

**Formulário Relatório Final - Componente Científica**  
[Componente Científica Lacrada com Sucesso a 31-07-2020]

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**1. Identificação do Projeto**

**Referência do Projeto:** UID/Multi/04413/2019

**Investigador Responsável:** Filomeno de Jesus Pires Coelho Fortes

**Instituição Proponente:** Universidade Nova de Lisboa (UNL)

**Data de Início:** 01-01-2019 **Data de Fim:** 31-12-2019 **Financiamento Concedido:** €337.647,00 €

**2. Caracterização Sumária do Projeto**

**Objetivos do Projeto (indicar endereço eletrónico do(s) site(s) criado(s), quando aplicável)**

The Global Health and Tropical Medicine Centre (GHTM) [<https://ghmt.ihmt.unl.pt/>] is a FCT funded R&D unit hosted at the Instituto de Higiene e Medicina Tropical da Universidade NOVA de Lisboa (IHMT /NOVA). GHTM mission is to produce knowledge on global health and tropical medicine, develop tools and strengthen health systems through excellence in research, training and systems implementation. Within this mission, GHTM objectives are: a) to reinforce local to global capacity to control vector borne diseases; b) to contribute to the control of HIV tuberculosis and opportunistic infections; c) to support countries to strengthen health systems to achieve Universal Health Coverage; d) to improve health and well-being of vulnerable populations improving individual health care in high-disease burden settings, specially of the Community of the Portuguese Speaking Countries. The year 2019 was a transition period for GHTM. The originally approved 2013-2017 strategic workplan, with its conceptual framework of three Research Groups (RG) [Vector-Borne Diseases (VBD); TB, HIV & Opportunistic Pathogens (THOP) and Population Health, Policies and Services (PPS)] developing research in two Research Lines (RL) [Health challenges of travelers and migrants (HCTM) and Emerging diseases and environmental changes (EDEC)], has been extended to 2018-2019 and gradually replaced by its current strategic framework, as proposed in the 2017/2018 FCT Evaluation of the Research Centers. The two RLs of the 2013-2017 GHTM framework were redefined as 5 cross-cutting issues (CCIs) in the 2019 reapplication, namely - global pathogen dispersion and population mobility; drug discovery & resistance; diagnostics; fair research partnerships and public health information. These CCIs are the new scientific driving forces and enablers of the 2019-on GHTM framework, reinforcing its vision and mission as defined in the 2013 original proposal. Furthermore, again in the scope of the 2019 Evaluation of GHTM, a new Research Group was created - Individual Health Care Group (IHC) - that will implement clinical research focused on the epidemiology, prevention, treatment and diagnosis of infections in the tropics and in travelers.

**Breve descrição das atividades desenvolvidas bem como dos desvios ocorridos durante a execução do projeto**

The VBD RG developed activities focused in its specific research objectives: i) molecular epidemiology and population genetics of pathogens and vectors; ii) mechanisms of resistance to drugs/insecticides, discovery of new therapeutic targets and drug candidates; iii) vector/host-pathogen transmission and interactions; iv) Arthropod vector bioecology and novel control methods; v) new methods of epidemiological assessment, surveillance and diagnosis, all in frame with the EDEC research line and CCIs. Studies were implemented mainly on CCIs "Drug discovery & resistance" and "Global pathogen dispersion and population mobility". The THOP RG developed activities on the molecular epidemiology, diagnosis, study of drug-resistance mechanisms, drug discovery and control of tuberculosis (TB), HIV and opportunistic diseases, to assess global risks and impact on control programs with a focus on early diagnosis and improved precision medicine in the era of antimicrobial resistance and chronic

immunosuppressive diseases. During 2019, THOP continued working on a Global Health perspective, with a focus on migrants and vulnerable populations of Portugal and CPLP countries, characterized phylogenetic origins, molecular epidemiological connections and determinants of resistance for several pathogens, as well as new therapeutic strategies. The PPS RG developed activities on Health Policy and Planning; Human Resources for Health; and Health determinants of vulnerable populations. We highlight the implementation of two studies related to the adult and child immigrant population. The study on adults is on acculturation, lifestyles and health of CPLP immigrants in two Iberian contexts. The child health study consisted in the implementation of a cohort in the Amadora region, with more than 300 children recruited and with the collection of both clinical and sociodemographic indicators. A partnership between the United Kingdom, Portugal and Mozambique was established to investigate patterns of men health literacy and health seeking behaviour in Mozambique. Finally, activities in the framework of the COST-action HARMONY, related to novel tools for test evaluation and disease prevalence estimation, were implemented. The recently formed IHC RG gathers researchers and physicians with expertise on Tropical Infectious Diseases, Travelers' Health and Social Sciences focusing on knowledge and attitudes related to diseases. IHC developed activities on the implementation of clinical research focused on the epidemiology, prevention, treatment and diagnosis of infections in the tropics and in travelers. IHC is part of the WHO Global Alliance against Chronic Respiratory Diseases (GARD-CPLP), acting as collaborative coordination Center. IHC's activities in 2019 included: evaluation of the efficacy of fexinidazole in *Trypanosoma brucei rhodesiense* infection in humans; traveler's diarrhea and STDs' antimicrobial resistant microorganisms; development of culture phenotypic based platforms as a tool to expand diagnosis and drug susceptibility testing of TB; evaluation of genetic markers linked with miltefosine treatment outcomes in visceral leishmaniasis. Special attention was given to GHTM's infrastructure for big data sequence analysis and Biobanking, to the promotion of our activities at several national and international open science dissemination events as well as to the consolidation of our research networks and international collaborations.

#### **Objetivos atingidos**

- VBD RG research highlights in 2019 include - In collaboration with the University of Minho, using molecular modelling, genetic transfection and biological tests, a new *Plasmodium falciparum* gene, Rpn2, has been identified, which has the ability to modulate the drug response to artemisinin derivatives - a promising new target for combating resistance to this important group of antimalarial drugs. Two highly active peroxidic compounds against *Leishmania sp.* induced significant ultrastructural alterations, oxidative stress events and other biochemical alterations that lead to parasite death, representing good candidates for further studies in the context of leishmaniasis therapy (collaborations with FCT/ UALg and IGC). Researchers from GHTM and the Tropical Medicine Foundation (Manaus, Brazil) demonstrated for the first time that the presence of *Trypanosoma cruzi* in açai juice was associated with an outbreak of Chagas disease in the Amazon. Molecular detection studies of RNA and DNA viruses in natural mosquito populations in Portugal, Angola and Mozambique, revealed a high biological diversity, with the identification of new groups of flavivirus, brevidensovirus and fenuivirus, relevant in the search for new arboviruses of medical importance and potential candidates for the development of innovative control methods (e.g. paratransgenesis).
- THOP RG research highlights in 2019 include - Molecular characterization of HIV-1 subtypes, acquired and transmitted drug resistance in migrants followed up in Portugal (2001-2017). Development of computational methods, algorithms and molecular epidemiology approaches to identify and study (i) dengue, Zika and chikungunya virus species and genotypes; (ii) the selective pressure of antiretroviral treatment on HIV-1 and; (iii) norovirus and rotavirus infections in Portuguese elderly living in aged care homes; (iv) and reliably predict M/XDR-TB drug resistance from NGS data using portable systems in Portugal and Brazil. Identification by *in silico* drug repurposing of >20 approved drugs with anti-TB potential; testing of new mycobacterial efflux-pump inhibitors as adjuvant treatment delivered in nanocomposite microparticles. Characterization of the *Staphylococcus aureus* efflux-pump norA diversity and its role in resistance. New tools for the diagnosis of *Pneumocystis jirovecii* pneumonia, using nanotechnology approaches (one patent submitted). Molecular epidemiology of infections by *Toxoplasma gondii*, *Giardia duodenalis*, *Cryptosporidium spp.*, *Blastocystis hominis* and *Microsporidia*, in Europe and Mozambique. Identification of transcriptional alterations during hepatitis delta virus infection and relation with liver oncogenic processes. Also, during 2019 we took advantage of the knowledge and technical expertise gathered with the previously developed diagnostic tools for early detection of MDR-TB and *Pneumocystis pneumonia* and develop novel, simple and low-cost diagnostic tools for other agents and diseases, to be used on endemic areas, on epidemiological surveillance or on travel medicine (two patents registered).
- PPS RG research highlights in 2019 include - Immigrant Child cohort study in the Amadora region. The CRIA cohort study aims to analyse the sociodemographic and health profile of 600 immigrant and native children from the Amadora municipality; databases from Hospital Fernando da Fonseca, ACES Amadora and questionnaires will be linked in a unique dataset. The recruitment of 4-year-old children started in June and by the end of the year, more than 300 children had been recruited, 55% of whom are immigrants mainly from Brazil and Cape Verde and Angola. Through questionnaires, we collected information on sociodemographic and economic characteristics of children, caregivers and family structure; children's emotional and behavioral problems were identified using the SDQ instrument;

clinical data was obtained via health centres and hospital data. This activity was co-funded by GHTM. We received a grant from the MRC/ESRC/DfID/Wellcome Trust to develop a project related to patterns on men's health literacy and health seeking behaviour in Maputo Mavalane region, in Mozambique, having Queen Margaret University (UK) and MIHER (Mozambique Institute for Higher Education and Research) as partners. With a WHO grant, we developed a prototype curriculum and teaching materials for a formative offer on leadership and management of human resources for health; the project is led by GHTM and has the University of the Western Cape School of Public Health (South Africa), the State University of Rio de Janeiro (Brazil) and Semmelweis University (Hungary) as partners. We adhered to the COST action-HARMONY-Novel Network for test evaluation and disease prevalence estimation, which includes the participation of 37 countries, strengthening the development and adaptation of latent class models, from a perspective of Bayesian statistics, in the validation of diagnostic tests with a "one-health" view. Finally, PPS had a major role in the organization of the 5th National Congress of Tropical Medicine. • IHC RG research highlights in 2019 include - Participation in the ongoing multicenter trial "Efficacy of Fexinidazole on the treatment of T. b. rhodesiense human Trypanosomiasis as a tool for disease elimination", funded by EDCPT and coordinated by DNDi. Identified a genetic marker in Leishmania infantum human isolates, associated with miltefosine treatment failures in Brazil. An observational study on the effects of oral polio vaccine campaigns on infants' respiratory and gut microbiome, in collaboration with the Bandim Health Project in Guinea-Bissau was finalized and data is being analyzed for publication. Submitted a non-interventional diagnostic clinical trial on the evaluation of an Ogawa-Kudoh swab culture platform as a tool to simultaneously expand diagnosis and drug susceptibility testing (INH and RIF) of pulmonary tuberculosis in Guinea-Bissau, in the scope of the "End TB" WHO Strategy. Regarding STIs' epidemiology and antimicrobial resistance of N. gonorrhoeae in Portugal, a clinical study was published showing results that reinforce the need and importance of new drug development. • Overall, 2019 was a very successful year in terms of scientific production and approved projects for GHTM. With 48 projects in progress, GHTM's 61 FTE researchers published 180 international articles, with a weighted citation impact for the scientific area 49% above the world average. The dedication to postgraduate training resulted in 13 new doctors in 2019 with the support of GHTM. In addition to the GHTM/IHMT/NOVA basic laboratory facilities, GHTM has refurbished the specialized BSL-3 laboratory and strengthened the support to the accredited vivarium, the several insectaries for breeding mosquitoes and sandflies, the Biobank - Biotropical Resources; and the bioinformatics infrastructure – Datatropical. A level-3 security infrastructure for arthropods (ACL3) - VIASEF (RNIE, FCT, FEDER) is under construction with the support of the FCT-National Network of Infrastructures program. Please refer to the file in section #8 for detailed information and outcomes reporting.

\* Indicar como foram publicitados os apoios POS\_Conhecimento. Anexar fotografias do projeto, em execução e da obra executada, dos equipamentos adquiridos bem como dos painéis e placas de divulgação dos apoios POCI2010. Juntar igualmente imagens das principais páginas do(s) site(s) desenvolvido(s) com indicações dos respetivos endereços eletrónicos.

#### **Realização Financeira (justificação sumária dos desvios ocorridos durante a execução do projeto)**

os desvios ocorridos centraram-se principalmente nas rubricas de Recursos Humanos e Aquisição de bens e serviços. Aguardamos análise de todos os pedidos de pagamento, e caso necessário, solicitaremos as devidas transferências entre rubricas à FCT.

### **3. Instituições que Participam no Projeto**

<b>Designação</b>	<b>Nº Pessoas Mês</b>	<b>Desistiu</b>
Universidade Nova de Lisboa (UNL)	107,3	

### **4. Equipa de Investigação**

<b>Nome</b>	<b>Cargo Função</b>	<b>Tarefas</b>	<b>%Tempo</b>	<b>Dt. Entrada</b>	<b>Dt. Saída</b>	<b>Desistiu</b>
<b>Isabel Maria Rodrigues Craveiro</b>	Investigador		100%	31-12-2018		
<b>Inês Santos Estevinho Fronteira</b>	Investigador		40%	31-12-2018		
<b>Philip Jan Havik</b>	Investigador		100%	31-12-2018		
<b>Pedro Vitor Lemos Cravo</b>	Investigador		100%	31-12-2018		
<b>Carolina Amaral Frade Bruno de Sousa</b>	Investigador		50%	04-01-2019		
<b>Rui Ferreira Alves Moreira</b>	Investigador		30%	31-12-2018		
<b>Celso Vladimiro Ferreira de Abreu Cunha</b>	Investigador		50%	31-12-2018		
<b>Ana Barroso Abecasis</b>	Investigador		100%	31-12-2018		
<b>João José Inácio Silva</b>	Investigador		30%	31-12-2018		
<b>Ana Paula Martins Reis Arez</b>	Investigador		70%	31-12-2018		
<b>Maria Luísa Lobo Ferreira da Costa</b>	Investigador		100%	31-12-2018		
<b>Olga Maria Guerreiro de Matos</b>	Investigador		50%	31-12-2018		
<b>Ana Isabel Amaro Gonçalves Domingos</b>	Investigador		90%	31-12-2018		
<b>Paulo de Lyz Girou Martins Ferrinho</b>	Investigador		0%			
<b>Silvana Maria Duarte Belo</b>	Investigador		40%	31-12-2018		
<b>Gabriela Maria Santos Gomes</b>	Investigador		60%	31-12-2018		
<b>Sofia Júdice da Costa Cortes</b>	Investigador		30%	31-12-2018		
<b>Carla Alexandra Soares Maia</b>	Investigador		100%	31-12-2018		
<b>Isabel Maria dos Santos Leitão Couto</b>	Investigador		60%	31-12-2018		
<b>Fernando Manuel Henriques Cardoso</b>	Investigador		30%	31-12-2018		
<b>Isabel Maria da Silva Pereira Amaral</b>	Investigador		30%	31-12-2018		

<b>João Pedro Soares da Silva Pinto</b>	Investigador		50%	31-12-2018		
<b>Filomena da Luz Martins Pereira</b>	Investigador		30%	31-12-2018		
<b>António Paulo Gouveia de Almeida</b>	Investigador		70%	31-12-2018		
<b>João Mário Brás da Piedade</b>	Investigador		30%	31-12-2018		
<b>Ricardo Manuel Soares Parreira</b>	Investigador		40%	31-12-2018		
<b>Rita Maria Rodrigues Teixeira de Castro</b>	Investigador		30%	31-12-2018		
<b>Henrique Manuel Condinho da Silveira</b>	Investigador		60%	31-12-2018		
<b>Ana Júlia Pinto Fonseca Sieuve Afonso</b>	Investigador		30%	31-12-2018		
<b>Patrícia Carla Simões Abrantes</b>	Investigador		100%	31-12-2018		
<b>ANA MARIA BUTTLE DE MENDONÇA MOURÃO POSSIDÓNIO DE ARMADA</b>	Investigador		40%	31-12-2018		
<b>Maria Teresa Lourenço Marques Novo</b>	Investigador		60%	31-12-2018		
<b>Carla Alexandra Gama Carrilho da Costa Sousa</b>	Investigador		40%	31-12-2018		
<b>Maria de Fátima Carvalho Nogueira</b>	Investigador		80%	31-12-2018		
<b>Ana Catarina Rodrigues Alves</b>	Investigador		100%	31-12-2018		
<b>João Paulo Tavanez da Silva Fernandes</b>	Investigador		100%	31-12-2018		
<b>Jorge Filipe de Sousa Varanda Preces Ferreira</b>	Investigador		30%	31-12-2018		
<b>Luis Filipe Vieira da Silva Lopes</b>	Investigador		70%	01-11-2018		
<b>José Manuel Martins Cristóvão</b>	Investigador		100%	31-12-2018		
<b>Luzia Augusta Pires Gonçalves</b>	Investigador		30%	31-12-2018		
<b>Maria Odete Alves Marques Carolino e Afonso</b>	Investigador		70%	31-12-2018		
<b>Marcelo de Sousa da Silva</b>	Investigador		80%	31-12-2018		
<b>MIGUEL VIVEIROS BETTENCOURT</b>	Investigador		60%	31-12-2018		

<b>Maria do Rosario Fraga de Oliveira Martins</b>	Investigador		30%	31-12-2018		
<b>Pedro Manuel Machado Carlos Ferreira</b>	Investigador		30%	31-12-2018		
<b>Ana Rita Merelo Lobo</b>	Investigador		20%	31-12-2018		
<b>Jorge Luis Marques da Silva Atouguia</b>	Investigador		35%	31-12-2018		
<b>angela maria duarte diamantino lopes mendes</b>	Investigador		30%	31-12-2018		
<b>Kamal Mansinho</b>	Investigador		30%	31-12-2018		
<b>Sónia Maria Ferreira Dias</b>	Investigador		10%	31-12-2018		
<b>Luís Manuel Varandas</b>	Investigador		30%	31-12-2018		
<b>Filomeno de Jesus Pires Coelho Fortes</b>	Inv. Responsável		100%			
<b>Rosa Maria Figueiredo Teodósio</b>	Investigador		50%	31-12-2018		
<b>Jorge Beirão Almeida Seixas</b>	Investigador		60%	31-12-2018		
<b>Dinora Maria da Silva Lopes Ferreira</b>	Investigador		80%	31-12-2018		
<b>Jaime Manuel Simões Nina</b>	Investigador		30%	31-12-2018		
<b>Patrícia Isabel Rosa Salgueiro</b>	Investigador		70%	31-12-2018		
<b>Marta Sofia Pereira Pingarilho</b>	Investigador		100%	31-12-2018		
<b>Anabela Pereira Coelho</b>	Investigador		30%	31-12-2018		
<b>Liliana Isabel Dias Rodrigues</b>	Investigador		100%	31-12-2018		
<b>Claudia Istrate</b>	Investigador		80%	31-12-2018		
<b>Paula Cristina Sousa Saraiva</b>	Investigador		20%	31-12-2018		
<b>Sandra Isabel da Conceição Antunes</b>	Investigador		100%	31-12-2018		
<b>joão borges da costa</b>	Investigador		80%	31-12-2018		
<b>Maria Cláudia Gomes dos Santos Rodrigues da Conceição</b>	Investigador		80%	31-12-2018		

<b>Jorge Alexandre dos Santos Ramos</b>	Investigador		30%	31-12-2018		
<b>Diana Isabel Oliveira Machado</b>	Investigador		100%	31-12-2018		
<b>Tiago João Correia Fonseca da Conceição</b>	Investigador		20%	31-12-2018		
<b>Maria Luisa Jorge Vieira</b>	Investigador		40%	31-12-2018		
<b>Anne-Mieke Vandamme</b>	Investigador		20%	31-12-2018		
<b>Gilles Dussault</b>	Investigador		30%	31-12-2018		
<b>António Manuel Simões Lopes Paiva de Carvalho</b>	Investigador		50%	31-12-2018		
<b>Luís Miguel Velez Lapão</b>	Investigador		90%	31-12-2018		
<b>Jorge Manuel Trigo Almeida Simoes</b>	Investigador		100%	31-12-2018		
<b>Ana Lopes Tavares</b>	Investigador		100%	31-12-2018		
<b>Sofia Maria Mourão Marques dos Santos Costa</b>	Investigador		100%	31-12-2018		
<b>Sofia do Carmo Pires de Moura</b>	Investigador		30%	31-12-2018		
<b>Jacques Derek Charlwood</b>	Investigador		60%	31-12-2018		
<b>Ana Cristina Parda Garcia</b>	Investigador		40%	31-12-2018		
<b>Isabel Larguinho Mauricio</b>	Investigador		30%	31-12-2018		
<b>Teresa Margarida Vaz Pereira Quaresma Carreira</b>	Investigador		100%	31-12-2018		
<b>Maria Joana Azevedo Silva Marques</b>	Investigador		100%	31-12-2018		
<b>Mónica Susana Costa Guerra</b>	Investigador		50%	31-12-2018		
<b>Maria de Aires Machado Pereira</b>	Investigador		100%	31-12-2018		
<b>Ana Paula da Silva Marques Maduro</b>	Investigador		30%	31-12-2018		
<b>Zulmira Maria de Araujo Hartz</b>	Investigador		30%	31-12-2018		
<b>Ana Maria Pinho Tavares</b>	Investigador		100%	31-12-2018		

<b>Ângela Maria Vilaça Pereira de Araújo Pizarro</b>	Investigador		40%	31-12-2018		
<b>Inês Alexandra da Passos Fernandes Domingos</b>	Investigador		50%	07-11-2019		
<b>Sofia Maria Briz Simões Müller Assis dos Santos</b>	Investigador		100%	31-12-2018		
<b>Lis Tavares Coelho Lobo</b>	Investigador		100%	31-12-2018		
<b>Teresa Lobo Machado Sousa Nazareth da Gama Lobo Xavier</b>	Investigador		100%	31-12-2018		
<b>Luis Filipe de Almeida Roxo</b>	Investigador		100%	31-12-2018		
<b>Mohsin Mahomed Sidat</b>	Investigador		80%	31-12-2018		
<b>Rute Alexandra Carvalho Antunes Marcelino</b>	Investigador		50%	31-12-2018		
<b>ANTONIO PEDRO DA COSTA DELGADO</b>	Investigador		40%	31-12-2018		
<b>Marisol Garzon Lozano</b>	Investigador		40%	31-12-2018		
<b>Gonçalo Filipe Rocha Seixas</b>	Investigador		100%	31-12-2018		
<b>Gonçalo Correia de Figueiredo Augusto</b>	Investigador		30%	31-12-2018		
<b>Andreia Filipa Ramos Ribeiro de Lemos Albuquerque</b>	Investigador		20%	31-12-2018		
<b>Ana Sofia Valério Bolas</b>	Investigador		20%	31-12-2018		
<b>Abilio Basilio da Silva Antunes</b>	Investigador		30%	31-12-2018		
<b>Tiago António Casaca de Rocha Vaz</b>	Investigador		100%	31-12-2018		
<b>André Aurélio Marona Beja</b>	Investigador		50%	31-12-2018		
<b>Carolina Bastos Gasparinho Antero da Silva</b>	Investigador		40%	31-12-2018		
<b>Márcia Melo Medeiros</b>	Investigador		100%	31-12-2018		
<b>Paulo Jorge Sampaio Morais</b>	Investigador		100%	27-05-2019		
<b>Joana Isabel Figueira Ferrolho</b>	Investigador		100%	31-12-2018		
<b>Gonçalo Nuno da Costa Martins Alves</b>	Investigador		30%	31-12-2018		

<b>Ana Sofia Andrade de Faria</b>	Investigador		30%	31-12-2018		
<b>Kinanga Kiaco</b>	Investigador		100%	31-12-2018		
<b>Marília Raquel Bettencourt Silva</b>	Investigador		50%	31-12-2018		
<b>Dinamene Alexandra de Matos Oliveira</b>	Investigador		100%	31-12-2018		
<b>Alexandra Maria Pinto de Castro Vasconcelos</b>	Investigador		100%	31-12-2018		
<b>Ahmed Mohamed Nabil Aly Shaaban</b>	Investigador		100%	24-01-2019		
<b>Gustavo Seron Sanches</b>	Investigador		100%	31-12-2018		
<b>Yorleydy Ruiz Moreno</b>	Investigador		100%	31-12-2018		
<b>Cátia Susana Nunes de Sá Guerreiro Albuquerque</b>	Investigador		80%	31-12-2018		
<b>Andrea Clemencia Pineda-Peña</b>	Investigador		100%	31-12-2018		
<b>Ana Luísa Regatão Tomás</b>	Investigador		50%	31-12-2018		
<b>JORGE LIMA DE MAGALHÃES</b>	Investigador		30%	31-12-2018		
<b>Samira Carneiro Gomes D'Almeida</b>	Investigador		100%	31-12-2018		
<b>Daniela Amaral Alves</b>	Investigador		100%	31-12-2018		
<b>André Duarte Belchior Pereira</b>	Investigador		100%	31-12-2018		
<b>MIGUELHETE JOAQUIM LISBOA</b>	Investigador		100%	31-12-2018		
<b>Áurea Martins Gabriel</b>	Investigador		100%	31-12-2018		
<b>Cátia Susana Semedo Patrício</b>	Investigador		50%	31-12-2018		
<b>Rosa Wanda Jambalina Miguel</b>	Investigador		70%	31-12-2018		
<b>MARIA DE JESUS FREITAS DE ALENCAR</b>	Investigador		30%	31-12-2018		
<b>Mélanie Raimundo Maia</b>	Investigador		40%	31-12-2018		
<b>Zélia Maria Araújo da Silva Muggli</b>	Investigador		100%	31-12-2018		

<b>MIGUEL JAIME LANASPA PEREZ</b>	Investigador		70%	31-12-2018		
<b>Moises Francisco</b>	Investigador		40%	31-12-2018		
<b>Filipa Sofia Mendes Oliveira</b>	Investigador		30%	18-11-2019		
<b>Joana Manuel Gonçalves Teixeira Couto</b>	Investigador		100%	31-12-2018		
<b>Victor Figueiredo Pimentel</b>	Investigador		100%	31-12-2018		
<b>Hélio Daniel Ribeiro Rocha</b>	Investigador		100%	18-06-2019		
<b>João Tiago Fernandes Serra</b>	Investigador		100%	31-12-2018		
<b>Gustavo Capatti Cassiano</b>	Investigador		100%	24-04-2019		
<b>Ana Cristina Augusto de Sousa</b>	Investigador		50%	31-12-2018		
<b>Catarina Filipa Calixto Morais</b>	Investigador		30%	31-12-2018		
<b>Leonardo Moerbeck da Costa Moreira</b>	Investigador		30%	31-12-2018		
<b>Reynaldo Dietze</b>	Investigador		80%	31-12-2018		
<b>Carlos Manuel Lima Araújo Osório</b>	Investigador		30%	31-12-2018		
<b>Marcelo Urbano Ferreira</b>	Investigador		30%	31-12-2018		
<b>Maria Guadalupe Medina</b>	Investigador		30%	31-12-2018		
<b>Fernando Passos Cupertino de Barros</b>	Investigador		30%	31-12-2018		
<b>Mafalda Nunes Da Silva Miranda</b>	Investigador		100%	28-11-2019		
<b>Joshua Joseph Galjour</b>	Investigador		30%	31-12-2018		
<b>Joana Paula Mendes da Paixão</b>	Investigador		40%	28-10-2019		
<b>Marly Marques da Cruz</b>	Investigador		50%	31-12-2018		
<b>Karina Kielmann</b>	Investigador		20%	01-04-2018		
<b>Luiz Claudio Santos Thuler</b>	Investigador		50%	19-09-2018		

<b>Tania Cristina Morais Santa Barbara Rehem</b>	Investigador		50%	10-10-2018		
<b>José Inácio Jardim Motta</b>	Investigador		70%	19-09-2018		
<b>Elen Rose Lodeiro Castanheira</b>	Investigador		50%	10-10-2018		
<b>Marcelino de Oliveira Graciano Garrine</b>	Investigador		40%	31-12-2018		
<b>Paula Malaquias Souto</b>	Investigador		30%	14-01-2019		
<b>Constancia Flavia Junqueira Ayres Lopes</b>	Investigador		100%	03-04-2019		
<b>Alvaro Francisco Lopes de Sousa</b>	Investigador		50%	15-01-2019		
<b>Duarte José Vital de Brito</b>	Investigador		40%	08-02-2019		
<b>Inês da Silva Reis</b>	Investigador		100%	31-12-2018		
<b>Deborah Carvalho Malta</b>	Investigador		20%	03-04-2019		
<b>Sara Lima Duarte</b>	Investigador		40%	14-04-2019		
<b>Rosa Maria Soares Madeira Domingues</b>	Investigador		20%	18-03-2019		
<b>Olga Maria da Conceição Nelson</b>	Investigador		50%	07-05-2019		
<b>AYANGMA BONOHO Simplicé</b>	Investigador		50%	11-06-2019		
<b>Regina Eustaquio de Souza Amado</b>	Investigador		100%	07-06-2019		
<b>Solange Salvador Pinheiro Afonso Neto</b>	Bolseiro do projecto		100%	10-09-2019		
<b>Silva Sá</b>	Investigador		70%	30-09-2019		
<b>Vânia Helena Melicio Teófilo</b>	Bolseiro do projecto		100%	10-09-2019		
<b>Filomena Arlindo Manjate</b>	Investigador		30%	09-12-2019		
<b>Wilson Manuel Lima Tavares</b>	Investigador		30%	12-11-2019		
<b>JULYANA BUERY</b>	Investigador		100%	04-11-2019		
<b>Maria Manuela André da Conceição da Silva</b>	Investigador		50%	22-11-2019		

<b>Luis Gomes Sambo</b>	Investigador	50%	05-12-2019		
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### 5. Indicadores de Realização Física

Indicadores	Quantidade realizada
<b>A - Publicações</b>	
Livros	6
Artigos em revistas internacionais	153
Artigos em revistas nacionais	21
<b>B - Comunicações</b>	
Comunicações em encontros científicos internacionais	61
Comunicações em encontros científicos nacionais	56
<b>C - Relatórios</b>	0
<b>D - Organização de seminários e conferências</b>	29
<b>E - Formação avançada</b>	
Teses de Doutorado	13
Teses de Mestrado	43
Outras	0
<b>F - Modelos</b>	0
<b>G - Aplicações computacionais</b>	0
<b>H - Instalações piloto</b>	0
<b>I - Protótipos laboratoriais</b>	0
<b>J - Patentes</b>	3
<b>L - Outros</b>	
Outros	0
Outros	0
Outros	0

### 6. Publicações

Ano	Publicações	URL
2019	Lista publicações em anexo ponto 9.	<a href="#">n/a</a>

### 7. Equipamento

Equipamento	Nº Recibo	Data	Observações
Lista em anexo ponto 9.			

#### 8. Descrição detalhada das atividades desenvolvidas

Nome	Descrição
<a href="#">GHTM 2019.pdf</a>	Descrição detakhada das atividades desenvolvidas

#### 9. Ficheiros Anexos (opcional)

Nome	Ponto do RF	Descrição
<a href="#">GHTM - Publications 2019.pdf</a>	6. publicações	Lista Publicações 2019
<a href="#">Lista Equipamento - Ponto 7. Relatório Final - Componente Científica.pdf</a>	7. Equipamento	Lista equipamento
<a href="#">GHTM - Ongoing Projects 2019.pdf</a>	na	Projetos em curso