



## *Three PhD scholarships in Mycotoxicology*

The LEAP-Agri research project **MycoSafe-South**, the “*European–African partnership for safe and efficient use of mycotoxin-mitigation strategies in sub-Saharan Africa*”, intends to harness the expertise and infrastructure available in Europe by strengthening the capacity of the Southern partners to tackle the mycotoxin problem and the associated food safety issues. This project will identify safe and efficient mitigation strategies to reduce aflatoxins (AFs) and fumonisins (FBs) exposure in Africa, with special focus on children.

**Food security** remains a major challenge in developing countries, particularly in Sub-Saharan Africa, with the highest prevalence of undernourishment. Worldwide, **cereal-based crops are spoiled by toxigenic moulds and their mycotoxins**. Food spoilage by moulds and mycotoxins not only reduces the amount of the available food, and can have **deleterious effects for animal & human health**, it also adversely affects the ability of Africa to trade with the rest of the world.

**Acute** high-level exposure to AFs leads to human death, which has repeatedly occurred in Sub-Saharan Africa, while **chronic** exposure to AFs or FBs may cause liver or oesophageal cancer, respectively. **AFs and FBs are defined as important causal factors of stunting in African children**. AFs are critical for young children since exposure occurs *in utero* through transplacental passage, and through breastfeeding. Also, weaning foods are cereal- and tuber-based, both of which are susceptible to AFs and FBs. Furthermore, the immunosuppressive effects of mycotoxins enhance the susceptibility of humans and animals to infectious diseases, and worsen the current HIV pandemic. Moreover, mouldy food & feed is frequently fed to food-producing animals, impairing food safety by carry-over to animal products such as milk, meat and eggs.

Therefore, there is an urgent research priority for the development of safe, efficient and sustainable **post-harvest intervention strategies** to reduce animal & human exposure to AFs and FBs, and applicable to both **rural small-scale subsistence** and **commercial farming** in Sub-Saharan Africa.

The consortium creates opportunities for young PhD researchers to conduct this research at both European and African institutes.



PhD scholarship 1 (reference: **MycoSafe-South\_piglet/human**)

**“Safety and efficacy of mycotoxin detoxifiers in human (children): *in vitro*, *in vivo* piglet model, and human intervention study”**

### PhD project description and starting date

This research aims to investigate the efficacy of mycotoxin detoxifiers in *in vitro* models consisting of single-concentration studies and a more complex model simulating the human (paediatric) gastrointestinal conditions via SHIME technology. Next, the efficacy of these products will also be evaluated *in vivo*, first, in a piglet model that serves as a human paediatric surrogate model. The pig is a suitable biomedical model for humans, due to its similarities in anatomy and physiology of the gastrointestinal tract, liver, renal and cardiovascular organs. Secondly, based on the results of the *in vitro* and *in vivo* animal experiments, the best-treatment strategy will be selected for a randomized placebo-controlled human intervention study in Kenya.

**The project will start on September 1st, 2018 at the latest.** It is an assignment for a period of 3 years, with Ghent University (Belgium) as degree awarding institution in close collaboration with University of Liège (Belgium), Norwegian Veterinary Institute (Norway), Biomin Research Center (Austria), University of Nairobi (Kenya), and International Livestock Research Institute (Kenya).

### Profile of the candidate

The MycoSafe-South consortium creates opportunities for young researchers by assigning 4 PhDs students to conduct this research at both European and African institutes. The project is embedded in two of the most important global networks on mycotoxin management and research: Partnership for Aflatoxin Control of the African Union (PACA) and Partnership to improve food security & food safety in developing countries: mitigation of mycotoxins - MYTOX-SOUTH.

- You have recently (2014 or later) obtained a Master of Science (Msc) diploma in (veterinary) medicine, public health, pharmaceutical sciences, bio-engineering, bio-sciences, agricultural and nutrition sciences, or related disciplines.
- Final year students can also apply, on the condition that the candidate obtains the degree of master before September 1<sup>st</sup>, 2018 (project start date).
- The consortium encourages also young (< 35 years old) and female African scientists to apply.
- The candidate we are looking for has a strong motivation to conduct research, can work independent, but can also function as part of a team.
- The candidate should be willing to travel between different African and European research institutes.
- Affinity for animal experiments and laboratory work is essential.
- Good communication and writing skills in English is mandatory.

For additional information please contact: Prof. dr. Siska Croubels ([Siska.Croubels@UGent.be](mailto:Siska.Croubels@UGent.be))

### How to apply

Letters of application, including a **motivation letter**, **extensive curriculum vitae**, a **copy of diplomas and a grading list** can be sent by email to Dr. Gunther Antonissen ([Gunther.Antonissen@UGent.be](mailto:Gunther.Antonissen@UGent.be)) before **June 15<sup>th</sup>, 2018**. Provide also **contact details of two persons who can be contacted for recommendation**. Please clearly mention the reference (**MycoSafe-South\_piglet/human**) of the PhD for which you apply. **INCOMPLETE APPLICATIONS WILL NOT BE CONSIDERED!**



PhD scholarship 2 (reference: **MycoSafe-South\_dairy**)

**“Decreasing aflatoxin M1 contamination in milk of different African dairy species”**

### PhD project description and starting date

Following ingestion of aflatoxins (AFs) contaminated feeds by ruminants, a part of the ingested aflatoxin B1 is degraded in the rumen. The remaining fraction is absorbed and hydroxylated in the liver to aflatoxin M1 (AFM1), which is possibly carcinogenic to humans. Circulating AFM1 can be excreted in urine or milk. The carry-over from feed to milk is influenced by various nutritional and physiological factors, such as dairy species, feeding regimens, other mycotoxins and actual milk production. This research project aims to investigate the interaction between the ruminal microbiome and its capacity to degrade AFs in different African dairy species. Subsequently, safety and efficacy of adding a mycotoxin detoxifying agent to these diets will be investigated.

**The project will start on September 1st, 2018 at the latest.** It is an assignment for a period of 3 years, with the University of Nairobi (Kenya) as degree awarding institution in close collaboration with Ghent University (Belgium), University of Liège (Belgium), Biomin Research Center (Austria) and International Livestock Research Institute (Kenya).

### Profile of the candidate

The MycoSafe-South consortium creates opportunities for young researchers by assigning 4 PhDs students to conduct this research at both European and African institutes. The project is embedded in two of the most important global networks on mycotoxin management and research: Partnership for Aflatoxin Control of the African Union (PACA) and Partnership to improve food security & food safety in developing countries: mitigation of mycotoxins - MYTOX-SOUTH.

- You have recently (2014 or later) obtained a Master of Science diploma from the University of Nairobi or an equivalent qualification from institutions recognized by Senate (UoN).
- Final year students can also apply, on the condition that the candidate obtains the degree of master before September 1<sup>st</sup>, 2018 (project start date).
- The consortium encourages also young (< 35 years old) and female African scientists to apply.
- Candidates for PhD scholarship MycoSafe-South\_dairy should have the Kenyan nationality.
- The candidate we are looking for has a strong motivation to conduct research, can work independent, but can also function as part of a team.
- The candidate should be willing to travel between different African and European research institutes.
- Affinity for animal experiments and laboratory work is essential.
- Good communication and writing skills in English is mandatory.

For additional information please contact: dr. Johanna Lindahl ([J.Lindahl@cgiar.org](mailto:J.Lindahl@cgiar.org)) and dr. James K. Gathumbi ([jkgathumbi@gmail.com](mailto:jkgathumbi@gmail.com))

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PhD scholarship 3 (reference: **MycoSafe-South\_poultry**)

**“Decreasing aflatoxins contamination in poultry food products”**

### PhD project description and starting date

Mycotoxins in poultry feed can have serious effects on poultry health, which impacts the productivity, but in addition, secondary exposure to aflatoxins (AFs) through consumption of eggs, liver and meat derived from chickens fed AFs-contaminated feed, poses a risk to consumer health. In contrast, fumonisins (FBs) residues in animal tissues are low, but co-exposure with AFs may alter the disposition of FBs. Therefore, this research project aims to investigate the impact of co-exposure of chickens to AFs and FBs on the carry-over of AFs to chicken products (i.e. eggs, liver, meat). Subsequently, safety and efficacy of adding a mycotoxin detoxifying agent to these diets will be investigated.

**The project will start on September 1st, 2018 at the latest.** It is an assignment for a period of 3 years, with the University of Liège (Belgium) as degree awarding institution in close collaboration with Ghent University (Belgium), Biomin Research Center (Austria), University of Nairobi (Kenya) and International Livestock Research Institute (Kenya).

### Profile of the candidate

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- You have recently (2014 or later) obtained a Master of Science diploma in (veterinary) medicine, public health, pharmaceutical sciences, bio-engineering, bio-sciences, agricultural and nutrition sciences, or related disciplines.
- Final year students can also apply, on the condition that the candidate obtains the degree of master before September 1<sup>st</sup>, 2018 (project start date).
- The consortium encourages also young (< 35 years old) and female African scientists to apply.
- The candidate we are looking for has a strong motivation to conduct research, can work independent, but can also function as part of a team.
- The candidate should be willing to travel between different African and European research institutes.
- Affinity for animal experiments and laboratory work is essential.
- Good communication and writing skills in English is mandatory.

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