



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	✉: Prof. Dr. Bernard De Baets bernard.debaets@ugent.be ☎: +32-471-580078
Name of the research or academic institution	Dept. of Data Analysis and Mathematical Modelling, Faculty of Bioscience Engineering
Name of the research group	KERMIT: Research Unit Knowledge-based Systems
Website of institution /research group	http://kermit.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 unit KERMIT (2000) adopts a holistic view on mathematical and computational modelling, acknowledging the needs of our modern information society with a particular focus on the applied biological sciences. It strives to keep a unique balance between theoretical developments and practical applications. Over the years, it has evolved into a holistic team covering the entire data-to-decision pipeline.

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



- Proficient in these hard and soft skills: mathematics, scientific writing, scientific computing, LaTeX
- Somewhat conversant in these hard and soft skills: probability theory and statistics, programming, presentation skills, github
- Basic or minimal knowledge in these hard and soft skills: planning and managing scientific research
- Language preferences: fluent in English (spoken and written)
- Interpersonal skills: active listening, team player, punctual and reliable
- Any other:

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
Knowledge transfer tailored to the candidate and his/her team members	Joint scientific research, resulting in co-authored peer-reviewed papers, co-supervised PhD students and

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

The research unit KERMIT provides methodological and practical expertise in the following areas covering different aspects of the data-to-decision pipeline, from data collection and processing over mathematical modelling to decision making and optimization. Research projects along the following methodological research lines can be developed given an appropriate match between the candidate and some of the present researchers at KERMIT and a strong potential application identified by the candidate.

A non-exhaustive list of research topics is:

- image processing and computer vision (e.g. mathematical morphology, filters);
- dynamical modelling (e.g. differential equations, cellular automata, individual-based models);
- data science and machine learning (e.g. time series prediction, multi-target prediction, deep learning, big data);
- management of imprecision and uncertainty (e.g. probability, possibility and fuzzy set theory; stochastic modelling, theory of copulas);
- optimization and operations research (e.g. preference modelling, multi-criteria decision making).

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.



The candidate is invited to visit the KERMIT website, scan through our publications and identify 3-5 papers that match his/her ambitions and interests.

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**).

