

International Livestock Research Institute

Training course report

Building research capacity of early career researchers of SafePORK project

May-June 2019



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Written by Fred Unger

#### Citation

*ILRI (International Livestock Research Institute). 2019. Building research capacity of early career researchers of SafePORK project. Report of a training course held on 27 May-28 June 2019 at University of Sydney. Nairobi, Kenya: ILRI.*

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# Training summary

**Organizer/co-organizers:** Sydney School of Veterinary Science (SSVS), University of Sydney and International Livestock Research Institute (ILRI)

## **Trainees**

- Nguyen Thanh Luong, CENPHER, Hanoi University of Public Health
- Ninh Thi Huyen, Department of Animal Feed and Nutrition, National Institute of Animal Science

## **Course goals**

The training aimed to introduce research scientists to the basic tools of molecular biology, including opportunity to practice on real samples, and to research and epidemiological concepts and methodologies relevant activities in the SafePork project.

## **Course description**

Two young researchers Nguyen Thanh Luong (male), Hanoi University of Public Health and Ninh Thi Huyen (female), Department of Animal Feed and Nutrition, National Institute of Animal Science of the 'Market-based approach to improving safety of pork chain in Vietnam', or SafePork project were sent to SSVS, University of Sydney to be trained on techniques for livestock/pig health research and introduced to modelling of disease spread and control.

The training course took place from 27 May to 28 June at Camden campus and Camperdown campus, University of Sydney.

A number of SSVS academics and staff contributed to the training program at Camden. They also joined a modelling course during the trip which was a collaboration between SSVS and the University of Copenhagen.

Feedback from trainees was positive about the content and activities at Camden. Some content was familiar but this differed between the two trainees given their different disciplines. Both stated that a similar program would benefit a second group in 2020 that had research interests aligning with theirs. Suggestions for next group:

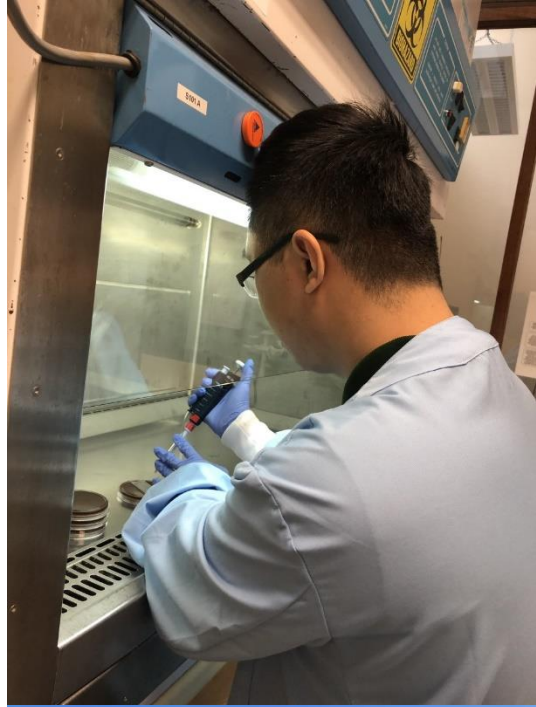
- Provide reading material and training agenda well before their arrival at Camden;
- Before some practice session, provide a short lecture to introduce concept and application for each procedure plus a document stating the laboratory protocol.

The modelling course was challenging due to use of @R but the new concepts and learning about applications of simulation modelling was useful.

## **Course outputs**

Additional outputs included a grant application submitted to the Vietnam One Health University Network (VOHUN) on the topic of antimicrobial resistance (AMR) by Nguyen Thanh Luong.

*Proposal title: Human exposure assessments of antibiotic residues through pork consumption in Vietnam*



# Agenda

## WEEK 1

### **Monday 27 May**

Introduction to the FAH group and orientation for access to PC2 laboratory. Candidates to come to the front desk at 9AM and at 9:30AM Rajesh Bangur (Facilities and Resources Coordinator) will carry out induction/orientation.

- PM - Jenny-Ann Toribio: Residue surveillance in Australia in animal products, Antimicrobial residues

### **Tuesday 28 May**

- AM - Assessment of laboratory skills (Karren Plain)

PM - Jenny-Ann Toribio: Antimicrobial resistance, Antimicrobial stewardship

### **Wednesday 29 May**

- All day - Introduction to basic lab skills I- Quantitative PCR skills (Karren Plain)

### **Thursday 30 May**

- 10 AM- Introduction to antimicrobial susceptibility testing I (Neil Horadagoda, Senior Veterinary pathologist)
- AM- Visit trial animals in the field to muster sheep and collect blood samples (Hannah Pooley)
- 1:30 PM - Introduction to basic lab skills II– cell isolation from blood, (Auriol Purdie)

### **Friday 31 May**

- 10 AM- Antimicrobial susceptibility testing of samples II (Neil Horadagoda, Senior Veterinary pathologist)
- PM- Jenny-Ann Toribio: Ethics requirements for research in Australia

## WEEK 2

### **Monday 3 June**

- AM - Introduction of E.Coli culture, bacterial counts, strain typing, diagnostic analysis (Dr Om Dhungyel)
- PM- Jenny-Ann Toribio: Reporting standards for trials involving livestock – the REFLECT statement

### **Tuesday 4 June**

- AM- Introduction of E.Coli culture, bacterial counts, strain typing, diagnostic analysis (Dr Om Dhungyel)
- PM- free

### **Wednesday 5 June**

- AM- Introduction of E.Coli culture, bacterial counts, strain typing, diagnostic analysis (Dr Om Dhungyel)

- PM- Jenny-Ann Toribio: Sampling strategy for surveys

#### **Thursday 6 June**

- All day – preparation for modelling course

#### **Friday 7 June**

- All Day- Visit to Elizabeth Macarthur Agricultural Institute (EMAI) food safety and microbiology laboratory with Alison Collins (Om Dhungyel)

### **WEEK 3**

#### **Monday 10 June (PUBLIC HOLIDAY)**

#### **Tuesday 11 June**

- All day –Mini –project: Cellular responses to antibiotics. (Auriol Purdie and Dr Kumi de Silva)
  - Pig blood PBMC, cell culture prep

#### **Wednesday 12 June**

- All day – modelling prep

#### **Thursday 13 June**

- Full day - Mini –project continuation (cellular responses to antibiotics). (Auriol Purdie and Dr Kumi de Silva)
  - Harvesting cells for RNA, Flow cytometry and supernatant for ELISA (mini-project, Dr Kumi de Silva)

#### **Friday 14 June**

- AM- RNA extraction of harvested cells (mini-project, Karren Plain)
- PM – write-up of mini-project including introduction, methods and results to date

### **WEEK 4**

#### **Monday 17 June**

- AM – qPCR of harvested samples (mini-project, Karren Plain)
- PM – ELISA (2 hours, mini-project, Kumi de Silva)

#### **Tuesday 18 June**

- AM – ELISA of harvested samples (mini-project, Kumi de Silva)
- PM – Jenny-Ann Toribio: Preparation for presentation

#### **Wednesday 19 June**

- AM – complete write-up of mini-project
- PM- free

#### **Thursday 20 June**

- AM – Jenny-Ann Toribio: Outbreak investigation

LUNCH SEMINAR Workshop attendees to present their learning from training program and their research to the group in the morning (20 minutes each + 5 mins of questions for each speaker)

**Friday 21 June**

- AM - Jenny-Ann Toribio – Trip report & project planning

**Saturday 22 June**

Move from Camden Campus to Sancta Sophia Camperdown

**WEEK 5**

**Monday 24 June – Friday 28 June**

- Modelling course (Camperdown Campus)

Introduction to Modelling of Disease Spread and Control.

Registration for this course coordinated with Prof Michael Ward.



## List of participants

Serial No.	Name	Email contact	Sex (M/F)	Country of origin	Country Classification (Developing/Developed)
1.	Nguyen Thanh Luong	<a href="mailto:ntl4@huph.edu.vn">ntl4@huph.edu.vn</a>	M	Vietnam	Developing
2.	Ninh Thi Huyen		F	Vietnam	Developing

# Feedback from participants

Nguyễn Thanh Luong (CENPHER, Hanoi University of Public Health)

## 1. Of the activities/learning over the 4-weeks

a. What was new knowledge or skills for you?

*I have learned a bunch of new things with me. Because I am a Public Health practitioner, I do not have any skills related to lab works. The course gave me a big opportunity to study abroad with Professors at the top university in Australia. I have a chance to work with ELISA, PCR, Flow cytometric which is extremely new with me. Besides, I also learnt about the animal welfare and animal ethics because it is not popular in Vietnam*

b. What was a repeat of knowledge or skills that you already have?

*As I said before, the lab works are definitely new with me. But some of the sessions related to epidemiology I have known already.*

## 2. What do you recommend should be done again for the 2<sup>nd</sup> training in 2020?

*I think keep people practice in their mini-project, therefore they will know how to apply the new knowledge after finish the course*

## 3. What can be improved or changed for the 2<sup>nd</sup> training?

a. In relation to content and practicals

*The content is good, do not need to change*

b. In relation to organisation of travel and activity program

*I think If you can send the material and the agenda for the student before they arrive, this will be better because they have time to prepare the essential knowledge. For me, sometimes I had struggle with the new terminology.*

## 4. What did you enjoy most?

*About the life, the people in Australia*

## 5. Any other comment? No.

**Ninh Thi Huyen (Department of Animal Feed and Nutrition, National Institute of Animal Science)**

## 1. Of the activities/learning over the 4-weeks

a. What was new knowledge or skills for you?

*I have learnt some new knowledge that I think very helpful with me:*

- *Antimicrobial residues in Australia. What chemical can be used in livestock and withholding period as well as the allowed maximum residue in livestock products? That can be a reference source when we provide idea for our government in related to controlling antimicrobial used in animal production.*
- *In concept of AMR, we hear a lot in our country or in other conference. However, the important thing is how to control, how to reduce AMR. Though the lecture that Jenny-Ann give us, we can see what happen in our case, and the lack of control of using antimicrobial in livestock for both treatment and preventing disease as well as growth promoter.*
- *How to design Randomized Controlled trials in livestock and food safety. The most important thing is the sample size to ensure the reliability of the research result.*

- We learn about how vaccine are made. And it is interesting when the foot rot vaccine now made by a part of pathogen (just the vili only, not the whole pathogen). It can make the vaccination more effective and reduce the health risk for animal.
- I am really interesting in the last lecture talking about the investigation process. How to do in practical. We need to do to narrow the potential reason to find down hypothesis. How to calculate the Attach rate and Risk ratio. It will be very helpful in real condition to quickly solve problem and save the money for the farmer.
- We have change to joy in some lab work (qPCR, ELISA, Flow cytometric, bacterial culture, bacterial count, cell culture, cell count, blood cell isolation. Learn and practice some basic skill in PC lap.

b. What was a repeat of knowledge or skills that you already have?

*Just only the Animal ethic that I have learn about before. However, I just learn the key definition. In this workshop I know more about how to apply in the research. Which question we have to answer, which statement need to be clear before get the approve from the Animal Ethic Committee*

## **2. What do you recommend should be done again for the 2nd training in 2020?**

*All those information above are new and useful for me, so I recommend that you can repeat all of those in the second training. However, you need to know what the trainer already know and what they want to learn more to decide the most suitable content should be included.*

## **3. What can be improved or changed for the 2<sup>nd</sup> training?**

a. In relation to content and practicals

*I just have some comment on how to improve for the next training*

- *Learning schedule: I think you need to provide the learning schedule as well as the plan a bit sooner so the learner can organise their plan better*
- *About some practicals: Before we go to the lap, it is better to have a lecture or some guideline for trainer to understand the concept. And before each kind of lap work (PCR, ELISE, cell isolation...) the protocol should be provide and explain each steps, what the purpose is or why we have to do this. And then when learner go to the lap they can follow the technical staff easier and focus on what they do not understand.*

b. In relation to organisation of travel and activity program

*I completely appropriate for your organise our trip to be here. They are all well organise.*

*I really like the trip to the sheep farm with Dr Om, to the Elizabeth MacArthur Agriculture Institute (EMAI) as well as the horse hospital to test about antibiotic susceptibility. It is really interesting. So I recommend should be included for the next training.*

## **4. What did you enjoy most?**

The lectures from Jenny –Ann and some skill in cell technique so we can see how the cell reacts with different agents.

5. **Any other comment?** *None*