



OPEN DOORS FELLOWSHIP PROGRAM- APPLICATION TEMPLATE FOR RECEIVING LABORATORIES IN FLANDERS

APPLICATION MODALITY A: This modality has been conceived for research institutions in Flanders' higher education institutions or research centres looking for new scientific partners in Africa and willing to explore new joint research streams with their counterparts.

Objective: The application presented by the candidate ODFP fellow shall align with the scope and the requirements of open slots offered by the Flemish research laboratories and published on the ODFP web page.

Examples of the testimonies and open slots offered by the Belgian research laboratories are published [on the ODFP web page](#).

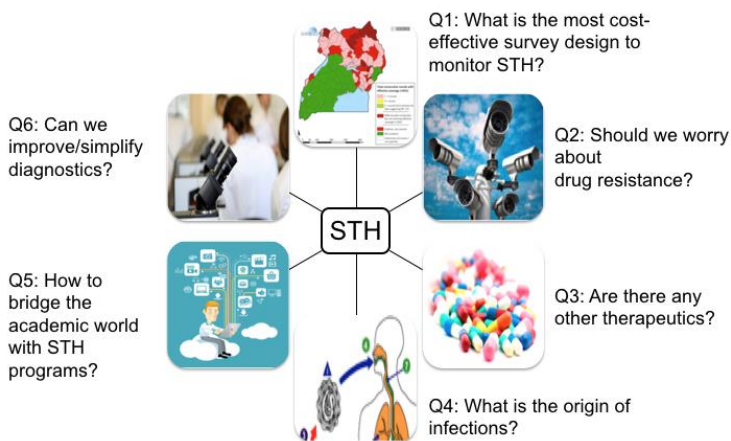
Information from the hosting institutions in Belgium

Contact details of a focal point	✉: Bruno.Leveck@ugent.be https://biblio.ugent.be/person/801002109203 ☎: 0032 9 264 74 04
Name of the research or academic institution	Department of Translational Physiology, Infectiology and Public Health
Name of the research group	Laboratory of Parasitology
Website of institution /research group	https://vetparasitology.ugent.be/

Present the group's research line(s) and activities, including a list of commonly used technologies (e.g. *bioinformatics, genetic engineering, chromatography, sequencing, metabolomics, metagenomics*).



The research of the group is aimed at unravelling the epidemiology, parasite biology and host-parasite interplay of parasite infections in both humans and animals, with the ultimate goal to provide the essential information needed for the optimal control of parasitic infections. The Laboratory of Parasitology has built up a strong expertise in the area of soil-transmitted helminth infections (STHs) in humans and has established research collaborations with governmental research institutes, hospitals and universities projects in Asia, Africa and Latin-America. Generally, the research is clustered in six research lines, addressing an equal number of questions that are important for the long-term success of any STH preventive chemotherapy program (see Figure).



For this research a variety of technologies / methodologies are used, including both laboratory techniques (e.g., PCR, PCR-RLFP, ELISA, sequencing, microscopic methods and artificial-based digital pathology) and statistical techniques (e.g. Monte Carlo simulation)

Describe the primary hard and soft skills desirable from the awarded ODFP fellow to deliver the task at hand.

Hard Skills

(i) Parasites: the candidate should have basic knowledge on intestinal parasites of humans and/or animals and microscopic diagnostic methods

(ii) DNA: the candidate should have no prior knowledge on the techniques, as this will be addressed during a short training.

(iii) The use of R software: it is an asset when the candidate has basic knowledge on the use of R acquisition and data analysis

Soft Skills:

Related to soft skills & competencies, the fellow should have excellent communication (verbal and written) in English, interpersonal communication, self-management, teamwork, and problem-solving.



Indicate the short and long-term outputs and synergies the PI in Belgium would like to see arising from this collaboration.

Expected Short-term synergies	Expected Long-term synergies
This project may contribute to: (i) the development of, at least one joint scientific publication. (ii) A collaboration in the framework of CENTD (www.centd.org) or Starworms (www.starworms.org).	Opportunity for long-term cooperation in public health research, for example through MSc students or PhD thesis projects and research projects. Long term cooperation resulting from projects suggested in the short-term outputs

Summarise (between 400 - 800 words approx.) the research project(s) or activities where the ODFP fellow would contribute to her/their research.

Today infections with soil-transmitted helminths (STHs; *Ascaris lumbricoides*, *Trichuris trichiura*, *Necator americanus* and *Ancylostoma duodenale*) pose an important burden on global health. Recent global estimates indicate that in 2015, more than 1.6 billion people were infected with at least one of the four STH species, resulting in a global burden of approximately 1.9 million disability-adjusted life years. Preventive chemotherapy or the periodical administration of a single-oral dose of one of the two benzimidazole drugs (albendazole (400 mg) or mebendazole (500 mg) to preschool- and school-aged children is the main strategy to control the morbidity caused by STHs. As indicated in the previous Figure there are a number of outstanding research questions that need to be addressed to ensure long-term success of any STH preventive chemotherapy program. Depending on the interest of the candidate we can work on the following topics

- Differential therapeutic efficacy of benzimidazole drugs against *Necator americanus* and *Ancylostoma duodenale*: this involves (i) purification of STH eggs from previously collected stool samples, (ii) DNA extraction, (iii) analysis of qPCR data (qPCR is done in collaboration with partners in the Netherlands), (iv) data-analysis and (v) write-up of paper. Samples are collected from children during 12 clinical trials in Africa and Asia. Samples are already at the laboratory.
- Importance of animals as a zoonotic transmission of STH: this involves (i) purification of STH eggs from previously collected stool samples, (ii) DNA extraction, (iii) PCR/RFLP, (iv) data-analysis, and (v) write-up of paper. Samples are collected from children during 12 clinical trials in Africa and Asia. Samples are already at the laboratory.
- Occurrence of mutant single-nucleotide polymorphism in the beta-tubulin gene associated with anthelmintic resistance: this involves (i) purification of STH eggs from previously collected stool samples, (ii) DNA extraction, (iii) analysis of deep amplicon sequencing (deep amplicon sequencing is done in collaboration with partners in the Canada), (iv) data-analysis, and (v) write-up of paper. Samples are



collected from children during 12 clinical trials in Africa and Asia. Samples are already at the laboratory.

- Genetic diversity of human *Trichuris* spp: this involves (i) purification of STH eggs from previously collected stool samples, (ii) DNA extraction, (iii) analysis of deep amplicon sequencing (deep amplicon sequencing is done in collaboration with partners in the Canada), (iv) data-analysis, and (v) write-up of paper. Samples are collected from children during 12 clinical trials in Africa and Asia. Samples are already at the laboratory.

Are there additional resources relevant to the work/project related to the short research stay (e.g. articles, videos, project documents and summaries, repositories) that would help the fellow have a broader background of the intended project? If so, please list them below.

<https://biblio.ugent.be/person/801002109203>

www.centd.org

www.starworms.org

An official letter from the Principal Investigator of the Belgian receiving group confirming the collaboration with the ODFP should be sent together with this form duly filled.

Applications can be submitted electronically to IPBO@vib-ugent.be (The application form must be named as follows: "**ODFP_ModalityA_name of research group**"). Please send the application form and supporting letter as a **single PDF file**.