

(Abroad • Domestic) Internship report form (Student)

20160603

(Year/Month/Day)

Name	Zhifu Shan
Laboratory	Veterinary Hygiene
Year (Grade)	D4
Internship institution	Chinese Center for Disease Control and Prevention (China CDC; National Institute For Viral Disease Control and Prevention; Prion Laboratory
Internship period	Internship period: 04/11/2016 - 05/06/2016 (Departure Date from Sapporo: 04/10/2016, Arrival Date in Sapporo:05/07/2016)
Purpose	(1) To understand the roles and responsibilities of Prion Laboratory in China CDC as a reference lab for the prion diseases (human and animals) in China. (2) To understand the epidemiological and clinical characteristics of prion diseases patients China. (3) To acquire the information of relevant facilities as the national reference lab for the prion diseases in China and seek any chance to obtain job after graduation.

- The reason why you chose this institute

The Prion laboratory in China CDC is the authority organization for surveillance and diagnosis of human prion diseases in China, and from there I understand the role of national reference lab and clinical and epidemiological feature of prion diseases in China.

- Result of the activity

(1) Introduction of China CDC and the laboratory for prion diseases

China CDC is an agency of the Ministry of Health of China based in Beijing, China. It works to protect public health and safety by providing information to enhance health decisions, and it promotes health through partnerships with provincial health departments and other organizations. The China CDC focuses national attention on developing and applying disease prevention and control, environmental health, occupational safety and health, health promotion, prevention and education activities designed to improve the health of the people of China. The institute for Vial Disease Control and Prevention (V-CDC; Fig 1.) is one of the institutes of China CDC, and the prion disease laboratory belongs to the V-CDC. The laboratory of Prion diseases is responsible for the monitoring the network of the prion disease

on human in China and offer the reference of prion disease diagnosis on humans. Therefore, this is a good chance for me to understand the detail of human prion diseases in China.

(2) The diagnosis of Creutzfeldt-Jakob disease (CJD) suspicious patients

The China CDC started the surveillance for CJD in 2006, and up to now 12 provincial centers for disease control and prevention (CDCs) and 15 sentinel hospitals were covered. Once suspicious CJD patient is found, the case will be reported to China CDC from these provincial CDCs or sentinel hospitals directly.

Around 50 cases of CJD suspicious patients were reported to China CDC during one month (April, 2016). After acquiring the case reports and pathological specimens from the CJD suspicious patients, China CDC collected specimens (blood and cerebral spinal fluid-CSF) for the diagnosis. I learned the detection of the 14-3-3 protein in CSF by Western blot assay (Fig 2.). I also learned the extraction of DNA from the blood and analysis of the mutation of PRNP gene by BLAST (Fig 3.). The principle for the diagnosis is if the mutation was founded in PRNP gene, the patient was definitely diagnosed as prion disease, however, only positive for the 14-3-3 protein from CSF is not enough for the diagnosis, characteristics of symptoms, MRI imaging of brain should also be considered and to make a conclusive diagnosis.

(3) The phone follow-up for the CJD diagnosed patients

The progression of CJD is sub-acute and during the reporting time of suspicious cases to China CDC, doctors may get new progress of treatment or new diagnose as another neurological diseases, therefore China CDC makes phone call to the family of CJD suspicious patients to follow-up the latest condition of patients.

Usually China CDC will make 2 follow-up calls, once is after getting the case report from CJD suspicious patients, which is helpful for the diagnosis of diseases. The second follow-up call makes at around 2 years later and I learned and made the phone call to follow-up the definitely and clinical diagnosed CJD patients during 2013 to 2014 (Fig 4.). During 2013 to 2014, nearly 200 cases were definitely or clinical diagnosed as CJD, and I mainly tried to ask the current condition of each patient, including the death time and the clinical period. Most of the definitely and clinical diagnosed CJD patients were dead within 2 years. Some of the family lost to follow-up or did not want to talk more about patients, some family wanted to know more, for example the possibility of inheritance, the way to deal the personal supplies of patients.

During the phone call follow-up, I felt the helpless from the CJD patient family and it is urgent to establish the effective therapeutics of prion diseases. This feeling confirmed my determination to work on prion diseases treatment.

(4) Collating case reports

After making the definite or clinical diagnosis of CJD patients, China CDC collated and saved all the data from clinical and laboratory. During this processes I learned the clinical symptoms of CJD patients (Fig 5.).

(5) Other activities

During the internship, I also attended the seminar of prion laboratory in China CDC. The students shared and explained the papers they interested and I also made a short presentation to introduce Hokkaido University, the institute of veterinary, my laboratory-Veterinary Hygiene and my research (Fig 6.).

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

During the internship, I talked with Professor Dong, who is the head of prion laboratory in China CDC and he said that although now 12 provincial CDCs and 15 sentinel hospitals were established but more institution for reporting and laboratory examining of CJD suspicious patients is needed. This information may offer me a good chance to find prion research-relevant job in China.

Moreover, I analyzed the advantage and disadvantage of me to find a job in China, less of information is one of the problems. So I also talked with students in prion laboratory in China CDC, they told me the employment after doctor course graduation these years and invited me to some prion special- or virus special groups on internet, where timely and pointed recruitment information will offer.

Unfortunately, not so many laboratories in China focus on the prion research, which reminding me to broaden my view to find my job in the future.

- Advice for your junior fellows

This is my first time contacted with the human patients of CJD and their family, and their desperation and survival hope touched me and I started to deeply understand the significance and importance of my research. So I would like to say that the main idea of our research is “one health”, and to see the real situation of human suffering is a good way to

enhance the understanding of your research. However, we are veterinary and it is difficult to see the real situation of human patients. Thanks for the internship to supply us the good opportunity to see more.

Approval of supervisor	Institution • Official title • Name Graduate School of Veterinary Medicine Laboratory of Veterinary Hygiene Professor Motohiro Horiuchi <div style="text-align: right;">印</div>
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- ※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.
- ※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.



Fig 1. The main building of China CDC (left) and the building for the V-CDC (right).

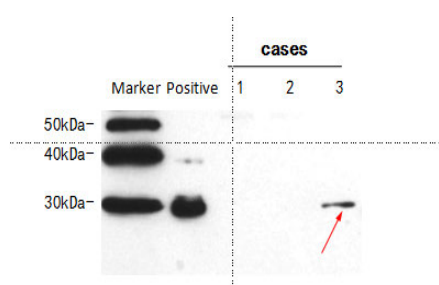


Fig 2. The result of 14-3-3 protein detection from CSF by Western blot assay



Fig 3. The gene sequencing of patient blood sample

姓名	性别	年龄	出生日期	身份证号	民族	籍贯	学历	毕业学校	毕业时间	备注
李强	男	32	1987-05-15	36042419870515001X	汉族	湖南长沙	本科	湖南大学	2010-06	1. 湖南
王明	男	28	1991-03-22	43010219910322001X	汉族	湖南长沙	本科	湖南大学	2013-06	2. 湖南
张华	男	35	1984-08-10	43010219840810001X	汉族	湖南长沙	本科	湖南大学	2008-06	3. 湖南
李华	男	30	1993-01-05	43010219930105001X	汉族	湖南长沙	本科	湖南大学	2015-06	4. 湖南
王明	男	25	1998-09-18	43010219980918001X	汉族	湖南长沙	本科	湖南大学	2020-06	5. 湖南
张华	男	33	1990-07-03	43010219900703001X	汉族	湖南长沙	本科	湖南大学	2012-06	6. 湖南
李华	男	27	1996-04-20	43010219960420001X	汉族	湖南长沙	本科	湖南大学	2018-06	7. 湖南
王明	男	31	1992-11-12	43010219921112001X	汉族	湖南长沙	本科	湖南大学	2016-06	8. 湖南
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李华	男	26	1997-02-14	43010219970214001X	汉族	湖南长沙	本科	湖南大学	2019-06	10. 湖南
王明	男	34	1989-10-01	43010219891001001X	汉族	湖南长沙	本科	湖南大学	2011-06	11. 湖南
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李华	男	28	1995-12-03	43010219951203001X	汉族	湖南长沙	本科	湖南大学	2018-06	13. 湖南
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李华	男	28	1995-10-04	43010219951004001X	汉族	湖南长沙	本科	湖南大学	2018-06	22. 湖南
王明	男	32	1991-07-22	43010219910722001X	汉族	湖南长沙	本科	湖南大学	2014-06	23. 湖南
张华	男	29	1996-05-11	43010219960511001X	汉族	湖南长沙	本科	湖南大学	2019-06	24. 湖南
李华	男	27	1997-03-29	43010219970329001X	汉族	湖南长沙	本科	湖南大学	2020-06	25. 湖南
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Fig 5. The case report of CJD patients



Fig6. Presentation in the seminar