

GHTM | ACTIVITY PLAN 2021

1 - General strategic objectives:

- **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 - CCI) of the GHTM / IHMT / NOVA (figure 1), in line with NOVA's global scientific strategy (emphasizing NOVA Health platform) and IHMT/NOVA;

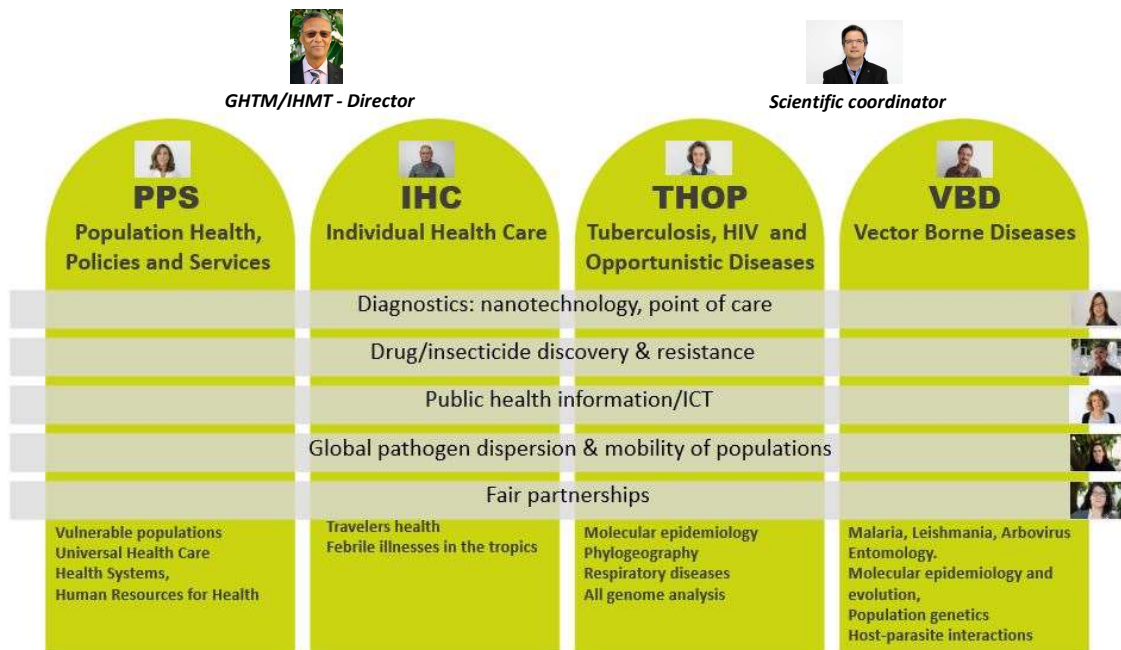


Figure 1: The Research Center GHTM/IHMT/NOVA organizational framework - four research groups (RG): 1- Population Health, Policies and Services (PPS); 2- Individual Health Care (IHC); 3- Tuberculosis, HIV and Opportunistic Diseases (THOP) and 4- Vector Borne Diseases (VBD) and five major research lines of shared interest – the crosscutting issues (CCIs) - Diagnostics (DG); Drug discovery & resistance (DDR); Public health information (PHI); Global pathogen dispersion and population mobility (GPPM) and Fair research partnerships (FRP).

- **Implement in 2021 the strategy** defined and approved for the GHTM / IHMT / NOVA for 2019-2023 incorporating the improvement proposals of the FCT Evaluation Panel (2019) 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** at GHTM / IHMT / NOVA through the maintenance and constant updating of its activities in the bibliometric repository PURE-NOVA [<https://novaresearch.unl.pt/en/organisations/global-health-and-tropical-medicine-ghtm>], support for attracting new projects and managing ongoing projects;



- Implement the **integrated 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/>];
- Complete the implementation of the general sample management regulation and standard procedures to regulate the data management of the research carried out at IHMT / NOVA;
- Promote the implementation of a **new Associated Laboratory of the Science and Technology Foundation [Associated Laboratory in Translation and Innovation Global Health Towards]**, in consortium with NOVA Medical School's Comprehensive Health Research Center (CHRC) [http://www.nms.unl.pt/main/index.php?option=com_content&view=article&id=2376:comprehensive-health-research-centre-chrc&catid=2:uncategorised&Itemid=500&lang=pt], 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/>];
- Framing the research actions of the GHTM / IHMT / NOVA in the Sustainable Development Goals (SDGs) and in the guidelines of the;
- Direct and adapt the Central Research Themes of the GHTM / IHMT / NOVA (Figure 1) to the objectives and actions of the European Union and National Horizon Europe Strategies [https://ec.europa.eu/info/horizon-europe_en] and Portugal 2030 [<https://www.portugal.gov.pt/pt/gc21/governo/programa/portugal-2030.aspx>] framework and align these themes with the priorities of the Portugal 2030 Strategy and the University NOVA, promoting the sharing of NOVA Saúde initiatives at IHMT / NOVA;
- Align the objectives for Research at the GHTM / IHMT / NOVA with the objectives for the teaching and training of post-graduate human resources at IHMT / NOVA, reinforcing the inclusion and participation of doctoral students (3rd Cycle) of IHMT / NOVA in GHTM / IHMT / NOVA.



2 - Specific strategic objectives - relational framework of interactions and anchor projects RG X CCI:

	IHC	THOP	PPS	VBD
D	Differential diagnosis of SARS CoV-2 infection in an endemic area of malaria, DENV, CHIKV, Salmonella and Leptospirosis - Lubango / Angola	New tools for rapid and accurate point of care diagnosis of SARS-Cov-2 Serological survey of SARS Cov2 in Cascais, Portugal Immunonodiagnosis of <i>Pneumocystis pneumonia</i> at the point-of-care. Diagnosis of mycobacterial and fungal infections TB and HIV (nano)diagnosis (Gilead) Diagnosis of sexually transmitted diseases (w/ IHC) Diagnosis of infections by spirochetes (w/ VBD)	Network activities COST-HARMONY- Novel tools for test evaluation and disease prevalence estimation. Funding: EU / COST	Diagnostics of Low-density malaria infections: a threat to malaria elimination efforts?
DDDR	Clinical trials for the treatment of African Human Trypanosomiasis (THA). Funding: EU / EDCTP	Drug design and development against mycobacterial drug resistant infections (FCT, EUCAST, TB Alliance, Becton & Dickinson, Tecnimed) Computational Drug Discovery and Drug Repurposing for <i>M. tuberculosis</i> and <i>Neisseria</i> (Marie Curie) QSAR modelling and molecular docking for multi-target drug design for <i>M. tuberculosis</i> and <i>Neisseria</i> Biocide resistance profiling of staphylococcal pathogens (FEDER/FCT) Efflux-mediated resistance in the veterinary pathogen <i>S. pseudintermedius</i> (FEDER/FCT) Drug repurposing for inhibition of SARS-Cov-2 (FCT)		Computer-aided drug repurposing approaches for identification of new antimalarials (FCT) Discovery of new molecular targets for drug development in malaria and leishmaniasis (FCT) Vaccine development for prevention and treatment of Chagas disease (H2020) A proteomic approach for vaccine development in Tick-Transmitted Diseases (FCT)
GPDM	Tracking of infectious diseases in mobile populations and travelers, with monitoring and risks of introducing pathogens that cause STDs and diarrhea of travelers from Portuguese-speaking	Dispersion and evolutionary dynamics of SARS Cov2 in Cabo Verde Evolutionary history and drug resistance patterns of HIV-1 in Cabo Verde	3 studies related to the adult and child immigrant population: at the adult level, a work on acculturation, lifestyles and health of CPLP immigrants in two Iberian contexts; in terms of child health, the	Modelling the risk of introduction of <i>Aedes</i> invasive species and the establishment of arboviral vector-borne infections in Europe (FCT)



INSTITUTO DE HIGIENE E
MEDICINA TROPICAL
DESDE 1902



	<p>countries and their profile of antibiotic resistance.</p> <p>The largest Travelers clinic in Portugal, established at IHMT</p> <p>Molecular markers of resistance in parasitic populations collected in malaria endemic areas (VBD + IHC).</p>	<p>Transmission dynamics of HIV-1 in Europe and in migrant populations</p> <p>Epidemic history of HBV and HCV in Portugal</p> <p><i>M. tuberculosis</i> phylogeographic dispersion and evolution of resistance determinants in Portuguese speaking countries</p> <p>Identification of shared staphylococcal clonal lineages in humans and pets in a OneHealth perspective</p> <p>Determinants of HIV-1 late presentation in Europe</p>	<p>cohort study in the Amadora region will be continued through a second survey of data and the elaboration of the Protocol for a cohort study of children in Cape Verde e / o) S. Tomé and Príncipe</p> <p>Funding: GHTM (according to FCT proposal for cohorts in Africa).</p> <p>Impact of deforestation for the emergence of new emergent infectious diseases</p>	<p>Epidemiology of leishmaniasis as a reemerging disease in Europe (ECDC)</p> <p>MosquitoWeb (NOVA Health)</p> <p>Phylogenomics of malaria parasites and socio-cultural determinants of malaria dispersal in PALOP countries (UMAP malaria working group - President's Global Impact Fund)</p> <p>Zikalliance: A global alliance for Zika virus control and prevention (H2020)</p> <p>Genomic epidemiology of silent malaria in Guinea-Bissau (submitted La Caixa)</p>
PHI	<p>Protocol with the objective of evaluating the knowledge, attitudes, practices and health literacy of migrants with regard to safety, efficacy and confidence in vaccination against COVID 19 in 2021.</p>	<p>Knowledge dissemination initiatives on the ongoing pandemics supporting efforts from the public health authorities.</p> <p>Publications on COVID directed for general public.</p>	<p>2 funded projects : VAX-TRUST - Addressing vaccine hesitancy in Europe e BCG vaccine to reduce unplanned absenteeism due to illness of health care workers during the COVID-19 pandemic. A multi-center randomized controlled trial (UE/EDCTP)</p>	<p>MosquitoWeb (NOVA Health)</p> <p>TRIAD: Health risk and social vulnerability to arboviral diseases in Portugal</p>
FRP		<p>Capacity building initiatives on Covid-19 diagnosis and awareness in Angola and other CPLP countries.</p> <p>HIV vertical transmission in Angola (w/ HIC, PPS)</p>	<p>Activities United Kingdom, Portugal and Mozambique on patterns of health literacy and demand for men's health care in Mozambique and another between Portugal, Mozambique, Cape Verde and Angola on strengthening the capacity of bioethics committees. Regarding the theme. (MRC-UK and EDCTP)</p>	

D – DIAGNOSTICS ;**DDDR** - DRUG DISCOVERY AND DRUG RESISTANCE; **GDMP** - GLOBAL PATHOGEN DISPERSION AND MOBILITY OF POPULATIONS, **PHI** – PUBLIC HEALTH INFORMATION; **FRP** - FAIR RESEARCH PARTNERSHIPS.



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 and Clinical Trials. The activities planned for 2021 fall within the transversal themes described above:

Activities	Outcomes
<p>Ongoing activities 2020/2021 with CCIs:</p> <p>CCIs - Drug discovery and resistance and Diagnosis and Clinical Trials - 2 therapeutic trials for the treatment of African Human Trypanosomiasis (THA) coordinated by DNDi and EDCTP funded. The 1st is an ongoing Clinical Trial on the "Efficacy of Fexinidazole in the treatment of patients with infection caused by T.b. rhodesiense in Malawi. The activation of an additional site in Uganda is expected to happen in 2021, which will increase patient enrollment. A second clinical trial with the new oral drug (Acoziborole), in a single dose, for the treatment of THA caused by T.b. gambiense in children and adults (≥ 15 years), coordinated by DNDi, was recently approved by the EDCTP for funding. This study is expected to start enrolling patients from The Democratic Republic of Congo and Guiné in 2021.</p> <p>Two cross-sectional non interventional study, in the area of visceral leishmaniasis (VL), caused by <i>L. infantum</i> are planned. The first one, a Doctoral Thesis of a student in Tropical Medicine, will determine the prevalence of asymptomatic human VL in Portugal. The second study, a Doctoral Thesis of a student in Tropical Medicine and Global Health, will evaluate the presence of miltefosine resistance genetic markers, in isolates of <i>L. infantum</i>, obtained from dogs with signs and symptoms of visceral leishmaniasis. Both studies are planned to start in second semester of 2021</p> <p>CCI - Global Dispersion of Pathogenic Organisms and Population Mobility - the ongoing project to track Infectious diseases in mobile populations and travelers will be continued, with monitoring and risks of introducing pathogens that cause STDs and diarrhea for travelers from Lusophone countries and its antibiotic resistance profile.</p>	<p>1st Clinical trail / Therapeutic trial - Expected start March 2021</p> <p>2nd Clinical trail / Therapeutic trial - Thesis topic of a PhD student in Tropical Medicine, scheduled to start in mid-2021</p> <p>3rd Clinical trail / Therapeutic trial</p> <p>Internal scientific sessions</p>
<p>New research Projects:</p> <p>CCI - Public Health Information - a protocol will be developed with the objective of evaluating the knowledge, attitudes, practices and health literacy of migrants with regard to safety, efficacy and confidence in vaccination against COVID 19, which should take place in 2021. The target population will include a sample of migrants from CPLP countries, mainly from the PALOP countries and Brazil, from the Greater Lisbon area.</p> <p>CCI - Diagnosis - A third cross-sectional study, to be developed at the Hospital de Lubango, Angola, is scheduled for 2021. The objective will be to evaluate the performance of clinical and laboratory diagnostic techniques in the differential diagnosis of SARS CoV-2 infection in an endemic area of malaria, DENV, CHIKV, Salmonella and Leptospirosis and with seasonal incidence of viral and bacterial respiratory infections in winter. It is also intended to develop an optimized diagnostic algorithm, based on the results of the discriminating power of the clinical case definition parameters and the diagnostic tests used.</p>	<p>Internal scientific sessions</p>
<p>Congresses//Events: participation in the ECTMIH 2021 27th of September 2021.</p>	<p>Two international presentations</p>
<p>Publications/Training:</p>	<p>At least 5 papers in international journals related with the results and outcomes of the ongoing clinical trails and projects indexed in scopus.</p> <p>At least one new doctoral student enrolled in GHTM-IHC group</p>
<p>Capacity building: Zoom meetings for training local PIs in Lubango, Angola Keep updated the PURE-NOVA profiles of IHC members.</p>	<p>At least two meetings and training courses planned for 2021.</p>



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 2021 fall into the various cross-cutting areas described above:

Activities	Outcomes
<p>Ongoing activities 2020/2021 with CCIs:</p> <p>CCI - Global dispersion of pathogenic organisms and population mobility - 3 studies related to the adult and child immigrant population: at the adult level, a work on acculturation, lifestyles and health of CPLP immigrants in two Iberian contexts; in terms of child health, the cohort study in the Amadora region will be continued through a second survey of data and the elaboration of the Protocol for a cohort study of children in Cape Verde e / o) S. Tomé and Príncipe. Project on the impact of the pandemic on health inequalities (FCT funding)</p> <p>CCI - Diagnostic - COST-HARMONY-Novels tools for test evaluation and disease prevalence estimation will continue.</p> <p>CCI - Public Health Information - 2 projects funded by European Funds: VAX-TRUST - Addressing vaccine hesitancy in Europe and BCG vaccine to reduce unplanned absenteeism due to illness of health care workers during the COVID-19 pandemic. A multi-center randomized controlled trial.</p> <p>CCI - Partnerships for research equity - 2 important partnerships: one between the United Kingdom, Portugal and Mozambique as part of an investigation into patterns of health literacy and demand for men's health care in Mozambique and another between Portugal, Mozambique, Cape Verde and Angola on strengthening the capacity of bioethics committees.</p>	<p>VAX-TRUST - Addressing vaccine hesitancy in Europe – Financing UE -Horizonte 2020.</p> <p>2 Grant Holders /Fellowship</p> <p>BCG vaccine to reduce unplanned absenteeism due to illness of health care workers during the COVID-19 pandemic. A multi-center randomized controlled trial. FinancingEU/ECDFP.</p> <p>1 Grant Holders /Fellowship posdoc</p>
<p>New research Projects:</p> <p>6 projects (as PI) and 1 approval were submitted to FCT's last call. There is also the intention to submit a new project entitled: A cohort study of HBV-infected pregnant women in Lubango, Angola: vertical transmission and relationship with maternal, obstetric and newborn complications</p>	<p>Determinants and health needs of migrant children in a pandemic context: a longitudinal study for the Region of Lisbon and the Tagus Valley. FCT financing.</p> <p>2 Grant Holders /Fellowship</p>
<p>Conferences/events:</p> <p>Organization of a European Conference (EUPHA Health Workforce Research Group 2nd midterm conference 'Health workforce development: disruption, innovation and resilience beyond the COVID-19 crisis'), of a Luso-Brazilian Meeting (in Health Assessment and Knowledge Management), and 3 seminars on: Health Human Resources, Knowledge Management and Communication Strategies.</p>	<p>5 National and international seminars / conferences</p>
<p>Publications/Training:</p> <p>PPS group members, including students, will participate, with presentation of communication, in the following Congresses and Conferences: 3rd World Congress on Maternal Fetal and Neonatal Medicine - MARCH 25-27, 2021 - Venice, Italy; 2021 International HBV Meeting - September 14-17, 2021 - Toronto, Canada; 3rd International Electronic Conference on Environmental Research and Public Health — Public Health Issues in the Context of the COVID-19 Pandemic online 11-21 January 2021, 12th European Congress on Tropical Medicine and International Health: Global challenges in health, migration and equity. Sep 27 - Oct 1, online, Bergen, Norway. Publications in journals indexed in Scopus</p>	<p>2 Posters 5 Oral communications</p> <p>At least 40 publications in journals indexed in scopus</p> <p>At least two new doctoral students enrolled in PPS-IHC group</p>
<p>Capacity building:</p> <p>organization of an advanced Statistics course for INS-MISAU, Mozambique; ethics course in health research in elearning for CPLP</p>	<p>2 advanced courses 1 in person 1 e-learning</p>



RG – 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. Despite the many challenges and uncertainty brought by the ongoing pandemic, we envisage the following aims for the THOP Group for 2021:

Activities	Outcomes
<p>Ongoing activities 2020/2021 with CCIs:</p> <p>CCI - Drug discovery & resistance (DDR):</p> <ul style="list-style-type: none"> • Drug design and development against mycobacterial drug resistant infections (FCT, EUCAST and EU-MepAnti Marie Skłodowska-Curie action) • Computational drug discovery and drug repurposing for <i>M. tuberculosis</i> and <i>Neisseria</i> (EU-Marie Curie Action) • QSAR modelling and molecular docking for drug design for <i>M. tuberculosis</i> and <i>Neisseria</i> • Antibiotic and biocide resistance profiling in major human and veterinary staphylococcal pathogens (FEDER/FCT) • Proposal of new criteria for identification of antibiotic resistant staphylococcal populations (FEDER/FCT, in collaboration with the COST Action ENOVAT). • Evaluation of efflux-mediated resistance in the major veterinary pathogen <i>S. pseudintermedius</i>. • Phylogenomics of multidrug efflux pumps in staphylococci • Antimicrobial resistance in <i>S. aureus</i> causing bloodstream infections in children in Mozambique • Antifungal activity of novel chemical compounds against <i>Candida albicans</i> and other pathogenic yeasts • Resistance to antiretrovirals • Drug repurposing for inhibition of SARS-Cov-2 replication (FCT). <p>CCI - Diagnostics (DG):</p> <ul style="list-style-type: none"> • Development of point-of-care tools for immunonodiagnosis of <i>Pneumocystis pneumonia</i>. • Identification and characterization of intestinal parasitic infections in Mozambique. • Study of the gut mycobiome using nanopore sequencing approaches • Development of point-of-care tools for SARS-Cov-2 diagnosis (FCT). • SARS Cov2 serological survey analysis. <p>CCI - Public health information (PHI):</p> <ul style="list-style-type: none"> • Knowledge dissemination initiatives on the ongoing pandemics supporting efforts from the public health authorities, including seminars and interviews for the media. <p>CCI - Global pathogen dispersion and population mobility (GPPM):</p> <ul style="list-style-type: none"> • Phylogeography, dispersion of HIV and resistance to antiretrovirals in Portugal, with a special focus on vulnerable populations (migrants and PALOPs). • Study of the evolutionary patterns of SARS Cov2. • Identification of prevalent clonal lineages of staphylococcal pathogens - associations with multidrug resistance, biofilm formation and virulence potencial (FEDER/FCT). <p>CCI - Fair research partnerships (FRP):</p> <ul style="list-style-type: none"> • Capacity building initiatives on Covid-19 diagnosis and awareness in Angola and other CPLP countries. • HIV vertical transmission in Angola (w/ HIC and PPS members) 	<p>Development of research activities in the framework of ongoing projects, with defined milestones and deliverables according to the initial proposals and considering eventual delays due to the COVID-19 pandemic.</p> <p>Participation of THOP members in >3 initiatives raising general public comprehension on COVID.</p> <p>Submission of 2 publications on COVID; 1 “Perspective” manuscript; 1 “Research” manuscript directed for general public.</p>
<p>New research Projects:</p> <p>To be submitted, areas of research:</p> <ul style="list-style-type: none"> • New strategies for drug design and development against mycobacterial drug resistant infections; 	



<ul style="list-style-type: none"> • In silico discovery and biological validation of new drugs against <i>Neisseria gonorrhoeae</i> (CEEI, FCT) • Computational drug discovery and drug repurposing for <i>Neisseria gonorrhoeae</i> (FCT/LaCaixa) • New environmental sources for antibacterial and anti-parasitic drugs • Combating drug resistance in a OneHealth context • New strategies to combat biofilms in human and animal pathogens - a OneHealth approach • Evolutionary patterns of SARS Cov2 • New tools for point of care diagnosis of SARS-Cov-2 • Impact of environmental determinants on respiratory microbiome 	<p>Submission of at least 5 new project proposals (FCT, LaCaixa)</p> <p>One proposal approved</p>
<p>Participation or organization in Conferences/events:</p> <p>Participation in Conferences</p> <ul style="list-style-type: none"> • 31st European Congress of Clinical Microbiology & Infectious Diseases 2021 • Conference on Retroviruses and Opportunistic Infections, CROI2021 • European Society of Mycobacteriology Meeting, ESM2021 • Tuberculosis 2021 • Acinetobacter 2021 • MicroBiotec 2021 • Cong. Nac. Doenças Infeciosas e Microbiologia Clínica Cong. Nac. VIH/SIDA <p>Organization of Scientific Events</p> <ul style="list-style-type: none"> • 5th GHTM Antimicrobial Resistance Awareness Day (Nov 2021) • Summer School/Course on antibiotic and biocide resistance in bacteria and OneHealth • GHTM Spirochetes meeting (w/ VBD members) • GHTM sessions/seminar on: <ul style="list-style-type: none"> - sexually transmitted infections - TB and HIV (nano)diagnosis - new therapeutic strategies on tuberculosis treatment - mycobacterial host defense and pathogenesis 	<p>Participation of > 5 THOP members in at least 5 international congresses and 1 national congress</p> <p>10 Posters 2 Oral communications</p> <p>Organization of at least 6 scientific events</p>
<p>Publications/Training:</p> <ul style="list-style-type: none"> • Increase the number of doctoral students enrolled in GHTM-THOP group • Increase the participation of students in GHTM-THOP publications • Increase internationalization of GHTM-THOP publications 	<p>At least 3 new PhD students enrolled in GHTM-THOP group by the end of 2021 (2 supported by GHTM/FCT PhD grants).</p> <p>At least 12 research papers and one book chapter published during 2021</p> <p>At least 7 articles published with PhD/MSc students as co-authors</p> <p>Increase the number of publications with international partners by 10%, all in open access</p>
<p>Capacity building:</p> <ul style="list-style-type: none"> • Collaborate/contribute to GHTM's Bioinformatics HUB's and to GHTM's BRC/Biobank • Definition of GHTM's Bioinformatics HUB's general SOPs for data storage and management. • Training of GHTM members on MinION and Flow Cytometer • Participation in open science initiatives • Initiatives on capacity building activities, using online/other platforms involving MSc or PhDs students, technicians, other 	<p>Integration of IHMT's mycobacteria collections at GHTM's BRC/Biobank</p> <p>GHTM's Bioinformatics HUB's general SOPs for data storage and management.</p> <p>Formation provided by THOP members (responsible for GHTM's Bioinformatics Hub) to students and technicians on good practices for MinION usage.</p> <p>Training provided by THOP members on GHTM's Flow Cytometer to PhD and MSc students.</p>



INSTITUTO DE HIGIENE E
MEDICINA TROPICAL
DESDE 1902



	<p>Participation in at least 3 open science initiatives</p> <p>Participation on capacity building initiatives concerning Covid-19 diagnosis and awareness in Angola and other CPLP countries</p> <p>Collaborative projects w/ Mozambique and Angola evolving MSc and PhD students in tuberculosis and other infections.</p> <p>Advanced training programs in Mycobacteriology to support the control programs of tuberculosis and leprosy in Mozambique, Angola, Guinea-Bissau and Brazil.</p>
--	--



RG – VBD

The overarching aim of the VBD group is the development of innovative methods for surveillance and control of vector-borne diseases. Our major research competences include: molecular, genetic and eco-epidemiological studies; mechanisms of drug and insecticide resistance; transmission and vector/host-pathogen interactions; vector bioecology and control; tools for epidemiological assessment and surveillance.

The activities plan here presented is conditioned by the evolution of the pandemic COVID-19, which has been significantly affecting the research activities of our members of VBD due to limitations in office and laboratory occupancy in the host institution, in order to guarantee social distance. Thus, a significant part of the activity planned for 2021 will focus on maintain current research and recover from delays in the implementation of ongoing projects.

Activities	Outcome
<p>The members of the VBD group have 22 ongoing research projects (9 as PI), corresponding to a global funding of 3.2 M €. We highlight:</p> <p>CCI - Drug discovery & resistance (DDR)</p> <ul style="list-style-type: none"> • A multitarget strategy to hit all stages of the Plasmodium life-cycle (FCT) • Exploring the tick-host interactome: on the path to vaccine development (FCT) • Identification of new antimalarial treatments through a target-centred "drug repositioning" approach (FCT) • Synthetic peroxides as new potential anti-Leishmania Chemotypes (FCT) • Vaccine for Prevention and Treatment of Trypanosoma Cruzi Infection (H2020) <p>CCI - Public health information (PHI)</p> <ul style="list-style-type: none"> • health Risk and social vulnerability to Arboviral Diseases in mainland Portugal • MosquitoWeb (NOVA Health): in 2021, this initiative will evolve into an integrated Iberian network of citizen science for mosquito surveillance, in collaboration with INSA and Mosquito Alert (Spain) <p>CCI - Global pathogen dispersion and population mobility (GPPM)</p> <ul style="list-style-type: none"> • A global alliance for Zika virus control and prevention (H2020) • An operational early WARning system for DENgue and other arboviral diseases in Madeira Island • Review on leishmaniasis in the European Union, the Enlargement countries and the European Neighborhood Policy countries (ECDC) • UMAP (University of Maryland-Angola-Portugal) Malaria working group development <p>CCI - Fair research partnerships (FRP)</p> <ul style="list-style-type: none"> • Learning to Investigate by Field Experiment for Southeast Asia Emerging Diseases (Erasmus+) <p>Transversal:</p> <ul style="list-style-type: none"> • Biotropical resources - BIOTROP (GHTM internal). Coordinated by two members of the VBD group, BIOTROP will make a catalog for internal and external consultation of its biological collections. Priority will be given to boosting collaboration with the Clínica do Viajante and Central Laboratory of IHMT, interaction with RNIE networks (Pt-mBRCN / MIRRI- and Biobanco.pt) and NOVA's CHRC-Biobank. The strategic plan for 2021-2023 will be implemented. • In vivo Arthropod Security Facility - VIASEF (FCT). The security insectary VIASEF is in the final phase of implementation. In 2021, priority will be given to the implementation of promotion and dissemination activities, with the objective of attracting funding and research projects 	<p>Development of research activities in the framework of 22 ongoing projects, with defined milestones and deliverables according to the initial proposals and considering eventual delays due to the COVID-19 pandemic.</p> <p>A catalog for BIOTROP biological collections.</p> <p>BIOTROP strategic plan for 2021-2023.</p> <p>Implementation of a roadmap for the promotion of VIASEF.</p>
<p>New research Projects:</p> <p>Approved:</p> <ul style="list-style-type: none"> • Explorar as oportunidades da medicina imunitária de precisão no controlo das tripanossomoses caninas – DogIPM (FCT) • AMAZonian snake toxins: creatiNG value from bioresources (FCT) <p>Under evaluation</p> <ul style="list-style-type: none"> • CITED network IBEROAMERILEISH: Cooperacion iberoamericana para combatir la leishmaniosis mediante estrategias eficientes. • HUdrepMAL - Hydroxyurea treatment for children with sickle cell anaemia– a good companion against malaria anyway (AKDN/FCT) 	<p>Implementation of at least one new research project.</p>



<ul style="list-style-type: none"> • Implementation of a malaria genetic and genomic surveillance pipeline for Angola that leverages COVID19-associated infrastructure development (Bill & Melinda Gates foundation, GCE) • Genomic epidemiology of silent malaria in Guinea-Bissau (La Caixa) <p>To be submitted</p> <ul style="list-style-type: none"> • Artificial intelligence approaches to accelerate antimalarial drug discovery (FCT) • Estratégias em quimiogenômica computacional e biologia sintética para identificação de novos compostos contra <i>Plasmodium vivax</i> (FAPESP) • Identification of the mechanisms of resistance to primaquine and tafenoquine in malaria parasites through experimental evolution, genomics and transgenesis (FCT) • Purydrazides, a novel class of antimalarial drugs (FCT) • Diagnostics of Low-density malaria infections: a threat to malaria elimination efforts? (FCT) • Network for Biobank Resources (Research Infrastructure, Horizon Europe 2021-2027) • Innovative devices for clean and sustainable mosquito control (FCT) 	<p>Submission of at least 4 new project proposals.</p>
<p>Participation in Conferences</p> <ul style="list-style-type: none"> • 16th Companion Vector-Borne Diseases Symposium. • 28th International Conference of the World Association for the Advancement of Veterinary Parasitology. • Congresso Ibérico de Entomologia. • Annual Meeting of the European Mosquito Control Association Microbiotec 2021. • 16th International Conference on Lyme Borreliosis and other Tick-borne disease – 5 - 8 July - Amsterdam, the Netherlands. • 31st European Congress of Clinical Microbiology & Infectious Diseases 2021. • British Society for Parasitology (BSP) Spring Meeting • BioMalPar XVI: Biology and Pathology of the Malaria Parasite • Laboratory methods applied to <i>Trypanosoma cruzi</i> <p>Organization of Scientific Events</p> <ul style="list-style-type: none"> • 5th GHTM Antimicrobial Resistance Awareness Day • GHTM Spirochetes meeting • Portuguese microBiological Resource Center Network meeting • Webinar on Diagnosis of neglected tropical diseases: differential diagnosis of febrile syndromes. • Webinar on trypanosomatid exosomes 	<p>Participation in at least 3 international scientific meetings with presentation of project results (it is unforeseen whether part of these events may be cancelled or postponed due to COVID-19 pandemic).</p> <p>Organization of at least 3 meeting events.</p>
<p>Publications/Training:</p> <p>Between 30 and 35 publications are predicted to be published during 2021 by the VBD group. Some of the titles include:</p> <p>Books</p> <ul style="list-style-type: none"> • <i>Control of Mosquitoes</i> (CABI Publishers) <p>Book chapter</p> <ul style="list-style-type: none"> • Yeast-based high-throughput screens for discovery of kinase inhibitors for neglected diseases. In: <i>Advances in Protein Chemistry and Structural Biology</i> • Targeting malaria protein kinases. In: <i>Advances in Protein Chemistry and Structural Biology</i> • Filárias e filarioses. In: <i>Parasitologia Contemporânea</i> • Plasmódios e a Malária. In: <i>Parasitologia Contemporânea</i> • Invasive mosquitoes on Islands. In: <i>Ecology of diseases transmitted by mosquitoes to wildlife</i> <p>Articles</p> <ul style="list-style-type: none"> • Atlantic forest malaria: a review of more than 20 years of epidemiological investigation. <i>Microorganisms</i>, 2021, 9, 132. https://doi.org/10.3390/microorganisms9010132 • Detection of <i>Plasmodium vivax</i> in a liver sample of a howler-monkey: one evidence more in favour of the identity between <i>Plasmodium simium</i> and <i>P. vivax</i>. <i>To be resubmitted</i> • Metabolomic profiles of 2,3-DPG treated and non treated host cells and parasites. <i>Journal to be decided</i> • Protective effect of red blood cell pyruvate kinase deficiency against malaria – is there a role for the host cell membrane as assessed by AFM? <i>Journal to be decided</i> • The effect of 2,3-diphosphoglycerate (2,3-DPG) on malaria parasite development. <i>Journal to be decided</i> 	<p>At least 10 research papers and four book chapters published during 2021</p>



<ul style="list-style-type: none"> • Artificial intelligence applied for the rapid identification of new antimalarial candidates with dual-stage activity. <i>ChemMedChem</i> • CYP2D6 allele frequency in five malaria vivax endemic areas from Brazilian amazon region. <i>Front Pharmacol</i> • Homology modeling and virtual screening to discover inhibitors targeting Casein Kinases CK1 and CK2. <i>Front Chem</i> • Phosphoglycerate kinase as a potential target for antimalarial therapy. <i>ChemMedChem</i> • Rodent malaria parasites resistant to the Artemisin Combination Treatment version of artesunate + mefloquine evolve amplification of the <i>mdr1</i> gene and mutation in a 26s proteasome subunit. <i>Journal to be decided</i> • Discovery of potent 1,4-naphthoquinones that do not inhibit mitochondrial electron transport chain identified from computational screening. <i>Antimicrobial Agents and Chemotherapy</i> • Violacein-induced chaperone system collapse underlies multi-stage antiplasmodial activity. <i>ACS Infectious Diseases</i> • Genetic variation of recently introduced <i>Aedes albopictus</i> in Portugal. <i>Parasites & Vectors</i>. • Scientists' and activists' opinions: a SWOT analysis regarding the use of modified insects for disease prevention and control. <i>International Journal of Environmental Research and Public Health</i>. • A case for a systematic quality management in mosquito control programmes in Europe. <i>International Journal of Environmental Research and Public Health</i>. • Wide and increasing suitability for <i>Aedes albopictus</i> in Europe is congruent across published predictions. <i>Eurosurveillance</i> <p>Training of PhD students The VBD group will have 16 PhD students developing their thesis plans in the framework of ongoing research activities and projects.</p>	<p>At least 2 PhD students will complete their thesis and 2 new PhD students will be enrolled.</p>
<p>Capacity building: The following capacity building activities are predicted:</p> <p>Organization of training actions</p> <ul style="list-style-type: none"> • Hands-on Workshop on "Gene editing in Trypanosomatids: Modern approaches for identification of novel drug targets". • Hosting of an Erasmus+ training student from Spain on Leishmaniasis. • Hosting of one Short Term Scientific Mission in the framework of the AIM-COST action on "Pyriproxyfen for <i>Aedes albopictus</i> control" • Hosting of Two Short Term Scientific Missions in the framework of the AIM-COST action on "Population genetics of <i>Aedes albopictus</i> in Romania and Czech Republic" • UCIMI/IHMT course on insecticide resistance surveillance for malaria vectors in São Tomé and Príncipe. • Workshop on flow cytometry <p>Participation in training actions:</p> <ul style="list-style-type: none"> • Effective Communication Skills – 2nd Ed. (NOVA Doctoral School). • Three workshops of the European Consortium NEWSERA with the citizen science initiative MosquitoWeb. 	<p>Organization of at least 3 workshops/courses</p> <p>Hosting of at least 2 international trainees</p> <p>Participation in at least 2 training actions</p>



CCI – DIAGNOSTICS (D)

After a thorough survey of what activities or projects are ongoing in the context of the development and/or evaluation of diagnostic methods within each RG, small and internal scientific sessions will be coordinated, in a way that real transfer of knowledge and technology between GHTM researchers may occur. This will allow clarifying and promoting the interaction between RG and the CCI, as suggested by the SAB report. As full laboratory work may continue to be hampered due to restrictions derived from the pandemic situation, it may be a good opportunity to foster discussion, joint evaluation of funding opportunities or collaborations with industry.

Activities	Outcomes
<p>Ongoing activities 2020/2021 with RGs: In collaboration with the THOP group <i>Pneumocystis</i> diagnosis Diagnosis of fungal infections Diagnosis of infections by spirochetes (THOP / VBD) New tools for point of care diagnosis of SARS-CoV-2</p> <p>In collaboration with the PPS group, Network COST- HARMONY- Novel tools for test evaluation and disease prevalence estimation.</p> <p>Serological survey of SARS Cov2 in Cascais, Portugal</p> <p>In collaboration with the IHC group, Differential diagnosis of SARS CoV-2 infection in an endemic area of malaria, DENV, CHIKV, Salmonella and Leptospirosis and with seasonal incidence of viral and bacterial respiratory infections in winter</p>	<p>Organization of GHTM Spirochetes meeting</p> <p>Implementation of Bayesian Latent Class Models (BLCMs) to both the identification and control of pathogens in humans and animals</p> <p>Performance evaluation of clinical and laboratory diagnostic techniques in the differential diagnosis of SARS CoV-2 infection Optimized diagnostic algorithm, based on the results of the discriminating power of the clinical case definition parameters and the diagnostic tests used</p>
<p>New activities 2020/2021 with RGs and infrastructures:</p> <p>New research Projects: Diagnostics of Low-density malaria infections: a threat to malaria elimination efforts? (FCT)</p> <p>Congresses//Events:</p> <ul style="list-style-type: none"> - Organization of conference/workshop on Universal access to health care for the populations - Molecular Testing in Infectious Diseases” - Organization of a webinar on Diagnosis of neglected tropical diseases: differential diagnosis of febrile syndromes <p>Publications/Training: Capacity building: Internal scientific sessions – GHTM sessions (Investing in diagnostics towards better health)</p>	<p>Transfer of knowledge and technology between GHTM researchers</p>



CCI - DRUG DISCOVERY AND DRUG RESISTANCE (DDDR)

Activities:	Outcomes
<p>Ongoing activities 2020/2021 with IHC 2 therapeutic trials for the treatment of Human African Trypanosomiasis (THA). The 1st, the study on "Efficacy of Fexinidazole in the treatment of patients with infection caused by T.b. Rhodesiense is in its third year of enrollment. A second clinical trial with the new oral drug (Acoziborole), in a single dose, for the treatment of THA caused by T.b. gambiense in children, coordinated by DNDi, was recently approved by the EDCTP for funding.</p> <p>The 2nd trial, in the area of visceral leishmaniasis (VL), caused by <i>L. infantum</i>, a cross-sectional study on the prevalence of asymptomatic VL in Portugal. In the same vein, a second study is planned, which aims to assess the presence of genetic markers of resistance to miltefosine, in isolates of <i>L. infantum</i>, obtained from dogs with signs and symptoms of visceral leishmaniasis.</p> <p>Ongoing activities 2020/2021 with THOP - Antibiotic and biocide susceptibility profiling and resistance determinants in relevant bacterial pathogens (eg: mycobacteria, staphylococci, Neisseria). - <i>In silico</i> drug design and drug repurposing for <i>M. tuberculosis</i> and <i>Neisseria</i> (Marie Curie) - Multi-target drug design for <i>M. tuberculosis</i> and <i>Neisseria</i> using computational methods.</p> <p>Ongoing activities 2020/2021 with VBD</p> <ul style="list-style-type: none"> • A multitarget strategy to hit all stages of the Plasmodium life-cycle (FCT) • Exploring the tick-host interactome: on the path to vaccine development (FCT) • Identification of new antimalarial treatments through a target-centred "drug repositioning" approach (FCT) • Synthetic peroxides as new potential anti-Leishmania Chemotypes (FCT) • Vaccine for Prevention and Treatment of Trypanosoma Cruzi Infection (H2020) 	<p>1st Clinical trail / Therapeutic trial - Expected start March 2021</p> <p>2nd Clinical trail / Therapeutic trial - Thesis topic of a PhD student in Tropical Medicine, scheduled to start in mid-2021</p> <p>3rd Clinical trail / Therapeutic trial</p> <p>- Antimicrobial resistance phenotypes and genotypes in staphylococci (FEDER/FCT); - Drug design and development against mycobacterial drug resistant infections (FCT, EUCAST) - Identification of new drugs against <i>M. tuberculosis</i> and <i>Neisseria</i> (Marie Curie)- Drug repurposing for inhibition of SARS-Cov-2 replication (FCT).</p> <p>- identification of new antimalarials (FCT) - Discovery of new molecular targets for drug development in malaria and leishmaniasis (FCT) - Vaccine development for prevention and treatment of Chagas disease (H2020) - Vaccine development for Tick-Transmitted Diseases (FCT)</p>
<p>New activities 2020/2021 with RGs and infrastructures: The execution of the tasks proposed above will benefit from the dynamism of existing internal resources, namely the Biobank and the bioinformatics hub. In addition, the acquisition of a high performance nucleic acid sequencing device (MinION) and the probable hiring of a doctorate element to work in the DDDR area will help to boost the implementation of the proposed activities.</p>	
<p>New research Projects:</p> <ul style="list-style-type: none"> • Artificial intelligence approaches to accelerate anti-malarial drug discovery (FCT) • Strategies in computational chemogenomics and synthetic biology to identify new compounds against Plasmodium vivax (FAPESP) • Identification of the mechanisms of resistance to primaquine and tafenoquine in malaria parasites through experimental evolution, genomics and transgenesis (FCT) 	<p>At least 8 project proposals for funding in 2021</p>



<ul style="list-style-type: none"> • Purydrazides, a novel class of antimalarial drugs (FCT) • New strategies for drug design and development against mycobacterial drug resistant infections (FCT); • In silico discovery and biological validation of new drugs against <i>Neisseria gonorrhoeae</i> (CEECl, FCT) • Computational drug discovery and drug repurposing for <i>Neisseria gonorrhoeae</i> (FCT/LaCaixa) New environmental sources for antibacterial and anti-parasitic drugs (LaCaixa) • Combating drug resistance in a OneHealth context (LaCaixa) • Biocides and AMR (FCT) • Evolutionary patterns of SARS Cov2 (FCT) 	
<p>Congresses/Events: Participation 31st ECCMID; CROI2021; ESM2021; Tuberculosis2021; Acinetobacter2021. MicroBiotec 2021; Cong. Nac. Doenças Infeciosas e Microbiologia Clínica Cong. Nac. VIH/SIDA. GHTM sessions</p> <ul style="list-style-type: none"> • British Society for Parasitology (BSP) Spring Meeting • BioMalPar XVI: Biology and Pathology of the Malaria Parasite • Laboratory methods applied to <i>Trypanosoma cruzi</i> <p>Organization New therapeutic strategies on tuberculosis treatment</p> <ul style="list-style-type: none"> • 5th GHTM Antimicrobial Resistance Awareness Day • Webinar on "Host-Directed Therapies - Exploring Host-Pathogen Interactions to circumvent antimicrobial drug resistance. 	<p>At least 10 Posters and/or oral presentation in international conferences</p> <p>Organization of at least 2 meeting events</p>
<p>Publications/Training: Book chapters</p> <ul style="list-style-type: none"> • Yeast-based high-throughput screens for discovery of kinase inhibitors for neglected diseases. In: <i>Advances in Protein Chemistry and Structural Biology</i> • Targeting malaria protein kinases. In: <i>Advances in Protein Chemistry and Structural Biology</i> <p>Articles*</p> <ul style="list-style-type: none"> • Artificial intelligence applied for the rapid identification of new antimalarial candidates with dual-stage activity. <i>ChemMedChem</i> • Homology modeling and virtual screening to discover inhibitors targeting Casein Kinases CK1 and CK2. <i>Front Chem</i> • Phosphoglycerate kinase as a potential target for antimalarial therapy. <i>ChemMedChem</i> • Rodent malaria parasites resistant to the Artemisin Combination Treatment version of artesunate + mefloquine evolve amplification of the <i>mdr1</i> gene and mutation in a 26s proteasome subunit. <i>Journal to be decided</i> • Discovery of potent 1,4-naphthoquinones that do not inhibit mitochondrial electron transport chain identified from computational screening. <i>Antimicrobial Agents and Chemotherapy</i> • Violacein-induced chaperone system collapse underlies multi-stage antiplasmodial activity. <i>ACS Infectious Diseases</i> • Exploring the activity of efflux pump inhibitors against multidrug resistant <i>Acinetobacter baumannii</i> resistant to carbapenems and colistin <i>Antibiotics</i>. • Deciphering the role of efflux pumps in <i>Mycobacterium abscessus</i> complex drug resistance, host adaptation and persistence. <i>Molecules</i> 	<p>At least 10 research papers and two book chapters published during 2021</p>



INSTITUTO DE HIGIENE E
MEDICINA TROPICAL
DESDE 1902



<ul style="list-style-type: none">• Overexpression of efflux pumps contributes to the emergence of high-level clarithromycin resistance in <i>Mycobacterium avium</i> and <i>Mycobacterium intracellulare</i>. <i>BMC Microbiology</i>	
<p>Capacity building and Organization of training actions.</p> <ul style="list-style-type: none">• Hands-on Workshop on “Gene editing in Trypanosomatids: Modern approaches for identification of novel drug targets”.• Hosting of one Short Term Scientific Mission in the framework of the AIM-COST action on “Pyriproxyfen for <i>Aedes albopictus</i> control”• UCIMI/IHMT course on insecticide resistance surveillance for malaria vectors in São Tomé and Príncipe.	



CCI - GLOBAL PATHOGEN DISPERSION AND MOBILITY OF POPULATIONS (GPDMP)

In 2021, the work plan of the Cross Cutting Issue Global Pathogen Dispersion and Mobility of Populations will continue to be implemented in close collaboration with all GHTM groups and cross cutting issues.

Activities:	Outcomes
<p>Ongoing activities 2020/2021 with RGs: In collaboration with the THOP group, we will continue working on several projects that pretend to reconstruct the dynamics of dispersion of pathogens, with an emphasis on the emergence and dispersion of antimicrobial or antiviral drug resistance:</p> <ul style="list-style-type: none"> - Serological survey of SARS Cov2 in Cascais, Portugal - Evolutionary history and drug resistance patterns of HIV-1 in Cabo Verde - Evolutionary history and evolution of transmitted and acquired HIV-1 drug resistance in Cabo Verde - Transmission dynamics of HIV-1 in migrants - Determinants of HIV-1 late presentation in Europe - Epidemic history of HBV in Portugal - Epidemic history of HCV in Portugal - Unraveling mechanisms of biocide resistance in bacteria. - Biocide susceptibility profiling and determination of biocide resistance determinants in relevant pathogens, with emphasis on staphylococci; Characterization of biocide stimulons in bacteria - Molecular characterization of staphylococci causing skin and soft tissue infections (SSTIs) in animals and humans - a OneHealth approach <p>In collaboration with the PPS group, we will work on different projects related to mobility of populations and migrants and on the determinants of emergence of pathogens, particularly we will address the problems of deforestation and vaccine hesitancy:</p> <ul style="list-style-type: none"> - Impact of deforestation for the emergence of new emergent infectious diseases - Acculturation, lifestyle and health of migrants in different CPLP contexts - Addressing vaccine hesitancy in Europe <p>In collaboration with the VBD group, we will investigate determinants of pathogen dispersion in different CPLP contexts, through three independent projects:</p> <ul style="list-style-type: none"> - MosquitoWeb - Modelling the risk of introduction of Aedes invasive species and the establishment of arboviral vector-borne infections in Europe - Epidemiology of leishmaniasis as a reemerging disease in Europe - Zikalliance: a global alliance for Zika virus control and prevention <p>In collaboration with the IHC group, we will continue the previously implemented projects:</p> <ul style="list-style-type: none"> - the largest Travellers clinic in Portugal, established at IHMT - Molecular markers of resistance in parasitic populations collected in malaria endemic areas (VBD+IHC). 	<ul style="list-style-type: none"> - At least 8 papers published in international journals - Submission of at least 2 projects for funding - At least 3 master theses - At least 1 Ph thesis - Organization of at least 1 training event
<p>New activities 2020/2021 with RGs and infrastructures:</p> <ul style="list-style-type: none"> - ORIGHAMI: Transmission dynamics of HIV-1 in migrants Europe (financed by ANRS) (THOP) - Implementation of a children cohort in the archipelagos of Cape Verde and São Tomé e Príncipe (PPS) - Phylogenomics of Malaria parasites and socio-cultural determinants of malaria dispersal in PALOP countries (VBD) - Tracking infectious diseases in mobile populations and travelers, with monitoring and risks of introducing pathogens that cause STDs and diarrhea of travelers from Lusophone countries and their antibiotic resistance profile (IHC). 	<ul style="list-style-type: none"> - At least 10 Posters and/or oral presentation in international conferences - At least 2 project proposals for funding



CCI – PUBLIC HEALTH INFORMATION (PHI)

Objective: To support public health decision making through the production of information and political decision-making tools, namely in the area of epidemiological surveillance and early detection systems:

Activities:	Outcomes
<p>Ongoing activities 2020/2021 with RGs:</p> <p>Screening for infectious diseases in mobile populations and travelers, with monitoring and risks of introducing pathogens that cause STDs and diarrhea of travelers from Lusophone countries and their antibiotic resistance profile. BCG vaccine to reduce unplanned absenteeism due to illness of health care workers during the COVID-19 pandemic. A multi-center randomized controlled trial. VAX-TRUST - Addressing vaccine hesitancy in Europe</p> <p>Initiatives supporting efforts from the public health authorities related to the ongoing pandemics. Health Risk and social vulnerability to Arboviral Diseases in mainland Portugal</p> <p>MosquitoWeb (NOVA Health): in 2021, this initiative will evolve into an integrated Iberian network of citizen science for mosquito surveillance, in collaboration with INSA and Mosquito Alert (Spain)</p>	<p>Number of tracing/epidemiological surveys performed</p> <p>Number of epidemiological surveillance alerts / notifications According to the deliverables contracted with the financing agencies</p> <p>Participation of members in at least 3 initiatives raising general public comprehension on COVID</p> <p>Number of scientific publications on COVID in Q1 journals Report for 2021</p> <p>Extended network in 2021</p>
<p>New activities 2020/2021 with RGs and infrastructures:</p> <p>Create an Intelligence center until December 31, 2021</p> <p>Develop and strengthen the training / capacity building of human resources in the area of public health information systems, with a particular focus on those related to epidemiological surveillance and early intervention.</p>	<p>Bylaws of the created intelligence center containing at least the definition of the mission, the objectives and general lines of operation</p> <p>At least one partnership protocol for analysis and strengthening of information systems established with a CPLP health institution by December 31</p> <p>80% of GHTM members with GCP certificate</p> <p>Conducting at least one training in the field of epidemiological surveillance for members of the GHTM and IHMT NOVA community</p> <p>At least one training course in the field of clinical trial management</p>
<p>New activities 2020/2021 with RGs and infrastructures:</p> <p>Create a GHTM data repository that allows to enhance the ability to answer public health issues through Big Data Analysis and artificial intelligence (AI) methods</p>	<p>Creation of the repository until December 31</p> <p>Establishment of partnerships with other academic institutions of the CPLP and the EU with a view to training in the areas of Big Data Analysis and IA</p>



CCI – FAIR RESEARCH PARTNERSHIPS (FRP)

Objective: To actively promote fair and equitable partnerships - with the assumption that we can contribute to increased productivity if: the definition of the research agenda results from joint work; clarification of responsibilities and promotion of mutual learning (“reverse innovation”); there is data sharing and research networks.

Activities	Outcomes
<p>Ongoing activities 2020/2021 with RGs:</p> <p>Ongoing activities 2020/2021 with VBD</p> <ul style="list-style-type: none"> • Learning to Investigate by Field Experiment for Southeast Asia Emerging Diseases (Erasmus+) <p>Ongoing activities 2020/2021 with PPS</p> <p>2 important partnerships:</p> <ul style="list-style-type: none"> - between the United Kingdom, Portugal and Mozambique as part of an investigation into health literacy standards and men's health care search in Mozambique - between Portugal, Mozambique, Cape Verde and Angola on strengthening the capacity of bioethics committees. 	<p>Analysis of ongoing partnerships (namely, PhD Course in Biomedical Sciences) - results until 31 December</p>
<p>New activities 2020/2021 with RGs and infrastructures:</p> <p>Develop and strengthen institutional capacity building in the area of fair and equitable partnerships</p>	<p>Guidelines for standardization of protocols on Fair and Equitable Partnerships (e.g. co-authorship rules, data sharing) - until 31 December</p>
<p>Capacity building:</p> <p>The following capacity building activities are predicted:</p> <p>Organization of training actions</p> <ul style="list-style-type: none"> - Workshop on knowledge management - Workshop on communication strategies 	<p>Organization of at least 2 training events</p>
<p>Congresses/Events:</p> <p>Participation</p> <p>GHTM sessions</p>	<p>Organization of at least 2 meeting events</p>



INSTITUTO DE HIGIENE E
MEDICINA TROPICAL
DESDE 1902



BIOLOGICAL RESOURCE CENTER (BRC) / BIOBANK

Nowadays, BRC and biobanks are central structures for innovation on global health and advance of precision health care. Through biobanks, a variety of biological specimens may be conserved under exceptional quality conditions, anticipating collection needs for prospective applications, mainly related with development or application of new biomarkers, new therapies, or diagnostic methods. The BRC/biobank of GHTM/IHMT – Biotropical Resources, BIOTROP – was created in 2016 to improve research in tropical medicine and infectious diseases, allowing the supply of high-quality biological resources to researchers.

After a long period dealing with structural (facilities, equipment), operational (governance, elaboration of standard procedures, SOP, and forms) and legal issues (protection of individual data, and conservation of biological resources), BIOTROP is now ready to receive, preserve, and distribute biological samples strictly following the ethical and legal issues, under the Nagoya protocol and the international best practice guidelines. Its data management good practices and confidentiality were recognized by the Data Privacy Impact Assessment (DPIA) evaluation performed by NOVA Data Protection Officer (DPO) (2019). Very recently, in 2019, BIOTROP integrated the Portuguese Roadmap of Research Infrastructures, as member of two networks - Portuguese microBiological Resources Center Network [Pt-mBRCN / MIRRI-PT - Portuguese microBiological Resources Center Network [<https://www.mbrcn.pt/>] / Microbial Resource Research Infrastructure– Portugal [<https://www.mirri.org/>] and National Biobanks Infrastructure (Biobanco.pt, <http://biobanco.pt>).

BIOTROP has now around 21,000 samples of microorganisms (or derived products) associated to both human and animal health, vectors, and reservoirs. These collections were donated by the principal investigators of both recent and past research projects. A web catalogue is being elaborated to facilitate the exchange of resources between investigators. To obtain prospective collections of infectious agents of tropical diseases from endemic areas, positive samples collected during the routine diagnostics procedures at the central IHMT's laboratory, from patients coming to ADMT's Travel Medicine Appointment, will be stored. The procedures and flowchart of collection and storage of this material are currently under appreciation of IHMT's Ethical Commission and will be implemented during the next year.

In addition to depositing and distributing samples, BIOTROP has given support to researchers and students to elaborate SOPs of collection and processing of isolates and further services, such as pathogen molecular typing or phylogenetic analysis will be put in practice.

Active participation in dissemination activities will continue as well as seek of national and international collaborations in order to gain visibility and gathering funds.

A Strategic Plan for 2021-2023 detailing all these activities is being prepared to be implemented at the beginning of 2021.



BIOINFORMATICS HUB

The GHTM/IHMT Bioinformatics Hub represents a significant opportunity to improve bioinformatics skills and support research for the entire GHTM scientific community.

The high processing and data storage capacity of this infrastructure has been essential to follow the intense speed, complexity and volume of data that have been produced in light of recent technological advances, especially in the area of genome-wide sequencing.

This infrastructure intends to act at four levels in 2021: sequencing, data management, support for research projects and enhancement of collaborative networks.

More specifically:

I. SEQUENCING:

Nanopore sequencing – MinION

Several GHTM researchers expressed their interest to carry out high-throughput sequencing in-house, as well as in fieldwork situations (refer to the Report on the analysis of the questionnaire for the purchase of MinION equipment and technology, from “Oxford Nanopore Technologies”). After evaluation of the available options, the portable equipment for nanopore sequencing MinION Mk1C, from “Oxford Nanopore Technologies”, was purchased in 2020. The management of MinION usage, namely concerning the schedule and storage space verification, will be performed by the coordinator of the Bioinformatics Hub, with the support of the other members of the Hub.

Action proposals:

- Implementation of the MinION usage regulation;
- Initial support in the use of the MinION equipment to ensure good application practices;

- Management of usage and timing;
- Reassessment of data storage needs

II. DATA MANAGEMENT:

Research data produced at GHTM/IHMT has been managed individually by each research group, mainly resorting to ad hoc storage and sharing options.

Action proposals:

- To define a general standard operating procedure for data storage and management;
- To develop data management plans, as well as integration in data analysis systems, for particular GHTM/IHMT projects that require it;
- To regularly reassess the needs for computer infrastructure or access to remote platforms.

III. SUPPORTING RESEARCH PROJECTS:

Bioinformatics support in the areas of genomics and transcriptomics was given, between 2019 and 2020, to 6 projects on HIV, HPV, Hepatitis, antibiotic resistance, Zika and other arboviruses.

Action proposals:

- To continue to support the development of projects and the analysis of genomics and transcriptomics data within the scope of ongoing research activities at GHTM;

- To manage all the bioinformatics equipment usage, assuring access and good practices, and proposing new acquisitions of computer material according to the research needs.



INSTITUTO DE HIGIENE E
MEDICINA TROPICAL
DESDE 1902



IV. COLLABORATIVE NETWORKS:

IHMT is part of collaborative networks within the scope of bioinformatics applied to health. The reinforcement of the existing bioinformatics infrastructure will allow to expand the networks and look for new collaborations and funding.

Action proposals:

- To continue to boost interaction and collaboration with national and international infrastructures and networks, namely, maintaining the participation in the PT-OPENSOURCE Infrastructure, in the REDCap (Research Electronic Data Capture) consortium, in the PrimaryCare@Covid19 and Lab-BioBanco digital platforms and in networks WANETAM-3 (West African Network for TB, AIDS, Malaria) and TB WGseq & Bioinformatic network (London School of Hygiene and Tropical Medicine);
- To strengthen partnerships and collaborative networks and prepare applications for funding;
- To develop exchange programs with CPLP partners.



VIASEF

The “In Vivo Arthropod Security Facility (VIASEF)” is part of the Roteiro Nacional de Infraestruturas de Investigação since 2014. This infrastructure, hosted at the Instituto de Higiene e Medicina Tropical/NOVA, is devoted to the study of arthropods and the pathogens they transmit. VIASEF is specifically adapted to rear and maintain invasive and non-invasive arthropod vector species, transgenic strains and to perform transmission studies of pathogens of human and animal diseases that need to be handled in BSL-3 laboratories.

Access to VIASEF is universal to the scientific and industry communities. This research facility with ACL-2 and 3 insectaries and laboratories (including a BSL-3 lab) provides access to a wide variety of services. Some of these services are standardized offers that can be purchased for either research or commercial purposes. There is also the possibility of submitting proposals for the development of specific studies. Insectaries and laboratories can be rent, with or without technical support.

This ACL-3 facility offers national and international researchers, new opportunities for the development of scientific activities focusing vector-borne diseases such as malaria, dengue and West Nile fevers, leishmaniasis, Chagas or Lyme disease. Many of these infections are neglected and/or (re)emerging diseases of increasing global health concern. This is of particular relevance in the present context of climate, environmental and social changes which tend to expand the geographic ranges and epidemiological patterns of vector-borne diseases. VIASEF, by promoting fundamental and translational research, as well as the development of new products and services addressing these issues, can significantly contribute to the improvement of health, social and economic status of populations. Furthermore, by fostering the training of researchers, health specialists and human resources for industry, VIASEF is also promoting the creation of new jobs and highly differentiated human resources. In this context, the outcomes of the activity of VIASEF will impact the following United Nations Sustainable Development Goals (SDGs):

- SDG 1 (no poverty), as many vector-borne diseases affect primarily the poorest fractions of both urban and rural human populations.
- SDG 2 (zero hunger), as vector-borne diseases of veterinary importance such as animal trypanosomiasis or tick-transmitted protozoans have major impacts in livestock.
- SDG 3 (good health and well-being), due to the enormous impact that vector-borne diseases such as malaria or Aedes borne arboviruses have in human populations worldwide.
- SDG 4 (quality education), being embedded in a University, VIASEF will accommodate students for experimental training in the scope of their (post-)graduate work programs.
- SDG 8 (decent work and economic growth), as vector-borne disease of both medical and veterinary importance as major causes of economic loss, especially in low-income countries.
- SDG 9 (industry, innovation and infrastructure), due to its capacity for testing new products and solutions for vector-borne diseases control.
- SDG 10 (reduced inequities), as some of the major vector-borne diseases still affect primarily tropical and subtropical regions of the globe, as well as low-income countries.
- SDG 13 (climate action), by providing insectary-based controlled environments for experimental studies on the impact of climate change in transmission of vector-borne pathogens.
- SDG 17 (partnerships for the goals), due to the potential of this infrastructure to promote synergies between academy and industry, at both national and international levels.

The activity of VIASEF also aligns with two of the five priorities for Health, Clinical and Translational Research, of the FCT Research and Innovation Agenda for Health 2020-2030, namely:

- Pharmacology, Medicines and Advanced Therapies;
- Assessment of Technologies and interventions in Health and Rapid Access to Innovation.



INSTITUTO DE HIGIENE E
MEDICINA TROPICAL
DESDE 1902



In addition to its capacity to maintain a variety of arthropod species in contained environments, VIASEF provides safe housing for in vivo tests of vector-borne pathogens. This allows the development of experimental protocols with multiple research purposes, including:

- The study of vector competence determinants, vector pathogen interactions and immunological factors.
- Testing of new pharmacological products interfering with the development of the pathogen in the vector.
- Testing new insecticidal and repellent candidates, including novel formulations (e.g. nano-encapsulation); and studies of insecticide resistance.
- Performing bioecological and behavioral studies of arthropod vectors towards the development of innovative non-insecticidal vector control tools.



INSTITUTO DE HIGIENE E
MEDICINA TROPICAL
DESDE 1902



Annex I: 2019 SAB Evaluation – Recommendations

After this discussion, the SAB recommends the following:

1. It is unclear how the different research groups and cross-cutting issues interact. Although it is appreciated that the current structure is different from the previous 4-year period, the SAB recommends producing **a scheme in which the interactions between research groups and cross-cutting issues are mapped and quantified**. For the time being, this will include the interactions of the previous 4 years. This will serve as baseline to monitor the evolution and degree of interactions over the next 4 years.
1. Securing competitive research funding is essential for the success of the Centre. Information on available funding opportunities should be known by all researchers so that they would be able to submit grant proposals. Partnership with LMIC is essential, particularly with lusophone countries. The SAB suggests creating, whenever possible, a **network between researchers and policy makers at national level** in the countries where the Centre is operating.
2. The SAB is happy to hear that there is already a plan to recruit an **implementation scientist**. This is essential for expanding the research portfolio of the Centre and the impact of its research activities. In addition, the SAB recommends strengthening the **partnership with the industry**, particularly when considering that the Centre is actively working on drug discovery, new treatments and novel diagnostic tests. Without industrial partners, discoveries may be overlooked and not developed towards products.
3. The SAB recommends **capacity building should be done at all levels**, not only MSc and PhDs, but also technicians. Adequate consideration should be given to the inclusion of promising alumni in research activities benefitting their career and the centre's activities. The SAB approves the Master course in medical entomology done for lusophone technicians and students, which is part of the process of capacity building.
4. Finally, the research portfolio of the Centre is extremely broad. Identifying priority research areas may help increasing the efficiency in the use of resources. This is an exercise that the SAB is unable to do at this moment as the time available for the presentation of the different research areas was extremely limited. **Prioritization could first be done internally and then discussed with the SAB at the next meeting that hopefully would have more time for such discussion.**



INSTITUTO DE HIGIENE E
MEDICINA TROPICAL
DESDE 1902



Annex II: GHTM / IHMT / NOVA APPROVED REGIMENT

REGIMENT

Global Health and Tropical Medicine Research Unit / Global Health and Tropical Medicine (GHTM), FCT, UID /
04413/2020

Institute of Hygiene and Tropical Medicine / NOVA University of Lisbon

PREAMBLE

According to the Foundation for Science and Technology (FCT), “the research units represent a fundamental pillar in the consolidation of a modern and competitive scientific system. They must gather a critical mass appropriate to their mission and promote creative environments, in which new ideas can arise and where researchers find the right conditions to carry out their scientific projects and to develop their career. Whenever applicable, they must bring together interdisciplinary and multidisciplinary resources that enhance the approach to complex problems and new societal challenges.”

The Global Health and Tropical Medicine Center (“Global Health and Tropical Medicine”), hereinafter referred to as GHTM, is a research and development (R&D) unit, under the terms of the Science Law (Decree-Law n° 63/2019) and in scientific domain of life sciences and health, created in 2015, which brings together in its composition, researchers with experience and knowledge in Tropical Medicine and Global Health. With its activity, it intends to reinforce and consolidate Portugal's role in leading the development and implementation of a research agenda applied to global health. Its intervention, based on the evidence provided by the investigation, contributes to the promotion of equity, health and well-being of the populations.

ARTICLE 1

MISSION AND OBJECTIVES

1 - The mission of the GHTM is to produce knowledge, develop tools and strengthen health systems, through research of excellence and training of human resources, so that individuals, communities and countries can improve their global health status.

2 - The specific objectives of the GHTM are:

- a) Strengthen local and global capacity to control vector-borne diseases;
- b) Contribute to the control of tuberculosis, HIV infection and opportunistic infections;
- c) Collaborate with national and international authorities with a special focus, but not restrictively, on the diseases mentioned in a) and b), and in order to strengthen health systems to achieve Universal Health Coverage and improve health and well-being. to be among the most vulnerable populations;
- d) Improve health care in areas with a high burden of these diseases.

ARTICLE 2

FUNCTIONAL ORGANIZATION

1 - The functional organization of the GHTM consists of four Research Groups (Research Groups, RG): 1- Individual Health Care (Individual Health Care, IHC), 2- Vector Transmitted Diseases (Vector Borne Diseases, VBD), 3- Population Health, Policies and Services (Population Health, Policies and Services, PPS), and 4- Tuberculosis, HIV and Opportunistic Diseases (Tuberculosis, HIV and Opportunistic Diseases, THOP)



2 - The four RG interact and share knowledge and experience within five Cross Thematic Lines (Cross Cutting Issues, CCI): Diagnosis (Diagnostics, DG), Discovery and Resistance to Drugs (Drug Discovery & Resistance, DDR), Global Dispersion of Pathogenic Organisms and Population Mobility (Global Pathogen Dispersion and Population Mobility, GPD&PM), Public Health Information (PHI), and Partnerships for Research Equity (Fair Research Partnerships, FRP).

ARTICLE 3 COMPOSITION

- 1 - The GHTM includes Doctoral Members (PhD) and Non-PhD Members (non-PhD) that are organized in Research Groups (RG), according to their main thematic area of activity;
- 2 - To become a Member, the researcher must fill out an individual registration form and present an activity that fits the lines of action and / or strategic interests of the GHTM.
- 3 - If the doctorate was obtained more than 3 years ago, the candidate must have at least three articles or other type of work published (or accepted for publication) in journals indexed in the Web of Science, SCOPUS or other internationally recognized databases;
- 4 - After curriculum appraisal and approval of the application for membership by the leader of the Research Group and by the Scientific Coordinator of the Center, the registration of the new Member in the GHTM is carried out through the FCT portal (by express request of the Coordinator, if the process occurs outside the FCT's annual team update period).

ARTICLE 4 DUTIES AND RIGHTS OF MEMBERS AND RENEWAL OF MEMBER STATUS

- 1 - GHTM Members must mention their affiliation with GHTM in all publications related to the center's themes, and must also keep their profile and *curriculum vitae* updated on the Center's website, as well as on the other relevant platforms, within the scope national and extranational curriculum evaluation systems, namely, NOVA's scientific information system - PURE NOVA, CIÊNCIAVITAE, ORCID and SCOPUS;
- 2 - GHTM Members must be proactive in seeking funding and any submission of applications to competitive or other tenders must be done via the Project Support Office (GAP), by providing basic proposal descriptors - RG, CCI in which it is integrated, summary, financing and partner institutions;
- 3 - The GHTM Members, through the leaders of the RG and / or coordinators of the CCIs, may suggest new thematic areas and research topics, in the context of the strategic lines of the GHTM, for an eventual integration in the work plan of the center;
- 4 - In the case of Doctorate Members for more than three years, in order to maintain the status of Member, the same must demonstrate in the last three years, at least one of the following indicators:
 - a) an article published, or accepted for publication, in journals indexed in the database SCOPUS;
 - b) a patent submitted and / or approved, accompanied by the respective reference;
 - c) an approved project, accompanied by the respective reference;
 - d) a doctoral student.

The rules mentioned above are not applicable to members with a PhD for less than 3 years.

- 5 - The repeated failure to fulfill these duties in two consecutive three-year periods, and of the others mentioned in these Rules, is a reason for not renewing the status of GHTM Member, on the proposal of its Director or the Scientific Coordinator, after hearing the Scientific Committee of the Center.



INSTITUTO DE HIGIENE E
MEDICINA TROPICAL
DESDE 1902



6 - The rights of GHTM members are framed in the general regulation of the research centers of the Foundation for Science and Technology.

ARTICLE 5

MANAGEMENT AND CONSULTATION BODIES

- 1 - The management bodies of the Center include the Director of GHTM, who is simultaneously Director of IHMT NOVA, the Management Committee (Management Board, MB), the Scientific Committee (Scientific Council, SC) and, as a consultation body, the Scientific Advisory Board, SAB;
- 2 - The Management Committee (MB) is constituted by the Director of IHMT NOVA, the Scientific Coordinator (Scientific Coordinator, SCoo) and the Administrator of IHMT NOVA;
- 3 - The Scientific Committee (SC) is constituted by SCoo, by the leaders of the RG and the coordinators of the CCI's;
- 4 - The Scientific Advisory Board (SAB) is composed of five internationally renowned scientists and experts in the intervention and research areas of the Center and is governed by its own regulation (annex).

ARTICLE 6

SCIENTIFIC COORDINATOR (SCOO)

- 1 - In accordance with paragraph 3 of article 33 of the Statutes of IHMT NOVA (6727/2018, DR 2nd series, 13.01.10 July), SCoo and SC are appointed by the Director of IHMT NOVA, after evaluation of the applications by SAB and hearing from the Scientific Council of IHMT NOVA;
- 2 - SCoo leads SC, has a casting vote and is responsible for implementing the strategic plan and monitoring the center's productivity;
- 3 - Candidates eligible for SCoo are all Doctoral Members of GHTM, with recognized scientific seniority in areas where the GHTM operates, with good command, spoken and written, of Portuguese and English;
- 4 - SCoo's selection is based on curriculum analysis and evaluation of the submitted work program. The application must be accompanied by the following documents, written in English:
 - a) Letter of intent addressed to the Director of GHTM / IHMT NOVA;
 - b) Concise curriculum vitae, containing clear information on the professional experience relevant to the application;
 - c) Program of work for 4 years within the areas of activity of the GHTM and a composition proposal for the Scientific Committee of the Center, describing the specific functions of each proposed member (there may be members common to several applications).

ARTICLE 7

SCIENTIFIC COMMITTEE (SC)

- 1 - The Scientific Committee (SC) is comprised of SCoo, the RG leaders and the coordinators of the CCI's, in a total of 10 elements.
- 2- The SC is responsible for:
 - a) Administer and manage the GHTM and its resources;
 - b) Prepare annual and multiannual activity reports and plans taking into account the SAB's opinions, under the terms defined in the FCT's General Regulation;
 - c) Prepare the annual budget proposal;
 - d) Institutionally represent the GHTM;
 - e) Submit to the Director of GHTM / IHMT NOVA proposals for changes to these regulations.



3 - RG leaders are responsible for:

- a) Submit to SC, within the period established by it, an annual report on the activities carried out by the RG and the subsequent plan;
- b) Manage the annual budget allocated to the RG by SC and ensure its proper execution;
- c) Provide technical and scientific advice to SCoo on the strategic suitability of new projects, acquisition of equipment and activities of the members of its RG, within the scope of the strategic objectives of the GHTM;

d) To give an opinion to the SC on the integration of new members in the Center who intend to integrate their RG.

4- The CCI Coordinators are responsible for:

- a) Streamline the dialogue between the different RGs, in order to maximize cross-cutting collaboration actions
- b) Identify and mark transversal actions that have been translated into submitted projects, publications in scientific journals, presentations at congresses, patents, Master's or Doctorate guidelines and other training actions.
- c) Periodically report to the Center Coordinator and SC members the results of the actions discussed above.
- d) Each CCI must present an annual activity plan (1 page) including GHTM Sessions, seminars, national or international guests, project applications or participation in congresses.

ARTICLE 8
SECRETARIAT

1 - SCoo and SC are advised by an administrative support secretary, appointed by the Director of IHMT NOVA for this purpose;

2 - The secretary is responsible for ensuring the entire GHTM expedient, in accordance with the guidelines of his SCoo, namely:

- Ensure the updating of content on the Center's website.
- Direct assistance to the Director of GHTM, SCoo and SC;
- Administrative and financial management of the GHTM adequate to the procedures of IHMT NOVA and the project financing entity;
- Administrative support for GHTM members in their activities related to the project;
- Administrative coordination with the IHMT NOVA Project Support Office.

ARTICLE 9
MEETINGS

1 - SC will meet at least monthly and / or whenever special circumstances so require;

2 - RG leaders and CCI coordinators may call meetings with GHTM members whenever they deem necessary for the proper execution of the work plan;

3 - SCoo and SC must meet with the SAB to monitor the activity, at least once a year, preferably in person, and alternatively, semiannually by videoconference;

4 - A plenary meeting should be held with all members of the GHTM, at least once a year, to discuss the scientific strategy and action plan proposed by SCoo;

5 - The minutes of all meetings will be made available in the public folder of the GHTM;

6 - All matters relating to the management of the GHTM will be announced publicly.



INSTITUTO DE HIGIENE E
MEDICINA TROPICAL
DESDE 1902



ARTICLE 10

FINANCIAL ORGANIZATION

- 1 - The GHTM Center is an R&D Unit whose financing is allocated by FCT;
- 2 - The financing is destined to the activities or applications recommended by the evaluation panel of the R&D Units, and the pursuit of the action plan proposed in the application for financing;
- 3 - If, due to budget cuts, the amount attributed is insufficient, the SC must reformulate the Center's action plan, according to the available budget;
- 4 - The budget must be distributed according to the following factors, which will be defined in each financing framework of the Center:
 - a) Funds for the basic activity and management of the Center;
 - b) Funds to encourage research and interaction between teams;
 - c) Funds to support open access publication, in magazines with a high impact factor;
 - d) Funds to support participation in strategic congresses for the center;
 - e) Funds to support the acquisition of equipment;
 - f) Funds for individual support to doctoral members.
- 5 - The GHTM may benefit from additional funding resulting from the submission of project applications by its members, in competitive competitions from national or international funding agencies.

ARTICLE 11

FINANCIAL SUPPORT TO DOCTORAL MEMBERS

- 1 - The funds available will be used for the following support to doctoral members and according to the following rules:
 - a) The amount for individual support to doctoral members will be counted according to the number of articles published and / or patents submitted in the previous year, which are included in PURE NOVA, according to the conditions and indicators referred to in specific internal regulations and periodically reviewed.
 - b) Incentive to research and interaction between teams: allocation of funds for Exploratory Internal Projects, which are defined as "small projects to develop innovative ideas and which must involve more than one RG within the scope of cross-cutting issues".
An annual internal call will be made for the submission of proposals;
 - c) Support for publication - publications in which:
 - i) 1st author or corresponding author is a Doctoral Member of one of the RG (maximum of one request per researcher per year is possible) and according to the order of arrival of the request until the available budget is completed;
 - ii) Thematic of the article must fall within the scope of the objectives of the RG and at least one of the KICs;
 - iii) Magazine with an impact factor (SCOPUS) equal to or above the 75% percentile of the impact factors of journals in the thematic areas of the group (according to the table attached to the internal regulations and updated every 4 years);
 - iv) The percentage of support for publication costs will be defined by the journal's impact factor, according to the table mentioned in the previous point;
 - v) Limited support for magazines that offer content in an Open Access model;



INSTITUTO DE HIGIENE E
MEDICINA TROPICAL
DESDE 1902



vi) Affiliation and Full Acknowledgments:

Affiliation: Global Health and Tropical Medicine, GHTM, Institute of Hygiene and Tropical Medicine, IHMT, NOVA University of Lisbon, UNL, Rua da Junqueira 100, 1349-008 Lisbon, Portugal

Acknowledgments: FCT for funds to GHTM - UID / 04413/2020

d) Support for participation in scientific congresses and meetings in which:

- i) The GHTM will support participation in congresses, up to a maximum limit value defined in internal regulations and updated periodically;
- ii) It is necessary to present scientific work (poster or oral communication);
- iii) Support is limited to PhD students and post-doctoral researchers with a PhD degree obtained less than 6 years ago;
- iv) The support is preferably intended for congresses and scientific meetings considered as priorities for the Center's strategy, according to the table attached to the internal regulations and updated annually.

ARTICLE 12

BINDING

All members of the GHTM are bound by the resolutions taken at the meetings, without prejudice to the right to declare the vote to be included as an attachment to the minutes drawn up.

ARTICLE 13

DOUBTS AND OMISSIONS

The doubts and omissions arising from the application of these Rules will be resolved by the SCoo or the Director of the GHTM, in accordance with the applicable legal rules and after hearing the SC of the GHTM.

ARTICLE 14

IMPLEMENTATION

These regulations come into force on the day following that of their publication on the Center's website, after public consultation with all members of the GHTM Center, after hearing the Scientific Council of IHMT NOVA, on July 30, 2020.

Approved by the Director of GHTM / IHMT NOVA on September 17, 2020.