Learning outcomes_undergraduate programme of molecular biology

1. Discuss the most significant discoveries and theories through the historical progress of biological scientific discoveries, and their impacts on the development of molecular biology
2. Explain the fundamental principles of phylogeny and systematics of the living world, with the application of the principles of classification
3. Link the structure of tissues, organs, organ systems and organisms with their functions in plants and animals
4. Compare the structure of eukaryotic cells with the structure of simpler prokaryotic cells and with the structure of viruses
5. Differentiate the main types of prokaryotes through their grouping abilities and list their characteristic and differentiating properties
6. Associate the processes that unfold in individual cell compartments as preconditions for the functioning of the cell as a whole
7. Analyse the main structural elements and processes that participate in reproduction, growth, maintenance and regulation of the cell, thereby enabling the survival of living beings
8. Explain and identify the phases of division of somatic and sex cells
9. Explain the fundamental structure, properties and processes in which nucleic acids play a part
10. Discuss the molecular mechanisms by which DNA controls development, growth or morphological characteristics of organisms
11. Explain the principles and laws of inheritance at the cell, individual and population levels
12. Explain the origin of mutations and their impact on the survival of individuals and species to propose the method for targeted introduction of mutations to create new gene variations that can be used for further research or application in industry
13. Explain the principles of cloning and genetic manipulation and their application in genetic analysis
14. Apply the fundamental rules for occupational safety in the laboratory, with the proper use and maintenance of equipment
15. Keep records on results obtained and observations made in a laboratory journal
16. Independently use various devices, centrifuges, measuring instruments and optical aids in laboratory work
17. Independently execute a laboratory experiment using the standard methods and techniques in molecular biology, with the appropriate analysis and interpretation of results obtained
18. Process the results obtained in the conducted experiments using computer processing, and display the results in the form of a written report
19. Accept the need and importance of ongoing development through the available lifelong learning programmes