ONCHOCERCIASIS AND OTHER FILARIASIS: MULTIDISCIPLINARY APPROACH

CU characterization:

CU name:
Onchocerciasis and other filariasis: multidisciplinary approach

Scientific area acronym:
HM

Duration:
Semiannual

Working hours:
58

Contact hours:
29

ECTS:
2

Observations:
Optional CU

Teacher in charge and respective teaching load in the CU:
Isabel Maurício – 28 hours

Other teachers and respective teaching load in the CU:
Paulo Almeida - 12 hours
Silvana Belo - 14 hours
Teresa Novo - 18 hours
Rosa Teodósio - 14 hours

INSTITUTO DE HIGIENE E MEDICINA TROPICAL
DESDE 1902

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

After this unit, students should be able to:

1. Describe and compare parasitic diseases caused by filarial worms, with special emphasis on the genus *Onchocerca*;
2. Describe the biology of the genus *Wolbachia* and symbiotic relationships with vectors and filariae;
3. Discuss and comment studies on the diagnosis of filarial diseases;
4. Assemble specimens of filarial vectors;
5. Identify and develop molecular markers for diagnosis and phylogenetic studies;
6. Perform phylogenetic analyzes 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 KAP studies;
9. Identify current control and research issues in filarial diseases;
10. Propose studies that contribute to improving knowledge and control of these parasites;
11. Appreciate the multidisciplinary nature of controlling filariasis, especially onchocerciasis.

Syllabus:

I. Onchocerciasis and other filarial diseases: parasites, transmission, epidemiology and impact on populations.
II. *Wolbachia*: biology and symbiotic interactions with filariae.
III. Diagnosis of filariasis - analysis of articles.
IV. Studies of Knowledge, Attitudes and Practices (KAP) in the control of filariasis.
V. Development of molecular markers from DNA sequences.
VI. Application of phylogenetic analyzes to the study of parasite-host-symbiont coevolution.
VII. Assembly of filarial vector specimens.
VIII. Preparation of project proposals.

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Teaching methodologies (including assessment):

Lectures, theoretical/practical sessions and seminars. Tutorials: general and guidance on work for assessment. Session to provide formative feedback to first draft of written assay.
Student assessment will be based on the following elements:
• Written work: individual project proposal, to be submitted using the form available on Moodle, about filariases, based on a specific topic to be chosen through Moodle.
• Seminar: preliminary presentation and discussion of the project proposal.
• Continuous assessment: class exercises on the Moodle platform, or assessment during class.
Any of the evaluation elements will have a classification between 0 and 20 points. Students will have to have a final classification of 10 or higher to obtain approval. The final classification will be obtained from the formula:

(written work grade) x 0.5 + (seminar grade) x 0.2 + (continuous assessment grade) x 0.3

In order to improve their grade, or in case of failure, students will have to take an exam.
Students' satisfaction with the CU and their teachers will be assessed through an anonymous questionnaire.

References for consultation / mandatory existence:

- Brattig, N. W., Cheke, R. A., & Garms, R. (2021). Onchocerciasis (river blindness) - more than a century of research and control. Acta tropica, 218, 105677. https://doi.org/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.
- Gebrezgabiher, G., Mekonnen, Z., Yewhalaw, D., & Hailu, A. (2019). Reaching the last mile: main challenges relating to and recommendations to accelerate onchocerciasis elimination in Africa. Infectious diseases of poverty, 8(1), 60. https://doi.org/10.1186/s40249-019-0567-z