ONCHOCERCIASIS AND OTHER FILARIASIS: A MULTIDISCIPLINARY APPROACH

CU characterization:

CU name:

Onchocerciasis and other Filariasis: A Multidisciplinary Approach

Scientific area acronym:

HM

Duration:

Semiannual

Working hours:

58

Contact hours:

30

% Distance contact hours

0

ECTS:

2

Observations:

4 T; 6 P; 8 TP; 6 OT; 6 S

T - Theoretical; P – Practical; TP - Theoretical and Practical; OT - Tutorial Guidance; S – Seminar

Teacher in charge and respective teaching load in the CU:

Isabel Maurício – 24 hours

Other teachers and respective teaching load in the CU:

Manuela Calado - 13 hours
Rosa Teodósio - 12 hours
Teresa Novo - 11 hours
Teacher to be hired/guest (Luis Filipe Lopes) – 11 hours

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

At the end of this course students should be able to:

1. Describe and compare parasites caused by filariae, with special emphasis on the genus Onchocerca, including in a social and territorial context;
2. Describe the biology of the genus Wolbachia and symbiotic relationships with vectors and filariae;
3. Discuss and comment on studies on emerging zoonotic filariasis;
4. Assemble specimens of filariae vectors;
5. Identify and develop molecular markers for diagnosis and phylogenetic studies;
6. Perform phylogenetic analyses based on DNA sequences to study filariae, vectors and symbiont bacteria and their co-evolutionary relationships;
7. Discuss the co-evolution of the parasite with its hosts (human and vector) and symbionts;
8. Explain good practices and objectives of CAP studies;
9. Identify current issues for sustainable control and research in filariasis;
10. Propose studies that contribute to improving the knowledge and sustainable control of these parasitic diseases, including through social and territorial innovations;
11. Appreciate the multidisciplinary nature of the control of filariasis, especially onchocerciasis.

Syllabus:

1. Onchocerciasis and other filariasis: parasites, transmission, epidemiology and impact on populations, sustainable control and territorial implications.
2. *Wolbachia*: biology and symbiotic interactions with filariae.
3. Emerging filariases - analysis of scientific articles.
4. Knowledge, Attitudes and Practices (CAP) studies in the sustainable control of filariasis.
5. Development of molecular markers from DNA sequences.
6. Application of phylogenetic analyses to the study of parasite-host-symbiont coevolution.
7. Assembly of specimens of filariae vectors.
8. Preparation and discussion of proposals for multidisciplinary projects that contribute to the sustainable control of these parasitic diseases, including through social and territorial innovation.

Evidence of the syllabus coherence with the CU intended learning outcomes:

The syllabus includes the main topics on which students should show new acquired knowledge and some critical capacity, as described in the learning objectives of this course.

Teaching/learning methodologies articulated with pedagogical model:

Theoretical, theoretical-practical classes and seminars. Tutorial guidance: general and monitoring of works for evaluation. Formative evaluation session for the initial versions of the written assignments.

Assessment:

Student assessment will be carried out based on the following elements:

Written work: individual project proposal, to be submitted in the appropriate form available in Moodle, on filariasis, with specific themes to be chosen in Moodle.
Seminar: preliminary presentation and discussion of the project proposal.
Continuous assessment: class exercises on the Moodle platform, or in-class assessment.
Any of the evaluation elements will have a classification between 0 and 20 values. Students who have a final grade lower than 9.5 will fail, but students with an evaluation between 9 and 9.5 may request an oral test to obtain approval. In case of suspicion of academic fraud, including abusive use of Artificial Intelligence platforms, the student will also be subject to an oral test.
The final grade will be obtained from the formula: (written work grade) x 0.5 + (seminar grade) x 0.2 + (continuous assessment grade) x 0.3.
To improve the grade, or in case of failure, students will have to take an exam.

Evidence of the teaching methodologies coherence with the CU intended learning outcomes:

This course includes lectures, theoretical/practical classes to promote the systematization and discussion of acquired knowledge. In addition, it is intended that the student develops and shows critical thinking. In this sense, a teaching methodology with formative assessment is privileged, including discussion during the process of preparation of the final works, which should contribute to the learning process and which will be evaluated through the formulation of a multidisciplinary research project in filariasis.

References for consultation / mandatory existence:

- Brattig NW, Cheke RA, Garms R. Onchocerciasis (river blindness) - more than a century of research and control. Acta Trop. 2021 Jun;218:105677. doi: 10.1016/j.actatropica.2020.105677.
- Lakwo T, Oguttu D, Ukety T, Post R, Bakajika D. Onchocerciasis Elimination: Progress and Challenges. Res Rep Trop Med. 2020 Oct 7;11:81-95. doi: 10.2147/RRTM.S224364.
- Ngwewondo A, Scandale I, Specht S. Onchocerciasis drug development: from preclinical models to humans. Parasitol Res. 2021 Dec;120(12):3939-3964. doi: 10.1007/s00436-021-07307-4.
- Tirados I, Thomsen E, Worrall E, Koala L, Melachio TT, Basáñez MG. Vector control and entomological capacity for onchocerciasis elimination. Trends Parasitol. 2022 Jul;38(7):591-604. doi: 10.1016/j.pt.2022.03.003.
- Wolfe CM, Barry A, Campos A, Farham B, Achu D, Juma E, Kalu A, Impouma B. Control, elimination, and eradication efforts for neglected tropical diseases in the World Health Organization African region over the last 30 years: A scoping review. Int J Infect Dis. 2024 Apr;141:106943. doi: 10.1016/j.ijid.2024.01.010.