

FINAL REVIEW

The following is a list of the topics covered in COGS17...

Peripheral Nervous System

Somatic Nervous System

- Retina
- Cochlea
- Otolith Organ
- Semi-Circular Canals
- Hair Cells
- Olfactory Bulb
- Nociceptors
- Thermoreceptors
- Encapsulated Nerve Endings
- Cranial Nerves
- Neuromuscular junction

Autonomic Nervous System

- Sympathetic Nervous System
- Parasympathetic Nervous System
- Parasympathetic Rebound

Central Nervous System

Meninges

- Ventricles
- Brainstem
- Raphe nuclei
- Reticular formation

The Spinal Cord

- Dorsal & Ventral Roots
- Bell Magendie Law

Hindbrain

Medulla

- Cochlear Nucleus
- Superior Olive

Pons

- PGO wave
- Locus Coeruleus

Cerebellum

- Parallels & Purkinjes
- LIP

Midbrain

Tectum

- Superior Colliculus
- Inferior Colliculus

Tegmentum

- Substantia Nigra
- Red Nucleus

Periaqueductal Gray Area

Forebrain

Thalamus

- LGN, MGN, VPN (sensory)
- VLN (motor)
- MDN (memory)

Hypothalamus

- SCN - Suprachiasmatic Nucleus
- MPOA -Medial Preoptic Area (SDN & INAH3)
- VMH - Ventro-Medial Hypothalamus
- VLPOA – Ventro-Lateral Pre-Optic Area
- Lateral Hypothalamus
- Tubero-Mammillary Body

Limbic System

Olfactory bulb

Hippocampus

Amygdala

- Cortico-Medial, Lateral, Central & Basolateral

Cingulate Gyrus

Basal Ganglia

- Caudate Nuc+Putamen (Striatum), Globus Pallidus

Basal Forebrain

Nucleus Accumbens & Ventral Tegmentum Area

Cerebral Cortex

Topological Maps

- (Penfield, Retinotopic, Tonotopic)

Magnification Factor

Columnar organization

Occipital Lobe -

- Visual Cortex, Striate Cortex
- V2, V4
- Dorsal Stream
- Ventral Stream

Temporal Lobe

- Auditory Cortex, Sylvian Fissure
- Insular Cortex
- IT (Inferior Temporal)
- MT, MST
- Planum Temporale
- STS (Superior Temporal Sulcus)
- Wernicke's Area

Parietal Lobe -

- Somatosensory Cortex, Central Sulcus
- Post-Central Gyrus
- Posterior Parietal
- Mirror Cell System

Frontal Lobe -

- Motor Cortex, Precentral Gyrus
- Premotor Cortex
- Broca's Area
- Prefrontal Cortex
- Orbitofrontal Cortex
- Mirror Cell System

Development

Proliferation, Migration, Differentiation

Synaptogenesis

Apoptosis

Fire together – Wire Together

Dendritic branching

Neurotrophins

Stem cells

Testes-Determining Factor (TDF)

Alpha-Feto Protein

Pathways

Corpus Callosum
Crossover / Optic Chiasm
Parvo-Cellular Pathway
Magno-Cellular Pathway
Retino-Hypothalamic Path
Cortico-Spinal Tract
Ventro-Medial Tract
Spinal-Thalamic Pathway
Medial Lemniscal Pathway

Neurons

Dendrites
Axon
Concentration Gradient
Electrical Gradient
Resting Potential
Sodium/Potassium Pump
Hypo-Polarization
Hyper-Polarization
Depolarization
Action Potential
Refractory Period
Graded Potentials
Myelination
Ionic Conduction
Electrical Conduction
Saltatory Conduction
Spontaneous Activity
Interneurons

Glial Cells
Astrocytes
Myelin (Schwann, Oligodendrocytes)
Micro-glia
Radial glia

The Synapse

Pre-Synaptic Cell
Post-Synaptic Cell
Synaptic Cleft
Vesicles of NT / Exocytosis
Receptor Sites
Ionotropic Effects
Metabotropic Effects
Reuptake
Autoreceptors
EPSP, IPSP
Axo-Axonal
K⁺, Na⁺, Ca⁺⁺, Cl⁻, Mg⁺⁺

Circuitry

Convergence
1:1 Mapping
Divergence
Summation
Receptive Field
Lateral Inhibition
- Bidirectional, Unidirectional
Across-Fiber Coding
- Selective adaptation
Hebbian Cell Assemblies

Communicators

Neurotransmitters & Neuromodulators
Agonism and Antagonism
Acetylcholine (ACh)
Adenosine
Dopamine
Endorphins
Epinephrine/Adrenalin (E)
GABA
Glutamate (AMPA & NMDA)
Norepinephrine (NE)
Orexin
Serotonin (5HT) & turnover (5-HIAA)
Substance P

Hormones
Melatonin
Androgens (Testosterone, Androstenedione)
Estrogens (Estradiol)
Gonadotrophin Releasing Hormone
Leutinizing Hormone (LH)
Follicle Stimulating Hormone (FSH)
Oxytocin
Prolactin
Cortisol

Pituitary Gland
Pineal Gland
Adrenal Gland
Testes/Ovaries

Brain Tech

Staining
Lesions
Electrical stimulation
Single Cell Recording
EEG, ERP
MEG
MRI, fMRI
PET
CAT

PLUS

Anterograde amnesia
Binding Problem
Blood-brain barrier
Brocas, Wernickes, Conduction aphasia
Classical conditioning
Cognitive map
Declarative, Procedural, Spatial Memory
EEG
Epilepsy
H.M.
Lateralization
Long Term Potentiation
Parkinson's Disease
Phineas Gage
Prosopagnosia
Reflexes
REM, Stages 1-4, Slow Wave Sleep
Urbach-Weith Disease

