

# Cerebrum Biology Academy

## Top 50 Biology Mnemonics for NEET 2026

Master Complex Biology Concepts with Easy-to-Remember Mnemonics

**Your Complete Memory Aid for Biology Revision**

Organized by Topic • Simple & Effective • NEET Focused  
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# How to Use This Guide

## Welcome to Your Biology Mnemonic Master Guide!

This comprehensive document contains 50 carefully curated mnemonics organized by topic to help you master biology concepts for your NEET 2026 preparation. Each mnemonic is designed to be memorable, intuitive, and directly aligned with your NEET syllabus.

## How to Make Best Use of This Guide:

- 1. Read Actively:** Don't just skim through. Read each mnemonic phrase aloud. The more senses you engage, the better the retention. Say it, write it, visualize it.
- 2. Create Your Own Variations:** While we've provided proven mnemonics, try creating your own variations. Personal mnemonics often stick better in memory than generic ones.
- 3. Use During Revision:** Keep this guide handy during your biology revision sessions. Use mnemonics when you struggle to remember sequence or list-type information.
- 4. Test Yourself:** Cover the explanation and try to recall what each letter stands for using only the mnemonic phrase. This active recall strengthens memory.
- 5. Group by Topic:** These mnemonics are organized by topic for easy navigation. Focus on one topic at a time for better understanding and retention.
- 6. Regular Review:** Spaced repetition is key. Review mnemonics regularly (daily, weekly, monthly) to ensure long-term retention.

## Topics Covered in This Guide:

- Taxonomy & Classification (5 mnemonics)
- Cell Biology (6 mnemonics)
- Genetics & Molecular Biology (8 mnemonics)
- Human Physiology (12 mnemonics)
- Plant Biology (8 mnemonics)
- Ecology & Evolution (6 mnemonics)
- Reproduction (5 mnemonics)

**Remember:** Mnemonics are memory tools, not substitutes for understanding. Always pair them with conceptual learning for comprehensive mastery. Good luck with your NEET preparation!

# Taxonomy & Classification

## King Philip Came Over For Good Spaghetti

The classic 7-level Linnaean hierarchy mnemonic. **K**ingdom, **P**hylum, **C**lass, **O**rders, **F**amily, **G**enus, **S**pecies. This is the most important classification sequence for all organisms.

## My Pet Frog Plays All-day

Five Kingdom classification: **M**onera, **P**rotista, **F**ungi, **P**lantae, **A**nnimalia. These are the five major kingdoms of life, with Monera containing prokaryotes and the rest containing eukaryotes.

## Pretty Clear, No Problem, Anyone Can Eat More Apples

The 9 major animal phyla in order: **P**orifera (sponges), **C**nidaria (jellyfish), **N**ematoda (roundworms), **P**latyhelminthes (flatworms), **A**nnelida (earthworms), **A**thropoda (insects), **E**chinodermata (starfish), **M**ollusca (snails), **C**hordata (vertebrates).

## Be Perfectly True, Generating Amazing Crops

Plant divisions in evolutionary order: **B**ryophyta (mosses), **P**teridophyta (ferns), **T**hallophyta (algae), **G**ymnosperms (conifers), **A**ngiosperms (flowering), **C**ycads. Understanding plant evolution helps with questions on plant characteristics.

## D-O-M-A-I-N before K-P-C-O-F-G-S

Modern classification includes Domain (Eukarya, Bacteria, Archaea) above Kingdom. Always remember: Domain comes first in modern taxonomy, then Kingdom, then the rest of the hierarchy. NEET often tests this hierarchy understanding.

# Cell Biology

## Men Run Excellent Gyms, Not Ladies' Clubs

Major cell organelles: **Mitochondria**, **Ribosomes**, **Endoplasmic Reticulum**, **Golgi apparatus**, **Nucleus**, **Lysosomes**, **Centrioles**. Perfect for remembering the membrane-bound and non-membrane-bound organelles.

## I Prefer Making Art (IPMAT)

Mitosis phases in order: **Interphase**, **Prophase**, **Metaphase**, **Anaphase**, **Telophase**. Interphase is technically not part of mitosis but is often included in the cell cycle discussion. Remember: sister chromatids separate in Anaphase.

## Promise Me It Is Still Complicated (PMISC)

Meiosis stages: **Prophase I**, **Metaphase I**, **Anaphase I**, **Telophase I**, then **P II**, **M II**, **A II**, **T II**. Meiosis I separates homologous chromosomes, while Meiosis II separates sister chromatids—similar to mitosis.

## G1, S, G2, M (Gap 1, Synthesis, Gap 2, Mitosis)

Cell cycle phases. G1 is growth and protein synthesis, S is DNA replication, G2 is preparation for mitosis, and M is actual cell division. G0 is the resting phase when cells exit the cycle. Checkpoints prevent progression if conditions aren't right.

## Rough ER has Ribosomes, Smooth ER is for Steroids

**Rough Endoplasmic Reticulum (RER)** appears bumpy due to attached ribosomes and synthesizes proteins. **Smooth ER (SER)** lacks ribosomes and is involved in lipid and steroid synthesis. Easy way: Rough for proteins, Smooth for fats and carbs.

## Endosymbiotic Theory: 2 to 1 (Mitochondria), 3 to 1 (Chloroplasts)

Mitochondria and chloroplasts likely originated from prokaryotic bacteria ingested by early eukaryotic cells. Evidence includes their own DNA, ribosomes (similar to prokaryotic), and double membranes. This explains why they're semi-autonomous organelles.

# Genetics & Molecular Biology

## All Gold (AG) for Purines, Cut the Uracil (CTU) for Pyrimidines

DNA bases: Adenine and Guanine are purines (double-ring, larger). Cytosine and Thymine are pyrimidines (single-ring, smaller). RNA has Uracil instead of Thymine. A and G have more angles, C and T/U are simpler—helps with structure memory.

## My Teacher Reads (mRNA, tRNA, rRNA)

**mRNA** carries genetic information from DNA to ribosomes. **tRNA** brings amino acids during translation. **rRNA** forms ribosomes and catalyzes peptide bonds. Remember: mRNA is temporary (messenger), tRNA is adapter, rRNA is structural.

## Mendel's Law of Segregation & Independent Assortment

**Law of Segregation:** Alleles separate during meiosis (heterozygous produces 3:1 ratio). **Law of Independent Assortment:** Different genes assort independently (only valid if genes are on different chromosomes). Law of Dominance: dominant traits appear in heterozygotes.

## AB Blood Type = Codominance, O = Recessive

Blood groups use multiple alleles:  $I^A$  and  $I^B$  are codominant (AB shows both),  $i$  is recessive. Type A ( $I^A I^A$  or  $I^A i$ ), Type B ( $I^B I^B$  or  $I^B i$ ), Type AB ( $I^A I^B$ ), Type O ( $ii$ ). Rh factor is separate (Rh+ dominant, Rh- recessive).

## U Are Annoying, U Are Gone, U Go Away (UAA, UAG, UGA)

Stop codons in genetic code: UAA, UAG, and UGA terminate translation. The START codon is AUG, which also codes for Methionine. Remember: start with AUG (methionine), stop with U-A-G combos. Only 61 of 64 codons code for amino acids.

## DNA Polymerase, Helicase, Ligase, Primase (DPHL)

**Helicase** unwinds the double helix. **Primase** creates RNA primers. **DNA Polymerase** adds nucleotides (5' to 3'). **Ligase** seals breaks in the backbone. Leading strand is continuous; lagging strand has Okazaki fragments.

## DNA → RNA → Protein (Central Dogma)

Information flows: DNA (in nucleus) is transcribed to mRNA, which is translated to Protein. Reverse transcription (RNA to DNA) occurs in retroviruses. Proteins determine traits and functions. This is the foundation of molecular biology—remember this always.

## Dominant = Appears in Heterozygote, Recessive = Needs Homozygote

Use Punnett squares for monohybrid (1 gene) and dihybrid (2 genes) crosses. Dominant alleles are usually represented by capital letters (A, B) and recessive by lowercase (a, b). In NEET, genetic problems often involve multiple crosses.

# Human Physiology

## Oh Oh Oh To Touch And Feel Very Good Velvet AH (CN I-XII)

12 Cranial Nerves: **O**lfactory, **O**ptic, **O**culomotor, **T**rochlear, **T**rigeminal, **A**bducens, **F**acial, **V**estibulocochlear, **V**agus, **G**lossopharyngeal, **A**ccessory, **H**ypoglossal. This is a classic NEET question—memorize it perfectly.

## All Dogs Eat Kibble (Fat-Soluble Vitamins ADEK)

Fat-soluble vitamins: **A** (vision, immune), **D** (calcium, bones), **E** (antioxidant), **K** (clotting). These are stored in body fat. Water-soluble vitamins (B complex, C) are not stored and must be replenished regularly.

## FLAT PEG (Anterior Pituitary Hormones)

**FSH** (Follicle Stimulating Hormone), **LH** (Luteinizing Hormone), **ACTH** (Adrenocorticotropic Hormone), **TSH** (Thyroid Stimulating Hormone), **Prolactin**, **Endorphins**, **GH** (Growth Hormone). These 7 hormones are controlled by the hypothalamus.

## Deoxygenated blood: RA → RV → PA → Lungs → PV → LA → LV → Aorta

Heart blood flow: Right Atrium → Right Ventricle → Pulmonary Artery → Lungs (get O<sub>2</sub>) → Pulmonary Vein → Left Atrium → Left Ventricle → Aorta (to body). Septum separates left and right sides. Valves prevent backflow.

## Nephron: Bowman → PCT → Loop → DCT → CD (collect urine)

**Bowman's Capsule** (ultrafiltration), **PCT** (reabsorption of glucose, ions), **Loop of Henle** (concentration gradient), **DCT** (selective reabsorption), **Collecting Duct** (final water reabsorption). Each segment has specific functions.

## Respiratory Volumes: TV 500, ERV 1100, IRV 3100, RV 1200, VC 4800, TLC 6000 (all in mL)

**Tidal Volume:** Normal breath. **ERV:** Extra air can breathe out. **IRV:** Extra air can breathe in. **RV:** Air left in lungs (can't expel). **VC:** TV + ERV + IRV. **TLC:** VC + RV. Vital capacity is crucial for respiratory function.

## Skin Layers: Epidermis, Dermis, Hypodermis (EDH)

**Epidermis:** Outermost layer (no blood vessels). **Dermis:** Contains blood vessels, nerves, hair follicles. **Hypodermis:** Fat layer for insulation. Remember: Epidermis is avascular (no blood), Dermis has blood supply.

## Blood Clotting Cascade: Injury → Platelet Plug → Coagulation Cascade → Fibrin Clot

Three stages: 1) Vascular spasm, 2) Platelet aggregation, 3) Coagulation cascade (intrinsic and extrinsic pathways meet at common pathway, forming thrombin from prothrombin, which converts fibrinogen to fibrin). Anticoagulants like heparin and warfarin block this cascade.

## **Muscle Types: Skeletal (voluntary), Cardiac (involuntary, striated), Smooth (involuntary, non-striated)**

**Skeletal muscles:** Attached to bones, conscious control, fast contracting. **Cardiac muscle:** Heart wall, intercalated discs, automatic contractions. **Smooth muscle:** Blood vessels, GI tract, automatic. Striated vs non-striated relates to actin-myosin arrangement.

## **Skull Bones: Frontal, Parietal, Temporal, Occipital (FPTO)**

Main skull bones: **Frontal** (forehead), **Parietal** (sides and top), **Temporal** (sides, temples), **Occipital** (back of head). Also include **Sphenoid** (base) and **Ethmoid** (nose). Cranial bones form the braincase; facial bones form the face.

## **Spine: C7, T12, L5, S5, Coccyx (Cervical, Thoracic, Lumbar, Sacral, Coccygeal)**

**Cervical** (7 in neck), **Thoracic** (12 in chest), **Lumbar** (5 in lower back), **Sacral** (5 fused into 1 sacrum), **Coccyx** (tailbone). Cervical and lumbar are most flexible; sacrum is fused. Total: 33 vertebrae (adult: 24 + sacrum + coccyx).

## **Endocrine Glands: PTA (Pancreas, Thyroid, Adrenal) + Pituitary, Parathyroid, Gonads**

**Pituitary:** Master gland. **Thyroid:** Metabolism. **Parathyroid:** Calcium. **Adrenal:** Stress response. **Pancreas:** Blood glucose. **Gonads:** Reproductive hormones. **Pineal:** Melatonin. **Thymus:** Immune. All are endocrine glands.

# Plant Biology

## Light Reactions (Light, Grana, Photo): Dark Reactions (Calvin, CO<sub>2</sub>, Sugar)

**Light reactions** occur in grana (thylakoid stacks) and produce ATP and NADPH. **Dark reactions** (Calvin Cycle) occur in stroma and use ATP/NADPH to fix CO<sub>2</sub> into glucose. Location matters: Light-dependent reactions need light; Calvin cycle doesn't directly.

## C3 = Calvin Cycle Crops (normal), C4 = Corn, CAM = Cacti (water-smart)

**C3 plants:** Normal photosynthesis, first product has 3 carbons, less efficient in hot/dry. **C4 plants:** More efficient, first product has 4 carbons. **CAM plants:** Store CO<sub>2</sub> at night, open stomata at night, close during day (desert adaptation). NEET often tests this.

## CAGE + A (Plant Hormones: Cytokinin, Auxin, Gibberellin, Ethylene, Absciscic acid)

**Auxin:** Cell elongation, apical dominance. **Gibberellin:** Seed germination, stem elongation. **Ethylene:** Fruit ripening, leaf abscission. **Cytokinin:** Cell division, delays senescence. **Absciscic Acid:** Stress response, stomatal closure. Effects often compete.

## Krebs Cycle (Citric Acid Cycle): Citrate → Malate → Oxaloacetate

Key Krebs intermediates in order: **Citrate**, **Isocitrate**,  $\alpha$ -Ketoglutarate, **Succinyl-CoA**, **Succinate**, **Fumarate**, **Malate**, **Oxaloacetate**. Memory: 'Citric Acid Is Krebs Starting Substrate For Making Oxaloacetate.' This cycle produces GTP/ATP and electron carriers.

## Root Anatomy: Epidermis, Cortex, Endodermis, Pericycle, Xylem, Phloem (ECEXP)

From outside to inside: **Epidermis** (absorption), **Cortex** (storage), **Endodermis** (selective absorption, Casparian strip), **Pericycle** (lateral root origin), **Xylem** (water transport), **Phloem** (food transport). Each layer has specific functions.

## Flower Whorls: Sepals, Petals, Stamens, Carpels (SPSC)

**Whorl 1:** Sepals (protect). **Whorl 2:** Petals (attract). **Whorl 3:** Stamens (male, anthers produce pollen). **Whorl 4:** Carpels (female, ovary produces ovules). Perfect flowers have all 4; imperfect flowers lack one or more.

## Fruit Types: Berry, Drupe, Legume, Aggregate, Multiple (BDAM)

**Berry:** Fleshy from single ovary (grapes, tomatoes). **Drupe:** Hard pit, single seed (mango, plum). **Legume:** Pod fruit (peas, beans). **Aggregate:** Multiple carpels (strawberry). **Multiple:** From multiple flowers (pineapple). Classification helps identify dispersal methods.

## Nitrogen Cycle: N<sub>2</sub> → NO<sub>3</sub> (Nitrification) → Plants → Animals → Decomposition → N<sub>2</sub> (Denitrification)

**Nitrogen fixation:** N<sub>2</sub> (gas) → NH<sub>3</sub> (ammonia) by nitrogen-fixing bacteria. **Nitrification:** NH<sub>3</sub> → NO<sub>3</sub>. **Assimilation:** Plants take up NO<sub>3</sub>. **Denitrification:** Return to N<sub>2</sub>. Nitrogen is essential for amino acids and nucleic acids.



# Ecology & Evolution

## Ecological Succession: Pioneer → Intermediate → Climax

**Primary succession:** Starts on bare rock (very slow, 1000+ years). **Secondary succession:** Starts in disturbed soil (faster). Early colonizers are often fast-growing, r-selected species. Climax community is stable with K-selected species. Facilitation, inhibition, and tolerance explain transitions.

## Trophic Levels: Producers → Primary Consumers → Secondary → Tertiary

Energy flow: Plants (producers) → Herbivores (primary consumers) → Carnivores (secondary) → Top carnivores (tertiary). Only ~10% energy transfers to next level. Biomass and population also decrease upward. Decomposers recycle nutrients outside trophic levels.

## Biogeochemical Cycles: C (Carbon), N (Nitrogen), S (Sulfur), P (Phosphorus), W (Water)

**Carbon cycle:** Atmosphere ↔ Organisms ↔ Fossil fuels. **Nitrogen cycle:** Fixation → Nitrification → Assimilation → Denitrification. **Phosphorus:** No gas phase, geological cycle. **Water:** Evaporation → Condensation → Precipitation. Each affects ecosystems.

## Population Interactions: Predation, Competition, Parasitism, Mutualism, Commensalism

**Predation:** +/- (one benefits, one harmed). **Competition:** -/- (both harmed). **Parasitism:** +/- (parasite benefits). **Mutualism:** +/+ (both benefit, obligate or facultative). **Commensalism:** +/- (one benefits, one unaffected). Lotka-Volterra equations model interactions.

## Geological Time: Cambrian, Ordovician, Silurian, Devonian, Carboniferous, Permian, Mesozoic, Cenozoic

**Paleozoic Era:** Most of these 6 periods. **Cambrian:** Explosion of life. **Ordovician:** Marine radiation. **Devonian:** Age of fishes. **Carboniferous:** Amphibians, coal. **Permian:** Reptile dominance, extinction. **Mesozoic:** Dinosaurs. **Cenozoic:** Mammals.

## Hardy-Weinberg Conditions: No Mutation, No Migration, Random Mating, Large Population, No Selection

Allele frequencies remain constant if these 5 conditions are met.  $p^2 + 2pq + q^2 = 1$  (genotype frequencies). Evolution occurs when any condition is violated. This is the foundation of population genetics. NEET loves Hardy-Weinberg problems.

# Reproduction

## Meiosis I (Reduction): Prophase I → Metaphase I → Anaphase I → Telophase I (homologous separate)

Meiosis I is the reductional division where homologous chromosomes separate, reducing chromosome number by half. Prophase I is long with crossing over. Meiosis II is like mitosis but starts with half the chromosomes. Result: 4 haploid cells from 1 diploid cell.

## Flower Reproduction: Stamen (male, anther+filament) → Pollen, Carpel (female, stigma+ovary) → Ovule

**Stamen:** Anther produces pollen (male gametophyte). **Carpel:** Ovary contains ovules (female gametophyte). Double fertilization in flowering plants: 1 sperm fertilizes egg (2n embryo), 1 sperm fertilizes central cell (3n endosperm). Pollination ≠ Fertilization.

## Menstrual Cycle: Menstruation → Follicular → Ovulation → Luteal → Menstruation

**Days 1-5:** Menstruation (shed uterine lining). **Days 5-14:** Follicular phase (FSH increases, follicles grow). **Day 14:** Ovulation (LH surge, egg released). **Days 14-28:** Luteal phase (corpus luteum secretes progesterone). Cycle length ~28 days but varies. Controlled by FSH, LH, estrogen, progesterone.

## Embryo Development: Blastula → Gastrula → Neurula → Organogenesis → Differentiation

**Blastula:** Hollow ball of cells (after cleavage). **Gastrula:** 3 germ layers form (ectoderm, mesoderm, endoderm). **Neurula:** Neural tube forms. **Organogenesis:** Organs develop. **Differentiation:** Cell specialization. Induction and gradients guide development.

## Placenta Functions: PEN (Protein transfer, Exchange gases, Nutrient/waste exchange)

Placenta is NOT a barrier—it's a selective exchange site. **Nutrients:** O<sub>2</sub>, glucose, amino acids → fetus. **Waste:** CO<sub>2</sub>, urea → mother. **Antibodies:** IgG passes (provides immunity). **Harmful substances:** Alcohol, drugs cross easily. Umbilical cord has 2 arteries, 1 vein.

## Master Biology, Ace Your NEET

You've now explored 50 powerful mnemonics covering all major biology topics. The next step is to integrate these memory tools into your daily study routine. Regular review, active recall practice, and conceptual understanding will transform these mnemonics from simple memory tricks into deep, lasting knowledge.

### Ready for personalized NEET guidance?

Join thousands of students who are already crushing the NEET with Cerebrum Biology Academy. Our expert faculty, comprehensive courses, and targeted practice sessions will give you the edge you need to succeed.

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