SENSATION & PERCEPTION

PSY 101 General Psychology

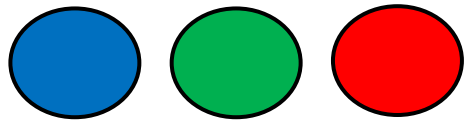
Instructor: Aimee Kim

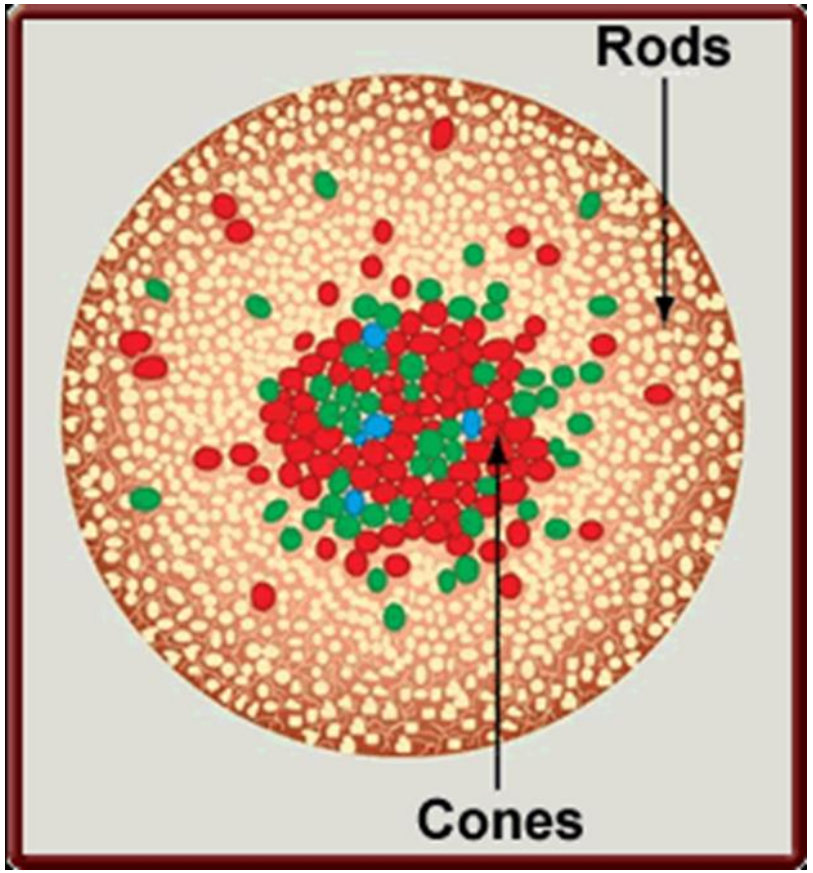
Drexel University

Vision

Color opponent-process theory:

Trichromatic theory
= 3 photoreceptors




Rods
Cones

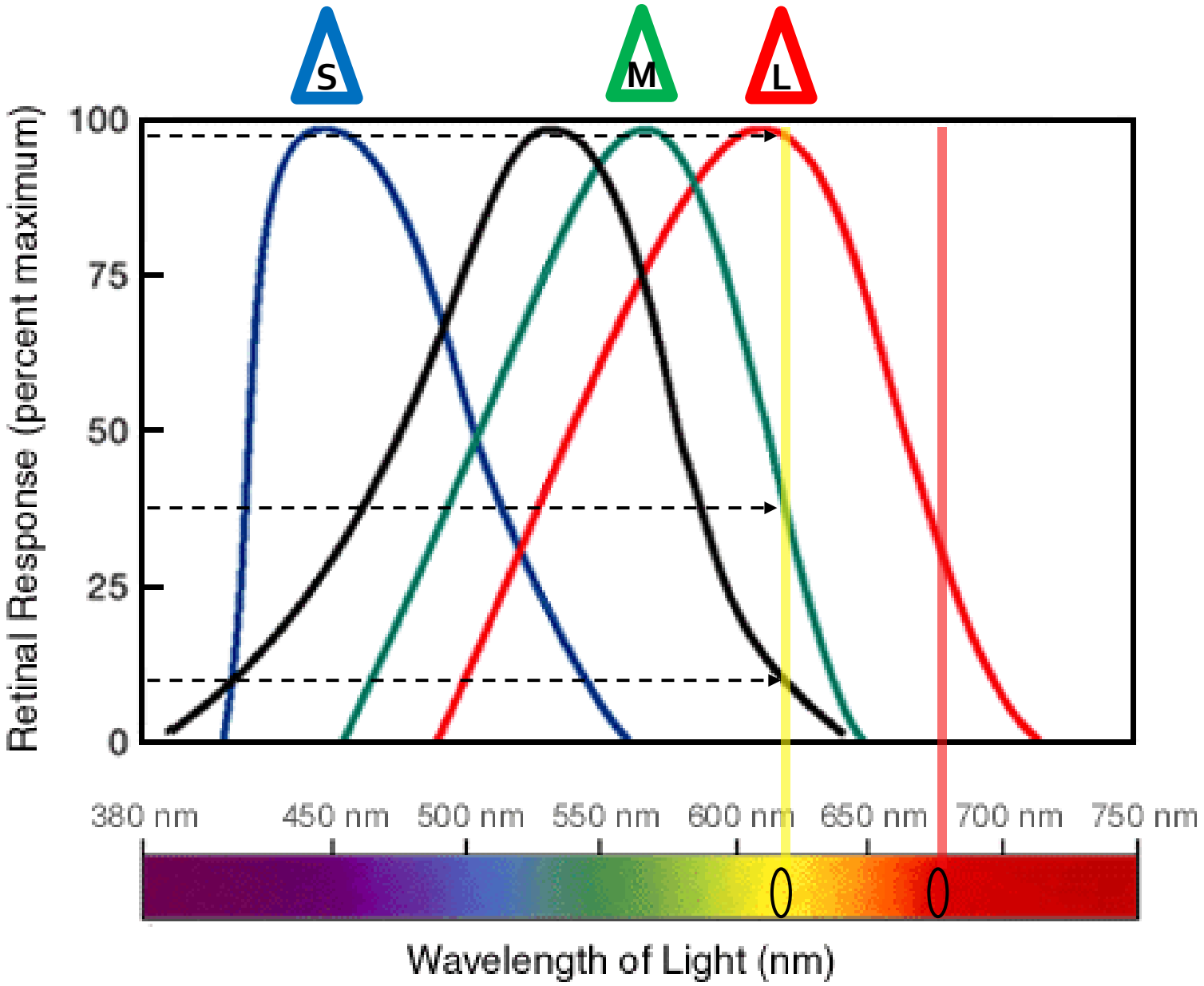
Vision

Young-Helmholtz trichromatic theory

Short WL - blue cones

Medium WL - green cones

Long WL - red cones

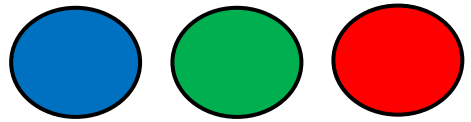


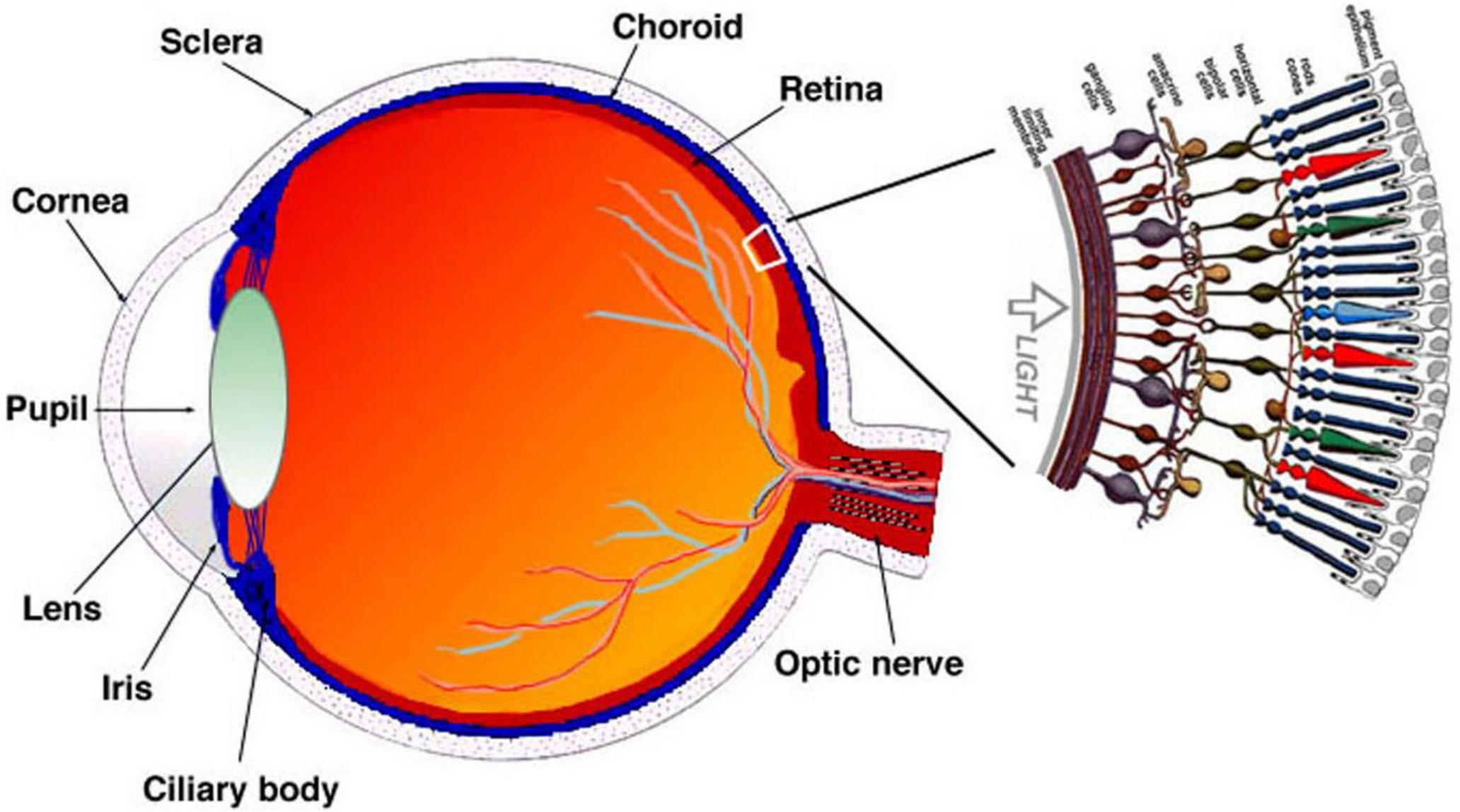
Vision

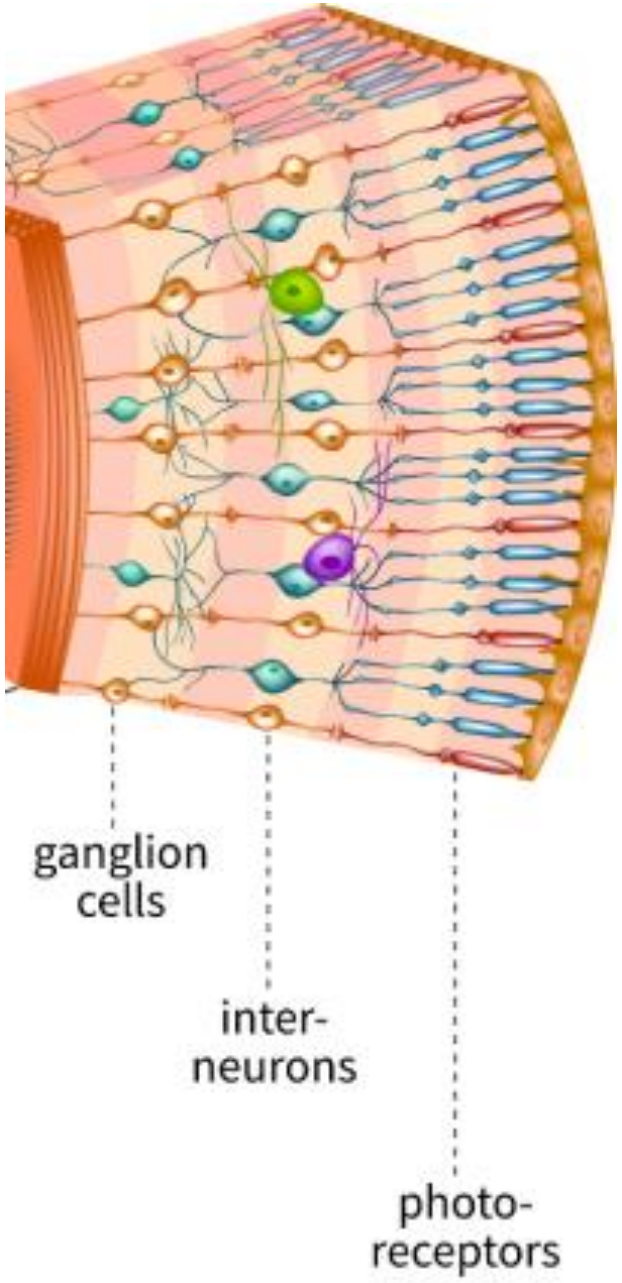
Color opponent-process theory:

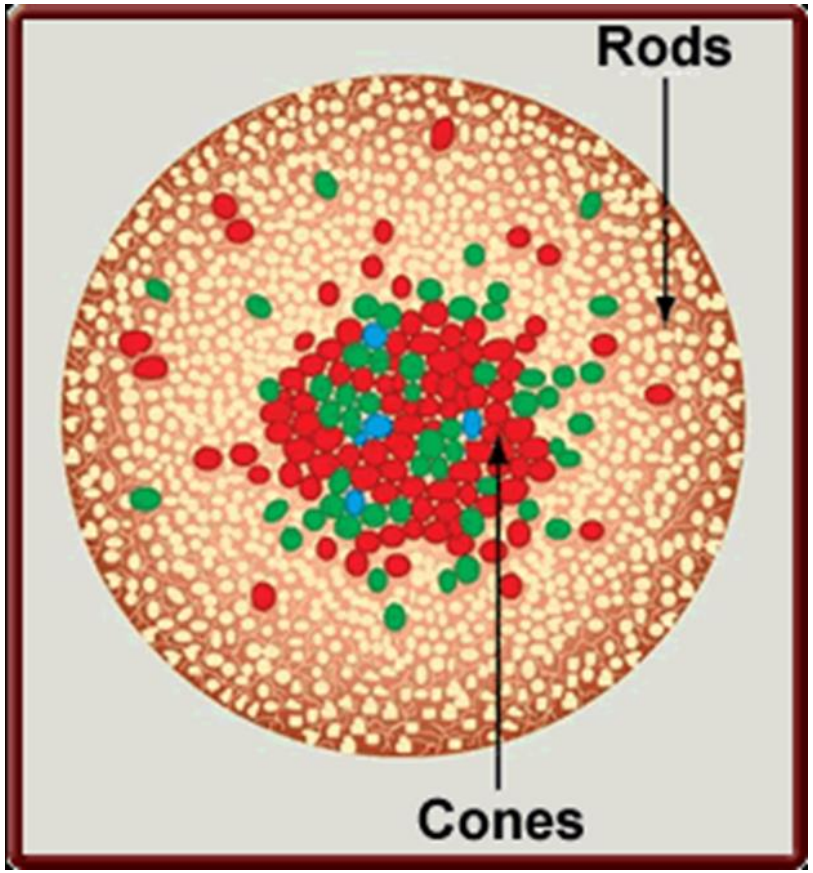
-photoreceptors (cones and rods) are interconnected

Trichromatic theory
= 3 photoreceptors




Sclera
Choroid
Retina
Cornea
Pupil
Lens
Iris
Ciliary body
Optic nerve
LIGHT


ganglion cells
inter-neurons
photo-receptors


Rods
Cones

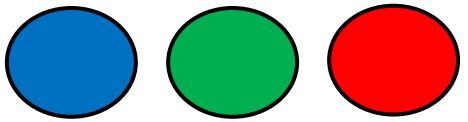
Vision

Color opponent-process theory:

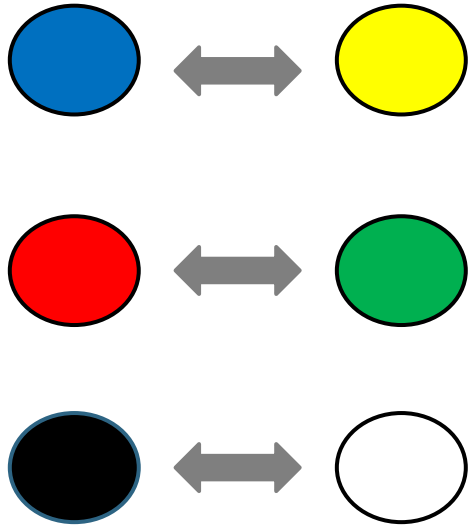
-photoreceptors (cones and rods) are interconnected

-only ‘opposing colors’ of the cones at a given time to reach the brain for processing

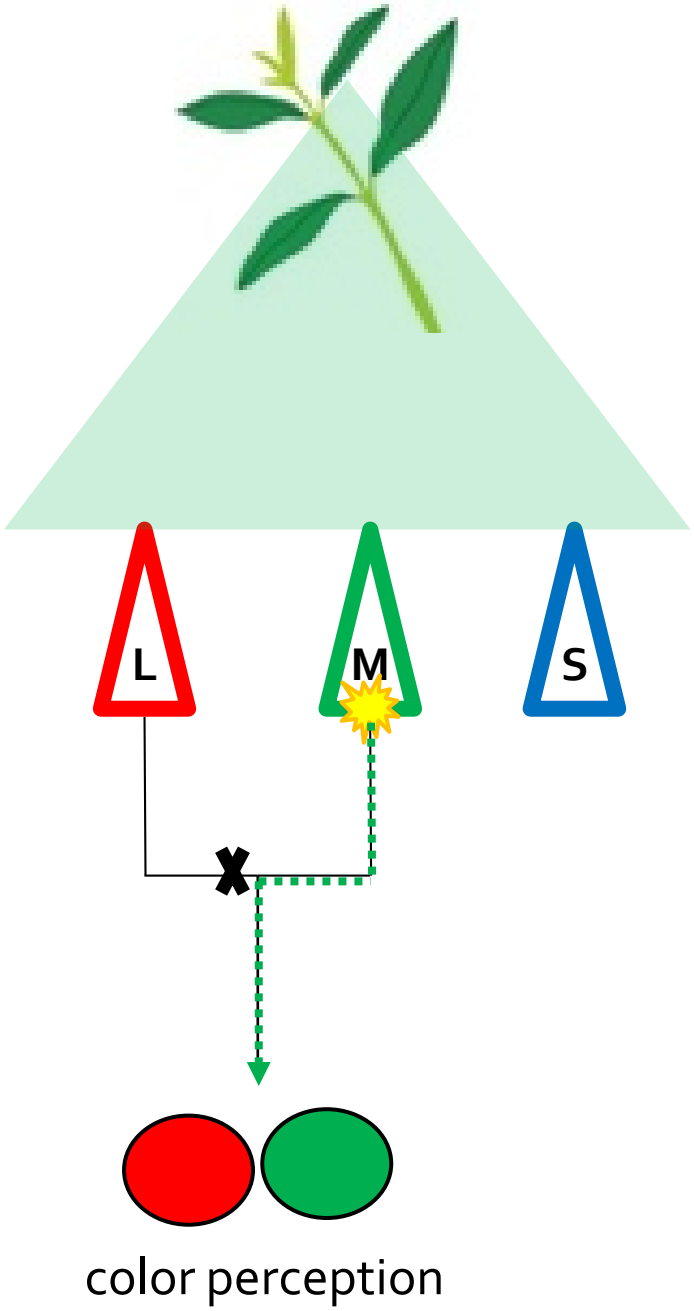
Trichromatic theory
= 3 photoreceptors



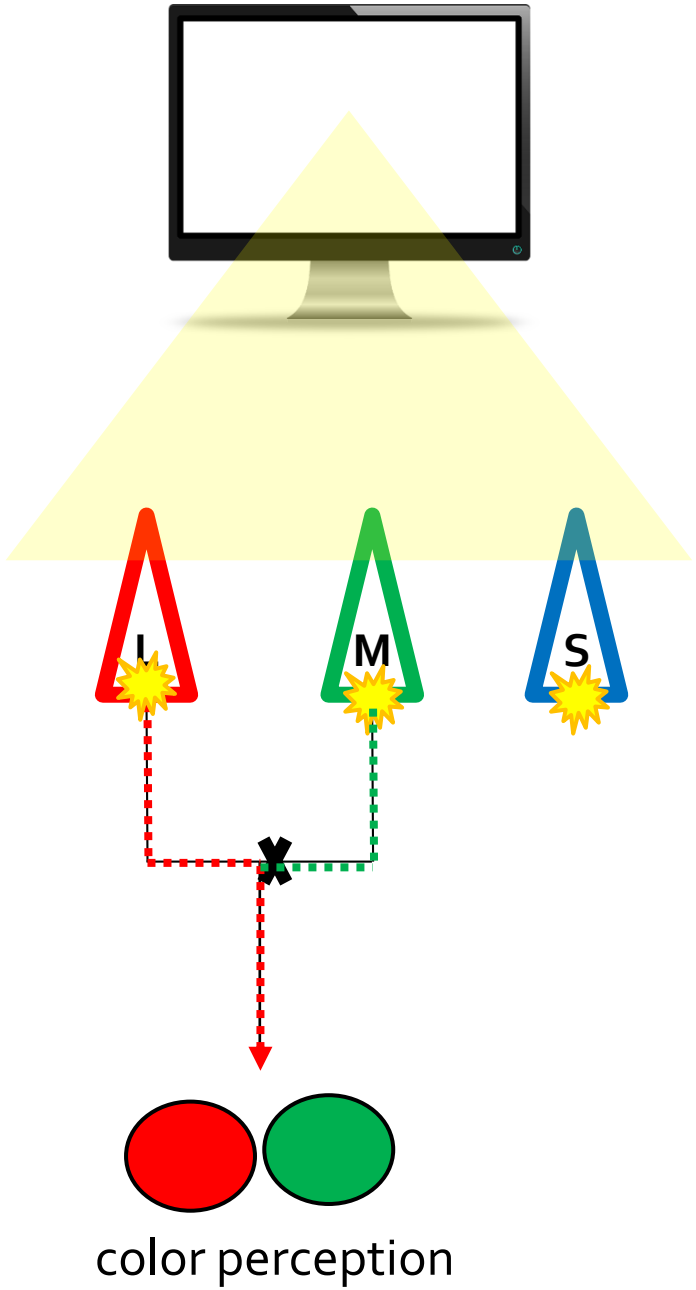
Opposing color pairs



Vision

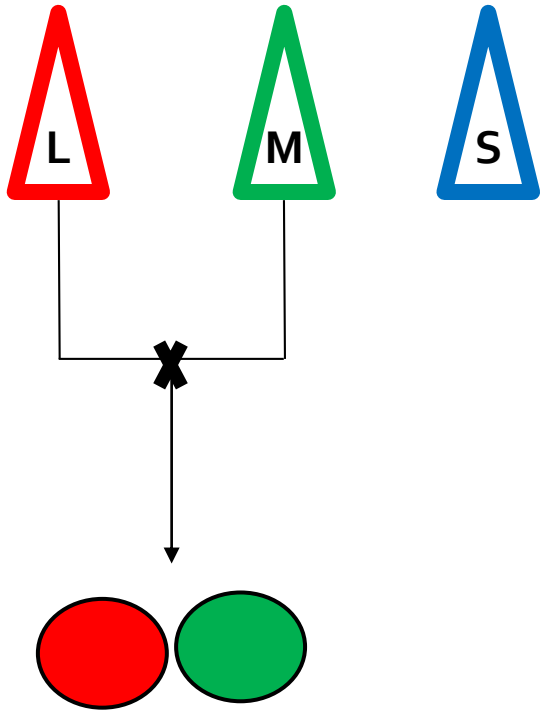


Vision

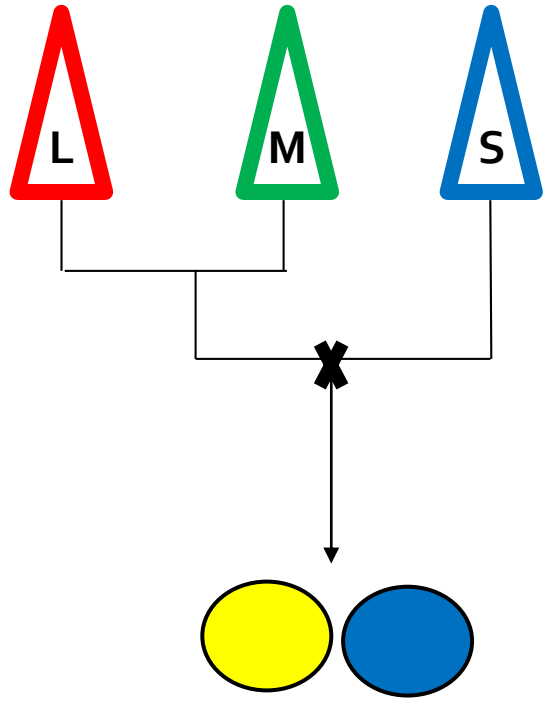


Vision

Chromatic channels

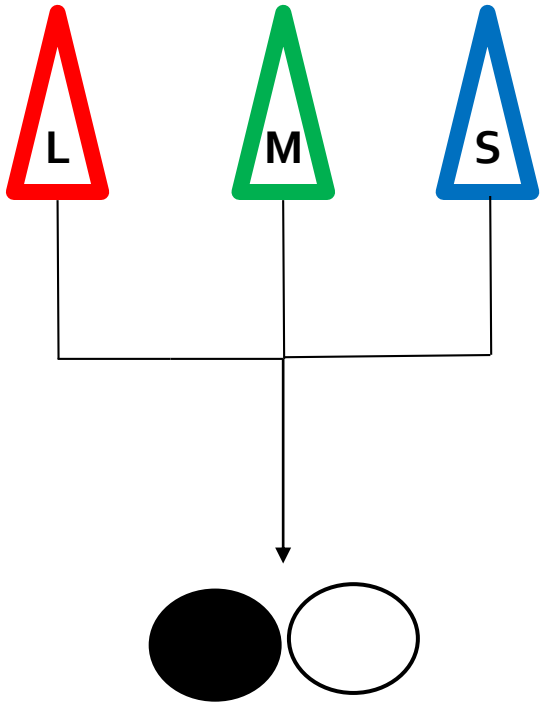


Opposing pair



Opposing pair

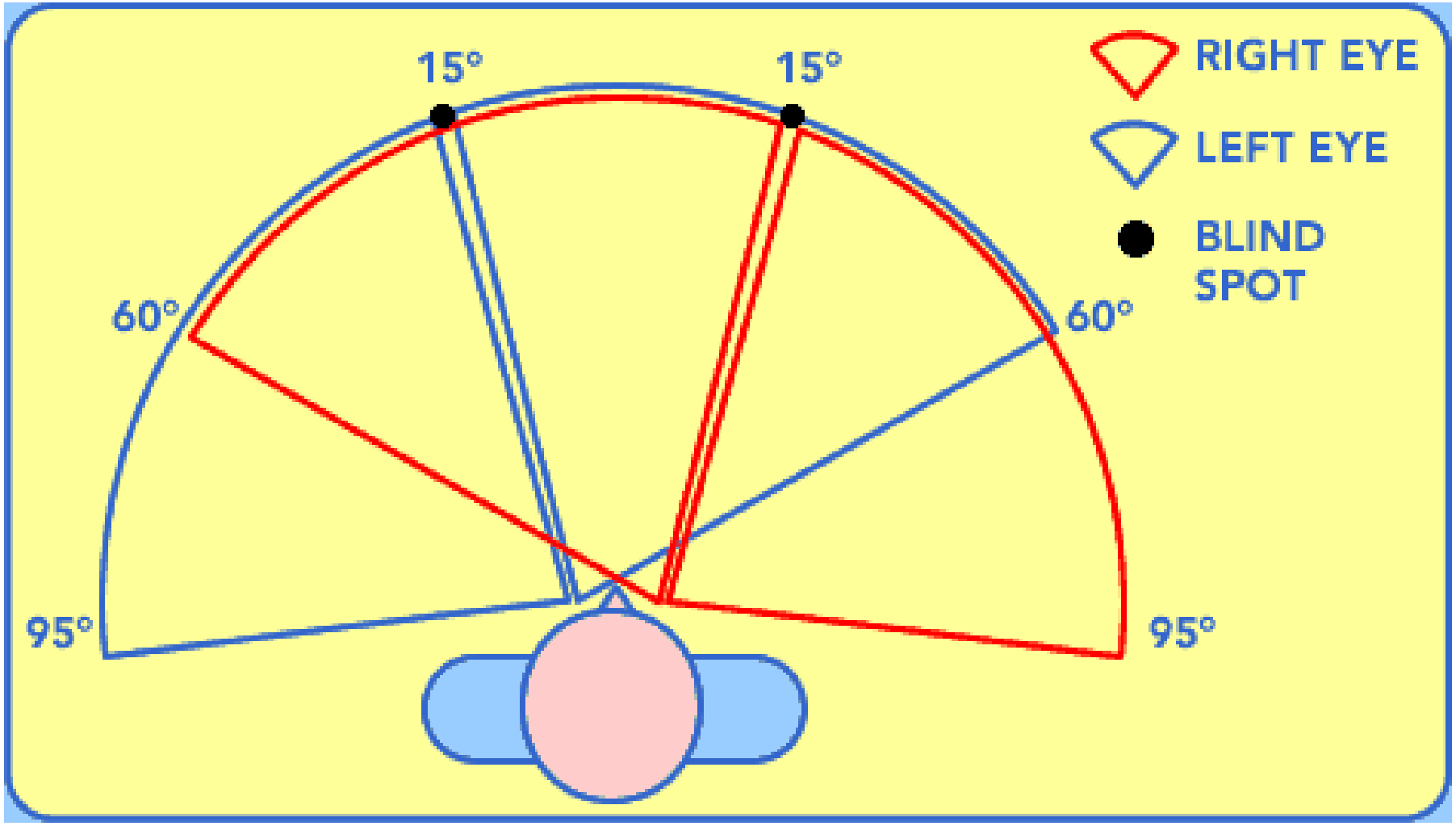
Luminance channel



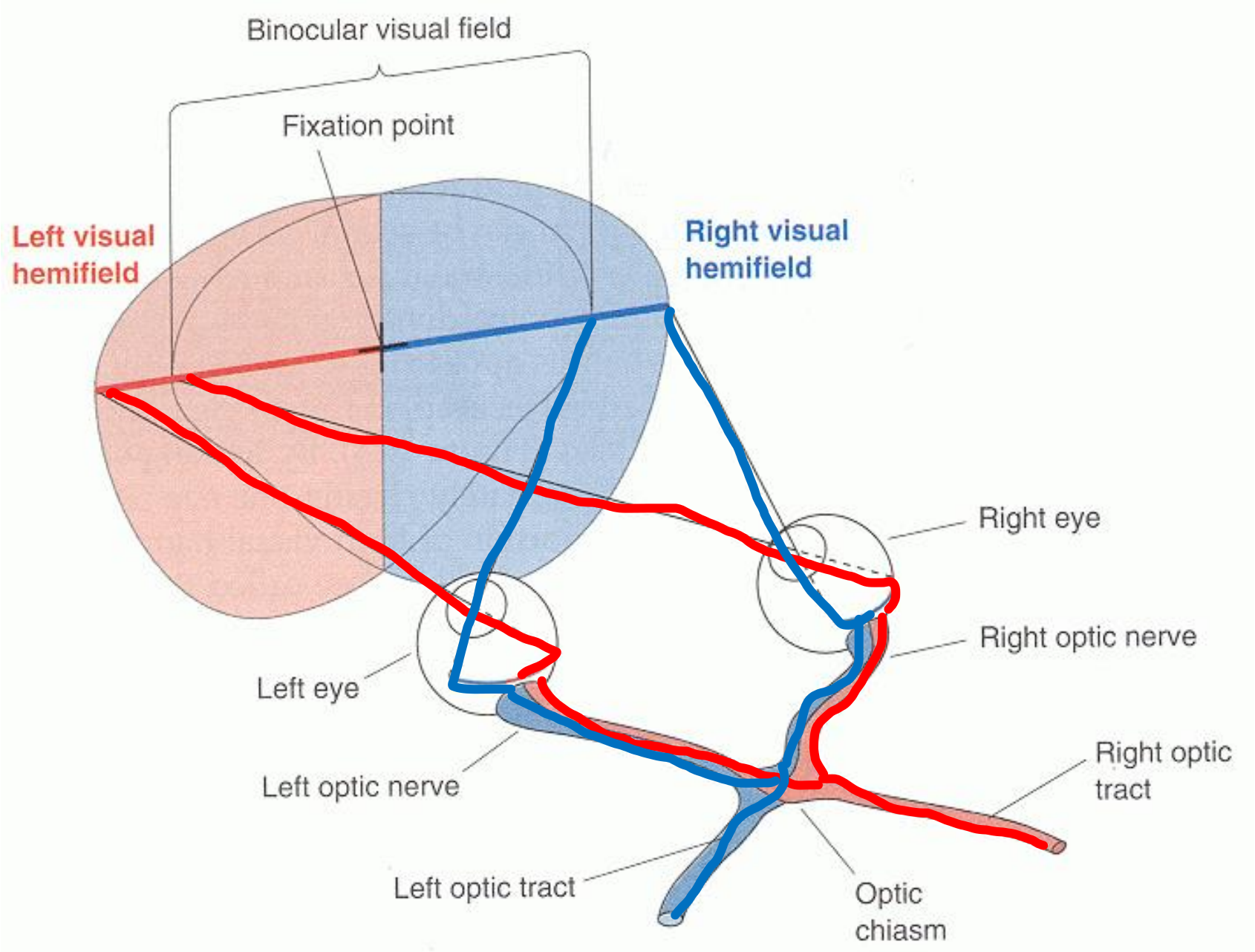
Opposing pair

Vision

Visual field of each eye

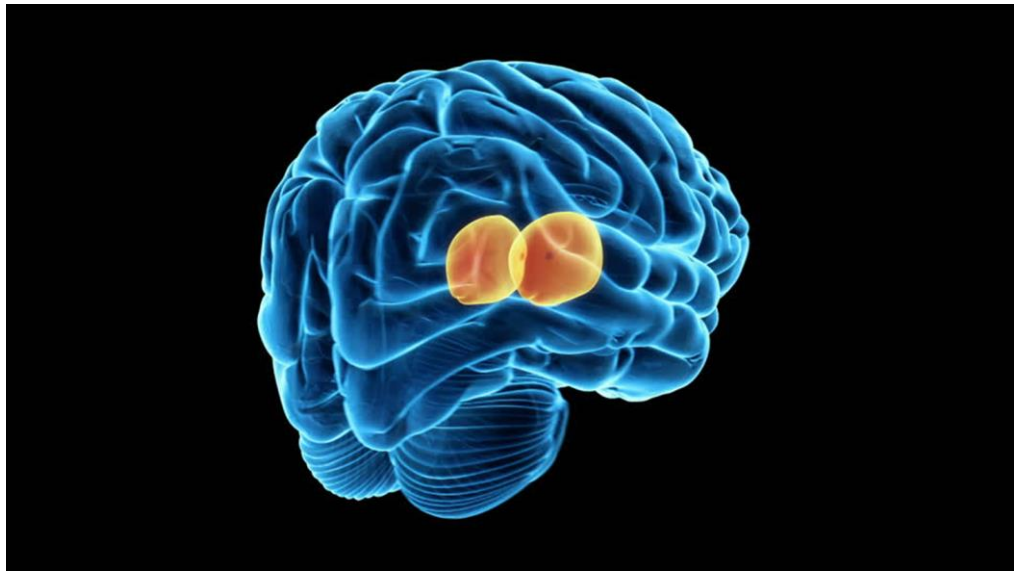


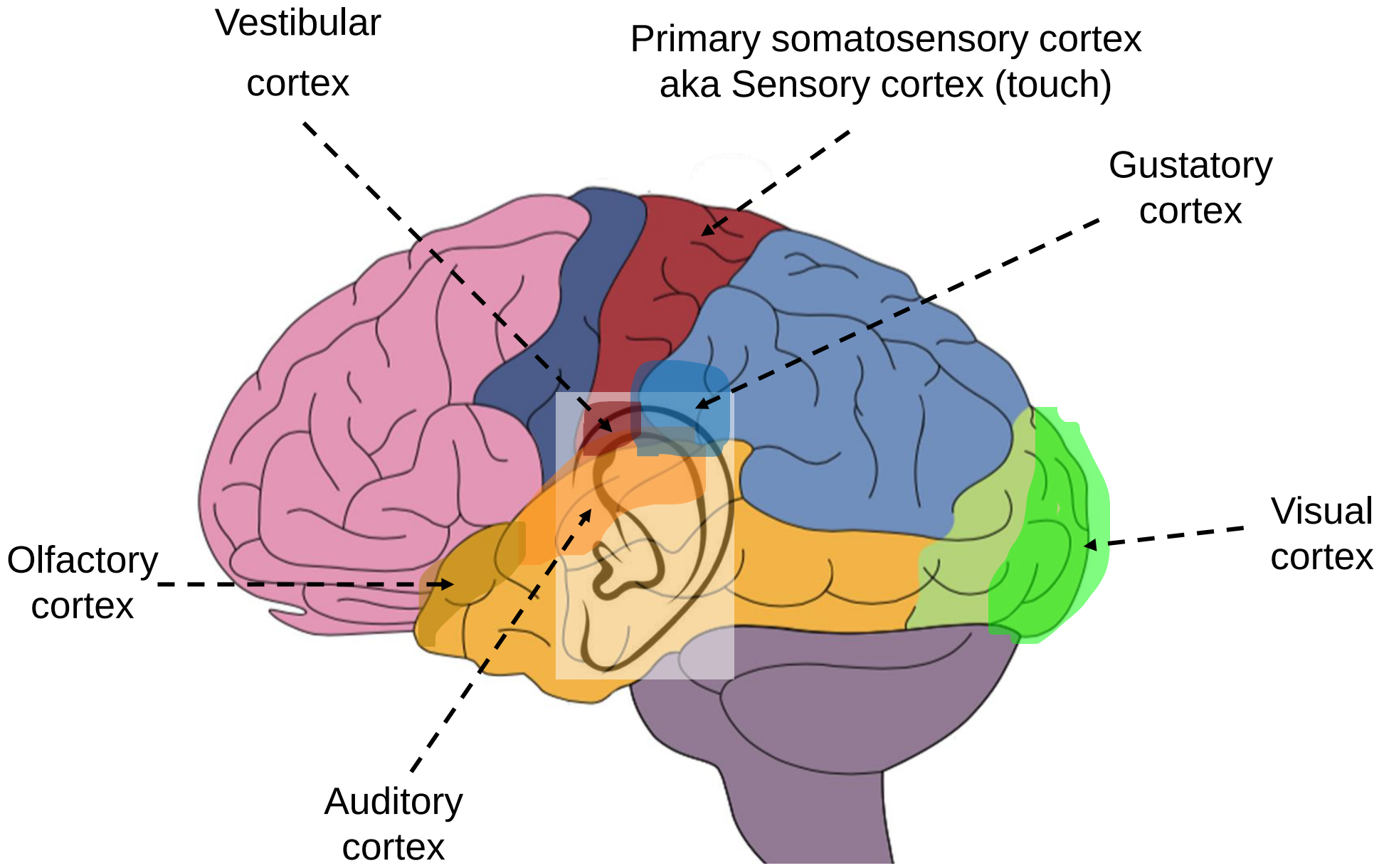
Vision

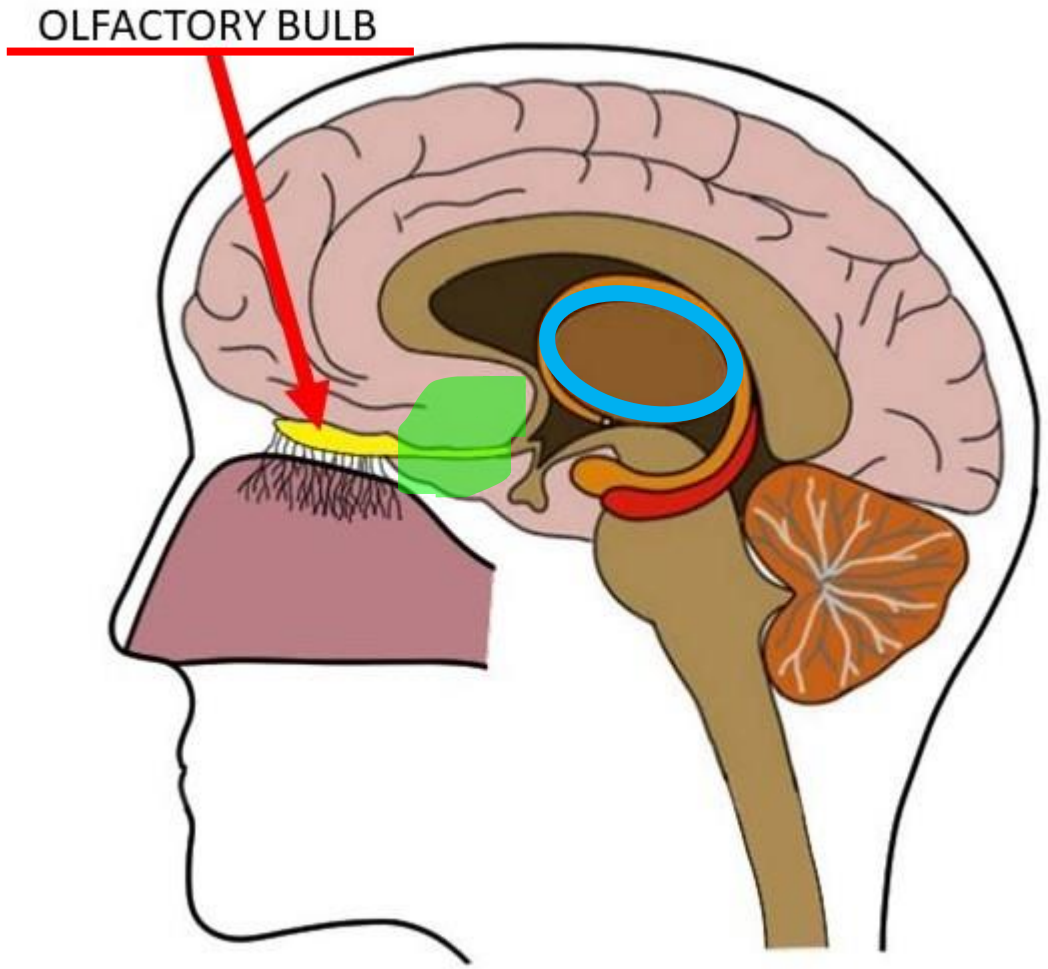

Binocular visual field
Fixation point
Left visual hemifield
Right visual hemifield
Right eye
Right optic nerve
Left eye
Left optic nerve
Right optic tract
Left optic tract
Optic chiasm

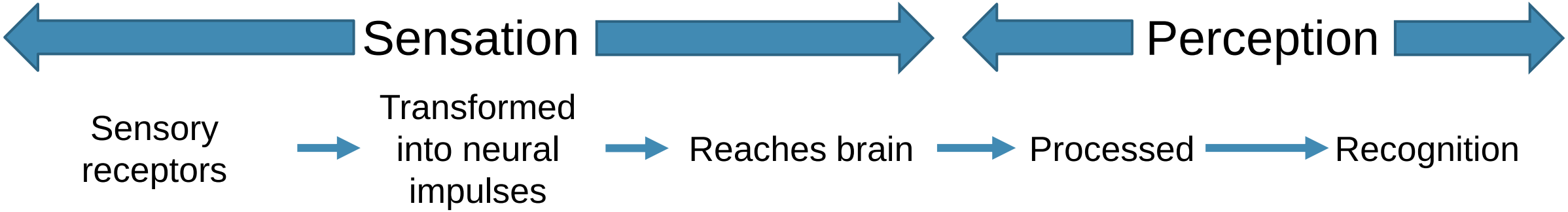
Sensory signals (nerve impulse) travel to the brain

- First stop: thalamus
- Second stop: specific sensory cortex
- Exception: Olfactory pathway




Vestibular cortex
Primary somatosensory cortex aka Sensory cortex (touch)
Gustatory cortex
Visual cortex
Olfactory cortex
Auditory cortex


OLFACTORY BULB



Variations

Physical & neural level

- Receptors
- Myelin sheath; axons
- Neurons and nerves
- Sensory adaptation

Perception

Interpretation of sensory input

Organization and association of input

★Bottom-up processing

"Data"-driven approach

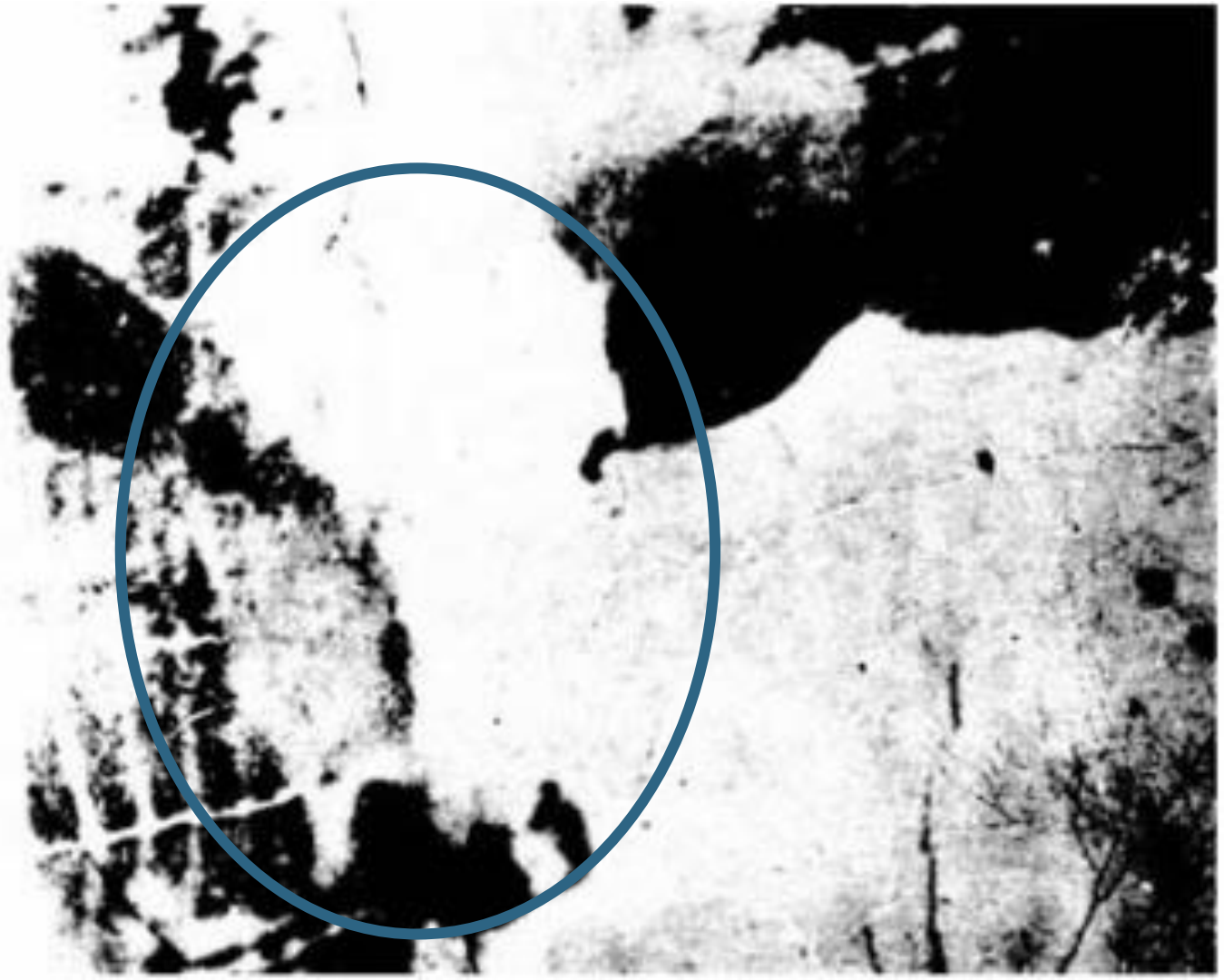
What-you-see-is-what-you-get approach

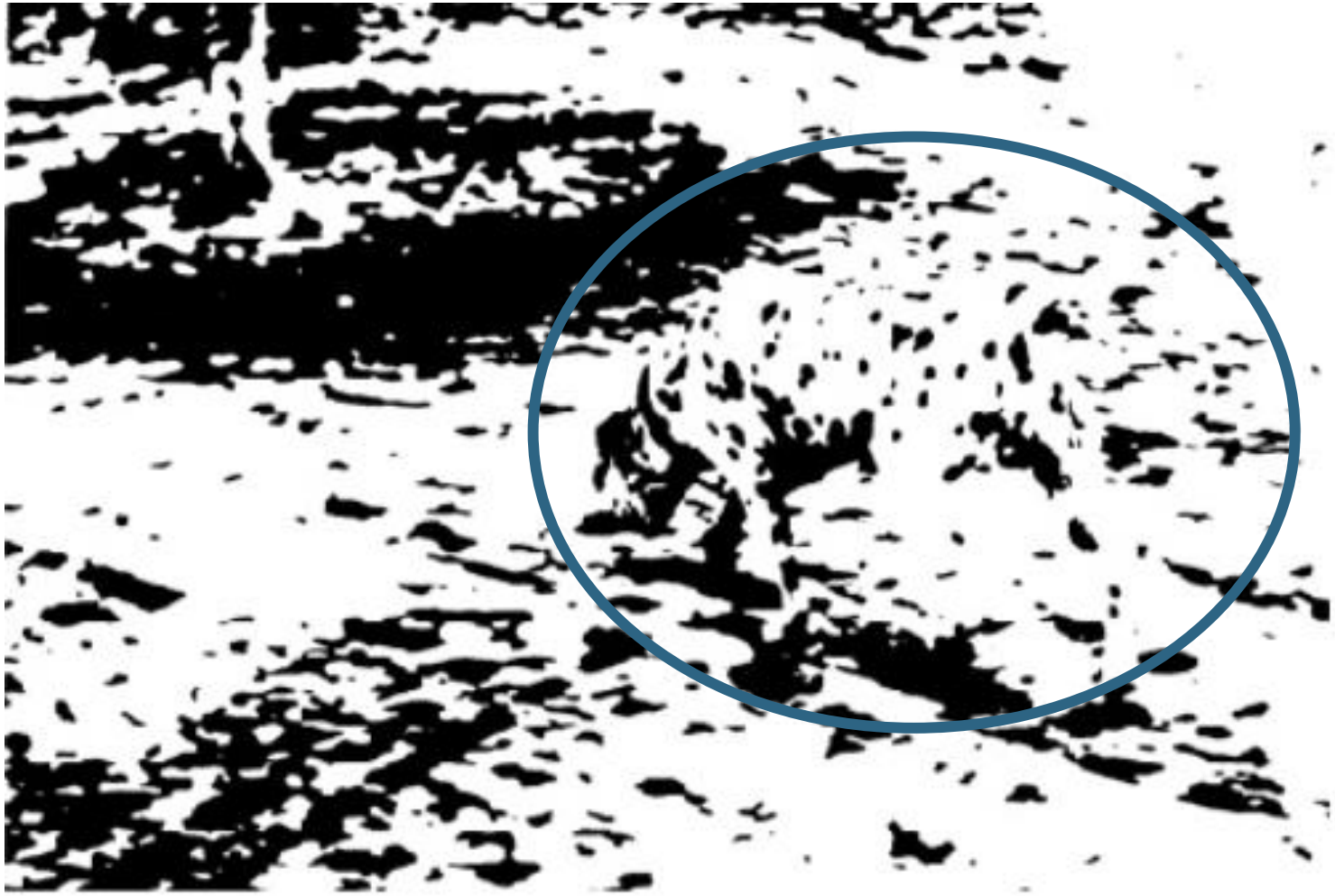
★Top-down processing

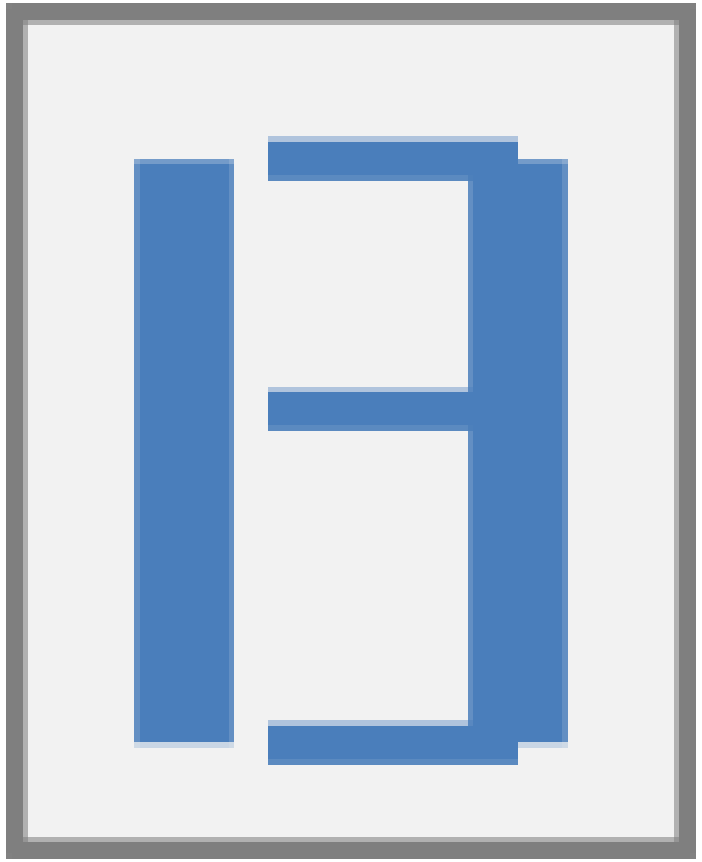
Relating-to-what-you-already-know approach

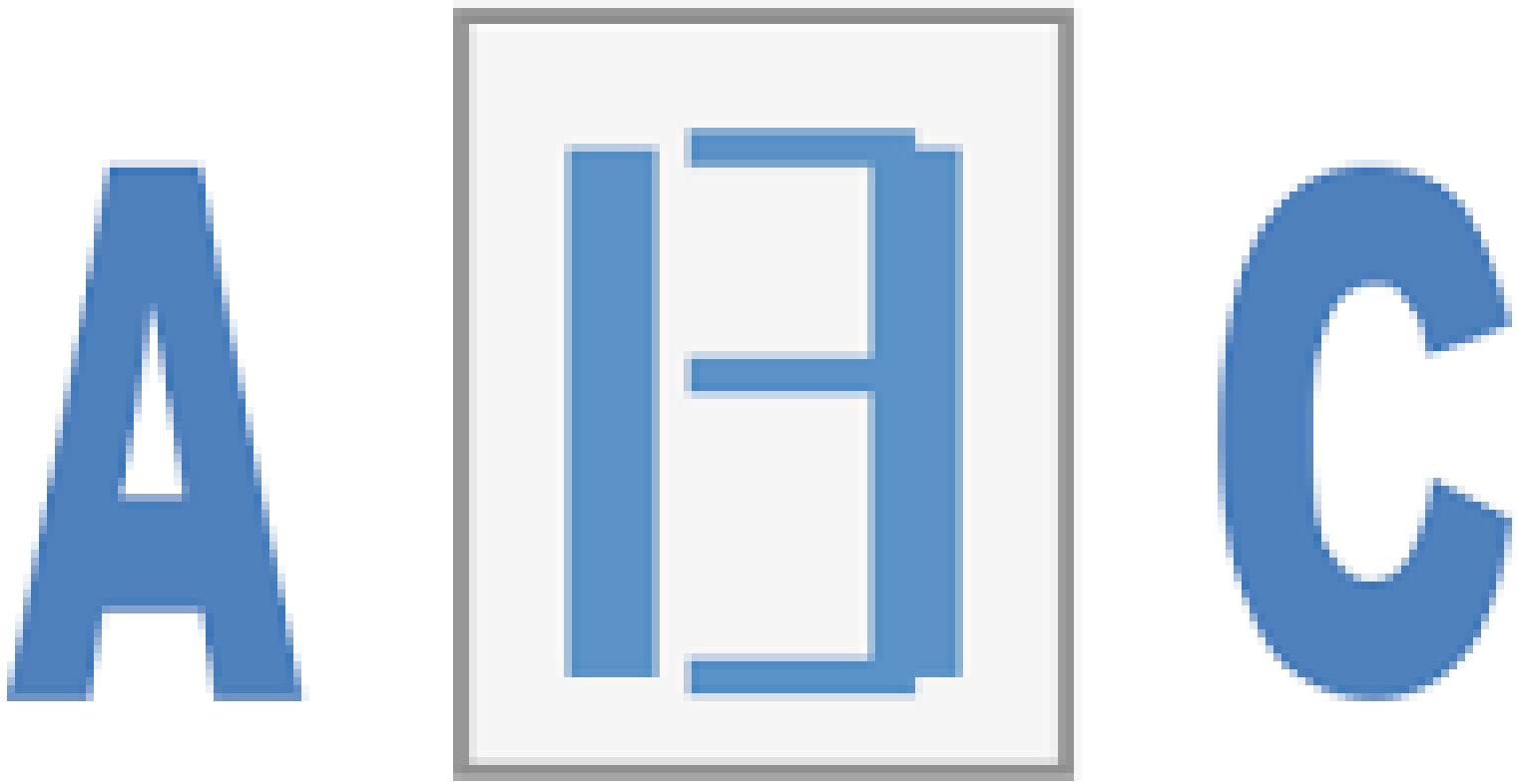
Top-down processing

Top-down processing









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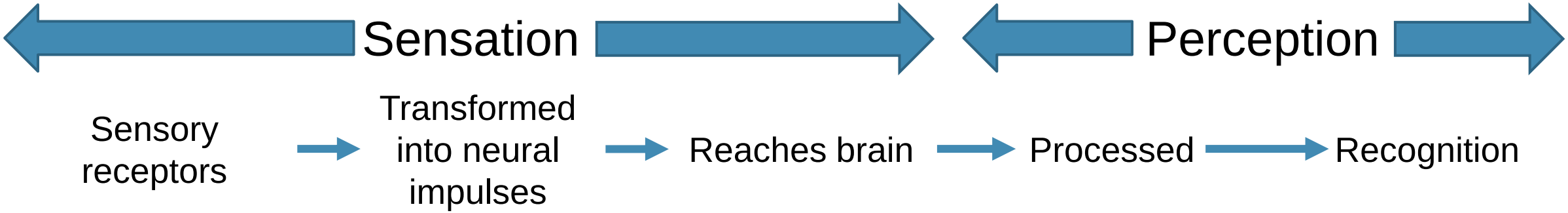


Variations

Physical & neural level	Neural (brain) & cognitive level
- Receptors - Myelin sheath; axons - Neurons and nerves - Sensory adaptation	- Brain damage - Neural connections - Attention - Priming - Perceptual set

Prosopagnosia

Synesthesia

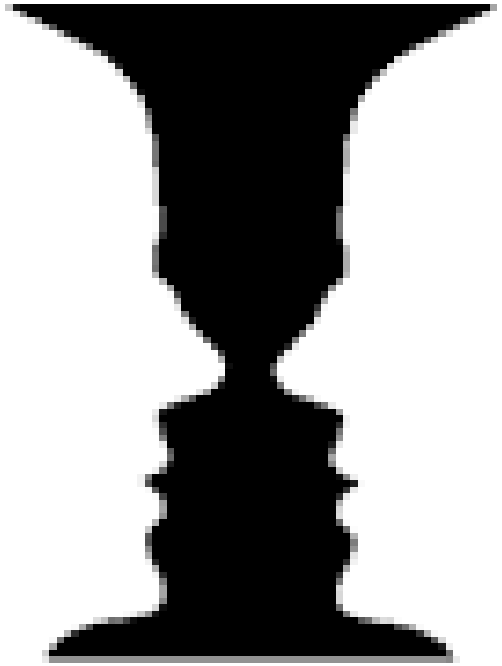
I smell colors.

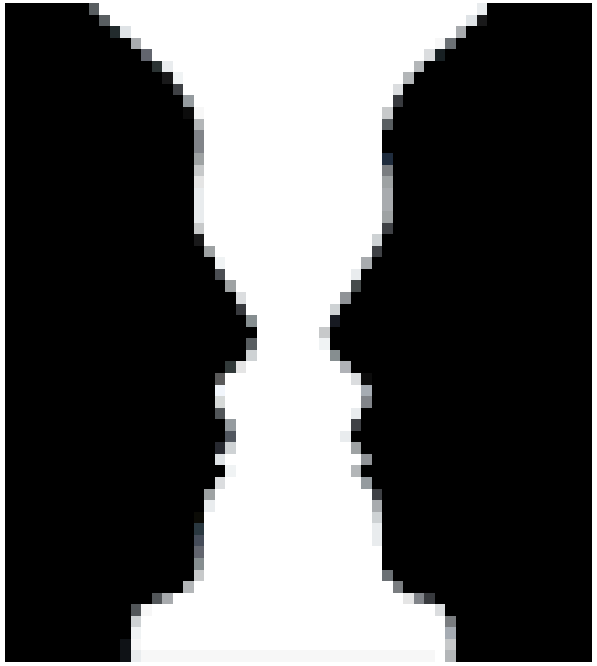
I see color when hearing sounds.

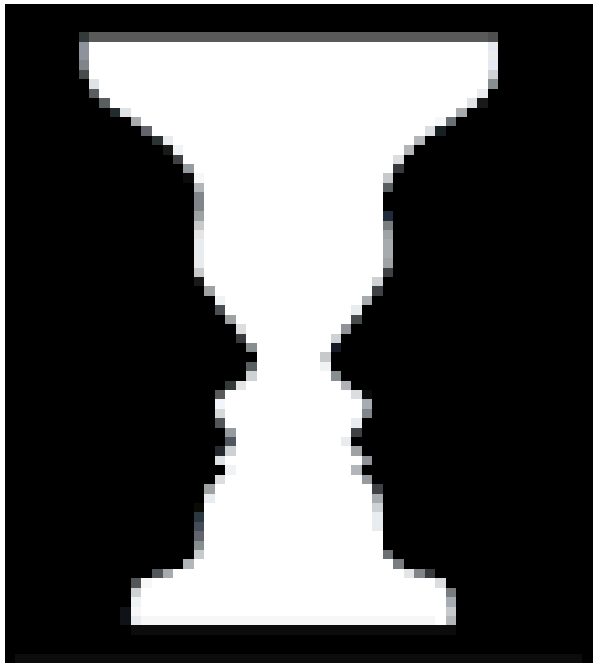
I feel sounds.

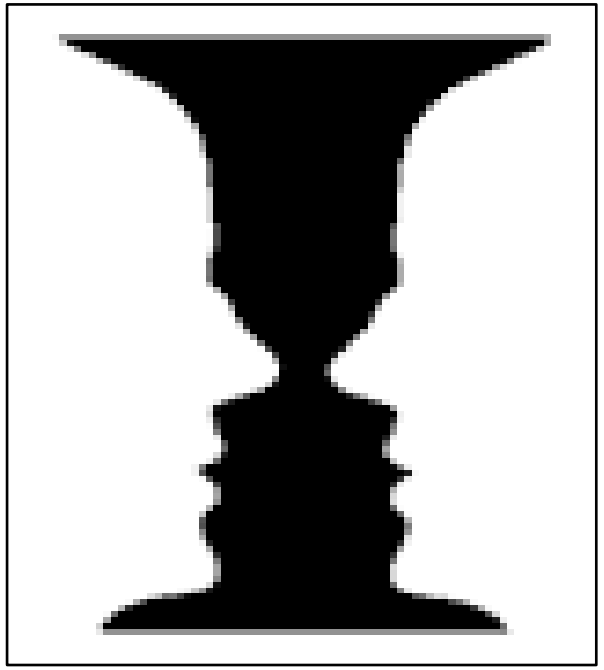
Synesthesia

Mirror-touch synesthesia









Priming

Subliminal priming

No awareness of what you perceive

Non-subliminal priming

Awareness of what you perceive

Perceptual set