（Abroad・Domestic）Official trip report form（Student） 2016/04/05 (Year/Month/Day)

Name	Tapiwa Lundu MTONGA
Laboratory	Public Health
Year (Grade)	DC2
Destination	Dublin, Ireland
Period of trip	2016/03/11
Purpose of trip	2016/03/21

Summary of activities （about 800 words, provide photos, tables and figures that clearly show the activities during the period）

I participated in a trip to Dublin, Ireland as part of a student exchange program between Hokkaido University (HU) and the University College Dublin (UCD). The purpose of the trip was to enhance collaboration between HU and UCD. A group of nine (9) students and five (5) professors from HU participated in the program. We travelled from Sapporo to Dublin on 11th March and arrived in Dublin on 12th March. While in Dublin, we attended lectures in the infection biology module coordinated by Professor Stephen Gordon. Our schedule of lectures at UCD started on Monday 14th March from 9 30 hours in the morning to 16 30 hours in the afternoon. The details of the lectures and the various topics are shown in the table below;

Date	Topic	Lecturers
Monday 14th March	(1) Host-pathogen interaction	10:00-10:15 Prof Stephen Gordon *Introduction* 10:30–11:15 Prof Stephen Gordon *Human and bovine TB* 11:15–12:00 Dr Noreen Sheehy *Oncogenesis and viral infection* 12:00–12:45Dr Jennifer Mitchell *Bacterial interactions with platelets*
	(2) Antimicobials	13:30-14:15 Dr Kirsten Schaffer *Current limitations in diagnosis and management of infectious disease* 14:15-15:00 Prof Shea Fanning *Antimicrobial resistance* 15:15-16:00 Prof Kevin Devine *Gram positive bacterial cell wall as a target for antimicrobials*
Tuesday 15th March	(3) Vaccines	10:00-10:45 Prof Grace Mulcahy *Parasite Vaccine development* 10:45-11:30 Prof Ed Lavelle (TCD) *Fundamentals of Vaccinology*

		11:30–12:15 Dr Joe Cassidy *Novel approaches to TB vaccination*
	(4) Global Health	13:30–14:15 Prof Hirofumi Sawa *Viral Epidemiology in Africa* 14:15 – 15:00 Dr Joe Gallagher *Childhood pneumonia* 15:15 – 16:00 Dr Aoife Cotter *HIV*
Wednesday 16th March	(5) Zoonosis	10:00- 10:45 Dr Marguerite Clyne *Campylobacter* 10:45- 11:30 Prof Motohiro Horiuchi *Glial cell activation in prion diseases* 11:30 – 12:15 Dr Gerald Barry *Arbovirus interactions with the mammalian innate immune system*
	(6) Experimental design and grant writing	14:00–14:45 Dr Mark d'Alton *Ethics of Animal experimentation* 14:45- 16:00 Prof Stephen Gordon *Experimental design, grant writing and overview of assessment*

In this report, I will summarize the key points of a few selected lectures that I attended. These include lectures on antimicrobial resistance, arbovirus interactions with the mammalian innate immune system and guidance we received on grand proposal writing. I will begin by quote from *Nature* 441, 255-256 (18 May 2006).

"*Infectious diseases have for too long been considered either from the point of view of the microbiologist, with a focus on the pathogen, or from the point of view of the immunologist, with a focus on the host…research agencies, universities and scientists should embrace approaches that unite microbiologists and immunologists in the study of infection biology.*"

The aim of the Infection Biology module was to provide students with an overview of research developments in the Infection Biology area, and how these are translating into novel control tools.

Antimicrobial resistance threatens the effective prevention and treatment of an ever-increasing range of infections caused by bacteria, parasites, viruses and fungi. It is an increasingly serious threat to global public health that requires action across all government sectors and society. Antimicrobial resistance is present in all parts of the world. New resistance mechanisms emerge and spread globally. For these reasons, antimicrobial resistance is raising concern in the scientific world. The rate at which microbes are gaining resistance to antimicrobials is faster than new antimicrobial agents are being developed. But the economics of the pharmaceutical industry shows that there is a lack of financial reward for

companies, commensurate with the cost and risk of developing a new antibiotic. The requirement of a short course of antibiotics only a few times a year means the economic reward for the drug manufacturing companies takes long to be realized. Nonetheless research efforts are underway to determine new ways of combating antimicrobial resistance. It is inevitable that resistance to any new antibiotic will occur. A newly developed antibiotic would be kept as “a reserve drug” to be used only when intervention. Recent research advances on the development of new strategies that aim at reversing antimicrobial resistant phenotypes, were introduced.

In the area of arboviral research, we learnt how arboviruses evade the innate immune system in host cells. Specifically we looked at Schmallenberg virus, a bunyavirus that causes foetal abnormalities in cattle and sheep. Research progress on the functions of the non-structural protein for Schmallenberg virus and possibilities of developing vaccines, were discussed.

On Thursday 17th March, a national holiday in Ireland, we participated in the St. Patrick‘s day celebrations which commemorates Saint Patrick and the arrival of Christianity in Ireland. The St. Patrick‘s parade attracted alot of local and international visitors include our group from HU and below are a few pictures from the parade.

Some photos from the St. Patrick ’s Day parade

Lastly, on Friday 18th March, we toured a few tourist sites in Dublin city centre as well as the veterinary teaching hospital at UCD as shown in the pictures below.

A

B

C

D

A, B, C were pictures taken from the UCD veterinary teaching hospital, while D was taken from the tour of St Steven's park in the Dublin city center.

Approval of supervisor	Institution・Official title・Name： Hokkaido University Professor Hiroaki KARIWA 印

※1 Send the electronic file to the Leading School section, International Affairs Office, also submit the original print out with seal of supervisor to the Leading School section, International Affairs Office.

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