

(Abroad • Domestic) Internship report form (Student)

2017/5/10 (Year/Month/Day)

Name	Jinxi Wang
Laboratory	Laboratory of Animal Science and Medicine
Year (Grade)	D3
Internship institution	Institute of Experimental Animal Sciences Department of Medicine, Osaka University.
Internship period	Internship period: 04/01/2017 - 04/29/2017 (Departure Date from Sapporo: MM/DD/YYYY, Arrival Date in Sapporo: MM/DD/YYYY)
Purpose	Become familiar with the work of and responsibility of research staff in a different research institute and gain working experience for the future career path.

This report should be submitted within 2 weeks after you return to Japan.

- The reason why you chose this institute

(1)This laboratory links with the National Bio Resource Project-Rat (NBRP-Rat) and has many cooperation with other institutes. Prof. Mashimo, the host of this lab, is highly experienced in operating and developing laboratory rodents resource.

(2)Genetically modified animals play an important role in the studies of laboratory animals. The staffs in this institute are highly experienced and professional in genome-editing of experimental animals. Their method is simple and effective, which is very useful in many kinds of researches.

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

(1) Lectures and training for animal experiment in Osaka University.

To get the permit of entering the Institute of Experimental Animal Sciences(IEXAS), using animals and perform the genome editing experiments, I accepted three lectures and some training about how to use the institute. The lectures were about the regulatory system on laboratory animal welfare of Japanese government and Osaka University, and how to use the IEXAS. Because I also worked with the staffs on producing genome editing animals, so I also accepted a lecture about Living Modified Organism: LMO.

After passed two examination, I got the admission of doing animal experiment in the IEXAS, and a card key for the institute and animal rooms.



(2) Work in the IEXAS.

The IEXAS supports the animal experiment to the Faculty Medicine of Osaka University, besides keeping the experimental animals, the IEXAS also provide the genome editing animals for each laboratory.

The IEXAS is constitute by five units, they are animal experiment support unit; animal welfare unit; facilities management unit; animal information unit and reproductive engineering unit. The reproductive engineering unit is managed by Prof, Mashimo. They use CRISPR/Cas system and electroporation to produce genome editing mouse and rats, not only for the researchers in the Osaka University, but also the other institutes in Japan or in other countries. During the period of internship, I also worked with the staffs and researchers in the reproductive engineering unit on producing genome editing rats. The following table shows my weekly schedule.

Monday	Inject PMSG to the female rats
Tuesday	Study and training
Wednesday	Inject hCG to the female rats, and mate these rats to male rats
Thursday	Collect embryos from the female rats, and introduce the CRISPR/Cas system into the embryos by electroporation. The embryos are cultured until transfer. Prepare pseudo pregnant female rats
Friday	Transfer the embryos into the oviduct of pseudo pregnant rats

For collecting more embryos and improving the efficient, super ovulation was very necessary. Rat pronuclear-stage embryos were produced by natural mating. Female rats were induced to superovulate by an intraperitoneal injection of 300 IU/Kg PMSG, followed by an intraperitoneal injection of 300 IU/Kg hCG 48 h later. Female rats were mated with male rats overnight after hCG injection. The oocytes were flushed out from the ampullae of oviduct with culture medium in the next morning. Pronuclearstage embryos were collected and stored in culture medium. The Cas9 mRNA, gRNA and ssODN were introduced into the intact embryo by electroporation using super electroporator NEPA 21 (NEPA GENE Co. Ltd., Chiba, Japan). After electroporation, all embryos were cultured before embryo transfer. In the next morning, Embryos that developed to the two-cell stage were transferred into the oviducts of female surrogate that anesthetized using isoflurane. Females were mated with vasectomised male rats the day before the embryo transfer. The number of offspring that were born naturally was counted at 19–21 days of gestation.

(3) Discussion about the career path and current research

I discussed with Prof. Mashimo and other researchers about my current study and future plan, and got some comments. I also discussed with Prof. Mashimo about my plan of career, he provided me some advice and experience about it. Considering my performance and ability, he was willing to provide me chances in the future, too.

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

career path?

Via this internship, I became familiar with the work of and responsibility of research staff in a different research institute and gain working experience for the future career path. I expanded my chances, and collected more information for my career path. And I also handed advanced technology of genome editing and knew how to apply the technology into the development of laboratory animal science.

- Advice for your junior fellows

Collect information of the related institutes as much as possible, and compare these institutes. Then, choose the one which is the most suitable for you.

Approval of supervisor	Institution • Official title • Name
	Graduate School of Veterinary Medicine • Professor
	Takashi Agui 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.
- ※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.

Submit to : Leading School section, International Affairs Office

Ext: 9545 e-mail: leading@vetmed.hokudai.ac.jp