Doctoral Scholarship: Development of molecular tools for rapid detection and quantification of indoor airborne molds to assess their impact on public health

Master in bio-engineering/biochemistry and biotechnology/biology/biomedical Sciences
Master of Science in drug development or Veterinary Science

Description of the PhD-project

The Scientific Institute of Public Health offers a PhD-project. You are responsible for the organisation, execution and reporting of the research project. The result of your research will contribute to a PhD.

You will be part of the unit ‘Platform Biotechnology and Molecular Biology’ and will be supported by senior scientists of this department and by the collaborators at the department of Mycology and Aerobiology. You are responsible for the research project entitled: Development of molecular tools for rapid detection and quantification of indoor airborne molds to assess their impact on public health

Project description: problems of indoor air quality are recognized as important risk factors for public health. Poor indoor air quality is determined by the presence of chemical and microbiological contaminants, the latter of which dust mites and fungi are the most important. Several global trends such as not properly implemented energy conservation measures in construction works and climate change contribute to conditions associated with increased exposure to dampness and mold, increasing even more the risks of adverse health effects. Indoor molds have the potential to produce components that have been associated to several severe human health problems like allergic hypersensitivity responses and symptoms of asthma, potentially mortal. Although new evidence is accumulating on the burden of disease due to indoor air fungal pollution, there still exists controversy whether there is a causal relationship between indoor exposure to airborne molds and health effects. An understanding of these links is, however, an essential element of action to reduce the burden of disease and to benefit public health. Sufficient scientific evidence is lacking, in part because there are no uniformly accepted, valid, quantitative environmental sampling and detection methods or tests to assess exposure.

This PhD project aims at the development and implementation of a platform to detect, identify and quantify indoor airborne molds. The developed methods should be specific, sensitive, fast, accurate, objective and preferentially allowing multiplexing. They should overcome the problems encountered with conventional detection methods, i.e. they should rapidly, reliably report viable, as well as non-culturable and non-viable molds, which is important because these molds are also potentially allergenic. This platform will allow gaining more insight into the fraction of indoor airborne molds not yet previously detected by conventional methods and determining their role as potential allergens through appropriate immunological testing. This insight will eventually provide scientific information on the link between indoor spore pollution and public health problems, such as asthma and allergies.

The objectives of this research are: obtaining a Ph.D.; the generation of knowledge (in the form of scientific publications) related to the research lines and programs developed; meet the operational expectations of the institutional partners involved in the project.

This PhD research will be performed in the Unit Platform Biotechnology and Molecular Biology of the WIV-ISP with following partners: Université de Liège (ULG), Unit Mycology and Aerobiology, Unit Immunology (Allergology) Brussels Institute for the Management of the Environment (BIME), Oxford University

Profile
• Master in bio-engineering, biochemistry and biotechnology, biology or biomedical Sciences
• Master of Science in drug development/Veterinary Science
• Max. 1 year of professional research experience (master thesis included)
• Willing to make a thesis dissertation

Technical competences:
• Strong interest in molecular biology and public health
• Able to speak and understand fluently one of two national languages (Dutch or French)
• Able to understand and write scientific papers and reports in English

General competences:
• A strong analytical mind
• Ability to synthesize
• Able to work independently
• Having sense of responsibilities
• Excellent planner and organiser
• Oriented towards learning
• Plus point: able to manage large datasets with appropriate software

Our offer
A doctoral scholarship for 4 years: results of the work will be valorised under the form of patents, scientific publications, press releases and a PhD.

Scientific supervision within a predefined project framework.

The research will be performed at the WIV-ISP (Elsene)

More information:

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 Interested? Send your application before the 30th of June 2012 to Institute of Public Health, Service P&O P&O f.a.o. Stefaan Vernaeve, J.Wytsmanstraat 14, 1050 Brussels. Or e-mail to: jobs@wiv-isp.be. Mention clearly the ref. RP-652.