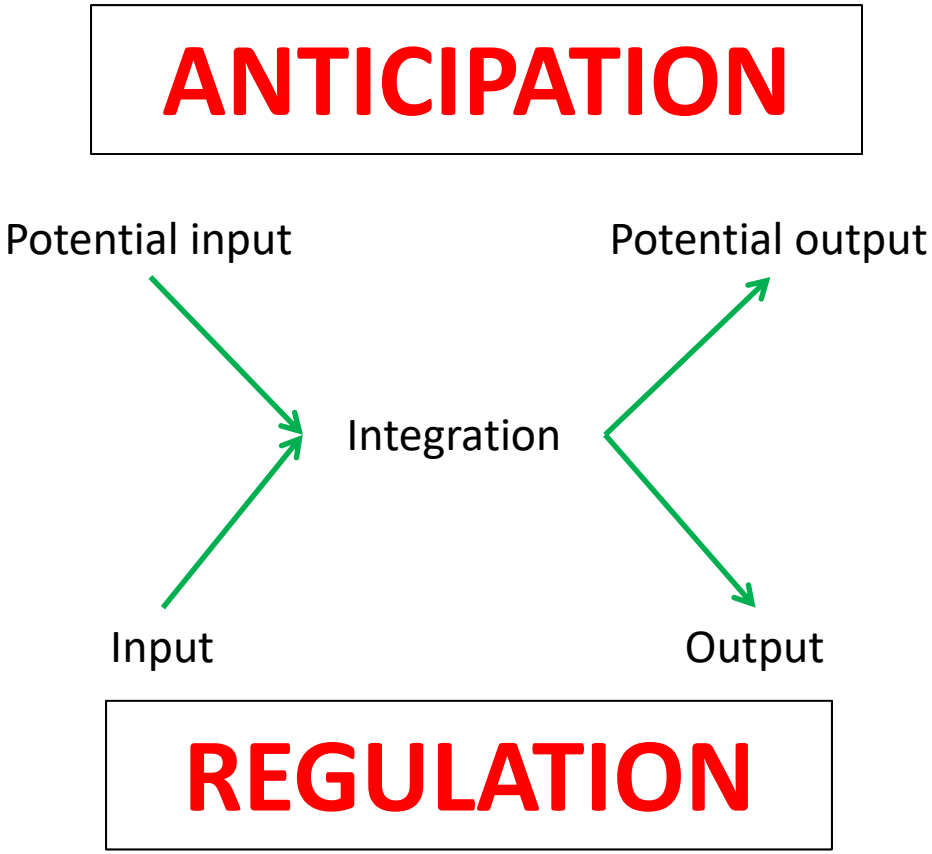

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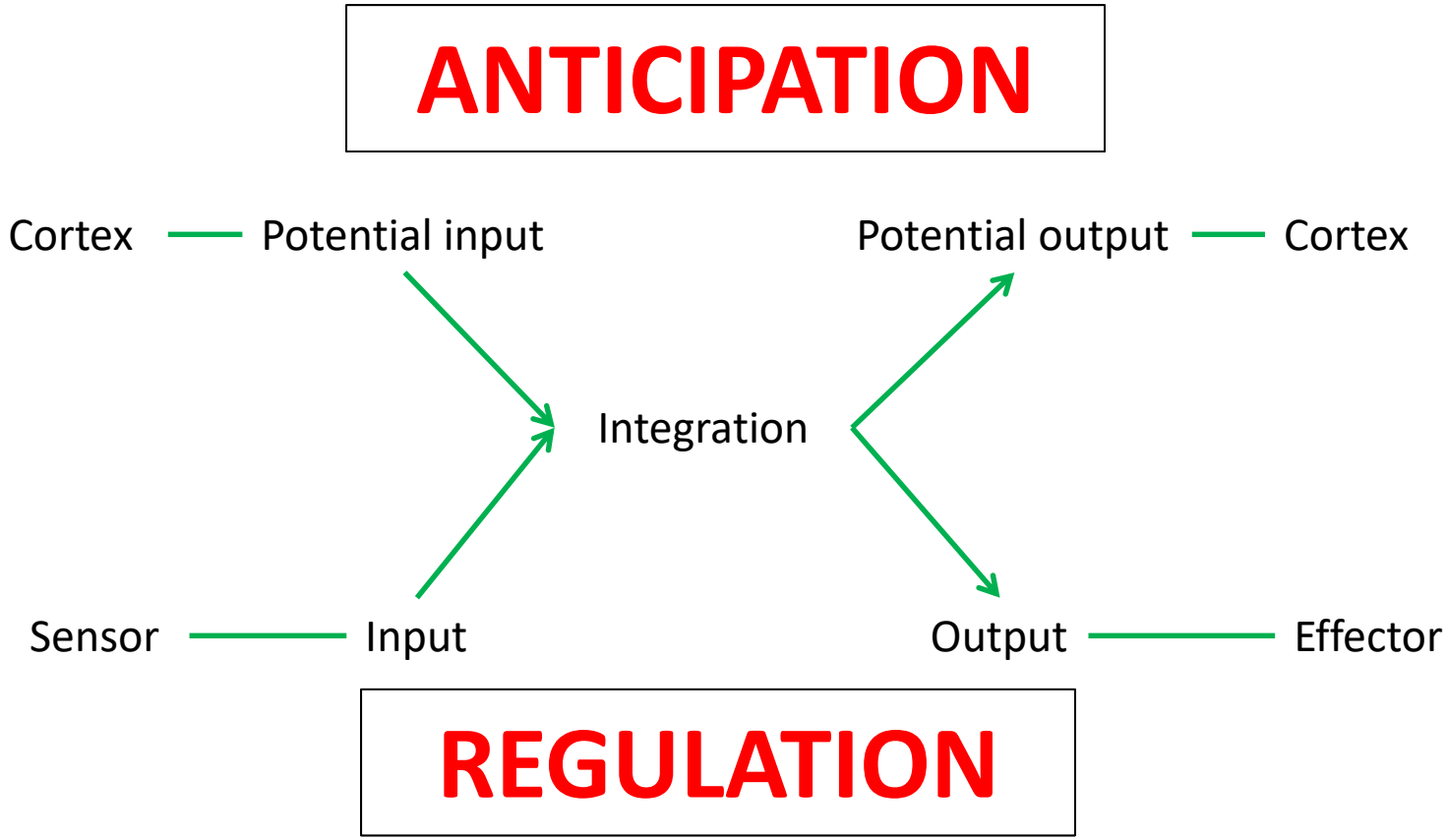

Evolutionary approach

Evolution is not revolution

Evolutionary approach

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- It is important to ask what is any particular function good for and how it has been improved in course of evolution