INSTITUTO DE HIGIENE E MEDICINA TROPICAL
DESDE 1902

GHTM | ACTIVITY PLAN

2023 MONITORING

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GHTM | ACTIVITY PLAN 2023 – MONITORING

1 Introduction – The year 2023 @ GHTM IHMT NOVA

In the year 2023, GHTM IHMT NOVA (GHTM) stabilized its administrative and financial management, and maintained its regular production of knowledge, training and cooperation for development, reinforcing the health systems of Portugal and the Portuguese-speaking countries. GHTM researchers produced 220 indexed scientific papers and coordinated 34 funded projects, reconciling scientific research of quality and impact with advanced training. In 2023 the European Union (EU) financed projects reinforced and diversified the sources of financing for GHTM's research and consolidated its structural financing, becoming less dependent on national funds. The project "CLIMOS: Climate Monitoring and Decision Support Framework for Sand Fly-borne Diseases Detection and Mitigation with COST-benefit and Climate-policy Measures", with 29 partners from 16 countries, was the first Horizon Europe project led by GHTM and one of the first coordinated by Portugal in the Horizon Europe program [https://climos-project.eu/] and the EuCARE project: "European cohorts of patients and schools to advance the response to epidemics", to study the dissemination and impact on public health of the variants of SARS-CoV-2 in the passage of COVID-19 pandemic to endemic, with 28 partners from 13 countries [https://eucareresearch.eu/], is now in full development with evident technical-scientific impacts in its areas of implementation , in Portugal and in the EU.

The Vax-Trust [https://vax-trust.eu] and Vax-Action projects [https://vax-action.eu/], the latter approved and initiated in 2023, both aims to support the EU Member States in the implementation of personalized and evidence-based interventions, aimed at reducing vaccine hesitancy.

Likewise, in 2023, the project HEROES (Health workforce to meet health challenges) [https://healthworkforce.eu/the-project/] initiated its activities, aiming to improve the planning capacity of human resources for health in Europe, to guarantee the accessibility, sustainability and resilience of health services and systems.

All these projects, led or with tasks led by GHTM researchers, intended to contribute significantly to public policies in health, in national and European countries. In addition, GHTM is the Portuguese institution with the largest number of funded projects in the "European & Developing Countries Clinical Trials Partnership" (EDCTP), in collaboration with partners from Cape Verde, Guiné-Bissau, Angola and Moçambique. Consequently, GHTM and IHMT became the scientific coordinator of the Lusophone Platform for Clinical Research and Biomedical Innovation (PLICIB), promoted and financed by the Agência de

Investigação Clínica e Inovação Biomédica (AICIB), for the promotion of clinical and biomedical research in African Portuguese Speaking Countries (PALOP) and (Community of Portuguese-speaking Countries (CPLP).

Furthermore, in the scope of GHTM's cross cutting issue of global dispersion of infectious agents and population mobility, it's important to highlight the study on the prevalence of respiratory diseases in children with 6/7 years residing on the island of Santiago, Cape Verde, the studies on the demography of Plasmodium falciparum in southwestern Africa, with particular incidence in Angola and the protocol for joint analysis of data on social inequalities and child behavior in 5 continents: Portugal, Brazil, Norway, South Africa and Australia.

GHTM also participated in several European multicenter laboratory studies on the epidemiological cut-offs for resistance of several antimicrobials against various microorganisms of clinical interest, in a one-health perspective, such as the emerging human respiratory infections with Mycobacterium avium and *Mycobacterium abscessus* or the skin and soft-tissues infections in company animals by *Staphylococcus pseudintermedius*, as well as the description of drug resistance profiles and epidemiology of Staphylococcus aureus, an important agent of pediatric bacteremia in Manhiça District, Moçambique. In the scope of the innumerous projects in partnerships with PALOP countries on HIV, we highlight new data on genetic diversity and acquired resistance to antiretrovirals and primary resistance to HIV-1 integrase inhibitors. The hepatitis-causing viruses circulating in Angola were characterized and GHTM continued to monitor the rotavirus infection after the introduction of the vaccine in Moçambique and Angola in 2023. In the environmental health perspective, metaviroma studies were carried out in waste waters, plants, and insects, as reservoirs of emerging infections. With impact on SARS-CoV-2 infection control in Portuguese and European schools in the post-pandemic period, the studies associated with the EUCARE project became guidelines for the control and transmission of COVID in Europe. Of greater relevance to public health surveillance in Portugal are the results of the Mosquitoweb citizen science project [http://mosquitoweb.ihmt.unl.pt/] through which the Aedes albopictus mosquito was detected for the first time in Lisbon in 2023, triggering a concerted response with health authorities to control it. Coming from the CLIMOS consortium, it was demonstrated that climatic alterations are drastically altering the geographical distribution of sandflies (vector of leishmaniasis), affecting new regions of Europe.

GHTM invested and supported clinical and epidemiological field research, carried out in the tropics with several field missions in 2023, notably with field missions to remote populations in the Brazilian Amazon, in São Tomé, in Moçambique, in Guiné-Bissau, in Cape-Verde and in Angola. The conclusion, with success, of the phase 1 of the first clinical trial of oral acoziborole for human African trypanosomiasis gambiense in children and the clinical trial of oral fexinidazole for human African trypanosomiasis rhodesiense were major outcomes in 2023. In the field and in partnership with Brazilian institutions, stands out in August 2023 the mission in Amazonia to validate the prevalence and clinical manifestations of infection by *Mansonella ozzardi* in 300 Amerindians of the Tikuna ethnic group, who live along the Solimões River and the studies on the causes and risk factors for perinatal and neonatal morbidity and mortality

in São Tomé, as well as the causes and defects of acute febrile illness in southern Angola with 500 children and adults recruited by November 2023, in the two largest public hospitals in Lubango, Huíla province.

Within the topic of resistance to antimicrobials and insecticides, the absence of polymorphisms in the domain of the Kelch 13 (K13) helix of Plasmodium falciparum associated with resistance to artemisinins determined in three localities of Moçambique and the conclusion that the differential genetic expression of this parasite in response to the host metabolite 2,3-DPG, using the new generation sequencing platform of GHTM – MinION - as an effect in reducing the offspring of parasites, are results of utmost importance. Several cross-sectional studies on the prevalence of Leishmania spp. were carried in Portugal and in CPLP, as well as the characterization of syphilis, HIV and HBV infections in Benguela, Angola. Likewise, new drug resistance markers have been characterized in various infectious agents, from new mutations to new efflux mechanisms. In the One Health perspective, infections by Bartonella spp., that circulate in wild cats in Lisbon, are also being studied and the general seroprevalence for Leishmania infantum in Portugal and its zoonotic potential was assessed.

The development of new rapid molecular diagnostic tests for resistant malaria by isothermal and microfluidic amplification within the scope of the transversal diagnostic line continues and is currently being validated with biological samples collected in endemic areas and previously characterized.

The new common-use sequencing platform using Oxford Nanopore technology became fully operational in 2023, as well as the commercial operation of VIASEF [http://viasef.ihmt.unl.pt/] [https://www.youtube.com/watch?v=ENlfloQV-GE], the Level 3 Safety Insect of GHTM, with several projects approved. Likewise, the BIOTROPICAL Biobank [https://www.ihmt.unl.pt/investigacao/biobanco/] continued to be a GHTM and NOVA reference infrastructure in the national and international offer of biological collections, being part of the Microbial Resource Research Infrastructure (MIRRI) network, a pan-European management research infrastructure , preservation and valorization of microbial resources and biodiversity.

In 2023 the Bioinformatics Infrastructure – BIOHUB – was restructured and refurbished and centralizes the genomic sequencing (MinION sequencing platform) and bioinformatics (Linux server) capacities of GHTM. This infrastructure supports the analysis of whole genome sequencing data produced by the existing MinION sequencing platform and manages the existing high computational capacity of GHTM.

Numerous dissemination activities were promoted in the work carried out with nearly 30 GHTM Sessions of global dissemination as well as various activities in the IHMT open day and the “Ciência Viva” Program for High Schools.

Part of this research was reinforced by post-graduate training with 11 new PhD holders in 2023, contributing to our global network of education and research in global health and tropical medicine. GHTM is currently integrated in the new Associate Laboratory in Translation and Innovation towards Global Health

(REAL), one of the fundamental pillars of the National System of Science and Technology. Of major importance for GHTM research impact and strategy was the strengthening and restructure of the WHO Collaborating Center on Health Work Force Policies and Planning, which supports the WHO strategic objective of optimizing the impact of current and future health work forces in obtaining better health, universal health coverage and global health security through research, training, and strategic advice.

With four years of profound dedication and resilience from all our researchers, overcoming pandemics, political and administrative uncertainty from national funding agencies and several other difficulties, leveraged by our students, professors and researchers, with a strong support and commitment from our technical-administrative support teams, we finish this cycle as a Scientific Research Unit of excellence in global health and tropical medicine – “obrigado a tod@s”.

2 General strategic objectives for 2023/2024

🔴- Not done/Canceled; 🟢- Done/Concluded; 🟡- Delayed/ Postponed

- **Promote and develop RESEARCH** in the areas of excellence at the center, in the context of the objectives of the research groups (Research Groups -RG) and the priority research lines (Cross-cutting Issues - CCIs) of the GHTM / IHMT / NOVA, in line with NOVA's global scientific strategy and IHMT/NOVA 🟢;

- **Implement 2023/24 strategy** defined and approved for the GHTM / IHMT / NOVA for 2023-2024 incorporating the improvement proposals of the FCT Evaluation Panel (2023) and the GHTM Scientific Advisory Board (see Annex I), ensuring success of the execution and financing plan approved by FCT for 2019-2023 🟢 / 🟡;

  - 🟢 Promote the **Open Science policy** [https://novaresearch.unl.pt/en/organisations/global-health-and-tropical-medicine-ghtm];
  - 🟡 I**ntegrated management GHTM / IHMT / NOVA** with the new strategic infrastructures - **security insectary ACL-3 VIASEF** - and the **Biological Resources Center / biobank - Biotropical Resources (BIOTROP**] [https://www.ihmt.unl.pt/investigacao/biobanco/] and **BIOHUB**;
  - 🟢 Framing the research actions of the GHTM / IHMT / NOVA in the **Sustainable Development Goals (SDGs);**
  - 🟢 **Focus on the European Union and National Horizon Europe Strategies** and **Portugal 2030 Strategy**;
  - 🟢 **Align the objectives for Research at the GHTM / IHMT / NOVA with the objectives for the teaching and training at IHMT / NOVA**.
  - 🟡 **Co-coordinate and co-manage the Associated Laboratory of the Science and Technology Foundation - [Associated Laboratory in Translation and Innovation Towards Global Health]**, a consortium with NOVA Medical School's [NOVA Medical School's Comprehensive Health Research Center (CHRC), the National School of Public Health [https://www.ensp.unl.pt/], FCT / NOVA's LIBPhys [https://www.libphys.fct.unl.pt/] and the University of Évora [https://www.uevora.pt/];
  - 🟢 **Prepare the forecasted 2024 GHTM Evaluation (Contract 2019-2023) and new proposal for 2024-2027**

3 2023 Executive Summary and Outputs

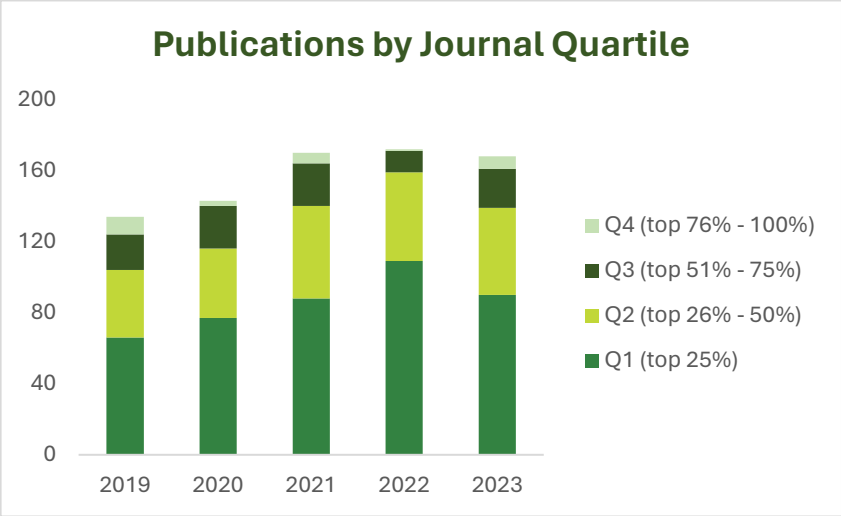
The year 2023 represents the end of the strategic and programmatic quadrennia of GHTM, with an expected execution above 80%, despite the limitations imposed by the pandemic. GHTM is now prepared for its evaluation and renewal proposal to the national funding agency. Over the last five years, we have strengthened our excellence in scientific production and funded projects, which allowed us to achieve our strategic objectives by publishing our results in nearly 200 internationally referenced articles, per year, with a weighted average impact of citations 59% above the world average, in average, thanks to the effort of our 153 members, of which 73 are integrated researchers (59.55 FTEs). This track record and performance is the best proof of the global impact of GHTM's scientific work, leveraged by our contribution to all the SDGs, with special emphasis on SDG3 - Health and Wellbeing. For 2023 que number of publications by journal quartile (2019-2023) - Q1 Top 25% is depicted in Figure 1, the publications distribution by GHTM Research Group in 2023 in Figure 2 and the publications distribution by Sustainable Development Goals in 2023 (n=220) and EU projects granted in 2023 in Figure 3.

Global output	2019	2020	2021	2022	2023	Variation (2019 – 2023)
Total of publications	Nº	Nº	Nº	Nº	Nº	
GHTM IHMT NOVA	**175**	**179**	**192**	**202**	**220**	↗

Field Weighted Citation Impact	2019	2020	2021	2022	2023	Variation (2019 – 2023)
	FWCI	FWCI	FWCI	FWCI	FWCI	
GHTM IHMT NOVA	**1.11**	**1.31**	**1.22**	**1.72**	**1.59**[1]	↗

[1] *data collection for 2023 not consolidated.*

Figure 1: Number of Publications by journal quartile (2019-2023) - Q1 Top 25% (↗).



Percentage of publications with international collaboration (2023) - 80% (↗)

GHTM 2022 publications in SCOPUS TOP 10% - 19,6% (↓)

Figure 2: Publications distribution by GHTM Research Group in 2023

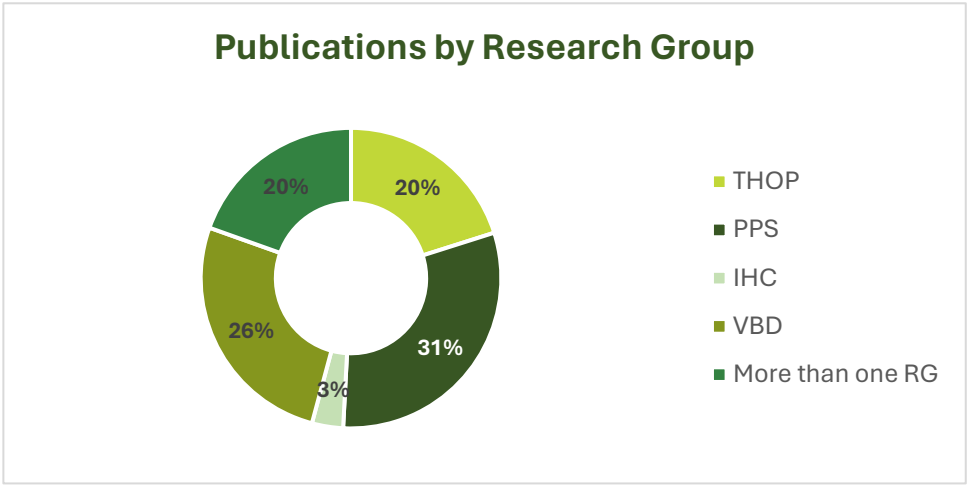


Figure 3: Publications distribution by Sustainable Development Goals in 2023 (n=220) and EU projects granted in 2023 (one paper can address one or more SDGs).

4 Monitoring Report of Research Group Activities in 2023

FRAMEWORK AND MISSION: Promote and develop RESEARCH in GLOBAL HEALTH AND TROPICAL MEDICINE, fostering research themes (RT) through the four Research Groups (RG) with the driving-force of the priority research topics of the five Cross-Cutting Issues – CCIs - Diagnostics (DG); Drug Discovery & Resistance (DDR); Public Health Information (PHI); Global Pathogen dispersion and Population Mobility (GPPM); Fair Research Partnerships (FRP).

- 🔴 - Not done / Canceled
- 🟢 - Done / Concluded
- 🟡 - Delayed / Postponed
- 🔵 - New activities not planned

RESEARCH GROUP – INDIVIDUAL HEALTH CARE (RG – IHC)

The main lines of action of the IHC group are related to the transversal areas of the GHTM, Global Dispersion of Pathogenic Organisms and Population Mobility, Discovery and resistance to drugs and Diagnosis. The main research themes are: (a) Traveler's Health, (b) Neglected Tropical Infections, and (c) Sexual and Reproductive Health.

IHC activities were aligned with Sustainable Development Goals (SDGs) especially #3- Good Health and Well-being; and #10 - Reduce inequality within and among countries.

ACTIVITIES	EXPECTED OUTCOMES	EVIDENCES
Research activities already ongoing in 2022/2023 with CCIs:		
CCI - Diagnostics (DG):		
🟡 Research Project: Morbidity associated with infection with Schistosoma and intestinal parasites in adults from Mozambique. PhD Thesis, João Tiago Serra. Supervisor: Cláudia Conceição (IHC). Co-supervisors: Silvana Belo (VBD) and Mohsin Sidat.	PhD thesis to be defended in 2023. Original article to be submitted in 2023.	Ongoing, but delayed. Original paper due for mid-2024.Thesis due for 2025.
🟡 Research Project: Electrochemical biosensor for the rapid detection of SNPs associated with drug-resistant malaria. PI: Márcia Medeiros (CTM). Collaborator: Marcelo U. Ferreira (CTM). Funding: GHTM (UID/04413/2020). Master project of Mariana Pinto. Supervision: Márcia Medeiros (CTM). Co-supervision: Ana Paula Arez (VBD).	Ongoing. Partial results by the end of 2023.	Ongoing, but partially delayed. The new PI is Marcia Medeiros (IHC). Three poster presentations; no publication yet. Thesis and original paper due for mid-2024.

🟢 Research Project: Prevalence of asymptomatic leishmaniosis in Portugal. PhD thesis, Rafael Amorim Rocha. Supervisor: Carla Maia (VBD). Co-supervisors: Cláudia Conceição (IHC) and Luzia Gonçalves (PPS).	PhD thesis to be defended in late 2023 or early 2024. Original article to be submitted in 2023.	Three publications: (1) Rocha R, Conceição C, Gonçalves L, Maia C. Knowledge, perceptions and practices of health students and professionals regarding leishmaniasis in Portugal: a cross-sectional study. Parasit Vectors. 2023;16:381. doi: 10.1186/s13071-023-05982-z; (2) Rocha R, Gonçalves L, Conceição C, Andrade P, Cristóvão JM, Condeço J, Delgado B, Caeiro C, Kuzmenko T, Vasconcelos E, Escoval MA, Rey C, Guz M, Norte C, Aldeia C, Cruz D, Maia C. Prevalence of asymptomatic Leishmania infection and knowledge, perceptions, and practices in blood donors in mainland Portugal. Parasit Vectors. 2023;16:357. doi: 10.1186/s13071-023-05980-1.; (3) Maia C, Conceição C, Pereira A, Rocha R, Ortuño M, Muñoz C, Jumakanova Z, Pérez-Cutillas P, Özbel Y, Töz S, Baneth G, Monge-Maillo B, Gasimov E, Van der Stede Y, Torres G, Gossner CM, Berriatua E. The estimated distribution of autochthonous leishmaniasis by Leishmania infantum in Europe in 2005-2020. PLoS Negl Trop Dis. 2023;17:e0011497. doi: 10.1371/journal.pntd.0011497.
🟢 Research Project: Causes and outcomes of acute febrile illnesses in south Angola: a hospital-based study. PhD thesis project of Helga Vicente. Supervisor: Marcelo U. Ferreira (IHC). Co-Supervisor: Lina Antunes (Lubango General Hospital). Collaborator: Jorge Seixas (IHC)	Starting date in Lubango, Angola: 06/2023. Currently funded by GHTM and Ciência LP	Fieldwork started in September 2023. Nearly 500 patients (out of 800) enrolled until November 2023. Another enrollment season planned for May-August 2024. Application for external funding submitted to Calouste Gulbenkian Foundation by co-PI Lina Antunes (Lubango General Hospital), but not granted.
◌ Research Project: Vaccine-preventable viral respiratory infections in the elderly: a multicenter, hospital-based cross-sectional study in Portugal. PI: Paulo Paixão (NOVA Medical School). Collaborator: Marcelo U. Ferreira (IHC).	Not planned in 2022-23	Supported by Pfizer. Expected starting date: May 2024.
CCI - Drug discovery & resistance (DDR)		
🟢 Research Project: Towards an arsenic-free oral treatment for human African trypanosomiasis due to Tb rhodesiense as a tool	Data analysis ongoing. Final Study Report planned for April-May 2023	The clinical trial was completed as planned and successful: 45 patients included, 34 in 2nd stage. All patients were successfully

for disease elimination. UE/ EDCTP GA nº RIA2017NCT-1846 (2018-2021). IHC researcher: Jorge Seixas.		treated without SAEs related to fexinidazole. One patient relapsed. Fexinidazole was approved by EMA for use in rhodesiense HAT in December 2023.
🟢 Research Project: Towards a pediatric indication for children between 1 and 14 years of age for a safe, effective, all-oral single-dose treatment formulation of acoziborole for first and second stage gambiense human African trypanosomiasis (g-HAT). UE/EDCTP RIA2019PD-2890 (2020-2024). IHC researcher: Jorge Seixas.	Clinical trial ongoing. Nine patients aged from 11 to 14 years were recruited and treated (Phase 1 of the trial). Phase 2 to be implemented in the DRC and Guinea in 2023	Phase 1 was completed in July 2023 with 9 patients successfully treated. Phase 2 could not be implemented in 2023 due to logistic and unexpected technical difficulties, but should be started in 2024
🟢 Research Project: Identification and prioritisation of Plasmodium vivax vaccine antigens. PI: Julian Rayner (University of Cambridge, UK). IHC collaborator: Marcelo U. Ferreira.	Ongoing. One original article to be published in 2023.	Concluded, one publication: Kundu P, Naskar D, McKie SJ, Dass S, Kanjee U, Introini V, Ferreira MU, Cicuta P, Duraisingh M, Deane JE, Rayner JC. The structure of a Plasmodium vivax Tryptophan Rich Antigen domain suggests a lipid binding function for a pan-Plasmodium multi-gene family. Nat Commun. 2023;14:5703. doi: 10.1038/s41467-023-40885-8.
CCI - Public health information (PHI): 🟡 Research Project: Vertical transmission of Hepatitis B in Angola: Evidence for political decision making. IHC researcher: Filomena Pereira.	Ongoing.	
CCI - Global pathogen dispersion and population mobility (GPPM) 🟢 Research Project: Malaria control and elimination: addressing the occult parasite reservoir. PI: Marcelo U. Ferreira (IHC). Funding: FCT (UID/04413/2020).	Ongoing. Two original papers to be published in 2023.	Ongoing, three publications: (1) Corder RM, Arez AP, Ferreira MU. Individual variation in Plasmodium vivax malaria risk: Are repeatedly infected people just unlucky? PLoS Negl Trop Dis. 2023;17:e0011020. doi: 10.1371/journal.pntd.0011020; (2) Ferreira NS, Lima NF, Sulczewski FB, Soares IS, Ferreira MU, Boscardin SB. Plasmodium vivax infection alters the peripheral immunoregulatory network of CD4 T follicular cells and B cells. Eur J Immunol. 2023;53:e2350372.

		doi: 10.1002/eji.202350372.; (3) Fontoura PS, Macedo EG, Calil PR, Corder RM, Rodrigues PT, Tonini J, Esquivel FD, Ladeia WA, Fernandes ARJ, Johansen IC, Silva MF, Fernandes AOS, Ladeia-Andrade S, Castro MC, Ferreira MU. Changing clinical epidemiology of Plasmodium vivax malaria as transmission decreases: population-based prospective panel survey in the Brazilian Amazon. J Infect Dis, in press, doi: 10.1093/infdis/jiad456
CCI - Fair research partnerships (FRP): 🟢 Iniciativa para o reforço dos serviços sanitários de primeiro e segundo nível em Angola. Promoter: Centro per le Malattie Tropicali Ospedale Sacro-Cuore Don Calabria, Verona, Italy, IHMT partner. IHC researcher: Jorge Seixas 🟢 When, Where and Why do newborns not only get sick but also die in Sao Tome & Principe? Analysis of causes and risk factors contributing to perinatal and neonatal morbidity and mortality in a developing country – a case–control study. IHC researcher (thesis co-suvervisor): Filomena Pereira.	Ongoing. PhD Thesis defended in 2023. Two new original papers published.	Publications: (1) Vasconcelos A, Sousa S, Bandeira N, Alves M, Papoila AL, Pereira F, Machado MC. Determinants of antenatal care utilization – contacts and screenings – in Sao Tome & Principe: a hospital-based cross-sectional study. Archives of Public Health 2023; (2) Vasconcelos A, Sousa S, Bandeira N, Alves M, Papoila AL, Pereira F, Machado MC. Intestinal parasitic infections and adverse outcomes among pregnant women and their newborns in Sao Tome & Principe: a hospital-based cross-sectional study. Preprint from Research Square, 23 May 2023 https://doi.org/10.21203/rs.3.rs-2174848/v3 2023; (3) Vasconcelos A, Sousa S, Bandeira N, Alves M, Papoila AL, Pereira F, Machado MC. Adverse birth outcomes and associated factors among newborns delivered in Sao Tome & Principe: a case–control study. PLOS One (2023); (4) Vasconcelos A, Sousa S, Bandeira N, Alves M, Papoila AL, Pereira F, Machado MC. Factors associated with perinatal and neonatal mortality in Sao Tome & Principe: a prospective cohort study. Manuscript submitted to BMC Pregnancy

		and Childbirth. Preprint available from: https://doi.org/10.1101/2022.08.07.2227847
New Research Projects planned for 2023/2024 with CCIs:		
🟢 Research Project: Individual variation in malaria risk: causes and consequences in Amazonian populations, PI: Marcelo U. Ferreira (IHC); Collaborator, Ana Paula Arez (VBD).	Submitted for external funding in December 2022.	External funding (approximately 400,000 euros) approved by the Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP), Brazil, 2023-28.
🟢 Research Project: Genomic signatures of malaria parasite adaptation to the New World. PI: Marcelo U. Ferreira (IHC) Collaborator, Carla Sousa (VBD)	To be submitted for external funding in June 2023.	Submitted for external funding (approximately 500,000 euros) by La Caixa Foundation in November 2023.
🔴 Research Project: Malaria control and elimination in Angola, São Tomé and Príncipe, and Equatorial Guinea. PI: Joana Carneiro da Silva (VBD) and Filomeno Fortes (IHC). Collaborators: Marcelo Ferreira and José Pedro Gil (IHC), Maria do Rosário O. Martins (PPS), Carla Sousa and Ana Paula Arez (VBD).	To be submitted for external funding in April 2023.	Submitted for external funding (NIH) in April 2023, but not funded.
🟢 Research Project: Child health on Santiago Island, Cape Verde: a cohort study. PI, Maria do Rosário O. Martins (PPS); collaboration with UniCv and Hospital Agostinho Neto. IHC researcher: Marcelo U. Ferreira	Study protocol to be submitted for ethical clearance.	External funding (150,000 euros) approved by the Calouste Gulbenkian Foundation, Portugal, 2024-27. PI: Isabel Araújo, UniCV, Cabo Verde. Anticipated starting date for fieldwork: April 2024
🟡 Research Project: Birth cohort study in Matola, Mozambique. PI, Maria do Rosário O. Martins (PPS); collaboration with ISCTEM and Regional Hospital of Matola. IHC investigators: Luís Varandas and Marcelo U. Ferreira	Study protocol to be submitted for ethical clearance and external funding. Currently funded by GHTM and Ciência LP	To be submitted for ethical clearance in January 2024. Pilot study planned for February 2024.
🟡 Research Project: Chagas disease on Madeira Island (Portugal): situation diagnosis and implementation of a surveillance system: PhD thesis of Susana Gonçalves. Supervisor	To be implemented in September 2023.	Delayed. Fieldwork did not start yet.

Jorge Seixas (IHC), Technical support by WHO (Pedro Albajar Viñas, WHO / UCN / NTD / Chagas disease)		
🟢 6th National Congress of Tropical Medicine. Organizing committee led by Filomena Pereira and Jorge Seixas (IHC); Scientific Committee led by Marcelo Ferreira and Luís Tavira (IHC)	Helded at the Institute of Hygiene and Tropical Medicine on April 20-21, 2023.	Successfully held in April 2023 with over 200 participants (https://www.ihmt.unl.pt/6-o-congresso-nacional-de-medicina-tropical-medicina-tropical-e-desenvolvimento-sustentavel/)
Capacity building:		
🟡 Pre-congress courses to be held in April, 2023 (6th National Congress of Tropical Medicine): Travelers' health, malaria, and sexually transmitted infections.		One course, on malaria, successfully held on April 20, 2023, with >100 participants online.
🔵 Open Course on Clinical Investigation	Not planned in 2022-23	Online course coordinated by Marcelo Ferreira (IHC) and successfully held between October and December 2023 (total, 204 hours). Total of 25 participants from Portuguese-Speaking African Countries (PALOPs) selected out of >480 applicants. Total of 36 speakers from Portugal and PALOPs. Funded by Calouste Gulbenkian Foundation, Portugal. A second edition planned for April-June 2024 (conditional to funding).
Other activities: Editorial Boards		
🟢 Memberships	Editorial board of Pathogens and Global Health, Memórias do Instituto Oswaldo Cruz, and Parasite Epidemiology and Control. Reviewing Editor (BRE) of eLife	Continued. Since 2023, member of the Editorial Board of PLoS Pathogens

RESEARCH GROUP – POPULATION HEALTH, POLICIES AND SERVICES (RG – PPS)

The main research topics of the PPS group are: Health Policy and Planning; Human Resources for Health; Health determinants of vulnerable populations. The activities planned for 2023/24 fall into the various cross-cutting areas described below: CCI PHI e FRP.

PPS activities were aligned with Sustainable Development Goals (SDGs) especially #1 – No poverty; #3- Good Health and Well-being; #4-Quality Education and #10 - Reduce inequality within and among countries.

ACTIVITIES	EXPECTED OUTCOMES	EVIDENCES
Research activities already ongoing in 2022/2023 with CCIs:		
PHI - Public health information:		
Non-specific effects of BCG in under-five children"(EXPL/SAU-EPI/0067/2021)	Final report and at least one paper	
BCG vaccine to reduce unplanned absenteeism due to illness of health care workers during the COVID-19 pandemic. A multi-center randomized controlled trial (BCG-COVID-RCT)	Final report and 3 papers	
🟢 Impacto da COVID-19 na saúde dos NPT: conhecer mais para intervir melhor (FAMI Parceiros técnicos da AJPAS)	Finish collecting and analyzing data on COVID-19 among immigrants in Amadora (incidence, mortality and quality of life)	Data Base available
🟢 Determinantes e necessidades de saúde das crianças migrantes num contexto de pandemia: Um estudo longitudinal para a Região de Lisboa e Vale do Tejo | Health determinants and needs of children on the move in a pandemic context: A	Finalize the first data collection on the health of native and immigrant children in Barreiro, Moita, Alcochete and Montijo.	Data Base available

longitudinal study for Lisbon and Tagus Valley Region (PTDC/SAU-INF/31990/2017)		
GPPM- Global pathogen dispersion and population mobility 🟡 Research Project: Addressing Vaccine Hesitancy in Europe (Vax-Trust) Impact of COVID-19 on the health of PTNs: knowing more to intervene better (FAMI) AJPAS technical partners 🟡 Research Project: Health determinants and needs of children on the move in a pandemic context: A longitudinal study for Lisbon and Tagus Valley Region (PTDC/SAU-INF/31990/2017)	Completion of WP6 on evaluation of health interventions	Vax-Trust: due to delays in the implementation of other work packages, the delivery of deliverables by work package 6 was delayed (deliverables completed and approved in 2023: deliverables 6.1 and 6.2; deliverables postponed to 2024: deliverables 6.3 and 6.4)
FRP – Fair Research Partnership 🟢 Research Project: Non-specific effects of BCG in under-five children" (EXPL/SAU-EPI/0067/2021) 🟢 Research Project: BCG vaccine to reduce unplanned absenteeism due to illness of health care workers during the COVID-19 pandemic. A multi-center randomized controlled trial (BCG-COVID-RCT)	Project finished. Reports Project finished	1 approved paper/ 1 letter submitted 2 papers submitted / several posters and oral presentations
New Research Projects planned for 2023/2024 with CCIs		
CCI - Public health information (PHI): 🟡 Research Project: Estudo de coorte sobre a saúde das crianças na Ilha de Santigado (com UniCv e Hospital Agostinho Neto)	Submit the study protocol to the CNEPS of Cape Verde and start collecting information	Project submitted to FCG-Caixa Grants- approved. Not yet submitted to the CNEPS

🟡 Research Project: Estudo de coorte Mãe-filho da Matola (com ISCTEM e Hospital da Matola)	Submit the study protocol to the CNBS of Mozambique and start collecting information	Already submitted to CNBS. Waiting for the approval
CCI - Global pathogen dispersion and population mobility (GPPM) Involvement of Tiago Correia and Paulo Ferrinho as external consultants for the funded project: '(The Matrix of) Populist and Denialist Attitudes towards Science' (funded by FCT).	Participation in project meetings and writing of documents	
CCI - Fair research partnerships (FRP): 🟢 Joint Action HEROES (Health Workforce to meet health Challenges) (2023-2026)	Country baseline assessment 2 fellowships	Report finished and available 2 scholarship holders hired.
Congresses/Events: 🟢 Fórum EDCTP em Paris - November	Membro da Comissão científica do EDCTP (PF): apresentações dos alunos do MEC da UniCV	4 presentations at EDCTP Forum , Paris 2023
🟢 Congresso da APE no Porto - September	Attending the XLI Reunión Científica SEE y XVIII Congresso da APE, Porto	3 presentations
🟢 Congresso da Sociedade Portuguesa de Saúde Pública	Guest speaker	
🟢 World Congress of Public Health	Attending World Congress of Public Health May 2023, Roma	12 poster presentations from GHTM members
🟢 Encontro da Academia de Medicina do Brasil	Guest speaker	

🟢 Congresso de Medicina Tropical, IHMT - April	Participation in the round table on Chronic Diseases Organisation of the session on Women Scientists Organisation of the IV Luso-Brazilian Meeting on Health Evaluation, Management and Translating Knowledge within the CPLP: from theory to practice.	See CMT 2023 program
Publications: 🟢 Publications in several Scientific Journals, Anais do IHMT e livros	Publicação de um mínimo de 45 artigos científicos Edition of 2 nos. of Anais; Edition of 3 nos. of series Leiass. Ebook Violência contra Profissionais de Saúde (Violence against Health workers) 1 suplement Anais (Health Evaluation in CPLP)	Published and available Papers undergoing peer review, expected publication first quarter 2024
Training 🟢 Final Seminar on Evaluation of health interventions aimed to address vaccine hesitancy in Europe	Organization of international seminar	Final Seminar on Evaluation of health interventions aimed to address vaccine hesitancy in Europe was held at IHMT in October 2023

🟢 Short-term course in evaluation of health interventions in vaccine hesitancy in Europe (part of Vax-Trust H2020 project).	Course implementation and teaching	Short-term course in evaluation of health interventions in vaccine hesitancy in Europe (part of Vax-Trust H2020 project) was held in March 2023 (one-week training)
🟢 Organization of workshop – Health Evaluation in CPLP (April 2023)	Workshop implementations	
🟢 Curso de Ética para a Investigação em saúde (com CNBS Moçambique)-Maio	Course implementation	The course was implemented with success
Capacity building: **Cape-Verde**		
🟢 MSP with UniCV	Master's Degree in Fielçd Epidemiology of UniCV at CV/GB/STP	Several Curricular Units with the coordination of GHTM-PPS members
🟢 Cancer Registration CV	Capacity building in population-based cancer registration with the CV Ministry of Health	Cancer Register already completed with success; data already available at GLOBOCAN (WHO) website
GB		
🟢 Specialization Course in Public Health, inserted in the project IANDA-Guiné	MSP in Guiné-Bissau Completion of the Specialization Course in Public Health, inserted in the project IANDA-GB	Specialization Course in Public Health, inserted in the project IANDA-Guiné was successfully completed by 25 trainees
MZ		
🟢 Master's Degree	Master's Degree in Statistics and Health Planning with ISCISA, MZ	2 CUs coordinated by PPS members
🟡 Post-graduate training	Research Methods Course with INS-MISAU	

Post-graduate training	Scientific support to Angolan institutions to undertake specialized, post-graduate training in Health Management.	The scientific support to Angolan institutions to undertake specialized post-graduate training in Health Management translated in the co-coordination with BAI Foundation and Agostinho Neto University of the 1st Executive Master in Health Management (40 trainees successfully completed the course)
Angola		
Post-graduate training in Health Management.	Capacity building in regional cancer registration with Lubango Hospital and the Provincial Directorate of Health	Cancer Register already completed with sucess; data already available at GLOBOCAN (WHO) website.
Other activities:		
Contribute to the NOVA4theGlobe	Ensure the representation of PPS in the NOVA4theGlobe structure. Align the action plan of NOVA4theGlobe with the and expertise by the PPS members. Coordination of the Consortium of Public Health Schools of the Centro Ciência LP	PPS member was enrolled in the academic council of NOVA4the Globe and influenced the strategic approach of NOVA to sustainability according to the knowledge produced withing PPS group. PPS member is leading the Consortium
Editorial Boards	Editor in Chief of BMC Human Resources for Health Editor in Chief of International Journal of Health Planning and Management/HPM Principal Editor of 2 thematic series for HRH Journal and IJERPH Member of the IEA	PPS member continued to be appointed as EiC for HPM.

	Associate Editor of Frontiers in Public Health Associate Editor of Plos One Member of the Ethics Committee of the European Mathematical Society	PPS member continued to be Associated Editor and member of the EECM

RESEARCH GROUP – TUBERCULOSIS, HIV AND OPORTUNISTIC DISEASES (THOP)

The overarching aim of the THOP group is the molecular epidemiology, diagnosis, study of drug-resistance mechanisms, drug discovery and control of tuberculosis (TB), HIV and opportunistic diseases on a Global Health perspective in an era of antimicrobial resistance, chronic immunosuppressive diseases and now the COVID pandemic. The activities planned for 2023/24 fall into the various cross-cutting areas as described below.

THOP activities were aligned with Sustainable Development Goals (SDGs) especially #1 – No poverty, #3- Good Health and Well-being, #4-Quality Education, #6-Clean Water and Sanitation, #10 - Reduce inequality within and among countries and #15 - Life on Land.

ACTIVITIES	EXPECTED OUTCOMES	EVIDENCES
Research activities already ongoing in 2022/2023 with CCIs:		
CCI - Drug discovery & resistance (DDR)		
🟡 Research Project: Project TMC207 Calib financed by Becton&Dickinson (Completion in 2024 – postponed from 2023)	3 articles Q1 within CCI DDR – 2023	Fröberg G, Maurer FP, Chryssanthou E, Fernström L, Benmansour H, Boarbi S, Mengshoel AT, Keller PM, Viveiros M, Machado D, Fitzgibbon MM, Mok S, Werngren J, Cirillo DM, Alcaide F, Hyyryläinen HL, Aubry A, Andres S, Nadarajan D, Svensson E, Turnidge J, Giske CG, Kahlmeter G, Cambau E, van Ingen J, Schön T; EUCAST AMST and ESCMYC study groups. Towards clinical breakpoints for non-tuberculous mycobacteria - Determination of epidemiological cut off values for the Mycobacterium avium complex and Mycobacterium abscessus using broth microdilution. Clin Microbiol Infect. 2023 Jun;29(6):758-764. doi: 10.1016/j.cmi.2023.02.007.
🟡 Research Project: Project Breakpoint Calibration for DLM, BDQ, LZD, MOX against M. tuberculosis financed by EUCAST, Becton&Dickinson and ThermoFisher ((Completion in 2024 – postponed from 2023)	1 PhD thesis completed in 2024	

🟡 Research Project: Aetiology and epidemiology of Acinetobacter baumannii through genomics to track global antimicrobial resistance – UI/BD/151063/2021 (ongoing until 2024)	2 MSc Thesis completed in 2023	Thesis postponed for 2024
🟡 Research Project: Gilead TB&HIV nanodiagnostics (Completion 2024)	1 MSc Thesis completed in 2023	Thesis postponed for 2024
🟡 Research Project: Inhibition of efflux in M. tuberculosis persister cells during dormancy – CEECIND/02562/2017 (ongoing until 2024)		No details provided
🟡 Research Project: Immunotargeting efflux systems for therapeutic modulation of multidrug resistant bacteria (w/ UCoimbra) (ongoing 2024)	1 MSc Thesis completed in 2023	Thesis postponed for 2024
Efflux mediated resistance in staphylococci	4 articles Q1 within CCI DDR – 23/24	Morais et al. Frontiers in Microbiology (Q1). Doi: 10.3389/fmicb.2023.1167834 Leal et al. Animals (Q1). Doi: 10.3390/ani13071270
🟡 Research Project: Project DREBI - Exploring efflux inhibition to counteract antimicrobial resistance and biofilms in staphylococci (FCT, Ref. 2022.07931.PTDC). Start in 2023, ongoing 2023-24		
🟡 PhD Thesis	2 PhD Thesis initiated in 2023	MAndrade. PhD in Biomedical Sciences. Grant BD/GHTM/DCB2022 (start: April 2023) MLeal. PhD in Biomedical Sciences. Grant 2023.02437.BD (start: Oct 2023)
🟡 Research Grants	BI Grant (DREBI project)	JNeves, BI Grantee. Ref. 2022.07931.PTDC (DREBI project) Since August 2023.

🟢 Master Thesis	3 MSc Thesis completed in 2023	JNeves. MSc Medical Microbiology (March 2023) CAntunes. MSc Biomedical Sciences (January 2023) PZacharias. MSc Medical Microbiology, IHMT NOVA, 2023.
🟡 Master Thesis	3 MSc Thesis to be completed in 2024	TRodrigues. MSc Biomedical Sciences (ongoing, since Oct 2022) ASantos. MSc Biomedical Sciences (ongoing, since Oct 2023) MBento. MSc Medical Microbiology (ongoing, since Oct 2023)
🟢 Project submission	2 national/international project submitted	Research project submitted to IV International Zendal Awards 2023 – Human Healthcare Award (PI:Sofia Santos Costa) Research project submitted to Sustainability Award Alfredo da Silva 2023 (PI:Sofia Santos Costa)
Molecular epidemiology and antimicrobial resistance of S. aureus causing bloodstream infections in children in Mozambique		
🟢 PhD Thesis	1 PhD Thesis concluded	MGarrine. PhD Thesis in Biomedical Sciences, Public discussion on 25th January 2024. Grant 45278 (IGC)
🟡 Scientific Publications	2 Articles in Q1	Garrine et al. European Journal of Clinical Microbiology and Infectious Diseases. (Q1) Doi: 10.1007/s10096-023-04580-2 Garrine et al. Frontiers in Microbiology (Q1). Doi: 10.3389/fmicb.2023.1208131

🟢 Scientific Meetings	2 Poster communications	Garrine et al. 1 oral communication at 6th CNMT (national); 1 poster at 33rd ECCMID (international); 1 poster at MicroBiotec2023 (national)
🔵 Neonatal sepsis in Maputo Central Hospital, Mozambique: associated factors, identification, and molecular characterization of aetiological agents	1 PhD Thesis initiated in 2023	LCoutinho. PhD in Biomedical Sciences. Grant CCVB-1E2 (CiênciaLP, FCT) (start: December 2023)
🟢 GHTM exploratory project (PI: LRodrigues; ongoing): Study of the activity of repurposed drugs against Neisseria gonorrhoeae: targeting membrane transport and energy metabolism.	1 MSc dissertation in Medical Microbiology 1 paper	3 MSc Thesis completed in 2023; 2 MSc Thesis completed in 2024 2 poster communications (1 international; 1 national) 1 oral communication in national congress
🟢 Study of efflux-based resistance mechanisms in N. gonorrhoeae	4 MSc Thesis completed in 2023 1 article	1 MSc Thesis to be completed in 2024
🟢 Molecular detection of antibiotic resistance in Mycoplasma genitalium (w/ IHC)		1 MSc Thesis completed in 2023; 1 MSc Thesis initiated in 2023 2 poster communications (1 international; 1 national)
🟡 Genetic diversity and primary resistance to integrase inhibitors in human immunodeficiency virus type 1 (HIV-1) in Angola. (JP, w/ HIC)	1 MSc Thesis to be completed in 2023 1 review; 2 original articles	1 MSc dissertation in Medical Microbiology [to be submitted in the first quarter of 2024] 1 paper [to be prepared in 2024] 1 poster [Godinho, I. S.; Quitéria, R.; Yefimenko, L.; Pereira, F. M.; Piedade, J. Resistência primária aos inibidores da integrase no vírus da imunodeficiência humana tipo 1 (HIV-1) na província de Benguela (Angola). 6.º Congresso Nacional de Medicina Tropical, Lisboa (Portugal), 20-21 de Abril de 2023]

Molecular epidemiology of HBV in Angola: drug resistance and immune escape mutants (JP, w/ IHC)	1 article Q1 1 MSc dissertation in Tropical Health [Marques, M.R. (2023). Contributo para a caracterização molecular do vírus da hepatite B (HBV) em circulação em duas províncias de Angola. Mestrado em Saúde Tropical, IHMT]	1 MSc Thesis completed in 2023; 1 MSc Thesis initiated in 2023 2 poster communications
CCI - Diagnostics (DG):		
Research Project: Diagnosis of sexually transmitted diseases (w/ IHC)	3 articles (ongoing) 2 MSc Thesis completed in 2023 2 Oral/poster presentation + article At least 1 new MSc student and 1 PhD student	*(No details provided)*
Research Project: Development and application of electrochemical biosensors for the rapid detection of SNPs associated with drug-resistant tuberculosis and malaria (Collaboration with The Universitat Rovira i Virgili, Spain and LSHTM, UK)	1 article Q1 within CCI D – 22/23 1 Training period in Universitat Rovira i Virgili 1 international project submitted in 2023	
SARS Cov2 serological survey analysis	1 article Q1, 1 poster (new outcome)	Seabra SG, et al. Serological screening in a large-scale municipal survey in Cascais, Portugal, during the first waves of the COVID-19 pandemic: lessons for future pandemic preparedness efforts. Front Public Health. 2024;12. https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2024.1326125
Research Project: EUCARE: European Cohorts of Patients and Schools to Advance Response to Epidemics	1 article Q1, 1 article Q2, 1 poster (new outcome)	Bellerba F, +8, Abecasis A, +9. SARS-CoV-2 trends in Italy, Germany and Portugal and school opening during the period of Omicron variant dominance: A quasi experimental study in the EuCARE

		project. Int J Infect Dis. 2024 Jan;138:63-72. doi: 10.1016/j.ijid.2023.11.002.
	3 publications	Raimondi S, Gandini S, Rubio Quintanares GH, Abecasis A, +7, Pingarilho M, +8; Eucare WP4. European Cohorts of patients and schools to Advance Response to Epidemics (EuCARE): a cluster randomised interventional and observational study protocol to investigate the relationship between schools and SARS-CoV-2 infection. BMC Infect Dis. 2023 Jan 3;23(1):1. doi: 10.1186/s12879-022-07947-6. Erratum in: BMC Infect Dis. 2023 Feb 16;23(1):96. Joaquim L, Miranda MNS, Pimentel V, Martins MRO, Nhampossa T, Abecasis A, Pingarilho M. Retention in care and virological failure among adult HIV positive patients on first-line ART in Maputo-Mozambique. Viruses.2023 Gonçalves P, Barreto J, Santos M, Leal S, Marcelino J, Abecasis A, Palladino C, Taveira N. HIV-1 drug resistance and genetic diversity in people with HIV-1 in Cape Verde, 2019-2021. AIDS. 2024 Feb 13. doi: 10.1097/QAD.0000000000003866.
◯ Prevalence and genotypic analysis of rotavirus infection in Angola	1 PhD thesis ongoing 2 publications	1 PhD thesis (finished); Infecção pelo vírus da hepatite B Prevalência, factores de risco, perfil serológico e genotípico viral. Análise e caracterização de uma amostra da população a nível dos cuidados de saúde primários em Luanda Contribuição para a prevenção e controlo da hepatite viral B. Antónia Constantino. (Awaits appointment for doctoral exam)
◯ Molecular epidemiology of rotavirus A infection before and after vaccine introduction in Mozambique	1 PhD thesis ongoing	1 PhD thesis (finished); Molecular and clinical epidemiology of rotavirus group A, in children less than 5 years of age, pre and post

		vaccine introduction, in a matched case-control study in Manhiça district, Mozambique, 2008- 2019. Filomena Manjate. (Awaits appointment for doctoral exam) IMandomando, FManjate, +15, Celso Cunha, Martin M Nyaga (2023) Genomic characterization of rotavirus G3P[8] strain in vaccinated children, reveals possible reassortment events between human and animal strains in Manhiça District, Mozambique. Frontiers in Microbiology, 14:1193094. doi: 10.3389/fmicb.2023.1193094
◌ Detection and differentiation by Real-Time PCR of pathogenic and intermediate species of Leptospira (w/VBD)	1MSc dissertation (to be completed in 2024)	No details provided on the MSc dissertation
● Development of new tools for diagnosis and molecular characterization of opportunistic, emergent and re-emergent pathogens. ● Molecular epidemiology of infections by: *Pneumocystis jirovecii*, *Toxoplasma gondii* and intestinal parasites in humans ● *Cryptosporidium* and *Giardia* in commercial vegetables in the city of Maputo, Mozambique: is it a public health concern?" (IHMT/ Nova SBE/ Faculdade de Veterinária, Universidade Eduardo Mondlane-Moçambique) ● "Caracterização genética e fatores de risco para aquisição de infeção por *Cryptosporidium* spp. e *Giardia duodenalis* em crianças até 14 anos com sintomas gastrointestinais em Moçambique" (IHMT/ Instituto Nacional de Saúde-Moçambique) ● "Infeção por *Pnemocystis jirovecii* em doentes seropositivos para VIH e suspeita de tuberculose pulmonar na Guiné-Bissau"	3 articles (ongoing) 2 MSc Thesis completed in 2023 2 Oral/poster presentation	2 articles Fernando M.H. Cardoso; Alexandre Elias; Inês Pereira; Isabel Maurício; Olga Matos. Improved dsRNA isolation and purification method validated by viral dsRNA detection using novel primers in Saccharomyces cerevisiae. 2023 MethodsX. Oct 11:11:102435. doi: 10.1016/j.mex.2023.102435 Nuno Taveira; Inês Figueiredo; Rita Calado; Francisco Martin; Inês Bártolo; José M. Marcelino; Pedro Borrego; Fernando Cardoso; Helena Barroso. An HIV-1/HIV-2 Chimeric Envelope Glycoprotein Generates Binding and Neutralising Antibodies against HIV-1 and HIV-2 Isolates. International Journal of Molecular Sciences.. 2023 May 22;24(10):9077. doi: 10.3390/ijms24109077. 1 MSc Thesis completed in 2023: Danielle Cristina dos Santos Cosa. Desenvolvimento de anticorpos recombinantes anti-Schistosoma. (2023 2 MSc Thesis completed in 2023:

◌ PARASITOSES INTESTINAIS OPORTUNISTAS EM CRIANÇAS COM VIH/SIDA NAS UNIDADES SANITARIAS EM BENGUELA, ANGOLA 2023 ◌ Biocompatibility and antioxidant capabilities of the new nanomaterials with potential applications in several areas such as biomedicine, (bio)sensors, photocatalysis, optoelectronics, and bioimaging	2 Proceedings papers 8 Poster communications	José Júnior. Infeção por Pneumocystis jirovecii em doentes seropositivos para VIH e suspeita de tuberculose pulmonar na Guiné-Bissau. MSc Medical Parasitology (2023) Maria Paula Pinto. Estimativa da presença de parasitas intestinais na comunidade através de pesquisa em águas residuais e lamas. (2023) 2 Proceedings papers Patrícia D. Barata, Sónia Martins, Magda C. Semedo, Fernando M. H. Cardoso, Maria Luísa Lobo and José V. Prata. Carbon Dots from Porphyridium cruentum Microalgae by High-Efficient Hydrothermal Approaches: Biocompatibility and Antioxidant Capabilities † Inês Chouzende 1 , Alexandra I. Costa. Chem. Proc. 2023, 14, 4. https://doi.org/10.3390/ecsoc-27-16074 Inês Chouzende, Alexandra Isabel Costa, Patrícia David Barata, Sónia Martins, Magda Cardoso Semedo, Fernando Manuel Henriques Cardoso, Maria Luísa Lobo and José Virgílio Prata. Green Synthesis of Luminescent Carbon Nanomaterials from Porphyridium cruentum Microalgae. Med. Sci. Forum 2023, 23, 3. https://doi.org/10.3390/msf202302300 8 Poster communications
CCI - Global pathogen dispersion and population mobility (GPPM) ● Research Project WasteWaterVir - Integrating metavirome analysis of wastewaters into tools for surveillance of infectious diseases – GHTM internal funds		1 oral communication in national meeting (6º Congresso Nacional de Medicina Tropical); 3 posters in national meeting (2nd Egas Moniz One Health Symposium and Microbiotec23); 1 poster in international meeting (International Virus Bioinformatics Meeting 2023);

🟡 Research Project: Phylogeography, dispersion of HIV and resistance to antiretrovirals in Portugal, with a special focus on vulnerable populations (migrants and PALOPs). 🟡 Research Project: Project MARVEL: Minimizing the emergence and dissemination of HIV-1 drug resistance in PALOPs through an evidence-based portable high-throughput sequencing and computational approach. 🟢 Research Project EUCARE: European Cohorts of Patients and Schools to Advance Response to Epidemics		1 publication in preparation 1 Msc ongoing
New Research Projects planned for 2023/2024 within CCIs:		
CCI - Drug discovery & resistance (DDR) 🟡 Study of antimicrobial resistance and genotypes of M. genitalium (planned to be submitted to FCT 2023) (WITH CCI DDR) 🟢 Antibacterial drug resistance and biofilms in staphylococci	Start of at least 1 newly approved project At least 2 proposals submitted to GHTM´s internal call 2023 At least 4 national projects submitted (LRodrigues + DMachado + SSCosta + OMatos) At least 3 international projects submitted (LaCaixa, SS; ERC – AAb; EDCTP-AAb)	M. genitalium - To be submitted to FCT February 2024 Project DREBI - Exploring efflux inhibition to counteract antimicrobial resistance and biofilms in staphylococci (FCT, Ref. 2022.07931.PTDC). Start in January 2023 (PI: Sofia Santos Costa). Mapping the staphylococcal response towards biocides, a key step to AMR emergence. Submitted to 2023 Call GHTM Exploratory Projects (PI: Sofia Santos Costa).

🟢 Clarifying the role of efflux and mobilome on antimicrobial resistance and virulence in staphylococci (subm to Programme for Cooperation in Science between Portugal and Germany, 2023-24) 🔵 Evaluation of ColorFlux molecule as a detection tool for efflux phenotypes in S. aureus clinical isolates (IC, SSC, MV in collaboration with J.M. Bollá, Aix-Marseille Université, France)		Bilateral PT/Germany Mobility Project. Clarifying the role of efflux and mobilome on antimicrobial resistance and virulence in staphylococci (FCT/DAAD, Ref. 2022.15300.CBM, Cooperation in Science between Portugal and Germany) Scientific visit of Dr. Mrunal Patil (Aix-Marseille Université, France) (July 2023). Application of ColorFlux as a marker for efflux phenotypes in ~ 100 S. aureus clinical isolates.
CCI - Global pathogen dispersion and population mobility (GPPM) 🟢 Project application submitted to laCaixa in 2022: "Towards wastewater-based genomic surveillance of arboviruses in African resource-limited settings" (SS) 🟢 Project application submitted to ERC Consolidator "HINVEST: INtegrated HIV-1 genomic, clinical and Epidemiological Surveillance to inform evidence-based prevention and Treatment strategies: a global health perspective" 🟡 Research Project: Project ORIGHAMI: ORIGins of HIV infections Among Migrants 🟡 Research Project: Project RSV Pfizer 🔵 Submission of proposals to ISEL´s internal call 2023	Concluded (not funded). laCaixa: (wastewater) proposal selected to second phase (interview), not selected for funding. Concluded (not funded) 2 proposals submitted to ISEL´s internal call 2023 (partners), 1 funded (Mic4BioDot)	Mic4BioDot - Valorização da Biomassa de Microalgas cultivadas em Resíduos Alimentares na Produção Sustentável de Pontos de Carbono com Atividade Biológica; Concurso Anual para Projetos de Investigação, Desenvolvimento, Inovação e Criação Artística (IDI&CA) do Instituto Politécnico de Lisboa (8ª edição); Set. 2023 a Set. 2024 (FC/MLL)

		Asia4Food - aproveitamento de algas (subm to CONCURSO ANUAL PARA PROJETOS DE INVESTIGAÇÃO, DESENVOLVIMENTO, INOVAÇÃO & CRIAÇÃO ARTÍSTICA - EDIÇÃO DE 2023- Politécnico de Lisboa -Instituto Superior de Engenharia de Lisboa (ISEL) (FC/MLL
◯ Network of Proposers of the COST Action Proposal OC-2023-1-26801 " Developing Knowledge involved in diagnosis and control of human-diseases related to Pneumocystis ". (MLL)		
◯ **Host pathogen interactions**		
◯ *Galleria mellonella* Research Hub: a new in vivo model for pathogenicity studies, drug discovery and host-pathogen interaction	2 MSc Thesis initiated	TRodrigues. MSc Biomedical Sciences (ongoing, since Oct 2022)
	2 national/international project submitted	MBento. MSc Medical Microbiology (ongoing, since Oct 2023)
	2 communications	Research project submitted to IV International Zendal Awards 2023 – Human Healthcare Award (PI:Sofia Santos Costa) Research project submitted to Sustainability Award Alfredo da Silva 2023 (PI:Sofia Santos Costa) Rodrigues et al. 1 oral communication at 6th CNMT (national); 1 poster at MicroBiotec2023 (national)
◯ Characterization of biofilm formation of bacteria associated with the midgut of *Anopheles* mosquito vector of malaria (in collaboration with VBD)	2 MSc Thesis initiated	MMarques. MSc Medical Microbiology (December 2023) JAntunes. MSc in medical Parasitology (ongoing, since Oct 2022)
	2 communications	Marques et al. 1 oral communication at MicroBiotec2023 (national); 1 poster at iBB-IST/UL Workshop (national); 1 poster accepted at 34th ECCMID (international)

Respira CV - Airway colonization and microbiome in relation to asthma and atopy in children from Cabo Verde (w/ PPS, CTM and VBD, in collaboration with University of Cabo Verde – UniCV).	1 newly approved project	Respira CV - Airway colonization and microbiome in relation to asthma and atopy in children from Cabo Verde. We'Search – support for clinical research projects in the PALOPs, Ref[a] 296790, Fundação Calouste Gulbenkian – Fundação "La Caixa".
Congresses/Events:		
European Congress of Clinical Microbiology & Infectious Diseases 2023 - Copenhagen, Denmark on 15 - 18 April 2023.	At least: 1 invited oral communication on a NIH sponsored Gordon Conference 3 oral communications. 15 posters in international conferences 12 posters in national conferences	1 oral communication (Armada et al.), 5 posters (Neves et al., Garrine et al., Ferreira et al., Morais et al., Mendes et al.) 1 oral communication (Neves et al.), 2 posters (Marques et al., Serrano et al.) - Accepted 3 oral communications (Garrine et al., Rodrigues et al., Vítor et al.), 3 posters (Neves et al., Morais et al., Leal et al.)
Update on Sexually Transmitted Infections Course (pre-National Congress on Tropical Medicine 2023)		Update on STIs Course was cancelled due to low number of participants.
Gordon Research Conference - Multi-Drug Efflux Systems - Targeting the Mechanisms and Regulation of Transporters for Advancing Health During a Pandemic - March 26 - 31, 2023		
European Society of Mycobacteriology Meeting, ESM (2023 and 2024) – Tirana, Albania -25-28 June 2023 ISSSI (Int. Symp Staphylococci & Staph infections), 2024		
20th European HIV and Hepatitis, June 2023, Rome, Italy		Sebastião C, Jandondo D, Pimentel V, Vigário A, Vienga P, Sebastião J, Comandante F, Abecasis A, David Z, Vasconcelos J, Morais J.

		"Seroprevalence of Transfusion Transmissible Infections Among SARS-CoV-2 Exposure Blood Donors in Luanda, Angola", 20th European HIV and Hepatitis, June 2023, Rome, Italy Bellerba F, Bardeck N, Böhm M, Kaiser R, Tomezzoli E, Abecasis A, D'Ecclesiis O, Incardona F, Mommo C, Fanti I, Gabellone V, Vaglio G, Lopalco P, Pingarilho M, Alves I, Alves D, Rubio Quintanares G, Gandini S "Preliminary Results: of the Eucare School Studies and SARS-CoV-2 Trends in Italy and Germany and School Opening During the Omicron Variant" , 20th European HIV and Hepatitis, June 2023, Rome, Italy Pimentel V, Pingarilho M, Sebastião CS, Miranda M, Seabra S, Gonçalves F, Diogo I, Fernandes S, Gomes P, Abecasis A and Portuguese HIV-1 Resistance Study Group "Low prevalence of resistance mutations associated with integrase inhibitors by sanger and Next Generation Sequencing among HIV-1 patients followed up in Portugal" 20th European HIV and Hepatitis, June 2023, Rome, Italy Pingarilho M, Miranda MNS; Graça J; Pimentel V; Diogo I, Fernandes S, Mansinho K, Baptista T, Marques N, Aleixo MJ, Pacheco P, Caixeiro M, Poças J, Ascenção B, Diniz A, Serrado M, Faria D, Pinho R, Proença P, Ferreira J, Faria T, Gomes da Silva E, Teófilo R, Pinheiro S, Germano I, Simões J, Roxo F, Ivo MS, Correia de Abreu R, Neves I, Maltez F, Manata MJ, Costa O, Corte-Real R, Janeiro N, Gaião G, Cristino JM, Tavares R, Silva AR, Oliveira J, Saraiva da Cunha J, Mota V, Rodrigues F, Nunes S, Mouro M, Serrão R, Piñeiro C, Kock C, Monteiro F, Gonçalves MJ, Sarmento e Castro R, Ramos H, Simões D, Mendão L, Martins MRO, Gomes P, Abecasis A, on behalf of the BESTHOPE study group "Sociodemographic, clinical, and behavioral factors associated with STIs Among HIV-1 positive Migrants in Portugal: are there differences between sex?" 20th European HIV and Hepatitis, June 2023, Rome, Italy

🟢 International Virus Bioinformatics Meeting 2023 (ViBioM 2023), Valencia, Espanha on 24 – 26 Maio 2023.		Seabra SG, Nunes M, Silva A, Crespo T, Pimentel V, Pingarilho M, Libin P, Abecasis A, Parreira R; "Virome approach to pathogen surveillance of wastewaters"; International Virus Bioinformatics Meeting 2023 (ViBioM 2023), Valencia, Espanha (24 – 26 Maio 2023).
🟢 European Congress of Clinical Microbiology & Infectious Diseases 2023 - Copenhagen, Denmark on 15 - 18 April 2023		Oral presentation (Flash) - Carolina Silva,,Teresa Carreira, Mónica Franco, Maria Luísa Vieira, Ana Armada.. Antimicrobial mechanisms employed by macrophages exposed to pathogenic spirochetes responsible to Lyme borreliosis (ECCMID23) ePoster / Poster: - Ana Armada, Wilmer Fernnades, Teresa Carreira, Maria Luísa Vieira. Optimization and application of an indirect immunofluorescence test for the diagnosis of leptospirosis in conventional laboratories (ECCMID23)
🟢 6th National Congress on Tropical Medicine (April 2023)		Oral presentation - Mónica Franco, Maria Luisa Vieira, Ana Armada. Expressão Génica da Resposta do Stress Oxidativo em Macrófagos na Borreliose de Lyme // Oxidative Stress Response Gene Expression in Macrophages in Lyme Borreliosis 6th congress ihmt)
🟢 MICROBIOTEC 2023 – 7 and 8 December 2023 – Universidade da Beira Interior		Poster - Mónica Franco, Maria Luisa Vieira, Ana Armada. Macrophage's gene expression response to oxidative stress imposed by Lyme Borreliosis spirochetes (Microbiotec23) Poster - Ana Armada, Wilmer Fernnades, Teresa Carreira, Maria Luísa Vieira. Optimization and application of an indirect immunofluorescence test for the diagnosis of leptospirosis (Microbiotec 23) Poster - Ana Armada & Maria Luisa Vieira. The role of the Lyme Borreliosis Lab (IHMT) vs the Community: a casuistic assessment of the disease (2019-2023) Microbiotec23

Scientific Committee of the 16th International Workshop on Opportunistic Protists, Switzerland, 2023 (OM)		Antunes, B.G., Barata, P.D., Costa, A.I., Semedo, M.C., Martins, S., Cardoso, F.M.H., Prata, J.V. "Comparative Study of Tomato Waste Carbon Dots Bioactivity: Conventional Heating vs. Microwave Irradiation", I International Meeting Molecules4Life, Universidade de Trás-os-Montes e Alto Douro, 20-22 Setembro 2023, Vila Real, Portugal. Marçalo, A.R., Semedo, M.C., Martins, S., Barata, P.D., Costa, A.I., Cardoso, F.M.H., Reboredo, F.H. "Composition, nutritive value, and bioactivity of five edible algae sold in the Portuguese market", I International Meeting Molecules4Life, Universidade de Trás-os-Montes e Alto Douro, 20-22 Setembro 2023, Vila Real, Portugal. Chouzende, I., Costa, A.I., Barata, P.D., Martins, S., Semedo, M.C., Cardoso, F.M.H, Prata, J.V., "Green Synthesis of Luminescent Carbon Nanomaterials from Porphyridium cruentum Microalgae", I International Meeting Molecules4Life, Universidade de Trás-os-Montes e Alto Douro, 20-22 Setembro 2023, Vila Real, Portugal. Marçalo, A.R., Semedo, M.C., Martins, S., Barata, P.D., Costa, A.I., Cardoso, F.M.H., Reboredo, F.H., "Nutritional Profile and in vitro Biological Activities of Edible Algae from Various Origins Available in the Portuguese Market", XXVII Encontro Luso-Galego de Química, 22-24 Novembro 2023, Fundação Dr. António Cupertino de Miranda, Porto, Portugal. Chouzende, I.; Costa, A.I.; Barata, P.D.; Semedo, M.C.; Martins, S.; Cardoso, F.M.H., Lobo, M.L., Prata, J.V. "Síntese de Pontos de Carbono Fluorescentes assistida por Microondas a partir da Biomassa da Microalga Porphyridium cruentum", XXVII Encontro Luso-Galego de Química, 22-24 Novembro 2023, Fundação Dr. - - António Cupertino de Miranda, Porto, Portugal.

		Antunes, B.G., Barata, P.D., Costa, A.I., Semedo, M.C., Martins, S., Cardoso, F.M.H., Lobo, M.L., Prata, J.V., "Nanopontos de Carbono Fluorescentes Derivados de Desperdícios do Tomate: Avaliação da Citotoxicidade e Aplicação em Bioimagem", XXVII Encontro Luso-Galego de Química, 22-24 Novembro 2023, Fundação Dr. António Cupertino de Miranda, Porto, Portugal. Conduto, M.G., Barata, P.D., Costa, A.I., Semedo, M.C., Martins, S., Cardoso, F.M.H., Prata, J.V., "Valorização da Biomassa de Microalgas produzidas em Desperdícios Alimentares na Síntese de Pontos de Carbono Fluorescentes Bioactivos", XXVII Encontro Luso-Galego de Química, 22-24 Novembro 2023, Fundação Dr. António Cupertino de Miranda, Porto, Portugal. Antunes, B.G., Barata, P.D., Costa, A.I., Semedo, M.C., Martins, S., Cardoso, F.M.H., Prata, J.V, "Valorização de Desperdícios da Indústria do Tomate na Síntese de Nanomateriais de Carbono com Atividade Biológica", iFEQB - Fórum de Engenharia Química e Biológica, Instituto Superior de Engenharia de Lisboa, Instituto Politécnico de Lisboa, 16 a 19 de Maio de 2023, Lisboa, Portugal
Training:		
🟡 Development and application of electrochemical biosensors for the rapid detection of SNPs associated with drug-resistant tuberculosis and malaria (Collaboration with The Universitat Rovira i Virgili, Spain and LSHTM, UK)	3 training initiatives accomplished by the end of 2023	
🟢 Bioinformatics course planned: "Python Aplicado às Ciências Biomédicas"	At least 4 new PhD students enrolled in GHTM-THOP group by the end of 2024.	Python course: 8-12 May 2023 at IHMT; co-coordination SGS; 10 students
🔵 Exploring efflux inhibition to counteract antimicrobial resistance and biofilms in staphylococci	At least 3 other trainings initiatives	MAndrade. PhD in Biomedical Sciences. Grant BD/GHTM/DCB2022 (start: April 2023) – THOP

		MLeal. PhD in Biomedical Sciences. Grant 2023.02437.BD (start: Oct 2023) – THOP André Almeida (AAb) BCarvalho. BSc final project under the scope of DREBI project, Jan-July 2023 Mrunal Patil (Aix-Marseille Université, France). Application of ColorFlux as a marker for efflux phenotypes in S. aureus (July 2023). CGeraldes (training on efflux phenotypes detection in enterococci), Nov 2023
◍ Efflux mediated resistance in staphylococci and other bacteria		
Capacity building:		
● Consolidation of the G. mellonella Research Hub for in vivo model for pathogenicity studies and drug discovery at GHTM (within CCIs DDR and DG)	1 Article in Q1/Q2 2 Communications 1 Msc thesis	Garrine et al, Submitted to Scientific Reports (December 2023) 1 oral communication at 6th CNMT (Rodrigues et al.), 2 posters at MicroBiotec23 (Rodrigues et al., Garrine et al.) TRodrigues. MSc Biomedical Sciences (ongoing, since Oct 2022) MBento. MSc Medical Microbiology (ongoing, since Oct 2023)
● Collaborative projects w/ Angola and Mozambique on STIs and pre-natal care involving PhD students (w/ IHC).	1 project submitted	Contacts regarding prospective collaborations w/ national (FF-UL) and international (CISM, Mozambique) research teams.
● Organization and implementation of a Molecular Epidemiology Course in Angola for the CPLP countries –	September 2023. Endorsed by CPLP with the financial support of Fundação BAI. Will take place in April 2024.	

"Workshop de Evolução Microbiana e Epidemiologia Molecular de Doenças Infecciosas" (Academia BAI, Angola)		
🔴 Capacity building in SARS-CoV2 sequencing and molecular epidemiology in Cape-Verde- Joint-venture with Instituto Nacional de Saúde Dr. Ricardo Jorge. (postponed for summer2023)	Summer 2023 – Support GHTM and INSA – Portuguese Health Ministry	
🟢 Curso de atualização a médicos 'Resistências na coinfeção VIH/Hepatites (com APECS/GEPCOI)	Finalized.	*(No details provided)*
🟢 Curso Internacional de Especialização em Saúde Pública (Guiné-Bissau)	Finalized.	*(No details provided)*
🟡 Completion of assessment, depositing and incorporation of well characterized mycobacterial stains in GHTM BIOBANK (within CCIs DG and GPPM)	At least 10 well characterized M. tuberculosis strains deposited by the end of 2023	
🟡 Deposit on GHTM´s Biobank of reference strains on efflux-driven antimicrobial resistance	At least 4 well characterized bacterial strains deposited by the end of 2024 (S. aureus, E. coli, N. gonorrhoeae, A. baumanni)	~20 N. gonorrhoeae strains deposited
Other activities:		
🟢 Participation at IHMT-NOVA Open Day 🟢 Participation at other outreach activities at IHMT-NOVA	Participation of THOP members in at least 4 open science initiatives/year	Open science initiatives: Participation at IHMT-NOVA Open Day (May 2023) Organization of the school visit of Escola Secundária de Elvas to IHMT-NOVA under the scope of "Clubes Ciência Viva na Escola" (2023)

🟢 Organization of GHTM Session within several CCIs 🟡 5th GHTM Antimicrobial Resistance Awareness Day (2023) 🔵 Member of eCost Proposal Reference OC-2023-1-26935 Title: Leptospirosis One Health NetworK (submitted by Gustavo Monti, Wageningen University and Research, Netherlands 2023) 🔵 Lyme Borreliosis casuistic Lab (diagnostic) serie (2019-2023) [w/ VBD](Ana Armada, Luisa Vieira) 🔵 Seminário Internacional “One Health, One Ethics - Uma Saúde, Uma Ética”,2023, Dia Mundial da "Uma Só Saúde", na Fundação Calouste Gulbenkian (OM/MLL)	At least 4 GHTM sessions organized by THOP members	Organization of the school visit of Agrupamento de Escolas de Moura to IHMT-NOVA (2023) Noite dos Investigadores (2023) GHTM sessions organized by THOP members Microbicidal activity of macrophages exposed to pathogenic spirochetes Borrelia garinii and B. lusitaniae; and Leptospira spp [w/ VBD] Optimization and application of an indirect immunofluorescence test as an alternative to the microscopic agglutination test (reference test) for the diagnosis of leptospirosis [w/ VBD] Marta Kicia , Żaneta Zajączkowska and Maria Wesolowska (Department of Biology and Medical Parasitology, Wroclaw Medical University, Wroclaw, Poland) eCost result: April 2024

◌ Member of the panel of Experts invited to participate in the re-evaluation of a research project submitted and funded, in 2019, through the “call for proposal of the German Ministry of Education and Research (BMBF) "Development and establishment of contract research in Africa innovation systems" "BMBF Research Partner Groups for Alumni" in Africa, Bonn, Germany, 2023. (OM) ◌ OPUS - Open and Universal Science (start Jan 2024), EU funded project, Ref 101058471 (consortium coordinated by The Oceanic Platform of the Canary Islands (PLOCAN)		

RESEARCH GROUP – VECTOR-BORNE DISEASES (VBD)

The Strategic objective of VBD is the reinforcement of local and global capacity to control vector-borne diseases. Major research competences include molecular, genetic, and eco-epidemiological studies, mechanisms of drug and insecticide resistance, transmission and vector/host-pathogen interactions, host-pathogen microbiome, vector bioecology and control, and development of diagnostic and surveillance/control innovative methods.

ACTIVITIES	EXPECTED OUTCOMES	EVIDENCES
Research activities already ongoing in 2022/2023 with CCIs:		
CCI - Diagnostics (DG): 🟡 Rapid detection of Single Nucleotide Polymorphisms (SNPs) associated with drug-resistant malaria using electrochemical biosensors (GHTM Exploratory Project RESMALDETECT) – **WITH THOP and IHC**	🟡 Development of a prototype point-of-need tool on nanodiagnosis of drug-resistant malaria 🔴 1 publication / 🟢 1 oral/poster presentations / 🔴 collaboration with industry	3 poster presentations **Congress of Microbiology and Biotechnology 2023. 7-9 December 2023. Covilhã Portugal** Pinto et al.. Rapid detection of Single Nucleotide Polymorphisms associated with drug resistance in malaria parasites using isothermal amplification approach. **Congresso de Saúde Pública 2023 – Uma Nova Era. 15-16 June. Lisbon, Portugal.** Tavares et al. Rapid detecton of Single Nucleotide Polymorphisms (SNPs) associated with drug-resistant malaria using an isothermal amplification approach. **6º Congresso Nacional de Medicina Tropical. IHMT NOVA, Lisboa, Portugal. 20-21 abril 2023.**

		Tavares et al. Utilização de biosensores na deteção rápida de SNPs associados à resistência aos antimaláricos com base na estratégia de amplificação isotérmica.
🟡 Environmental DNA detection methods for trematodes (*Fasciola hepatica, Schistosoma*) and their intermediate hosts.	2 MSc theses; 2 publications (1MSc thesis completed; publications in preparation)	
🟡 Comparison of diagnostic methods for filariases in Angola, Lunda South.	1 MSc thesis; 1 publication (delayed and objectives changed. publication delayed)	
🟡 Evaluation of *Strongyloides venezuelensis* heterologous antigen in the immunodiagnosis of human strongyloidiasis: a study between Brazil, Peru and Portugal (partner UF Bahia-Brazil, FAPESP – Brazil)	To identify specific antigens for accurate immunodiagnosis of strongyloidiasis; 2 publications (funding delayed)	
🟢 Development of *Schistosoma mansoni* recombinant antibodies for serodiagnosis of human schistosomiasis	1 MSc thesis; 1 publication (submitted)	
🟢 Microbicidal activity of macrophages exposed to pathogenic spirochetes Borrelia garinii and B. lusitaniae; and Leptospira spp [with THOP]	MSc dissertation* + 1 oral/poster presentation	MSc dissertation + 1 oral presentation 6ªCNMT (IHMT); 1 oral presentation (Flash by Ana Armada)) +1 eposter ECCMID'23 Dinamarca + 1 poster Microbiotec' Dec'23
🟢 Optimization and application of an indirect immunofluorescence test as an alternative to the microscopic agglutination test (reference test) for the diagnosis of leptospirosis [with THOP]	1 MSc 2022-23: + oral*/poster presentation *accepted for eposter	MSc dissertation concluded (Wilmer Fernandes) + 1 eposter+1 poster ECCMID'23 Dinamarca + 1 poster Microbiotec' Dec'23.
🟢 Lyme Borreliosis casuistic Lab (diagnostic) series (2019-2023) [with THOP]	Oral/poster presentation	1 poster Microbiotec, Dec'23 - Lyme Borreliosis casuistic (2019-2023) – Microbiotec. Dec'23
🟢 Collaboration with the Paediatrics team of the D. Estefania Hospital (Lisbon) in a discussion of a clinical leptospirosis case (with support of leptospirosis Lab, 2023)	Oral/poster presentation	Poster presentation at the Congress of the European Society of Paediatric Infectious Diseases - Lisbon, May '23

🟢 Collaboration with the (cE3c) & CHANGE Centre, Faculty of Sciences of the University of Lisbon and CESAM (University of Aveiro) in research on landscape genetics, focused on the distribution of arthropod vectors (ticks) ectoparasites of small mammals	1 publication	e-Poster / Poster presentation at the Congress of the European Society of Paediatric Infectious Diseases (ESPID) - Lisbon, May '23.at the Congress of the European Society of Paediatric Infectious Diseases – Lisbon, Portugal.
CCI - Drug discovery & resistance (DDR) ***Drug discovery & resistance***		
🟡 Efficacy of synthetic compounds against *Babesia ovis*	Using *Babesia ovis* cell cultures we will test the efficacy of synthetic compounds on Babesia inhibition, in collaboration with both the University of Oporto and the National Research Institute for Agriculture, Food and Environment.	The assays are ongoing under a MSc to be concluded in 2024
Malaria pre-elimination in São Tomé and Príncipe: parasite population characterization	*(No details provided)*	*(No details provided)*
🟡 AMAZonian snake toxins: creatING value from bioresources CIRCNA/BRB/0281/2019	Ongoing MsC thesis of Bernardo Aguiar. Snake venoms as antimalarials. Mestrado em Parasitologia Médica IHMT-NOVA. Submitted papers: 1) Unlocking the potential of snake venom-based molecules against the malaria, Chagas disease, and leishmaniasis triad. 2) Disclosure of chloroquine bile salts as triple-stage antimalarial hits	New PhD thesis of Inês Morais with FCT Grant Refª 2023.03356.BD Almeida et al. "Unlocking the potential of snake venom-based molecules against the malaria, Chagas disease, and leishmaniasis triad". International Journal of Biological Macromolecules (2023): 124745-124745. http://dx.doi.org/10.1016/j.ijbiomac.2023.124745. Ferreira et al. "Enhanced Antimalarial Activity of Extracts of Artemisia annua L. Achieved with Aqueous Solutions of Salicylate Salts and Ionic Liquids". Chem & Bio Engineering (2024): https://doi.org/10.1021/cbe.3c00005.

		Filho et al. "Evaluation of the hydroalcoholic extract of Clarisia racemosa as an antiparasitic agent: an in vitro approach". 3 Biotech (2023): http://dx.doi.org/10.1007/s13205-023-03799-2. da Silva et al. "Facile Access to Structurally Diverse Antimalarial Indoles Using a One-Pot A3 Coupling and Domino Cyclization Approach". ChemMedChem (2023): http://dx.doi.org/10.1002/cmdc.202300264. da Silva et al. "Anti-malarial resistance in Mozambique: Absence of Plasmodium falciparum Kelch 13 (K13) propeller domain polymorphisms associated with resistance to artemisinins". Malaria Journal 22 1 (2023): http://dx.doi.org/10.1186/s12936-023-04589-0. Santos et al. "Synthesis, characterization, antioxidant and antiparasitic activities new naphthyl-thiazole derivatives". Experimental Parasitology, 248 (2023): 108498-108498. http://dx.doi.org/10.1016/j.exppara.2023.108498. Almeida et al. "Unlocking the potential of snake venom-based molecules against the malaria, Chagas disease, and leishmaniasis triad". International Journal of Biological Macromolecules (2023): 124745-124745. http://dx.doi.org/10.1016/j.ijbiomac.2023.124745. Filho et al. "In vitro evaluation of alkaline lignins as antiparasitic agents and their use as an excipient in the release of benznidazole". International Journal of Biological Macromolecules, 231 (2023): 123339-123339. http://dx.doi.org/10.1016/j.ijbiomac.2023.123339. da Silva et al. "In silico ADMET prediction, evaluation of cytotoxicity in mouse splenocytes and preliminary evaluation of in vitro antimalarial activity of 4-(4-chlorophenyl)thiazole compounds". Anais da Academia Brasileira de Ciências (2023): https://doi.org/10.1590/0001-3765202320230566.

🔴 Artificial intelligence approaches to accelerate antimalarial drug discovery for prophylaxis and transmission-blocking (to submit FCT)	To develop new technologies artificial intelligence-driven in silico drug screening for accelerating the discovery of lead candidates to promising multi-stage antimalarials.	Not submitted due to the absence of an IC&DT project call by FCT
🟢 Future antimalarials: towards multi-stage compounds for treatment and transmission-blocking (to be submit GHTM)	To proceed to hit-to-lead optimization of promising compounds already discovered for us, further analysing their activity against sexual blood stages through in vivo efficacy experiments.	Ongoing
🟢 The anthelmintic activity of Guinea-Bissau ethanolic extracts using *Caenorhabditis elegans* as a model	1 MSc thesis (concluded); 1 publication (in preparation)	
🟢 Study of medicinal plants used for the treatment of schistosomiasis in the Huambo region Angola (Partner: Faculdade Farmácia, ULisboa)	1 PhD (on going); 3 publications (1 published, 2 in preparation)	Valente et al. Vernonia britteniana Root Phytochemical Studies, In Vitro Cercaricidal Activity on the Larval Stage of Schistosoma mansoni and Antioxidant Activities. Plants 2023, 12, 1788. https://doi.org/10.3390/plants12091788
🟢 Potential of spirooxadiazoline Oxindoles as anti-Leishmania chemotypes (with Faculdade Farmácia, UL)	1 MSc thesis on-going; work to be presented in 2024	
🟢 Adjusting CRISPR/Cas9 protein tagging in Leishmania infantum Portuguese strains (with WCIP, Glasgow University, UK)		
Insecticide discovery & resistance		
🟡 Levels and mechanisms of insecticide resistance in the malaria vector *Anopheles coluzzii* of São Tomé and Príncipe (STP)	IR surveys will be conducted on the island of Principe in February 2024 (wet season) and August 2024 (dry season) to conclude this work.	This work has been completed for São Tomé island, with dry and wet season surveys in two localities showing high levels of pyrethroid resistance and presence of *kdr-w* mutations and frequencies >10%.
Host/Vector – Pathogen interactions and Microbiome		

🟢 Microbiome of *Aedes albopictus* from different field populations	On-going work to be published in 2023	Submitted for publication at Journal of Medical Entomology Melo et al. Characterization of the microbiome of Aedes albopictus populations in different habitats from Spain and São Tomé: implications for vector control.
🟡 *Ixodes ricinus* microbiome	Under a PhD work plan, we aim to continue the study on the Ixodes ricinus microbiome (ms in preparation)	
🟢 Tick cell – hazara virus interaction	On going	
🟢 DogIPM | Immune precision medicine as a new opportunity to control canine trypanosomatid diseases	Ongoing Two fellowships (undergraduate and post-doc) One PhD finalized and two ongoing PhDs One ongoing MSc One published paper Five presentations in scientific meetings	
🟢 Tackling trypanosomiasis cardiomyopathy with microRNAs and tridimensional (3D) models -miT3D (FCT – PeX)	Ongoing One fellowship (MSc) Two ongoing MSc thesis Four presentations in national scientific meetings Project website available at: http://mit3d.ihmt.unl.pt/	
🟢 Achieving new frontiers through trypanosomatid exosomes (EXOTRYPANO)	Project implementation Concluded project 1 published paper Five presentations in scientific meetings One international webinar	

🟢 Vaccine for prevention and treatment of Trypanosoma cruzi infection (CRUZIVAX)	Ongoing Two concluded MSc thesis One ongoing MSc thesis	
🔴 Study of bacteriome in flies with impact on human, animal and environmental health (to submit to GHTM)	Webinar implementation Ongoing	
Beyond vectorial diseases:		
🟢 Prevalence and risk factors of *Strongyloides stercoralis* in an immigrant population, Portugal.	1 MSc thesis (concluded); 1 publication (in preparation)	
🟡 Prevalence and risk factors for soil transmitted helminths in Guinea-Bissau.	1 MSc thesis (on going); 1 publication (in preparation)	
🟡 Detection of intestinal parasites in water treatment affluents and muds and in vegetables and fruit consumed raw.	1 MSc thesis; 1 publication (in preparation – water treatment) 🔴 1 MSc thesis and 1 publication cancelled (in fruit and vegetables)	
🟡 Risk of environmental contamination by *Toxocara* spp in the Praia city, Santiago Island – Cape Verde.	1 MSc thesis (on going); 1 publication (in preparation)	
🟡 Identification and distribution of intermediate host snails in the island of Santiago - Cape Verde.	1 MSc thesis (on going); 1 publication (in preparation)	
🟡 Intestinal parasites in children from two communities in the municipality of Seixal.	1 MSc thesis (on going); 1 publication (in preparation)	

◯ Intestinal parasites and nutrition in Guinea-Bissau – NEW	1 MSc thesis	
CCI - Public health information (PHI): ● MosquitoWeb (NOVA Health)	Continuing collaboration with the NEWSERA project (newsera2020.eu/). Publications in social media ● Integration of existing dataset on GBIF and continuous update (gbif.org)	Lopes LF. Invited participant at "NEWSERA Final Conference", of the European project Newera, representing MosquitoWeb, 28-30 March, Belgium, Brussels. Sousa C.A.. Invited participant at Sessão Plenária: Envolver, 4º Encontro Nacional de Ciência Cidadã, 27-28 November, Coimbra. Sousa C.A., Novo M.T., Lopes L.F. MosquitoWeb – First report of Aedes albopictus in Lisbon (Poster), 2nd Egas Moniz One Health Symposium, 3 November, Lisbon. **190 citizens submissions to MosquitoWeb** 7 Facebook, 4 Instagram and 6 Twiters publications Broadcasting by Rádio Belém of the podcasts" Cuidado a ter com os mosquitos (14 Janeiro)" and "A Entomologia" (11 Fevereiro) Portugal de olho nos mosquitos Aedes, que transmitem doenças infecciosas | Mosquitos | PÚBLICO (publico.pt) Corpo clínico - T11 E010_02 - Marco António (saudemais.tv) O calor trouxe-nos mais mosquitos - Ciência & Saúde - SÁBADO (sabado.pt) Os Aedes albopictus são inteligentes "e exploram os comportamentos humanos": autoridades monitorizam mosquito da dengue e zika em Portugal (expresso.pt)

		Mosquito-tigre-asiático: Ajude os cientistas a saberem em que locais se encontra - Wilder Encontrou um mosquito? Ajude a ciência: basta fotografá-lo ou enviar por correio | Saúde | PÚBLICO (publico.pt) Instituto em Portugal pede à população que ajude a localizar mosquito invasor — Plataforma Media Instituto de Medicina Tropical pede à população que ajude a localizar mosquito invasor DN-sem link O Impacto das Alterações Climáticas nas Pragas de Insetos Revista Sábado – sem link. Noticiário: Ajude o IHMT a saberem em que locais se encontra o Mosquito-tigre-asiático. TSF-sem link Processo que ficou pendente devido a dificuldade de identificação da Instituição que conferiria a autorização (IHMT ou UNL). Será retomado em 2024.
◯ Questionnaire on knowledge, perceptions and practices of students and health professionals regarding leishmaniasis [within the PhD project of Rafael Rocha]		https://www.veterinaria-atual.pt/na-pratica/estudo-leishmaniose/
CCI - Global pathogen dispersion and population mobility (GPPM) ◯ Epidemiology of tick-transmitted pathogens	Epidemiologic assays will be performed in order to identify pathogens in tick samples collected in Brazil and in Poland.	Szczotko et al. Neoehrlichia mikurensis-A New Emerging Tick-Borne Pathogen in North-Eastern Poland? Pathogens. 2023 12;12(2):307. doi: 10.3390/pathogens12020307.

	We will participate in a working group of 22 European universities aiming to generate a questionnaire "to study the general knowledge and the degree of awareness of European citizens regarding ticks and tick-borne diseases".	
🟡 Dispersal and establishment of mosquito's species into new regions	On-going work to be published in 2023 under the scope of two PhD projects.	
🟡 "CLIMOS: Climate monitoring and decision support framework for sand fly-borne diseases detection and mitigation with COST-benefit and climate-policy measures". Funding: Horizon Europe, Cluster Health (HE-HORIZON-HLTH-2021-ENVHLTH-02- 101057690) and United Kingdom Research and Innovation.	First year of sand fly and canine field work for the detection of sand fly-borne pathogens	
🟢 Prevalence of asymptomatic leishmaniasis in blood donors from mainland Portugal (PhD thesis: Rafael Rocha; SFRH/BD/GHTM/DTM2020)	Determination of *Leishmania* seroprevalence in blood donors from mainland Portugal and associated risk factors	Rocha et al. (2023). Prevalence of asymptomatic Leishmania infection and Knowledge, Perceptions and Practices in blood donors in mainland Portugal. Parasites & Vectors, 16:357. DOI:10.1186/s13071-023-05980-1
🟢 Morphological and molecular characterization of mosquitoes from West African countries, Guinea-Bissau and Cameroon, and potential vectors of arboviruses and avian malaria.	Update of culicid fauna of Guinea-Bissau and Cameroon, and biodiversity characterization, with finding of potential vectors of arboviruses or avian malaria.	Study of of mosquitoes from Guinea-Bissau - Morphological characterization concluded, Molecular characterization still ongoing; MSc student from G-B, with difficulties in the development of laboratory work Kowo et al. (2023). Descriptions of a new Aedes species and subspecies of the subgenus Aedimorphus, from southwest Cameroon and updated key for the species of the Domesticus group. African Entomology, 2023 Jul. 21;31. Available from: https://www.africanentomology.com/article/view/15181

🟢 Analysis of the diversity of hematophagous arthropods in Spain (in collaboration with Daniel Bravo-Barriga and Eva Frontera/FacMedVet, Univ Estremadura, Spain)(SDG: 3-Good Health and Well-Being).	Characterization of new arthropod species and analysis of their diversity and dispersal	Ongoing collaboration. At the moment a total of 14511 mosquitoes, 103 simulids and 3 phlebotomes were analyzed, giving a total of 14617 specimens. The three species most commonly found, which accounted for 94.46% of the total, were Aedes caspius-68.51%-with 10014 specimens, of which 9833 were females, 8 were fed females and 173 were males; Culex pipiens-15.49%-with 2260 specimens, of which 2176 are females, 34 are fed females and 50 are males; and Culex theileri-10.49%-with 1533 specimens, of which 1478 are females, 2 are fed females, 52 are males and 1 is a semi-pregnant female with blood remaining. Two Coquillettidia were analyzed, from the Obando locality, which have already been confirmed morphologically but not yet molecularly. Bravo-Barriga et al. 2023. Shedding light on the controversial taxonomic status of Culicoides jamaicensis and Culicoides paolae (Diptera: Ceratopogonidae): an overseas trip among continentes. J Med Entomol. Sep 12;60(5):944-954. doi: 10.1093/jme/tjad062.
🟢 Screening of potential zoonotic pathogens in mosquitoes and other arthropods in Spain (in collaboration with Ignacio Ruiz-Arrondo/Center for Biomedical Research of La Rioja, Logroño, Spain/Center of Rickettsiosis and arthropod-borne diseases, Univ Estremadura, Spain)(SDG: 3-Good Health and Well-Being).	Detection of viruses in hematophagous arthropods, including bona fide arboviruses and insect-specific	Ongoing work. The first screening carried out last year did not reveal the presence of Insect Specific orthoflaviviruses in mosquitoes from northern Spain.
🟢 Sequencing, genetic characterization and analysis of the spatiotemporal dispersion of serotype 3 dengue viruses circulating in 2022 in the Democratic Republic of São Tomé and Príncipe (SDG: 3- Good Health and Well-being; 4-Quality Education).	Identification of the origin of the 2022 outbreak and reconstitution of the spaciotemporal dispersal of identified DENV-3. Involves the complete sequencing of two viral genomes and the partial sequencing of 4 others.	The study is ongoing. New results on this subject were published recently. We decided to check the results in question and the calculations required are still ongoing. A publication will be prepared soon.
CCI - Fair research partnerships (FRP):		

🟡 SUBFAM protocol: Submicroscopic *Plasmodium falciparum* infections in Guinea-Bissau: a barrier to eliminate malaria? (with Bandim Health Project, Guinea-Bissau) – ALSO WITHIN CCI GPPM 🔵 *Plasmodium falciparum* population structure in Angola, using whole genome sequence data from field isolates (with INIS Angola, Univ Maryland) - – ALSO WITHIN CCI GPPM	ongoing PhD thesis of a local student 2 publications	Oral presentations 16th International Conference on Molecular Epidemiology and Evolutionary Genetics of Infectious Diseases (MEEGID XVI). 14-17 November 2023. Dresden, Germany. Silva et al. The importance of the genomic analysis of host and pathogens for malaria control and elimination. Tavares et al. Plasmodium falciparum population structure in southwestern Africa, using whole genome sequence data: Initial genome-wide sequence data from Angola. 2023 Annual Meeting of American Society of Tropical Medicine and Hygiene. 18-22 October 2023. Chicago, IL, USA Tavares et al. Plasmodium falciparum population structure in southwestern Africa, using whole genome sequence data: Initial genome-wide sequence data from Angola.
New Research Projects planned for 2023/2024 with CCIs:		
CCI - Diagnostics (DG): 🔴 Proposal submission to FCT (or other) on the point-of-need nanodiagnosis of drug-resistant malaria	Not submitted (no FCT calls)	
CCI - Drug discovery & resistance (DDR) ***Drug discovery & resistance*** ***Insecticide discovery & resistance***		

🟢 INOVEC - Research & InNOvation Partnership for enhancing the surveillance and control of mosquito VECtors of emerging arboviruses. RISE Program /EC	Implementation of WP4 (advanced training and education). Task leaders in WP3 (social sciences) and WP4.	WP4 was successfully implemented, with activities carried out in two of the three tasks of WP4 in line with the Project's calendar Lopes LF- Secondment in Barcelona/Blanés to work in tasks WP1.3 and WP3.1. Activities related with coordination of WP3.1, preparation of first milestone to be delivered in 2024 and preparation of field trials in Tanzania and Burkina Faso. 8 october – 10 november 2023, Spain, Barcelona.
🔴 Vector competence studies in the framework of the University of California Malaria Initiative.	Vector competence analysis of *Anopheles coluzzii* from São Tomé and Príncipe to *Plasmodium falciparum*.	Due to difficulties in establishing the standard membrane feeding assay, namely during the phase of gametocyte production, this activity was suspended.
🔴 Study of microorganisms with medical/veterinary relevance in flies (Order Diptera, Suborrder Brachyera (to submit in 2023)		Submitted a project to the GHTM call, with the title "Fly microbiome (FlyMic) - One health snapshot of flies' bacterial communities in the era of climate changes". Not approved. A revised version will be submitted to the FCT call (2024).
🔴 The study of insects of biomedical importance in Portugal, from Portuguese entomological collections and online databases (to submit in 2023)		
Host/Vector – Pathogen interactions and Microbiome		
🟡 BabRed: A toolbox to decipher the cross-talk between *Babesia ovis* and the host cell	🟢 1) Generation of a high-quality annotated *B. ovis* genome, providing a deep genetic insight of the parasite, supporting future basic and applied studies, ultimately representing an invaluable asset for the scientific community focused in vector borne diseases.	Genome is sequenced and data is being deposited at NCBI. Annotation is ongoing
	🔴 2) Identification of key proteins for *B. ovis* invasion and multiplication in the erythrocyte. Here a catalogue of differentially represented proteins during *Babesia* asexual stage will be	This aim was substituted with: Evaluation of suitable promotors for B. ovis and generation of a RFP expressing (transgenic) B. ovis line . (ongoing)

	obtained, representing potential targets for downstream studies.	
🟡 Mechanisms of the protective effect of pyruvate kinase deficiency against malaria		Carvalho M, Medeiros MM, Morais I, Lopes CS, Balau A, Santos NC, Carvalho FA, Arez AP 2023. 2,3-Diphosphoglycerate and the Protective Effect of Pyruvate Kinase Deficiency against Malaria Infection—Exploring the Role of the Red Blood Cell Membrane. International Journal of Molecular Sciences, 24, 1336. doi:10.3390/ijms24021336 Balau et al. Differential Gene Expression of Malaria Parasite in Response to Red Blood Cell-Specific Glycolytic Intermediate 2,3-Diphosphoglycerate (2,3-DPG). Int J Mol Sci. 2023. 24(23):16869. doi: 10.3390/ijms242316869. Congress of Microbiology and Biotechnology 2023. 7-9 December 2023. Covilhã Portugal – oral presentation. Balau et al. Unveiling the Protective Mechanisms of Pyruvate Kinase Deficiency against Malaria: Transforming Vulnerability into Resilience.
🔴 Exploring the mechanisms of the protective effect of pyruvate kinase deficiency against malaria – submitted to La Caixa (partners IHC GHTM, iMM and IST) **– not approved**		
🟡 Collaboration with AKU, Pakistan		
🔴 Participation on proposal for an International Centers of Excellence for Malaria Research (National Institute of Allergy and Infectious Diseases (NIAID)) https://grants.nih.gov/grants/guide/rfa-files/RFA-AI-22-067.html	Not submitted	
🟢 Erasmus+ Visit to AKU	Participation on the Malaria Elimination Consortium- (GLIDE-AKU PROJECT)	

🟢 Activities on the project "Evaluation of 3-(N-acetyl-n-butyl) Aminopropionic Acid Ethyl Ester as a Spatial Repellent for Malaria Control in Mozambique." Fundação Belmiro de Azevedo - REPELMALARIA-MOVAM (2021-2023). ClinicalTrials.gov ID: NCT04419766 🟢 Organization of WANETAM steering committee meeting 4 – 5 May 2023	AKU Board of Trustee meeting, June 2nd 2023; Lisbon Participation in the Mozambique PNCM annual meeting to present project results Project evaluation activities in Mozambique Participating in the PAMCA – PanAfrican mosquito control association	
CCI - Global pathogen dispersion and population mobility (GPPM) 🟢 Variação individual no risco de malária: causas e consequências em populações amazônicas – submitted to FAPESP by IHC - **approved** 🔴 Participation on proposal for an International Centers of Excellence for Malaria Research (National Institute of Allergy and Infectious Diseases (NIAID)) https://grants.nih.gov/grants/guide/rfa-files/RFA-AI-22-067.html – Proponent Univ of Maryland; Partners VBD, IHC and PPS, Angola, São Tomé Príncipe, Equatorial Guinea – **not approved** 🟡 2022.01349.PTDC - The Alqueva reservoir, climate change and migrant birds: a dangerous liaison for emerging snail borne diseases?	1 MSc thesis (cancelled); 2 publications (1 preparation)	Corder et al. 2023. Individual variation in Plasmodium vivax malaria risk: Are repeatedly infected people just unlucky? PLoS Negl Trop Dis, 17:e0011020. doi: 10.1371/journal.pntd.0011020.
Congresses//Events:		

🟡 15th International Symposium on Ticks and Tick-borne Diseases (**postponed)**		
🟢 Kick-off meeting of INOVEC		Lopes et al. KICK-OFF MEETING of the “INOVEC - A research and Innovation Partnership for enhancing the surveillance and control of mosquito Vector of emerging arboviruses" project - 15-16 February, France, Montpellier.
🟢 Final AIM-COST meeting		Lopes et al. 1st Symposium on Research & Innovation for the control of vectors of emerging arboviruses - 14 February, France, Montpellier. Pereira et al. One Health snapshot of flies’ bacterial communities in an era of Global Changes (Poster), 2nd Egas Moniz One Health Symposium, 3 November, Lisbon.
🟢 17th CVBD® world forum symposium		Rocha et al (2023). Prevalence of asymptomatic Leishmania infection and Knowledge, Perceptions and Practices in blood donors in mainland Portugal. 17th Symposium of the CVBD World Forum. 24-25 setembro, Lisboa, Portugal. Rocha et al (2023). Knowledge, perceptions and practices of health students and professionals regarding leishmaniasis in Portugal – a cross-sectional study. 17th Symposium of the CVBD World Forum. 24-25 setembro, Lisboa, Portugal.
🟢 European congress of Veterinary Parasitology		Maia et al. (2023). Providing a better knowledge and comprehension of climate and environmental drivers of sand fly-borne diseases – the CLIMOS project. European Veterinary Parasitology College Conference, Paris 2023. Last 20 years in Veterinary Parasitology: trends and future. 29-30 junho, Paris, França. P23. Livro de resumos p.82-83.

◌ XII European Congress of Entomology		Bongiorno et al. (2023). CLIMOS PROJECT - In-depth study for knowledge and comprehension of climate and environmental drivers of sand fly borne diseases. XII European Congress of Entomology. 16-20 outubro, Creta, Grécia. Livro de resumos. OC200.
◌ Annual Meeting for the Australian Society for Parasitology		Nguyen et al. (2023). A Nanopore sequencing-based tool to explore the genetic diversity of Leishmania species in animals, humans and sand flies in endemic areas. Annual Meeting for the Australian Society for Parasitology. 5-8 setembro, Darwin, Australia. Livro de resumos, p. 51.
◌ 29th International Conference of the World Association for the Advancement of Veterinary Parasitology		Berriatua et al. (2023). Providing Better Understanding of Climate and Environmental Drivers of Sand Fly Borne Diseases – The Climos Project. 29th International Conference of the World Association for the Advancement of Veterinary Parasitology. 20-24 agosto, Chenai, India. Livro de resumos. OA 19.02
◌ 10º Encontro de Formação da Ordem dos Médicos Veterinários.		Pereira et al. (2023). Primeiro registo da deteção molecular de Leishmania major e de híbridos de Leishmania major/Leishmania donovani sensu lato em gatos na Europa. 10º Encontro de Formação da Ordem dos Médicos Veterinários. 14-16 abril, Lisboa, Portugal. Livro de resumos p.349.
● 1 oral/poster presentation at XLVIII Annual Meeting of the Portuguese Society for Immunology [XLVIII Annual Meeting of the Portuguese Society for Immunology (SPI'48), Aveiro, Portugal, 29-31 March 2023		Poster - Exploiting the immunomodulatory potential of Leishmania extracellular vesicles
● XLVII Annual Meeting of the Brazilian Society of Immunology, in Ouro Preto - MG, from October 02nd - 06th, 2023		Poster- Analysis of the immunomodulatory activity in different lineages of macrophages by natural and synthetic leishmanicidal compounds

🟢 2nd meeting of the Portuguese Network on Extracellular Vesicles, 2023, NOVA Medical School, Lisbon, Portugal, 22nd and 23rd June		Oral presentation -Leishmania infantum extracellular vesicles manipulate dendritic cell -T lymphocyte communication Poster - Extracellular vesicles can transport "SOS" signals to naïve cells
🟢 XXXIVth European Association of Veterinary Anatomists (EAVA) Congress, 2023, The Norwegian University of Life Sciences, Oslo, Norway, July 25th - 29th 1		Poster - In vitro differentiation of dendritic cells from peripheral blood monocytes in the context of canine leishmaniosis Poster - A glance into Leishmania infection Poster - Evolutionary analyses: Phylogeny as a possible way to understand the trypanosomatid's main immune system scape mechanisms
🟢 International meeting of *Portuguese* Association for Evolutionary Biology (ENBE), Lisbon, Portugal, 18-19th December 2023		Poster - Immunomodulatory effect of extracellular vesicles from Trypanosoma cruzi: an example of parasite-host co-evolution Poster -Transcriptomics and Immunoinformatics approach: Unveil Leishmania sp.-host interaction mechanism
🟢 2nd Egas Moniz One Health Symposium, November 3rd, 2023, Caparica, Portugal		Poster - One health approach to tackle Chagas disease: cardiac explant culture Poster -Detection of canine vector-borne Disease agents in Galgo Español used as hunting dogs in Alentejo, Portugal
🟢 AL4AnimalS - Emergent Infectious Diseases and Zoonosis - Big Data, 29-20th November 2023, Lisbon, Portugal		Oral presentation - *Encephalitozoon cuniculi* seroprevalence and analytical trends in the population of pet rabbits attending FMV-ULsboa Veterinary Teaching Hospital

🟢 Pre-congress event: Workshop "Women in Tropical Health" linked to the Congress in Tropical Medicine (IHMT NOVA) – **with PPS and THOP** 🟢 33rd ECCMID -15-18 April 2023 Copenhagen, Denmark 🔵 6th National Congress of Tropical Medicine and Sustainable Development, 20 – 21 April 2023, Lisbon, Portugal (with THOP) 🔵 41st Annual Meeting of the European Society for Paediatric Infectious Diseases, 8 -12 May 2023, Lisbon, Portugal 🔵 Microbiotec'23 – Covilhã, 7- 9 Dec'23 (with THOP)		Oral presentation: Silva et al. Antimicrobial mechanisms employed by macrophages exposed to pathogenic spirochetes responsible to Lyme borreliosis Poster: Armada et al. Optimization and application of an indirect immunofluorescence test for the diagnosis of leptospirosis in conventional laboratories Oral presentation – Franco et al. Expressão Génica da Resposta do Stress Oxidativo em Macrófagos na Borreliose de Lyme // Oxidative Stress Response Gene Expression in Macrophages in Lyme Borreliosis e-Poster / Poster – Vaz et al. A case of Leptospirosis in a child with unusual clinical manifestation Poster – Franco et al. Macrophage's gene expression response to oxidative stress imposed by Lyme Borreliosis spirochetes Poster – Armada et al. Optimization and application of an indirect immunofluorescence test for the diagnosis of leptospirosis Poster - Armada & Vieira. The role of the Lyme Borreliosis Lab (IHMT) vs the Community: a casuistic assessment of the disease (2019-2023)
Publications:		

🟢 1 Publication under a special issue on “Tick classic papers” 🟡 1 publication on tick and parasite interactions 🟡 2 publications on tick vaccine development 🟢 2 publications on tick-parasite epidemiology 🔴 1 publication on Babesia sp. inhibition assays		Antunes & Domingos. Tick Vaccines and Concealed versus Exposed Antigens. Pathogens. 2023;12(3):374. doi: 10.3390/pathogens12030374. Rodríguez-Mallon et al. Efficacy of the Vaccine Candidate Based on the P0 Peptide against Dermacentor nitens and Ixodes ricinus Ticks. Pathogens. 2023;12(11):1365. doi:10.3390/pathogens12111365. Szczotko et al. Neoehrlichia mikurensis-A New Emerging Tick-Borne Pathogen in North-Eastern Poland? Pathogens. 2023 12;12(2):307. doi: 10.3390/pathogens12020307. Giglioti et al. Detection and quantification of Babesia bovis and Babesia bigemina using different target genes. Res Vet Sci. 2024 Mar:168:105122.doi: 10.1016/j.rvsc.2023.105122. Epub 2023 Dec 26. Contreras et al. Antibody isotype epitope mapping of SARS-CoV-2 Spike RBD protein: Targets for COVID-19 symptomatology and disease control. Eur J Immunol. 2023, 53(4):e2250206. doi: 10.1002/eji.202250206.
🟢 1 publication on the effect of the compound 2,3-diphosphoglycerate (2,3-DPG) on the *Plasmodium falciparum* development – transcriptomics analysis. 🟡 1 publication on the influence of genetic variants of ICAM1 and CD36 on the phenotypic variation of sickle-cell disease and malaria in Angolan children 🟢 1 publication on the characterization of a cohort of Angolan children with sickle cell anemia medicated with hydroxyurea (published in 2024)		Balau et al. Differential Gene Expression of Malaria Parasite in Response to Red Blood Cell-Specific Glycolytic Intermediate 2,3-Diphosphoglycerate (2,3-DPG). Int J Mol Sci. 2023. 24(23):16869. doi: 10.3390/ijms242316869.

Correia & Lopes LF. 2023. Revisiting biodiversity and ecosystem functioning through the lens of complex adaptive systems. Diversity 15: 895 At least 4 research papers on sand fly-borne diseases		Rocha et al. (2023). Knowledge, perceptions and practices of health students and professionals regarding leishmaniasis in Portugal – a cross-sectional study. Parasites & Vectors, 16:381. DOI: 10.1186/s13071-023-05982-z Rocha et al. (2023). Prevalence of asymptomatic Leishmania infection and Knowledge, Perceptions and Practices in blood donors in mainland Portugal. Parasites & Vectors, 16:357. DOI:10.1186/s13071-023-05980-1 Maia et al. (2023). The estimated distribution of autochthonous leishmaniasis by Leishmania infantum in Europe in 2005-2020. PLoS Negl Trop Dis,17:e0011497. DOI:10.1371/journal.pntd.0011497 Ticha et al. (2023). Experimental feeding of Sergentomyia minuta on reptiles and mammals: comparison with Phlebotomus papatasi. Parasites & Vectors, 16:126. DOI: 10.1186/s13071-023-05758-5 Rocha et al (2023). A global perspective on non-autochthonous canine and feline Leishmania infection and leishmaniosis in the 21st century. Acta Tropica, 237:106710.
At least 3 research papers on malaria pre-elimination in São Tomé	*(No details provided)*	*(No details provided)*

🟡 4 publications on canine trypanosomatid diseases		Weber et al. Insights on Host-Parasite Immunomodulation Mediated by Extracellular Vesicles of Cutaneous Leishmania shawi and Leishmania guyanensis. Cells. 2023;12(8):1101. doi:10.3390/cells12081101
🟡 1 publication on Application a deep learning-driven protocol to identify multistage compounds with potential for malaria treatment	The first author is on maternity leave	
🟢 1 publication on Looking into 4-aminoquinolines as multistage antimalarials		Manuscript under review by the journal Cell Chem Bio
🟡 1 publication on Quinazolines as potential inhibitors of NIMA-related kinases of *Plasmodium falciparum*	Ongoing - Some experiments are pending	
🟡 1 publication on Development of PKG inhibitors as antimalarials	Delayed due to difficulties in obtaining the compound	
🟡 1 publication on Repositioning one approved antipsychotic drug (TZ) in chemosensitizing resistant parasites to chloroquine (CQ)	Ongoing - Some experiments are pending	
🟢 1 publication on Antimalarial and Cytotoxic Activity of Native Plants Used in Cabo Verde Traditional Medicine.		Published in the Plants (Basel)
🔵 1 publication on Identification of potential inhibitors of casein kinase 2 alpha of Plasmodium falciparum with potent in vitro activity		Published in the Antimicrob Agents Chemother
🔵 1 publication on Whole genome sequencing identifies novel mutations in malaria parasites resistant to artesunate (ATN) and to ATN + mefloquine combination		Manuscript under review by the journal Frontiers in Cellular and Infection Microbiology

🟢 1 publication on Mutation in the 26S proteasome regulatory subunit rpn2 gene in Plasmodium falciparum confers resistance to artemisinin		Manuscript under review by the journal Frontiers in Cellular and Infection Microbiology
🟢 1 publication on Polymorphisms in Toll-Like receptors genes and their associations with immunological parameters in Plasmodium vivax malaria in the Brazil-French Guiana Border		Published in the Journal Cytokine
🟡 Review on "Advances and challenges of Research article on "Detection of non-patent infection with Schistosoma haematobium in populations of Bulinus sp. as risk factor for urinary schistosomiasis in the province of Zambezia, Mozambique – in preparation		
🟢 Research article on "Total Phenolic, Triterpene, Tannin Content, Antioxidant Activity, Phytochemical Profile and in vitro Cercaricidal Activity of Aqueous and Hydroethanolic Extracts of Vernonia britteniana Root on Schistosoma mansoni Larval Stage". (https://doi.org/10.3390/plants12091788)		
🟡 Research article on "Evaluation of POC-CCA performance for diagnosis of schistosomiasis in Chókwè district Mozambique" – in preparation		
🟢 Levy et al. First Molecular Identification of *Fasciola gigantic* in Slaughtered Cattle in Cape Verde: Prevalence, Gross Pathological Lesions, Genetic Identification and Coprological Analysis. Pathogens. 2023 12(1):75. doi: 10.3390/pathogens12010075. (NEW)		
🟢 Hornemann et al. (2023). Compressed AFM-IR hyperspectral nanoimaging of single Leishmania parasites. 2022. ACS Omega (under review)		Kastner et al. 2023. Compressed AFM-IR hyperspectral nanoimaging. Measurement Science and Technology. 35, 015403.

🟡 Book Chapter under the History of Leishmaniasis (with FCT NOVA and Fundação Oswaldo Cruz,RJ) 🔴 4 publications on new drugs anti-*Leishmania* 🔵 Carrilho et al. 2023. Prevalence of Ectoparasites on Small Mammals Inhabiting an Agroforestry System of Western Portugal". *Comparative Parasitology* 90(1). http://dx.doi.org/10.1654/copa-d-21-00002.	Ongoing, to be published in 2024	
Training: **PhD Students** 🟢 Wilson Tavares. Plasmodium falciparum population structure in Angola, using whole genome sequence data from field isolates. Biomedical Sciences. IHMT NOVA. In collaboration with Univ. of Maryland. **Ongoing** 🟢 Ronise Silva. Low-density malaria infections: are they important to sustain malaria in Guinea-Bissau? Tropical Diseases and Global Health IHMT NOVA, in collaboration with Bandim Health Project, Guinea-Bissau **Ongoing** 🟢 Mariana Delgadinho. Gut Microbiome Analysis in Patients with Sickle Cell Disease. Biomedical Sciences. IHMT NOVA. In collaboration with ESTeSL/IPL. **Ongoing** 🟡 Brígida Santos. Identificação de modificadores genéticos em crianças com Anemia de Células Falciformes numa área endémica de Malária, Angola. Human Genetics and Infectious		

Diseases IHMT NOVA in collaboration with ESTeSL/IPL and INSA. Conclusion 🟢 1 PhD dissertation on trypanosomatid diseases – conclusion 🔵 Marta Monteiro (FCT UI/BD/152819/2022) Canine Leishmaniosis: the activity of dendritic cells from dogs under different antileishmanial prophylaxis strategies (**ongoing)** 🔵 Joana Palma Marques (2021.05579.B) Dogs in travel - Take of dendritic cells to shape protective immune response against Chagas disease. **Ongoing** 🔵 Juliana Weber (2022.13899.BD) Canine Chagas disease: exploring the influence of microRNA in host immune response – **Ongoing** 🔵 Ines Lopes (2023.02612.BDANA). Exploiting tridimensional (3D) skin models to innovate ozone therapy for cutaneous leishmaniasis in dogs. **Ongoing** 🔵 Rodrigo Furtado (CAPES). 2023. Unveil extracellular vesicles shed by amastigotes of American Leishmania species. **Ongoing** 🟢 1 PhD student on Looking into 4-aminoquinolines as multistage antimalarials. Ongoing 🟡 1 PhD student on Quinazolines as potential inhibitors of NIMA-related kinases of *Plasmodium falciparum* 🟢 Samira D'Almeida. Fasciolosis in Portugal and Brazil - Diagnosis and Genotyping in Definitive and Intermediate Hosts. PhD thesis (2023) **– Concluded**	Thesis defense scheduled for early 2024	Ana Valério-Bolas (Bolsas FCT SFRH/BD/118067/2016, COVID/BD/151671/2021) 2023. Bridging the gap between innate and adaptive immunity in dog leishmaniosis. 278 Pgs. - **Concluded** Silvia Donato. 2023. Identificação e caracterização imunoquímica de antígenos de tripanosomatídeos envolvidos na reatividade sorológica entre Trypanosoma cruzi e Leishmania spp. – **Concluded** Raissa Couto Santana (studentship CAPES). 2023. Análise do efeito do sesquiterpeno na imunobiologia da leishmaniose canina. - **Concluded** PhD conclusion at the University of Campinas

🟢 Aires Moura. Wolbachia in medically important culicids of Cape Verde: prevalence, genetic diversity and vector competence (Instituto Camões). Biomedical Sciences IHMT NOVA 🟢 Manuel Tomás da Silva. Vectorial capacity of *Aedes albopictus*: risk of arbovirus outbreaks in southern Portugal (FCT - 2022.13476.BDANA). Tropical Diseases and Global Health IHMT-NOVA. - **ongoing** 🟢 Bárbara Pocongo. Impact of primary resistance and emerging secondary resistance to Dolutegravir therapy in Angola (Thesis plan to be submitted to CC in 2023). Biomedical Sciences IHMT NOVA. **Ongoing** 🟡 Mbueno Nzila. Clinical and parasitological response on day 7 after treatment of *Plasmodium falciparum* malaria with ACTs and their correlation with molecular markers of resistance in Banga, Angola. IHMT-NOVA in collaboration with Univ. Agostinho Neto, Luanda. 🟢 Denise Duarte. *Plasmodium falciparum* redox system: the role of heterocycle thiosemicarbazones derivatives as potential regulators. IHMT-NOVA in colaboration with Universidade Federal de Pernambuco (UFPE), Recife - Brasil. 🟢 Clemente da silva. Resistance to antimalarials in Mozambique (?): Characterization of molecular markers and assessment of susceptibility of *Plasmodium falciparum*. IHMT-NOVA in colaboration with Instituto Nacional de Saúde, Maputo, Moçambique.		

🟡 Valéria Chicamba. Serum leptin and malnutrition in children with severe malaria in Mozambique. IHMT-NOVA in collaboration with Faculdade de Medicina da Universidade Eduardo Mondlane, Moçambique. ***Beyond vectorial diseases:*** 🔵 Leonardo Manuel, Estudo da diversidade genética de Toxoplasma gondii e os mecanismos imunopatofisiológicos associados a transtornos neurológicos em pacientes HIV+ . **Ongoing** 🔵 Ana Reisinho New trends in diagnostic and therapeutic approaches in Encephalitozoon cuniculi infection in pet rabbits. **Ongoing** **MSc Students** 🟢 Ana Balau. Effect of the compound 2,3-diphosphoglycerate (2,3-DPG) on the *Plasmodium falciparum* development – transcriptomics analysis. MSc Biomedical Sciences, IHMT. (2022-2023) 🟡 Irina Matos – Influence of genetic variants of ICAM1 and CD36 on the phenotypic variation of sickle-cell disease and malaria in Angolan children. MSc Biomedical Sciences, IHMT. (2022-2023) 1 MSc student - Molecular analysis of antimalarial resistance of Plasmodium falciparum in São Tomé and Príncipe (2022-2023). 🟢 3 Master thesis on canine trypanosomatid diseases – conclusion	*(No details provided)*	*(No details provided)* Mafalda Carvalho Planas Meunier. 2023. Canine Leishmaniasis: Explore modulation of T lymphocytes activity by autologous dendritic cells, 99 pg - **Concluded**

🔵 João Oliveira. Exploiring T cells activation by autologous Trypanosoma cruzi loaded dendritic cells (**ongoing**) 🔵 Maria Mafra.. Specific T-lymphocyte activity in canine Chagas (**ongoing**) 🔵 Ofélia Cruz. Exploring the role of extracellular vesicles in parasite-host communication (**ongoing)** 🔵 Flavia Martins. Effect of Leishmania spp. extracellular vesicles on canine leukocyte activity (**ongoing**) 🔵 Aleska Silva. Animal trypanosomiases: effect of Trypanosoma cruzi infection on cardiac tissue in three-dimensional (3D) cellular models (**ongoing**) 🔵 Victoria Tavares. Exploring the role of microRNA in the context of Trypanosoma cruzi infection in cardiac tissue (**ongoing**) 🟡 1 MSc student. Screening and hit evaluation of the PT-Open screen library against asexual blood stage *Plasmodium falciparum* 🔵 Adhelle Frederico (MSc in Medical Parasitology IHMT-NOVA) - Estratégia Bioinformática para identificação de novos fármacos contra Leishmania infantum - **Concluded** 🟢 Ana Cândido. Estudo da atividade anti-malárica de endoperoxidos Mestrado em Ciências Biomédicas do IHMT-NOVA. **Concluded**.	The project is being developed by a Ph.D. student (first year)	Georgy Nakhratyan. 2023. Unraveling the immunomodulatory potential of exosomes of cutaneous Leishmania spp. using an in vitro cellular model of skin. - **Concluded**.

🟡 Bernardo Aguiar. Snake venoms as antimalarials. Mestrado em Parasitologia Médica IHMT-NOVA. Ongoing 2022/2023. 🟡 Ana Dias. Marcadores moleculares de resistência a anti-maláricos em amostras de malaria importada em Portugal. Mestrado em Parasitologia Médica IHMT-NOVA. Ongoing 2022/2023. 🟢 Ana Saltão. Sequencing, genetic characterization and analysis of the spatiotemporal dispersion of serotype 3 dengue viruses circulating in 2022 in the Democratic Republic of São Tomé and Príncipe. MSc in Medical Microbiology (NOVA). **Concluded** 🟢 Marta Falcão. Bagaza Virus - Phylogenetic Analysis, Development and Validation of Molecular 🟢 Diagnosis Methods. MSc in Biomedical Sciences (IHMT-NOVA) **Concluded** 🟢 Melanie Alves. Microbiological safety assessment of greenhouse-grown raspberries. MSc in Biomedical Sciences (IHMT-NOVA) **Concluded** 🟢 MSc student from Angola (MSc in Medical Parasitology, Univ Katyava Bwila, in Helminthology – parasitological and molecular detection – Daniel Zage – Lab training Jan-Mar 2023 🔵 Danielle Cosac. Development of recombinant antibodies against Schistosoma. 🔵 Maria Paula Pinto. Estimation of the presence of intestinal parasites in the community through wastewater and sludge research.		Falcão et al. 2023. Genome Characterization and Spaciotemporal Dispersal Analysis of Bagaza Virus Detected in Portugal, 2021. Pathogens. Jan 17;12(2):150. doi: 10.3390/pathogens12020150. Wilmer Fernandes (Guine-Bissau) – MSc in Medical Microbiology (2022-2023). Otimização e aplicação de um teste de imunofluorescência indireta para o diagnóstico de leptospirose em laboratórios convencionais // Optimisation and application of an indirect immunofluorescence test for the diagnosis of leptospirosis in conventional laboratories (with THOP) - **Concluded** Mónica Cristina Anacleto Coelho Franco MSc in Medical Microbiology (2022-2023). Avaliação do stress oxidativo e defesas antioxidantes de macrófagos expostos a espiroquetas das espécies Borrelia garinii e Borrelia lusitaniae // Assessment of oxidative stress

🔵 Diamarize Carinton. *Strongyloides stercoralis*: prevalence and transmission in low-income communities 🔵 João Domingos Silva, MSc student from Guinea-Bissau - (MSc in Medical Parasitology) Morphological and molecular characterization of mosquitoes from West African countries, Guinea-Bissau and Cameroon, and potential vectors of arboviruses and avian malaria – thesis work **ongoing** 🔵 Gisele Albuquerque, GlowBab: Estabelecimento de uma linha transgénica de Babesia ovis a expressar uma proteína fluorescente. MSc in Biomedical Sciences (IHMT-NOVA) 🔵 Jessica Malaquias, "Avaliação do efeito de inibidores de proteases em cultura in vitro de Babesia ovis." MSc in Biomedical Sciences (IHMT-NOVA) 🔵 Isabelle Mostacato, Produção de anticorpos monoclonais para diagnóstico de Babesiose" MSc in Biomedical Sciences (IHMT-NOVA) 🔵 Eva Dias, "Characterization of viral-derived DNA (vDNA) forms in Hyalomma lusitanicum tick cell line in response to Hazara virus infection, MSc in Medical Microbiology (IHMT/NOVA)		and antioxidant defences of macrophages exposed to spirochetes of the Borrelia garinii and Borrelia lusitaniae species (with THOP) - **Concluded**
Capacity building: 🟢 1 pos-doc (researcher). 40 days. Tick pathogen detection by qPCR and transcriptomic data analysis. Departamento de Genética da Secretaria de Agricultura e Abastecimento, Instituto de Zootecnia, São Paulo, Brasil.		

🟢 1 MSc student, 12 months on *Babesia* sp cultures: inhibition studies 🟢 1 pos-doc (Professor). 2 weeks. Erasmus +. Tick pathogen detection by qPCR. Faculty of Biology and Biotechnology, University of Warmia and Mazury, Poland 🟢 1 PhD student. 1 month. Erasmus. Tick microbiome assays. Faculty of Biology and Biotechnology, University of Warmia and Mazury, Poland 🔵 1 PhD student, university of Padua, Italy, under the subject of tick-viruses interactions. 🔵 1PhD student, University of Pontificia, Rio Grande do Sul, Brasil, under the theme " Production of monoclonal antibodies against a tick recombinant protein" 🔵 1 professor (2 weeks). Establishment of a collaboration on recombinant protein production and monoclonal antibodies production. 🟢 Course "Insect collections, medical and forensic entomology", to be held September, IHMT, Lisbon, Portugal. 🟢 Course "Public Health and Vector Borne Diseases". February 2023 (25 hours). Course held by videoconference for students of the "Master and Ph. D Program in Biodiversity Informatics", at the Faculty of Agricultural Sciences, University of Abomey-Calavi (Benin). 🟢 Course "Python applied to biomedical Sciences", to be held 8-12 May 2023, IHMT, Lisbon, Portugal.		

Training program on IHMT for National Tuberculosis Reference Laboratory of STP technicians in medical and molecular microbiology. Workshop on molecular techniques associated with diagnostics on Instituto Superior de Ciências da Saúde Vitor Sá Machado da Universidade de São Tomé e Príncipe	*(No details provided)*	*(No details provided)*
🟢 Co-supervising of a PhD student from the PhD in Biosciences and Public Health of Faculty of Medicine of the Eduardo Mondlane University- Irina de Sousa. Study of the association of HIV infection with the severity of malaria, prevalence of parasitic populations resistant to antimalarials and innate susceptibility of patients at the Hospital Provincial da Matola - **ongoing**		
🟢 Logistic and technical support of laboratory work to be carried out within the framework of the Doctoral Thesis proposed by Lúcia Chambal, PhD student in Biosciences at the Faculty of Medicine of the Eduardo Mondlane University	Initiation of the lab work in the spring of 2023	Completed. A publication will be prepared in the near future.
🟡 Theoretical-practical course in Molecular Malacology (**postponed**)		
🔴 Hands-on course Gene editing *in Leishmania*- second edition		
🟡 Courses on article and project writing for women scientists in PALOP: Mozambique and Cape Verde (MulhereSTrop) – with PPS and THOP (**postponed to 2024**)		
🟢 CEECIND funding reference - 2022.00499.CEECIND/CP1725/CT0023, DOI 10.54499/2022.00499.CEECIND/CP1725/CT0023	https://doi.org/10.54499/2022.00499.CEECIND/CP1725/CT0023	

🟢 Webinar on Trypanosomoses: challenges and opportunities 5th January 2023		Oral presentations: Leishmaniasis Tripanossomoses animais no mundo Vesiculas extracelulares de Trypanosoma brucei manipula a resposta imune do hospedeiro host Vesiculas extracelulares de Leishmania influencia a actividade das células dendríticas caninas Efeito das vesiculas extracelulares na Leishmaniose cutânea
🟢 UCMI-IHMT Program of advanced training in biomedical sciences of human resources for São Tomé and Príncipe	Scholarships attributed to one PhD student (Biomedical Sciences) and three MSc students (Medical parasitology), all of Santomean nationality, to continue their academic studies at IHMT NOVA.	Students were enrolled in the courses.
🔵 Zoonoses transmitidas por Vetores (Vector borne Zoonotic Diseases). Paulo Almeida, GHTM/IHMT, Portugal. Invited oral presentation (in Portuguese), Opening session round table: Challenges in One Health, I Conference of CPLP* countries One Health Uma Só Saúde, 12-14 october 2023, Santa Maria, Sal Island, Cabo Verde. 🔵 Controlo Vectorial da Malária (Vector Control of Malaria), Paulo Almeida GHMT/IHMT, Portugal. Invited oral presentation (in Portuguese), Round table: Neglected and Parasitic Diseases. 2nd International Congress of Medicine from UPRA (Private University of Angola), Health for All – Public Health, cross-cutting sustainable primary health care. 5-7 de July 2023, Luanda, Angola.		
Other activities:		

🟡 COST Actions: CA21170 (Prevention, anticipation and mitigation of tick-borne disease risk applying the DAMA protocol (PRAGMATICK)), CA21111 (One Health drugs against parasitic vector-borne diseases in Europe and beyond)		
🟡 Tick Mitochondrial Genome Network		
🟢 Participation in the CA20110 - RNA communication across kingdoms: new mechanisms and strategies in pathogen control (exRNA-PATH)		
🟢 Participation in the CA21108 - European Network for Skin Engineering and Modeling (NETSKINMODELS)		
🔴 "Training in Science Communication and Dissemination" (https://www.nativescientist.com/institutions) addressed to institution's goals and internal researchers interested in science outreach activities.	Formalization of a group of researchers committed to science communication activities. Development of a new science dissemination and educational offers to the "Community" (in the website https://www.ihmt.unl.pt/)	PI (Ana Tavares) left the institution
🟢 Participation in science dissemination activities, such as the NEI, IHMT Open Day, etc		
🟢 Lectures on: “Genetics: how it interferes in our health.” (year 9) and “The importance of nucleic acids in our lives – diagnostics and discovery of disease agents” (years 10 and 11) to the Secondary School António Inácio da Cruz, Grândola Municipality.		
🟢 Project “Ciência Viva”: Helminths around us.		
🟢 **Urgent completion**: Design and implement a Business Model (Canvas model) with implementation plan for VIASEF	To be completed and implemented in the 1st semester of 2023	

5 Monitoring Report of Strategic GHTM / IHMT / NOVA Infrastructure Activities in 2023

- Not done / Canceled
- Done / Concluded
- Delayed / Postponed
- New activities not planned

BIOINFORMATICS HUB

The GHTM/IHMT NOVA Bioinformatics Infrastructure - BIOHUB – centralizes the genomic sequencing (MinION sequencing platform) and bioinformatics (Linux server) capacities of GHTM. This infrastructure supports the analysis of whole genome sequencing data produced by the existing MinION sequencing platform and manages the existing high computational capacity of GHTM, providing guidelines and supervision to users, equipment maintenance and training. BIOHUB has been essential in improving bioinformatics skills and responding to the intense complexity/data volume generated by recent technological. advances.

Since 2017, the infrastructure has supported 17 users of the Linux server and 14 users of the MinION sequencer in projects involving the characterization of viral genomes associated with arthropods (e.g., ZIKAlliance - https://zikalliance.tghn.org/), in fish and wastewater, including analysis of their spatiotemporal distribution, as well as the characterization of arthropod vectors and antimicrobial resistance studies (e.g., BIOSAFE - http://biosafe.ihmt.unl.pt/; INTEGRATE - https://www.euresist.org/integrate).

BIOLOGICAL RESOURCE CENTER (BRC) / BIOBANK – BIOTROPICAL RESOURCES (BIOTROP)

ACTIVITIES	EXPECTED OUTCOMES	EVIDENCES
Research activities already ongoing in 2022/2023		
Pursuing activities described at the Strategic Plan 2021-2023 (http://ihmtweb.ihmt.unl.pt/Download/BIOTROP/BIOTROP_2021-2023_STRATEGIC_PLAN_vsf.pdf), namely: 🟢 - Establish collaboration with potential stakeholders at Portuguese-speaking countries (especially PALOP and Brazil) 🟡 Implement a sample quality plan - Promote the integration/usage of collections 🟡 Create a BIOTROP microwebsite 🔴 Submission of Expression of Interest regarding RNIE by both networks (Pt-mBRCN /MIRRI-PT and Biobanco.pt), FCT (Under evaluation)	Establish a ***Portuguese-speaking network of biobanks*** under the coordination of BIOTROP Increase the use and integration of biological resources, as well as sample quality monitoring Create the microwebsite to promote resources and services within the national and international scientific community and biotech industry Funds from FCT as RNIE networks member	Meeting on "Biobanks on Lusophone countries". 6th National Congress of Tropical Medicine – Tropical Medicine and Sustainable Development, Pre-congress event (https://6cnmt.admeus.pt/?page=62), 19 april 2023.
New Research Projects planned for 2023/2024: 🟢 Develop and implement the Business Model		

🟢 Preparation of the regulation of BIOTROP 🟡 Design the Strategic Plan 2024-2026 **(delayed)** 🟡 Participation as partner, together with INIS Angola, in the proposal submitted to NIH Research Project Grant Program (R01), *Plasmodium falciparum* demography in Angola, a country with highly heterogenous malaria incidence, by University of Maryland 🔴 Participation as partner, together with INIS Angola, National Centre of Endemic Diseases STP and Equatorial Guinea Malaria Vaccine Initiative (EGMVI) in the proposal submitted to NIH International Centers of Excellence for Malaria Research, ICEMR 2023, by University of Maryland **– not approved.** 🟢 Participation as partner, together with UNI-CV - 2023-2026 "Airway colonization and microbiome in relation to asthma and atopy in children from Cabo Verde (Respira-CV)". Faculty of Sciences and Technology, University of Cabo Verde ((FCT/Uni-CV). Call We´Search – Calouste Gulbenkian Foundation / La Caixa, Ref# 296790	Still under evaluation	
Congresses/Events: 🟢 National scientific conference - Microbiotec´23	1 Oral/Poster communication 1 Oral communication	Congress of Microbiology and Biotechnology 2023. 7-9 December 2023. Covilhã Portugal Ana Paula Arez on behalf of Lusophone Biobank Network. "Building a Network of Biobanks and Biological Resource Centres Across Portuguese-Speaking Countries: Collaborative Efforts for Global Sustainability"

🔴 15th International Conference on Culture Collections (ICCC15), World Federation for Culture Collections (WFCC) 🔴 Internal scientific sessions - GHTM Session – Sample management		
Capacity building: 🟡 Collaboration with INIS to monitor the implementation of a local biobank 🟢 Meeting on "Biobanks on Lusophone countries". 6th National Congress of Tropical Medicine – Tropical Medicine and Sustainable Development, Pre-congress event (https://6cnmt.admeus.pt/?page=62), 19 april 2023. 🟢 Advanced course on Clinical Research (Curso de formação avançada em Investigação Clínica) (16 out – 12 dez 2023). Universidade NOVA de Lisboa / Fundação Calouste Gulbenkian	Coordination of the Module 5 "Management of biological samples and associated data Sessions: • Collection and processing of biological samples • Structuring and maintenance of biological collections and biobanks	
Other activities: 🟢 Participation in science outreach activities (e.g. Noite Europeia dos Investigadores, Open Day IHMT, Ciência VIVA FCT, etc)	Dissemination of biobank activities to general public, especially targeting "young scientists"	

VIASEF

ACTIVITIES	EXPECTED OUTCOMES	EVIDENCES
Research activities already ongoing in 2022/2023		
🟢 Support to the development of Aires Moura PhD	Establishment of West Nile Virus extrinsic incubation cycle through *Culex quinquefasciatus* artificial infection	Lab work completed. "*Culex quinquefasciatus* native Wolbachia induces resistance to West Nile virus infection". Jornadas Científicas do IHMT.
🟡 Vector competence studies in the framework of the University of California Malaria Initiative.	Establishment of O'nyong O'nyong extrinsic incubation cycle	O'nyong O'nyong virus mosquito infections to be concluded during the first trimester of 2024. Several attempts were made during 2023, ongoing work.
🟡 Establishment of reference colonies of *Anopheles gambiae* ss and *An. coluzzii*	Establishment of Plasmodium falciparum extrinsic incubation cycle through Anopheles coluzzii artificial infection	On-going work. Insectaries infrastructural problems have delayed the fully establishment of Anopheline colonies.
🟢 Bioassays related to the development of the project Repel+ New Mosquito Repellent Solutions for Malaria Control (Patent P2020)		Bioassays performed and project completed.
New Research Projects planned for 2023/2024:		
🟢 Support to Filipe Monteiro PhD	Establishment of dengue extrinsic incubation cycle through *Aedes albopictus* artificial infection.	Student still on Curricular year. On-going work

🟡 Screening of all VIASEF resident colonies regarding insecticide resistance and genetic inbreeding parameters	WHO insecticide resistance tests as well genetics analysis will be carried out on reference colonies of *Aedes aegypti, Aedes albopictus, Anopheles gambiae ss, Anopheles coluzzii, Anopheles atroparvus and Anopheles stephensi*	Screening was carried out for insecticide resistance of *Anopheles stephensi*.
Congresses/Events: 🟢 Publicization at: Kick-off meeting of INOVEC and Final AIM-COST meeting 🟡 Integration on the VBD media publicization plan 🟢 Participation on IHMT´s Open Day		VBD media publicization plan wasn't implemented. VIASEF communication plan is already finished and will be implemented in 2024.
Publications/Training: 🩵 Two MSc students ended their MSc thesis.		**Tiago Melo**: Caracterização do microbioma de populações de *Aedes albopictus* de Espanha e de São Tomé e Príncipe **Bacar Embaló**: Eficácia residual de mosquiteiros impregnados de longa duração de ação em Bissau, Guiné-Bissau
Capacity building: 🟡 Short training course	Security in BSL3 and ACL3.- to be implemented in the 1st semester of 2023	Course conclusion was delayed due to changes in IMS´s personnel in charge of video editing.

Other activities planned for 2023/2024: Design and implement a Business Model (Canvas model) with implementation plan New website launched (not included in the 2023 activities)	To be completed and implemented in the 1st semester of 2023	http://viasef.ihmt.unl.pt/