

This report should be submitted within 2 weeks after you return to Japan. Please do not change the formatting

(Abroad • Domestic) Internship report form (Student)

2019/8/19 (Year/Month/Day)

Name	Wessam Mohamed Ahmed Mohamed
Laboratory	Bioinformatics
Year (Grade)	4th
Internship institution	University of Glasgow, Institute of Biodiversity, Animal Health & Comparative Medicine
Internship period	Internship period: 19/07/2019 - 10/08/2019 (Departure Date from Sapporo: MM/DD/YYYY, Arrival Date in Sapporo: MM/DD/YYYY)
Purpose	To conduct an academic network with researchers in Glasgow University. Facilitate the process of obtaining a job to continue my academic career path in a prospective university

- The reason why you chose this institute

Institute of Biodiversity, Animal Health & Comparative Medicine, University of Glasgow is one of the leading institutes in UK. Many superior professors and experts are teaching there. Dr. Roman Biek is an expert in the field of disease ecology, epidemiology, pathogen evolution, and phylogenetic and molecular ecology.

- Result of the activity (about 800 words、 provide photos, tables and figures that clearly show the activities during the period)

During the internship I was planning to conduct phylogeographic analysis of influenza virus A H5N1 to monitor and infer the spatio-temporal virus migrations. The study was separated into two steps, data manipulations and data analysis.

Data manipulation: I downloaded the time stamped and geographically referenced HA gene of H5N sampled from human and poultry in the period from 2006 to 2016 from Egypt. Virus sequences from the same outbreak as Egyptian outbreak but sampled from the neighbor country were downloaded and included in the analysis. Sequences missing the exact sampling location (longitude and latitude) were excluded from the analysis. Egypt were dissected into four regions, Canal, Nile Delta, Cairo, and Upper Egypt where the sequences were sampled from. Sampling time availability among sequences and we tried to overcome this issue by using the uncertainty method to measure the degree of uncertainty from the origin.

Data analysis: We assessed evidence of clock-evolution using TempEst software to evaluate if there is a correlation between avian and human virus evolution

across the time. Figure 1 shows the clock coevolution. Then we generated time-scaled phylogenies using Bayesian phylogenetic software BEAST v1.10. To infer virus movement rates and ancestral locations we applied discrete phylogeographic models. We visualized the spatial distribution of samples using google map (figure 2). Finally, I learnt how to interpret and visualize model output.

On the other side I will keep in contact with Dr. Roman to continue this project and we are planning to include it as a chapter in my thesis and progress that study to be published.

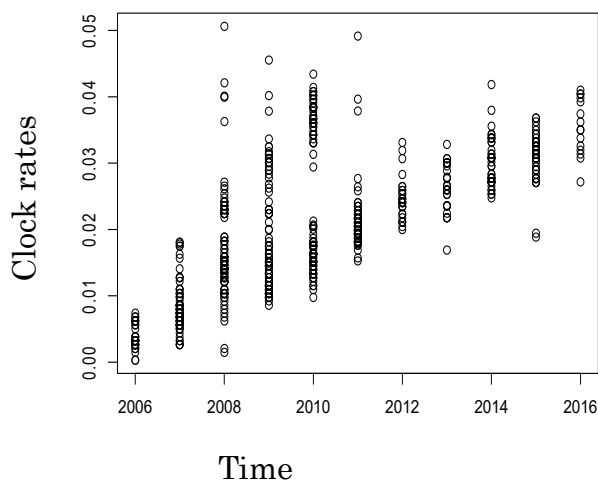


Figure 1. Coevolution of H5N1 viruses sampled from human and poultry.



Figure 2. Spatial distribution of samples

- What do you think the positive impact of the activity will have on your further career path?

It was a great experience for me to contact and deal with sophisticated scientists and this prepares me to be a qualified scientist in the future. It provided me with opportunity to discuss about my recent research and the job opportunities and work requirements with the people in Glasgow University. I Gained knowledge about the educational system in the University of Glasgow.

- Advice for your junior fellows

1. Travel abroad as it is very important for young researchers. It helps to
  - a. Conduct a strong academic network.
  - b. Get experience about the work opportunities abroad.
  - c. Learn new techniques that help you in your afterward career.
2. Enjoy your stay while you are travelling.

### 3. Have new friends every time you travel.

Approval of supervisor	Institution • Official title • Name
	Institute of Biodiversity, Animal Health & Comparative Medicine. Reader.
	Roman Biek

- ※1 Send the electronic file to the Leading School section, International Affairs Office
- ※2 Attach a copy certificate of the content of internship activity that is prepared by the counterpart at the internship institution (any form with a signature of the counterpart).
- ※3 The Steering Committee of the Leading Program will first confirm the content of this report and report will be forwarded to the Educational Affairs Committee for credits evaluation.

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（海外・国内）インターンシップ報告書

年 月 日提出

氏名	
所属	
学年	
活動先名	機関名、国名
期間 ① （出発日―帰札日） ② （インターンシップ 実施開始日―終了日）	① 201X 年 XX 月 XX 日-XX 月 XX 日 ② 201X 年 XX 月 XX 日-XX 月 XX 日

- ・ 活動目的及びインターンシップ先を選択した理由
- ・ 活動内容・成果（2,000 字程度、活動内容が判る様な写真や図表を加えて下さい）
- ・ 今後のキャリアパスを考える上でどのようにプラスになったか。
- ・ 後輩へのアドバイス

指導教員確認欄	指導教員所属・職・氏名
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- ※ 1 電子媒体を国際連携推進室・リーディング大学院担当に提出して下さい。
- ※ 2 インターンシップ先の担当者が活動内容を証明した文書（署名入り）を提出して下さい。
- ※ 3 本報告書はリーディングプログラムキャリアパス支援委員会で内容を確認します。その後、教務委員会で単位認定を受けることになります。

提出先：VETLOG

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