MOLECULAR EPIDEMIOLOGY

CU characterization:

CU name:

Molecular Epidemiology

Scientific area acronym:

SI

Duration:

Semiannual

Working hours:

80

Contact hours:

22

ECTS:

3

Observations:

Mandatory CU

Teacher in charge and respective teaching load in the CU:

Isabel Maurício - 12 hours

Other teachers and respective teaching load in the CU:

Inês Fronteira - 2 hours
Ana Paula Arez - 1 hour
Ana Tavares – 1.5 hours
Rosa Teodósio – 1.5 hours

Intended learning outcomes (knowledge, skills and competences to be developed by the students):

After this unit, students should be able to:

1. Apply epidemiological concepts, including, prevalence, incidence, risk, predictive values, sensitivity and specificity.
2. Describe the procedures for biomarkers' validation.
3. Discuss good practices to obtain and analyse epidemiological data and samples.

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Intended learning outcomes (knowledge, skills and competences to be developed by the students): (continuation)
4. Describe good practices and usefulness of geographic studies to generate hypotheses.
5. Explain how to investigate outbreaks and epidemics, as well as vectorial transmission.
6. Apply criteria for identification of disease-causing organisms and pathogenic variants.
7. Explain the principles of genetic epidemiology and its application in infectious diseases studies.

Syllabus:
I. Introduction to epidemiology and essential epidemiological concepts: prevalence, incidence, risk measures, study design, bias, confounder and effect modification.
II. Development, validation and integration of biomarkers.
III. Biobanks and their relevance in the management of biological samples: a case study of Biotropical Resources (GHTM-IHMT).
IV. Collection of epidemiological information: questionnaires.
V. Questions and methodologies in molecular epidemiology of infectious diseases: hypotheses formulation, outbreaks and epidemics, vectorial transmission, identification of pathogenic organisms and variants.
VI. Types of study and applications of genetic epidemiology to infectious diseases.
VII. Discussion on molecular epidemiology of COVID-19: informal and article.

Teaching methodologies (including assessment):
Active method, comprising brief sessions of exposition of the subject followed by discussion and sessions of informal and evaluated discussion.
The evaluation will be carried out through a written exam to the students (80%) and a discussion in class of an article given by the CU coordinator (20%).

References for consultation / mandatory existence:
- Riley, L. W. (2004). Molecular epidemiology of infectious diseases: principles and practices. ASM Press.
- Schulte, P. A. & Perera, F. P. (1993). Molecular Epidemiology: principles and practices. Academic Press.