

Required knowledge in life sciences

Molecular biology

Structure of DNA

- Nucleic Acids
- Replication
- Chromatin Organization
- Gene structure (exons, introns, promoters)

Protein synthesis

- Transcription
- Genetic code
- Translation
- Post-translational modifications
- Regulation of protein synthesis (eukaryotes and prokaryotes)

Cellular biology / Biochemistry

Structure of main cellular components (proteins, lipids and carbohydrates)

- biosynthesis
- concepts of enzymology

Primary metabolism

- glycolysis
- respiration / fermentation
- photosynthesis

Plant Biology

- structure of the different organs
- roles of the different organs (stem, root, leaf)
- how meristems work
- reproduction in higher plants (flowers)

Plant Physiology

Nutrition

- water in plants
- nitrogen uptake and metabolism
- photosynthesis (metabolism C3/C4)

Development

- phytohormones (Auxins, Gibberellins, Cytokinins, Ethylene, Abscisic acid)
- photoperiodism and floral transition
- seed dormancy

Animal Physiology

Main metabolic pathways

- central nervous system
- digestion
- bloodstream
- respiration

Reproduction

Embryogenesis

Evolution

Molecular polymorphism (alleles, dominance, additivity, frequencies calculus)

Notions of genotype and phenotype

General classification of living things

Principles of the neutral theory of evolution