REPORT OF THE 2nd SCIENTIFIC ADVISORY BOARD (SAB) OF THE GLOBAL HEALTH AND TROPICAL MEDICINE RESEARCH CENTRE AT THE INSTITUTE OF HYGIENE AND TROPICAL MEDICINE – UNIVERSIDADE NOVA DE LISBOA (IHMT/NOVA)

Dates: 30-31 March 2021

Members of the SAB:

Present:

Prof Sylvie Manguin (SM)	Institut de Recherche pour le Développement, Montpellier, France
Prof Afranio Kritski (AK)	Federal University of Rio de Janeiro, Brazil
Dr Mateus Webba da Silva (MWS)	Ulster University, United Kingdom
Prof Umberto D'Alessandro, Chair (UDA)	London School of Hygiene and Tropical Medicine, United Kingdom

Apologies for absence:

Dr Maria do Rosário Bragança Sambo (MRB)	Ministério do Ensino Superior, Ciência, Tecnologia e Inovação - República de Angola

The meeting was held via teleconference on March 30th, 2021 for 3 hrs and on March 31st, 2021 for 3 ½ hours. The meeting was opened by Prof Filomeno Fortes, Director of the IHMT/NOVA, who welcomed the SAB members and went over some of the achievement and constraints experienced in the last year. The award to Dr Rosario Martins of the gold medal for the 50th anniversary of the Declaration of Human Rights was mentioned a few times during the meeting as a major achievement, recognising the important work done by the GHTM. Prof Fortes mentioned also the financial constraints and the disruption due to the ongoing Covid-19 pandemic that offered also additional opportunities for research.

Miguel Viveiros (MV), the scientific coordinator of the Centre, provided an overview of past achievements, vision, and plans for 2021. There are 54 ongoing projects, 38% of them international ones, 20 new projects approved in 2020, 50% of them international, with a success rate of 19%. This resulted in 202 publications in 2020, a 12% increase compared to 2019, and 28.2% of them being published in top journals versus 23.9% in 2019. This represents an average of 3.2 publications per person. GHTM has had a major role in the national response to COVID-19, that resulted in the funding of 2 international and 3 national projects and the publication of 33 papers. GHTM deposited 5 patents in 2020.

GHTM has a large network of scientific organizations including WHO, Fiocruz in Brazil and African lusophone institutions, which participate in research projects and benefit from courses and training provided by GHTM. It is worth mentioning the 2 new MSc that have started or are about to start, namely the MSc in Biology and Disease Vector Control, and the MSc in Field Epidemiology in Lusophone African countries, the latter funded by the EDCTP. A PhD programme in Angola is also about to start. There are 8 PhD fellowships to be signed in April 2021 and several new research positions (biobank, chemogenomics, geography, clinical statistics). The core (base) budget has been invested in infrastructure (insectary, biosafety level 3, biobank, cohort of migrants, accredited

animal house, bioinformatics hub). MV presented the general objective for 2021. The SWOT analysis mentioned, among the weaknesses, the aging staff, a deficit of human resources in key areas, and insufficient equipment renewal.

Dr Rosario Martins (RM) presented the Population Health, Policies and Services group (PPS). In 2020, PPS produced 97 publications, 25 of them on Covid-19; PPS coordinates 10 projects, 7 of them international; and there are 19 PhD students. PPS will expand its work on migrant children in the Lisbon region, from 450 to 1300 households, focused on the impact of Covid-19. It is important to notice that this work motivated the award of the gold medal to RM, indicating its substantial impact in Portugal. There is the plan to set up a similar cohort in Cabo Verde. Importantly, the work on Covid-19 has been an opportunity to increase the PPS public visibility and that of the GHTM, thanks also to participation in media events. For the fair partnership, there is a project on strengthening bioethics committees in the Lusophone African region, the MSc in field epidemiology mentioned earlier, and a trial on the protective effect of BCG against Covid infection among health workers, all of them supported by EDCTP funds. PPS is also a WHO Collaborating Center for Health Workforce Policy and Planning.

Dr Reynaldo Dietze (RD) presented the Individual Health Care group (IHC). In 2020, IHC produced 8 publications. There are 2 ongoing randomized controlled trials (RCT), both on the treatment of human trypanosomiasis (Fexinidozole and Acoziborole). A cross-sectional study on Covid-19 is being implemented in Lubango, Angola. IHC is recruiting a new staff with expertise on statistics and clinical epidemiology.

Dr Isabel Couto (IC) presented the TB, HIV & Opportunistic Diseases and Pathogens group (THOP). In 2020, THOP published 31 papers and they had 21 PhDs ongoing and 8 non-PhD students. There are 12 ongoing projects with a broad research portfolio, spanning from diagnostic test development for *Pneumocystis jirovecii* and Sars-Cov-2 to drug discovery for *M. tuberculosis,* and antiretroviral drug resistance.

Dr Joao Pinto (JP) presented the Vector Borne Disease group (VBD). In 2020, VBD published 48 papers and managed 26 projects. There are 15 PhDs and 40 post-doctorates studying in VBD. This group has a diverse and broad research portfolio spanning from diagnostic tests for canine leishmaniasis (*L. infantum*) to discovery of new antimalarial compounds (7 promising drugs) and resistance, predictive model of dengue importation in Europe, and the tick-host interactome (TICKOMIC), a path to vaccine development. An important development is the establishment of an *in vivo* arthropod security facility (VIASEF) that will, among others, perform experimental infections with human pathogens and test vector control products. VBD is also part of the malaria working group development (UMAP) along with the University of Maryland, USA and the National Research Institute of Health (INIS), Angola.

The presentation of the GHTM was followed by a discussion with questions and answers. The SAB was impressed by the work produced by the GHTM over the last year, particularly when considering the difficulties due to the ongoing Covid-19 pandemic.

Discussion points:

1. **Discovery of antimalarial compounds** and link with any industrial partner. Apparently, GSK has been contacted and there is some interest on their side. SAB advice is also to contact Medicine for Malaria Venture (MMV) for possible development and link with industry.
2. **REAL.** A new development (February 2021) is the establishment of the ASSOCIATED Laboratory in Translation and Innovation Towards Global Health (REAL) which comprises

several institutions including 13 academic partners, 26 hospitals, 6 Portuguese government agencies and NGOs. The scope is to develop new drugs, new trials and new technologies. GHTM fits extremely well within REAL as it will mainly deal with infectious, communicable and tropical diseases and global health (e.g. mental health). REAL would provide the opportunity to develop capacity in clinical research, including clinical trials, and a platform focusing on implementation science to answer societal challenges. It will follow national guidelines for leveraging funding and the goal is to be effective within 2-3 years from now. The development of the capacities to carry out clinical trial (phase 1, 2, 3 and 4) of international standard in Portugal is seen as a priority by both the GHTM and the Portuguese authorities.

3. **Biobank.** It was unclear whether samples from the cohort of immigrant children would be stored in the biobank and how investigators would have access to them. For the time being, there are about 21,000 stored samples but the number will probably increase. This is a transversal facility useful to the different GHTM groups. Today, the Biobank is not accessible to international users.
4. **VIASEF.** Here the main issue seems to be how to maintain the infrastructure and the related personnel. There is the need to lobby at EU level to obtain support to maintain the facility. There is also the need to use the facility at its full potential by attracting new projects from both industry and public funding. For this, the facility needs to be promoted to a larger audience.
5. **Human resources.** There was a question related to one of the weaknesses mentioned in the SWOT analysis, namely the scarcity and ageing of human resources. Is there a plan addressing this problem? The answer is that there are plans to recruit in the areas of clinical trials, entomology, virology (there are only 35 virologists in Portugal and the Covid-19 pandemic has exposed such weakness), neglected tropical diseases, e.g. schistosomiasis, helminthiasis, and mycology.
6. **Training.** Although GHTM provides a substantial amount of training, there seems to be no specific approach to capitalise on it, at least not in a coordinated manner, either in the context of Portugal and/or in the context of Lusophone speaking countries. Individual researchers maintain contacts with individual fellows trained at GHTM but there is no working alumni association. There was one but it stopped functioning last year. There are no resources for this, but the rectorate may help.

SAB discussion, feedback, and recommendations

The SAB was very impressed by the activities carried out by GHTM. There is clearly a change in gear compared to previous years. There are more interactions between groups and a huge improvement in terms of integrating the cross-cutting issues within and between groups. All recommendations by the SAB done last year have been addressed. The SAB is also impressed by the work carried out on Covid-19 which provided, besides the opportunity to carry out cutting edge research, higher visibility of the GHTM and the Institute. The interaction with the Portuguese Government is also an extremely positive development. Looking at the output, IHC is doing less well than the other 3 groups, despite the emphasis GHTM puts on clinical trials, for which this should be the “specialised” group. There is the need for a more concerted action between groups in terms of building clinical trial capacity and expertise. The SAB notices that there is a real effort in building partnership with Lusophone African countries. However, there are other key institutions from Portuguese-speaking countries, e.g. in Brazil that would be extremely useful in partnerships, not least because their technical capacities and infrastructure are probably more developed than those available in sub-Saharan Africa.

After discussion, the SAB recommends the following:

1. The preclinical trial structure has been developed and now the ambition is to build capacity in clinical trial, focusing on phase 1, 2, 3 and 4. While this could be done in Portugal, thanks also to the REAL, it is important that at the same time clinical/ operational research, i.e phase 3 and 4 trials, respectively, is started in other Lusophone countries, for example in Guinea Bissau, where a pilot study has just started. Clinical research should be a common effort between groups and not exclusive to IHC. There is the need of formulating a plan for such development.
2. Besides African Lusophone countries, consideration should be given in establishing strong partnership with countries outside Africa, e.g. Brazil.
3. Consider uniting the whole laboratory infrastructure into a common platform to which all researchers would have access. This may require opening a position of coordinator for such platform.
4. Support VIASEF as much as possible as this is an important resource for the Institution. It is important to devise a strategy to maintain the facility by attracting funds from public sources, e.g. EU, or private companies.
5. Biobank. This is another important resource for the GHTM and the Institute. Priority samples should be identified. These should be those with a clear clinical and epidemiological context available. There is the need for a strategy to make these samples available to other researchers. Whole genome sequencing of some samples may increase their interest for other research groups. An opening to international access will also increase the visibility of GHTM.
6. Effort will have to be made to recruit key human resources for maintaining and developing the expertise of retiring GHTM staff scientists and those needed for the different platforms (Biobank, VIASEF, clinical trials). Potential use of seed funding will be crucial.
7. Finally, at the end of the meeting, it was clear that the different groups had not met for a long time, also because of the current Covid-19 pandemic. It is important that the different groups at GHTM take time to meet regularly, e.g. every 2-3 months, and openly discuss progress and way forward. This can only increase the cohesion of the research program. Each group should consider holding an internal monthly meeting, with participation from the cross-cutting issues, to discuss progress and opportunities. Moreover, weekly seminars on the work carried out by different researchers would be extremely useful to inform the whole GHTM staff on ongoing activities and possibly to further build bridges between groups.