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VRIJE  
UNIVERSITEIT  
BRUSSEL



Hands-on workshop/practical training in biotechnology for  
Ugandan BSc, MSc and PhD students, and professionals at:

Makerere University, Kampala, Uganda

(July 17-26, 2019)

Venue:

College of Veterinary Medicine Animal Resources and Biosecurity

Organising Committee

For IPMB:

Prof. Dr. ir. Geert Angenon  
drs. Christopher Kariuki, MSc.  
Prof. Dr. Edilbert Van Driessche  
Prof. Dr. Sonia Beeckmans  
Prof. Dr. Serge Muyldermans

For Makerere University:

Dr. Steven Odongo  
Assoc. Prof. Julius Okuni  
drs. Sylvester Ochwo  
drs. Monica Namayanja  
Mr. Geoffrey Sentamu  
Mr. Joseph Nkamwesiga  
Mr. Christian Ndekezi

# Welcome to the IPMB workshop/training!!!

Dear participants,

It is a great pleasure for us to welcome you to the "IPMB-workshop/practical training in Biotechnology for Ugandan students" hosted by Dr. Steven Odongo at the Makerere University, from July 17 till 26, 2019.

IPMB, the "Interuniversity Programme Molecular Biology", is already for 23 years jointly organized by the Vrije Universiteit Brussel, the Katholieke Universiteit Leuven and the Universiteit Antwerpen and supported by VLIR-UOS as one of its International Course programmes (ICP). Until now, nearly 600 students from all over the world graduated from the programme, 13 of whom are from Uganda. We hope the coming days will be inspiring for you and give you the opportunity to meet the participants of the IPMB Alumni Meeting and enjoy the talks and posters. During the Alumni Meeting as well as during the Workshop, you will get thoroughly informed about the content, demands and career opportunities offered by a Master of Science in Molecular Biology diploma. You will not only learn about the exciting master programme that IPMB is, but you will also get the opportunity to experience the real life of a scientist at the bench in the lab! However, before starting to work in the lab, you will first get some introductory lectures on safety and good lab practices, on the strategies to manipulate genetic material to produce recombinant proteins and on the techniques used to isolate and characterize proteins. You will also be introduced to some basic statistics that you will need to interpret your experimental data. The introductory lectures will be taught by experienced IPMB lecturers and during the bench work the present and former IPMB assistant, drs. Christopher Kariuki and Dr. Steven Odongo and his co-workers will guide you in the lab and share with you their rich scientific knowledge and skills.

For several decades, VLIR-UOS supported many collaborative initiatives between Flemish academics in the South. This workshop/practical training is supported by VLIR-UOS through the "Global Minds" project at the Vrije Universiteit Brussel. We also gratefully acknowledge the support to this workshop by the Makerere University

Previously, similar workshops/practical trainings were organized in Kenya (Institute of Primate Research, Nairobi) and Tanzania (Sokoine University of Agriculture, Morogoro).

We wish you all a most enjoyable and fruitful time!!

On behalf of the Organising Committee

Dr. Steven Odongo  
Makerere University

Prof. Geert Angenon  
Vrije Universiteit Brussel

## IPMB Alumni meeting at the Makerere University, Kampala

(July 15<sup>th</sup> -17<sup>th</sup>, 2019)

**followed by the hands-on workshop/practical training in biotechnology for  
Ugandan BSc, MSc and PhD students, and professionals**

(July 17<sup>th</sup> - July 26<sup>th</sup>, 2019)

Date (July 2019)		Activity	Participants	Responsible
Sunday 14 <sup>th</sup> July		Arrival in Entebbe and travel to Makerere University, Kampala		
Monday 15 <sup>th</sup>	Whole day	Opening speeches, oral presentations, posters, alumni network activities	IPMB alumni (Kenya, Uganda, Tanzania); VUB professors; BSc., MSc., PhD students & post-Docs of: MAPRONANO-ACE, Makerere University, SACIDS-ACE and Sokoine University of Agriculture; IPMB alumni contact points Kenya & Uganda; Representatives of Makerere University	Organizing Committees of the Alumni Meeting
Tuesday 16 <sup>th</sup>	Whole day	Oral presentations, posters, alumni network activities		
Wednesday 17 <sup>th</sup>	Morning	Oral presentations, posters, alumni network activities		
Wednesday 17 <sup>th</sup>	<b>Afternoon</b> (Venue: <i>Food Science and Technology: Conference Hall</i> )	Welcome to the workshop, presentation of the updated IPMB Programme, scholarship opportunities. Workshop overview	Students (workshop)	Prof. G. Angenon Dr. S. Odongo drs. C. Kariuki
		Laboratory safety and GLP	Students (workshop)	Dr. S. Odongo
Thursday 18 <sup>th</sup>	<b>Morning</b> (Venue: COVAB, Rm: 326/424)	Biostatistics	Students (workshop)	drs. C. Kariuki
	<b>Mid-morning</b> (COVAB, Rm: 326/424)	From DNA to recombinant proteins	Students (workshop)	Prof. Serge Muyldermans
	<b>Afternoon</b> (COVAB, Rm: 326/424)	From DNA to recombinant proteins	Students (workshop)	Prof. Serge Muyldermans
Friday 19 <sup>th</sup>	<b>Morning</b> (COVAB, Rm: 326/424)	Analytical techniques: protein purification and characterization	Students (workshop)	Prof. Sonia Beeckmans
	<b>Mid-morning</b> (COVAB, Rm: 326/424)	Analytical techniques: protein purification and characterization	Students (workshop)	Prof. Sonia Beeckmans
	<b>Afternoon</b>	General introduction to the practical training	Students (workshop)	drs. C. Kariuki Dr. S. Odongo
	(COVAB, Rm: 326/424)	Practical training - Obtaining a DNA insert via PCR - Harvesting of vector from bacteria	Students (workshop)	drs. C. Kariuki Dr. S. Odongo Mr. Sylvester Ochwo, Ms. Monica Namayanja, Mr. Geoffrey Sentamu, & Mr. Christian Ndekezi

Saturday 20 <sup>th</sup>	<b>Free day</b>			
Sunday 21 <sup>st</sup>	<b>Free day</b>			
Monday 2 <sup>nd</sup>	<b>Morning</b> (COVAB, Rm: 326/424)	Practical training - Clean-up of PCR amplicons - Restriction digestion of pure vector and cleaned amplicons	Students (workshop)	drs. C. Kariuki Dr. S. Odongo, Mr. Sylvester Ochwo, Ms. Monica Namayanja, Mr. Geoffrey Sentamu, Mr. Christian Ndekezi, & Mr. Joseph Nkamwesiga
	<b>Afternoon</b> (COVAB, Rm: 326/424)	- Agarose gel electrophoresis as quality control - Ligation of digested fragments - Inoculation of naïve bacterial pre-culture for competent cell preparation	Students (workshop)	drs. C. Kariuki Dr. S. Odongo, Mr. Sylvester Ochwo, Ms. Monica Namayanja, Mr. Geoffrey Sentamu, Mr. Christian Ndekezi & Mr. Joseph Nkamwesiga
Tuesday 23 <sup>rd</sup>	<b>Morning</b> (COVAB, Rm: 326/424)	Practical training - Competent cell preparation - Heat shock transformation of bacterial cells with recombinant vectors	Students (workshop)	drs. C. Kariuki Dr. S. Odongo, Mr. Sylvester Ochwo, Ms. Monica Namayanja, Mr. Geoffrey Sentamu, & Mr. Joseph Nkamwesiga
	<b>Afternoon</b> (COVAB, Rm: 326/424)	- Inoculation of recombinant bacterial pre-culture	Students (workshop)	drs. C. Kariuki Dr. S. Odongo, Mr. Sylvester Ochwo, Ms. Monica Namayanja, Mr. Geoffrey Sentamu, & Mr. Christian Ndekezi
Wednesday 24 <sup>th</sup>	<b>Morning</b> (COVAB, Rm: 326/424)	Practical training - Sub-inoculation of bacterial culture for competent cell preparation	Students (workshop)	drs. C. Kariuki Dr. S. Odongo, Mr. Sylvester Ochwo, Ms. Monica Namayanja, Mr. Geoffrey Sentamu, & Mr. Joseph Nkamwesiga
	<b>Mid-morning</b> (COVAB, Rm: 326/424)	- Induction of bacterial cell expression	Students (workshop)	
	<b>Afternoon</b> (COVAB, Rm: 326/424)	- Harvesting of cell culture - Protein extraction	Students (workshop)	
Thursday 25 <sup>th</sup>	<b>Morning</b> (COVAB, Rm: 326/424)	Practical training - IMAC of extracted proteins	Students (workshop)	drs. C. Kariuki Dr. S. Odongo, Mr. Sylvester Ochwo, Ms. Monica Namayanja, Mr. Geoffrey Sentamu, & Mr. Christian Ndekezi
	<b>Mid-morning</b> (COVAB, Rm: 326/424)	- SDS PAGE and Western blot	Students (workshop)	
	<b>Afternoon</b> (COVAB, Rm: 326/424)	- Coating ELISA plate	Students (workshop)	

Friday 26 <sup>th</sup>	<b>Morning</b> (COVAB, Rm: 326/424)	Practical training - ELISA	Students (workshop)	drs. C. Kariuki Dr. S. Odongo, Mr. Sylvester Ochwo, Ms. Monica Namayanja, Mr. Geoffrey Sentamu, Mr. Christian Ndekezi &
	<b>Mid-morning</b> (COVAB, Rm: 326/424)			
	<b>Afternoon</b> (COVAB, Rm: 326/424)	Seminar on interpretation of data from the experiment	Students (workshop)	
Workshop ends with a Certificate Award Ceremony <b>(Makerere University Guest House)</b>				
Saturday 27 <sup>th</sup>	Departure from Kampala			

COVAB = College of Veterinary Medicine Animal Resources and Biosecurity main building; **Rm 324** = former Pathology Laboratory; **Rm 424** = former Parasitology Laboratory.

Lectures/ Practical sessions are estimated to last approximately 2.5 - 3 hours.

- Morning session – 08:30-11:00 hrs
- Midmorning session – 11:30-13:00 hrs
- Afternoon session – 14:00-16:30 hrs

# Protocols