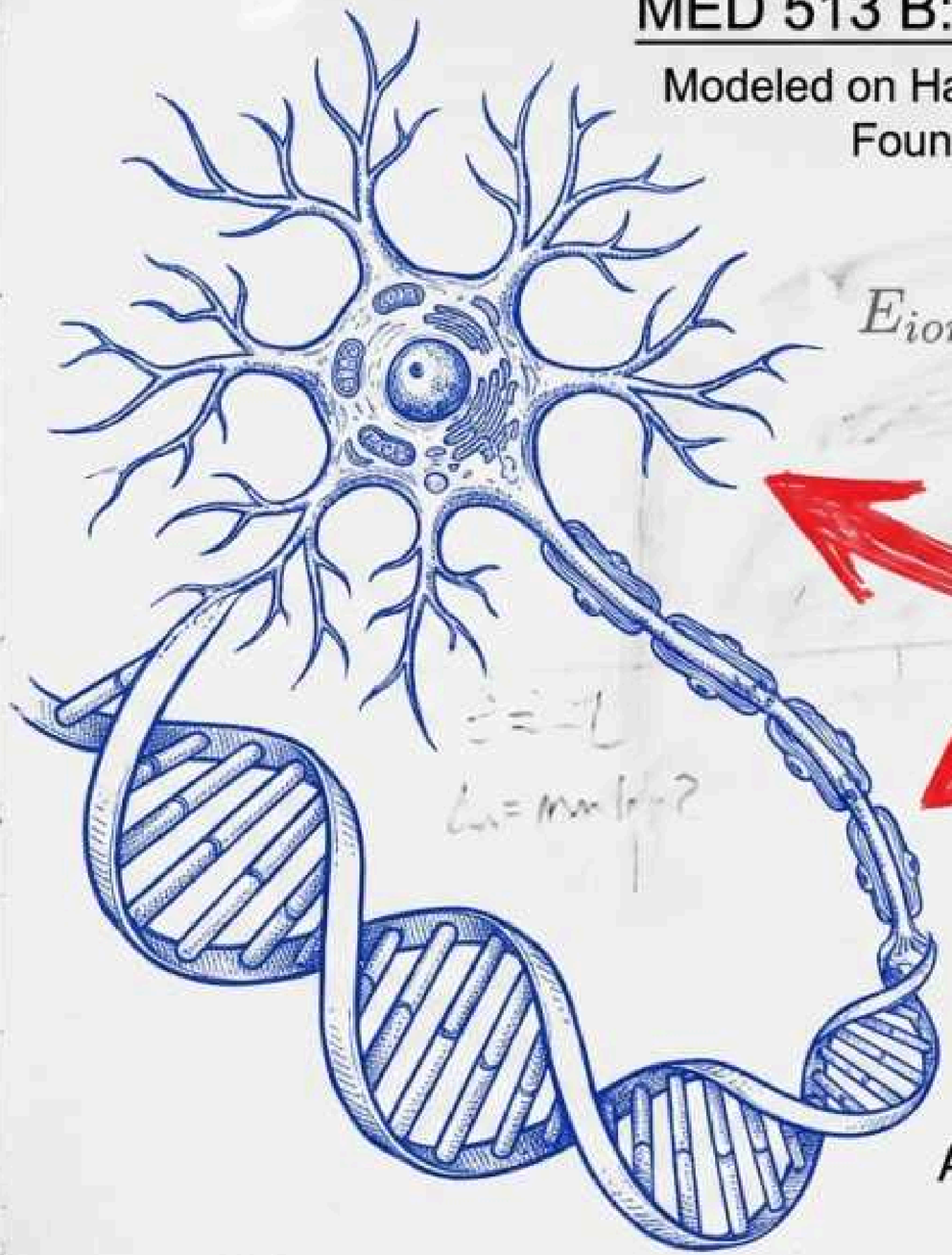
MED 513 B: Neuroscience — Anderson Academy

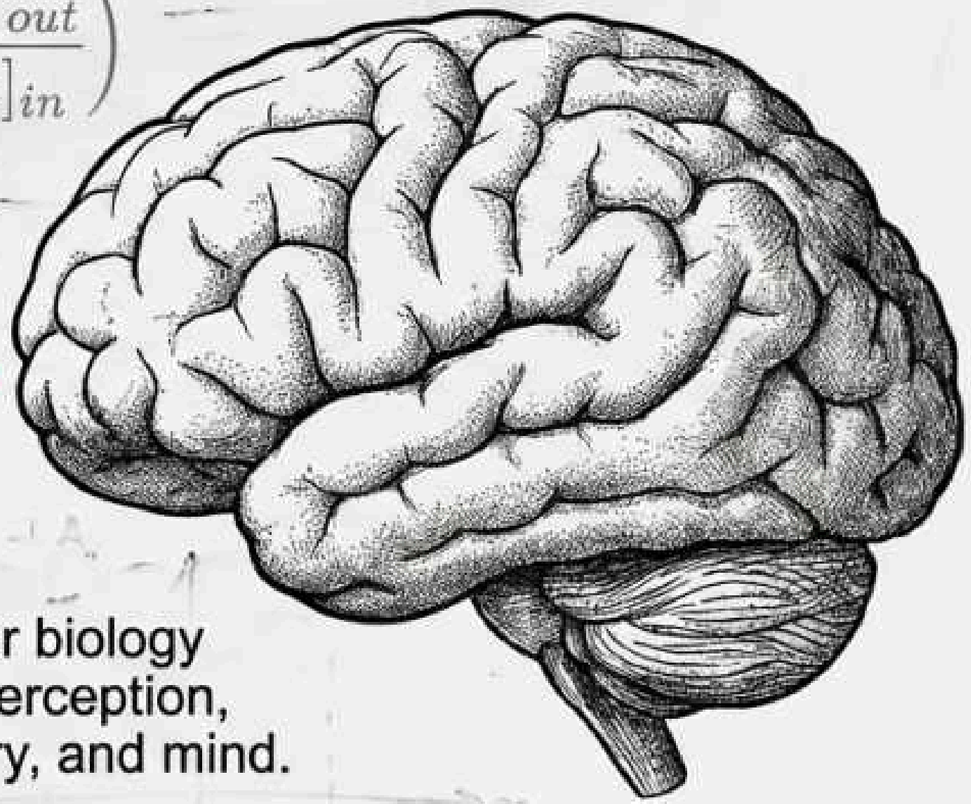
¶ 0.1

Modeled on Harvard-MIT HST131 (Fall 2005, Dr. David Corey).
Foundational open-source OCW curriculum.

$$E_{ion} = \frac{RT}{zF} \ln\left(\frac{[Ion]_{out}}{[Ion]_{in}}\right)$$

$$V = IR$$

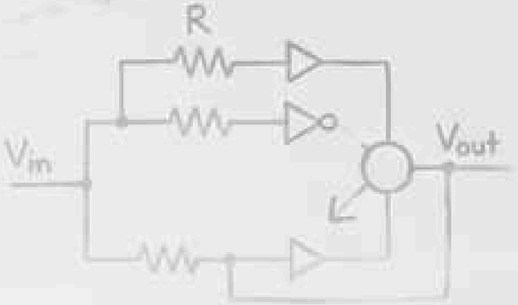


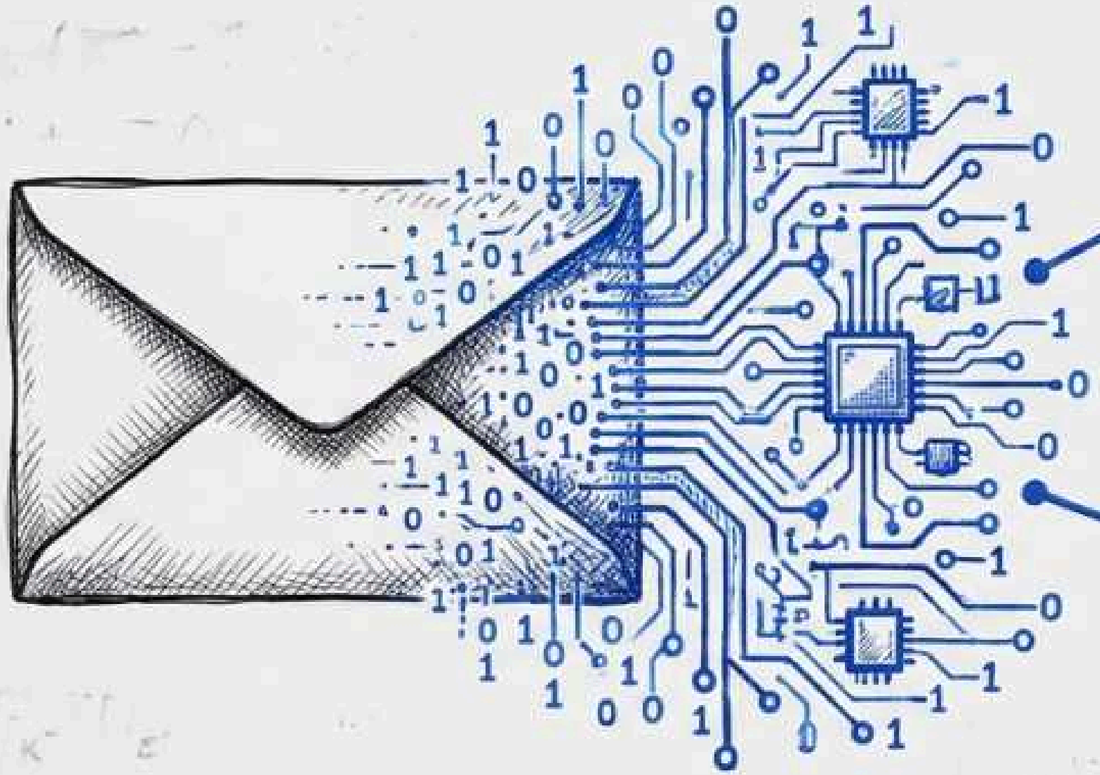


From the molecular biology
of nerve cells → perception,
movement, memory, and mind.

An original introduction designed for the undergraduate reader,
not a mere transcript. Uses illness as a window into function.

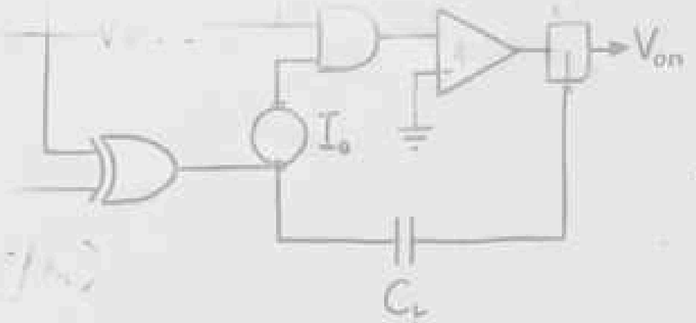
$$V_m = \frac{RT}{F} \ln\left(\frac{P_K[K^+]_o + P_{Na}[Na^+]_o + P_{Cl}[Cl^-]_i}{P_K[K^+]_i + P_{Na}[Na^+]_i + P_{Cl}[Cl^-]_o}\right)$$





Questions & Feedback
Welcome

Email: garyanderson@mail.grokbot.com
X (Twitter): @garyanderson



$$V_m = \frac{RT}{F} \ln\left(\frac{P_K[K^+]_o + P_{Na}[Na^+][Cl^-]_i}{P_K[K^+]_i + P_{Na}[Na^+[Cl^-]_o}\right)$$

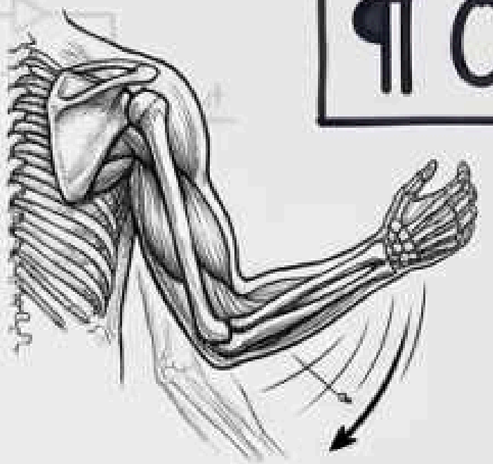
¶ 0.3

IDEAS, NOT CLINICAL TRAINING. ZERO DOSES. ZERO PROCEDURES.

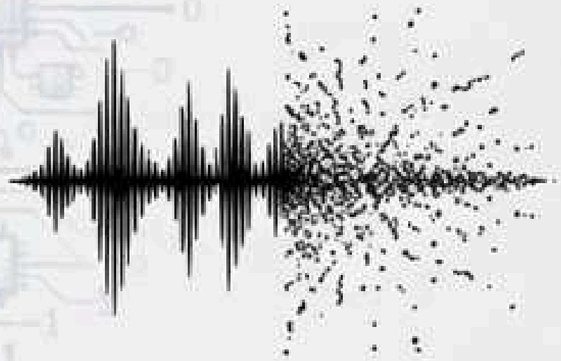
This is a university-level introduction.
It does not qualify anyone to diagnose or treat.
Seek a qualified clinician if unwell.



F - Face Drooping



A - Arm Weakness



S - Speech Difficulty



T - Time to call emergency services

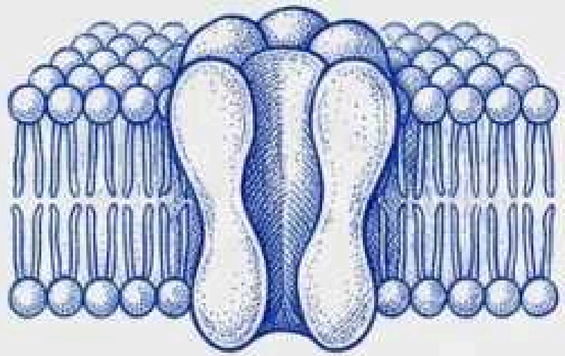
Emergency Triggers: Seek immediate help for sudden unilateral weakness, confusion, vision loss, loss of balance, or severe unexplained headache.

Seizure Protocol: Urgent care required for: First seizure, seizures lasting > few minutes, sequential seizures, or sudden loss of consciousness.

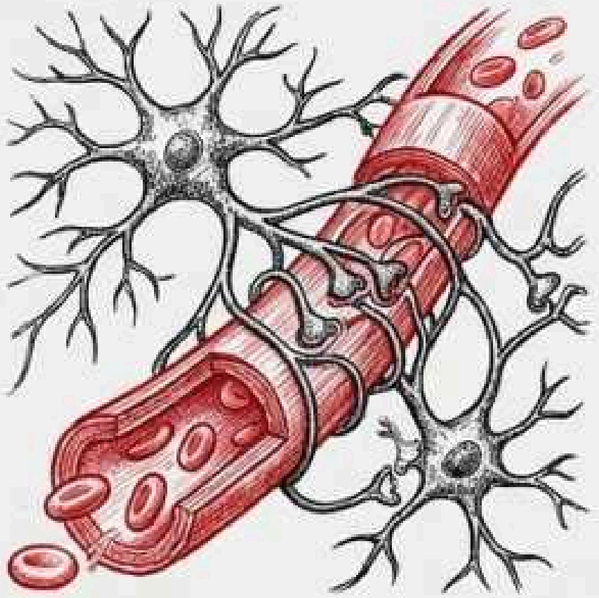
Why Neuroscience Matters

¶ 0.4

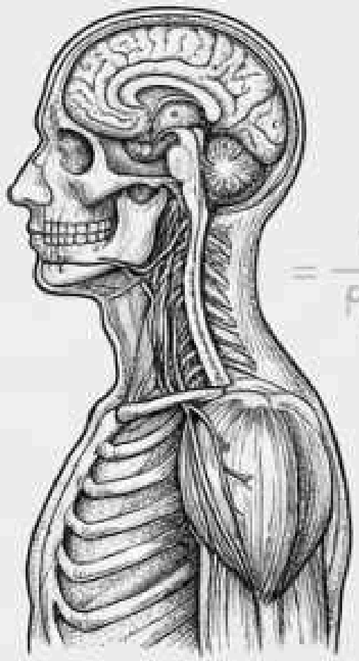
Micro-to-Macro Scale Spectrum



Change in membrane protein → Seizures



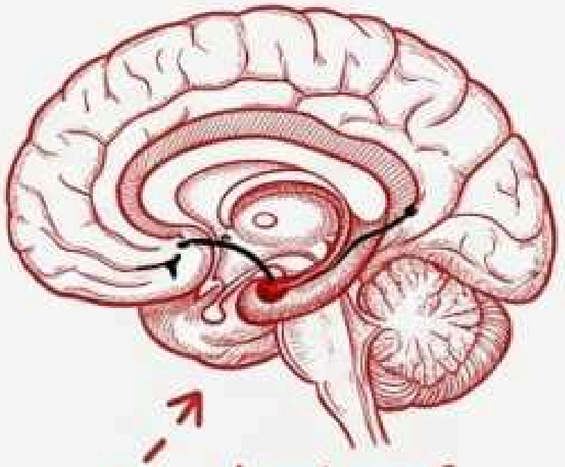
Blocked blood vessel → Stolen speech



Disease of movement → Tremor

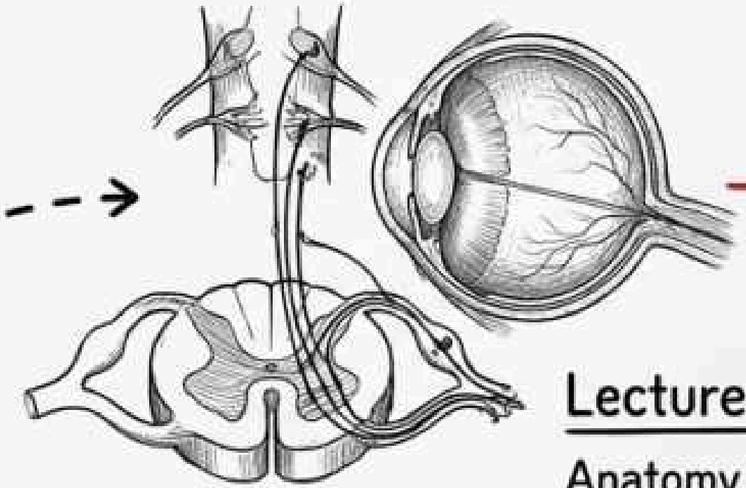
Synthesis Box

Illness is not just a label; it is a window into the healthy system.
The Cell, the Circuit, and the Person belong in one picture.



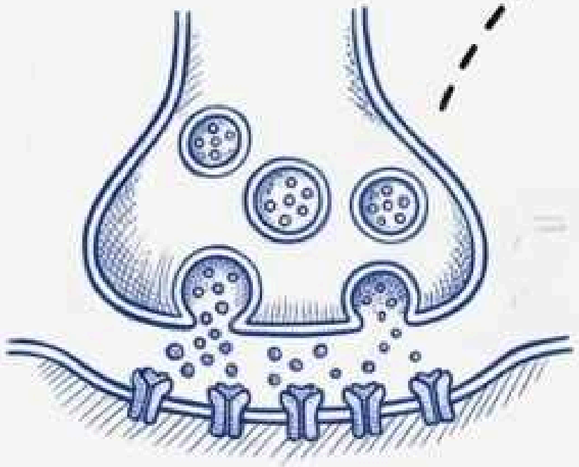
Lecture 6

Mind & Assembly: Memory organization, fear, mood, and addiction (crisis lines provided).



Lectures 3, 4 & 5

Anatomy & Movement: Sensory organs to perception. Hierarchy of movement. (Note: Parkinson's and Motor Neuron Disease discussed at an encyclopaedic level).



Lectures 1 & 2

Cells & Signals: Electrical impulses (axons), chemical synapses, and major chemical systems.

Prerequisite Flow Diagram

MED 500 B
(How to Use)

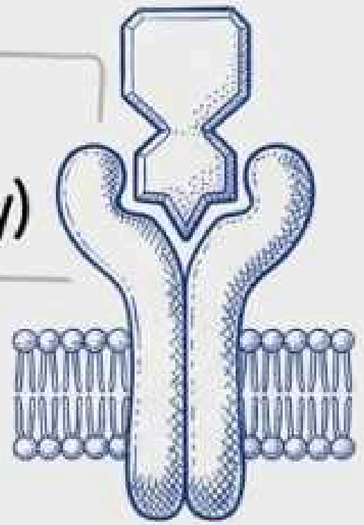
PHIL 100 B
(Anderson Academy Intro)

MED 513 B: Neuroscience

No laboratory work required.
Technical terms explained in plain language.

MED 505 B
(Human Pathology)

MED 511 B
(Pharmacology)

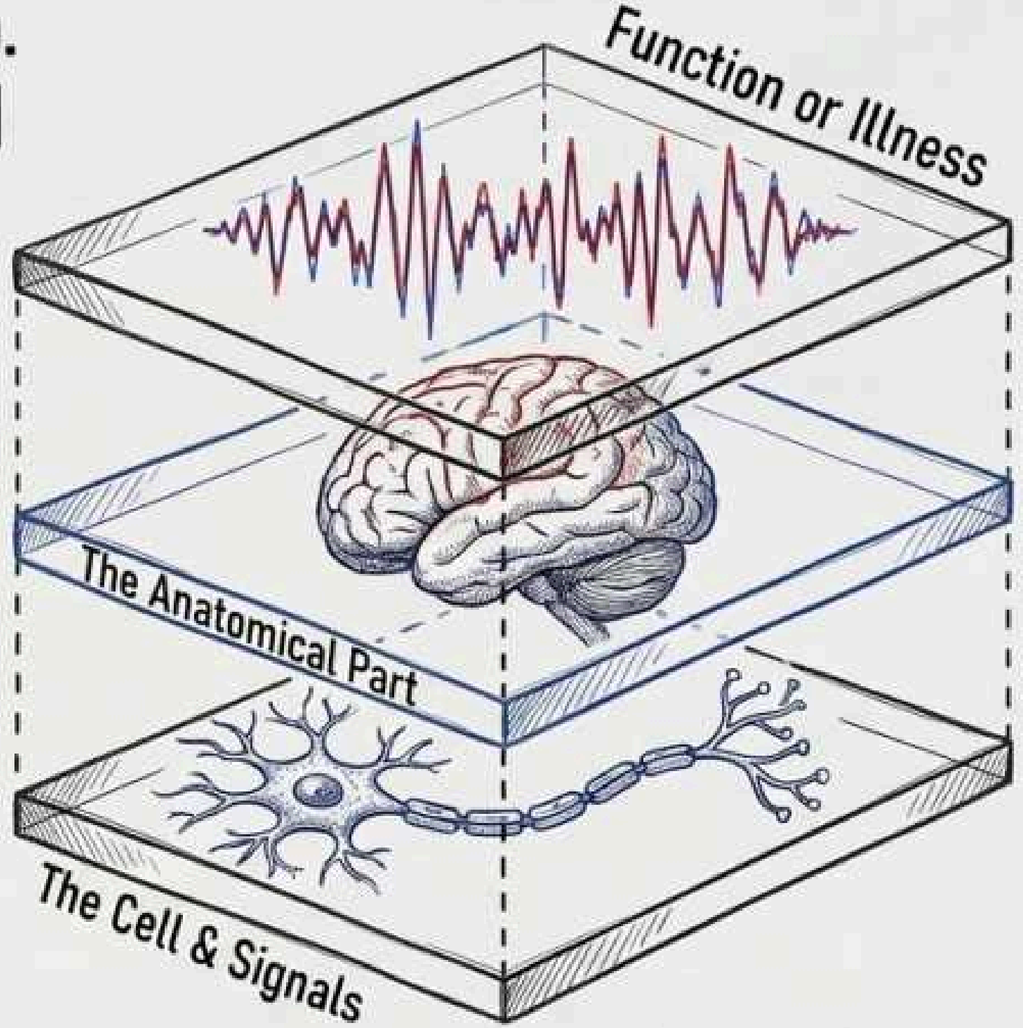


Prepares you for tissue injury studies and the concept that medicines act on receptors/channels.

This book will never prescribe. Teaching, not training.

Study Tip: Keep a single running map. Add to these three layers as you read to make the anatomy intelligible.

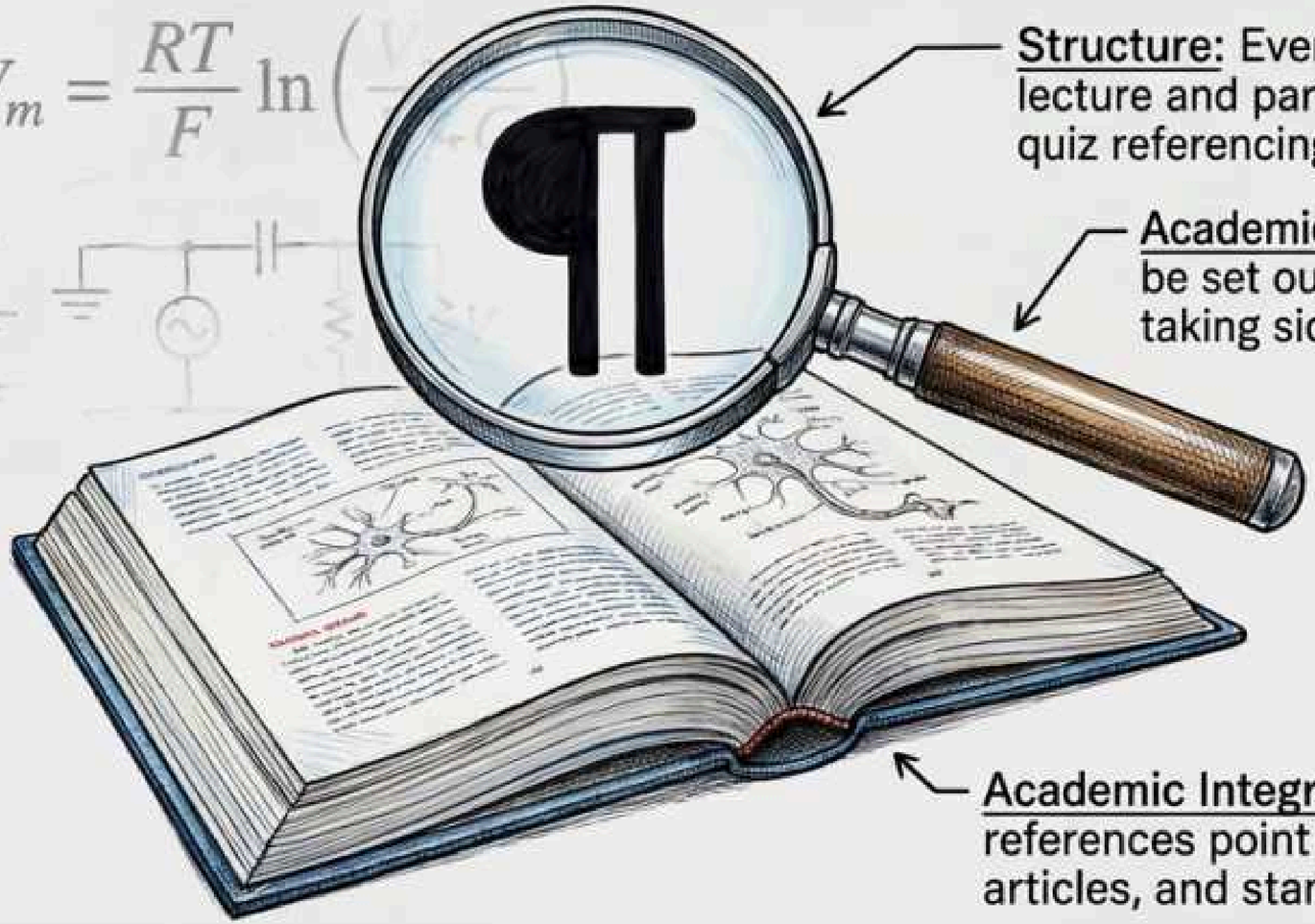
Isometric 3-Layered Diagram



Reminder: Guide to ideas, not medical care. Do not hunt for doses, lab methods, or examination instructions—they are deliberately absent. Consult a clinician for personal health concerns.

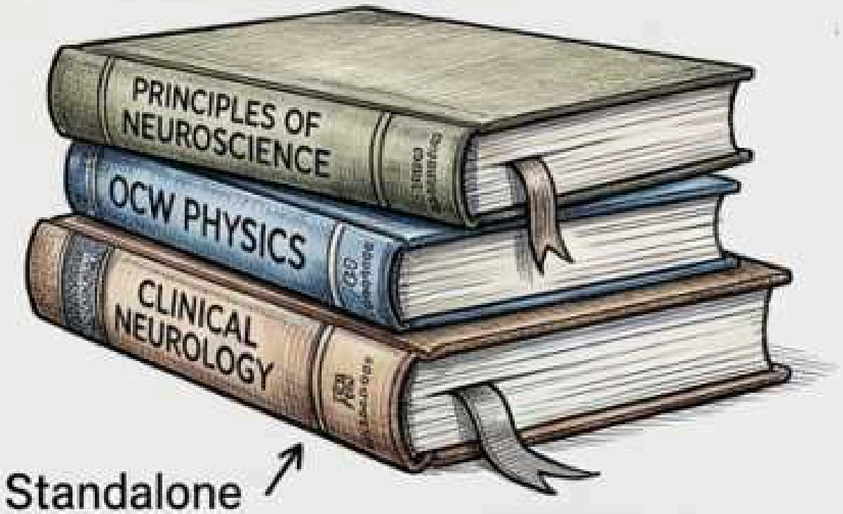
Structural Blueprint & Toolkit

¶ 0.8



Structure: Every paragraph is numbered by lecture and paragraph (e.g., ¶ 0.8) for precise quiz referencing and note-taking.

Academic Integrity: Contested scientific questions will be set out by giving the main positions fairly, without taking sides.



Academic Integrity: Standalone references point to OCW pages, open articles, and standard undergraduate texts.

Goal: A clear map from the nerve cell to the mind, building the habit of reading both the healthy system and its disorders with care and restraint.