

MOLECULAR BIOLOGY OF THE CELL

Study Programme: MIMV **Curricular Year:** 1st **Semester:** 2nd **Compulsory** **Credits:** 5.0 ECTS

Lecturer(s): José A. Mestre Prates (CCP e R), Mário A. Soares Pinho, Victor D. Alves

1. Contact hours:

Lectures – 28, Practicals – 28, Total – 56

2. Objectives:

Learning of the general concepts and fundamentals of molecular and cellular biology to the understanding at molecular level of biological phenomena occurring in Veterinary Sciences. Furthermore, attending to the strong experimental basis of this scientific field, the application of the scientific methodology by the students is also a major goal of the discipline.

3. Programme:

3.1. Theoretical: Cells foundations. Structure of nucleotides and nucleic acids. Recombinant DNA technology. Genomics and proteomics. Genes and cromossomes. DNA metabolism. RNA metabolism. Protein metabolism. Regulation of gene expression. Signal transduction. Vesicular traffic. Cell-cycle and cell-growth control.

3.2. Practical: Histological techniques. Techniques of nucleic acid analysis. Recombinant DNA technology. Searching information on biological databases.

4. Bibliography:

Prates, J. A. M. et al. (2022) - *Texto de Apoio das Aulas Teóricas da Disciplina de Biologia Molecular da Célula*. Edição de 2021/22 & CD-ROM (Biologia Molecular da Célula, FMV-UL). Lisboa : FMV-UL. 155 p. Material fornecido aos Discentes.

Prates, J. A. M. et al. (2022) - *Sumários e Protocolos Técnicos das Aulas Práticas da Disciplina de Biologia Molecular da Célula*. Edição de 2021/22 & CD-ROM (Biologia Molecular da Célula, FMV-UL). Lisboa : FMV-UL. 35 p. Material fornecido aos Discentes.

Lodish, H. et al. (2016) - *Molecular Cell Biology*. 8th edition & CD-ROM. New York: W. H. Freeman and Company.

Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K. & Walter, P. (2014) - *Molecular Biology of the Cell*. 6th edition. New York : Garland Science.

Nelson, D. L. e Cox, M. M. (2021) - *Lehninger Principles of Biochemistry*. 8th edition. New York : W. H. Freeman and Company.

Osgood, M. e Ocorr, K. (2009). *The Absolute, Ultimate Guide to Lehninger Principles of Biochemistry: Study Guide and Solutions Manual*. 5th edition. New York : W. H. Freeman and Company.

5. Assessment:

Theoretical: written examination (60% of final classification). Practical: written examination (20%) and final report (20%).