Research Activity Report
Supported by "Leading Graduate Program in Primatology and Wildlife Science"
(Please be sure to submit this report after the trip that supported by PWS.)

	2015. 10, 30
Affiliation/Position	Primate Research Institute / D1
Name	Morgane Allanic

1. Country/location of visit

Primate Research Institute, Inuyama, Japan

2. Research project

Sex identification of wild sika deer (*Cervus nippon yakushimae*) from feces using DNA and hormones.

3. Date (departing from/returning to Japan)

2015. 10. 26 – 2015. 10. 30 (5 days)

4. Main host researcher and affiliation

Professors Hayakawa, Kinoshita, and Kishida (Kyoto University)

5. Progress and results of your research/activity (You can attach extra pages if needed)

Please insert one or more pictures (to be publicly released). Below each picture, please provide a brief description.

As a follow up of the Yakushima Field Course, I participated to the Genome Science Course from October 26th to 30th. During the previous course, we showed that the size of fecal pellet was not related to the body size of sika deer individuals, however, it was related to the age. Adults had longer and larger fecal pellets than juvenile ones. The study of fecal pellet size seems, therefore, to give information on the age of the individual. Thus, the study of both pellet density and pellet size should contribute to the better understanding of why the sika deer population shows so much variation in Yakushima.

The purpose of the Genome Science Course was:

(i) To identify the sex of our individuals by DNA analysis, to compare the results with the ones from our direct observations in Yakushima, and to compare these two methods for sex identification.

We first extracted, purified, and quantified the DNA from our samples. We found that the DNA concentrations of our samples were very low, probably because of the way we collected the DNA in Yakushima when swabbing the surfaces of the fecal pellets. We then did a Polymerase Chain Reaction (PCR) to amplify the DNA. In the PCR mixture we added the primer SRY (Sex-determining Region Y) and the primer ZFXY (Sex-determining Region X and Y) since our goal was to identify the sex of the individuals. Finally, we run the electrophoresis. After removing the samples for which the results were not visible on the electrophoresis gel we found only one mistake. From our direct observations, we recorded the individual as a female, however after DNA analysis the result revealed it was a male. Since, it was the only inconsistency, our results from direct observations and our results from DNA analysis are matching at a level of 97% which means that DNA analysis is an efficient method for identifying the sex of sika deer.

(ii) To see how sex steroid hormone concentrations differ between sexes and between seasons, and also to see if it is possible to identify male and female from the hormonal concentration levels.

We measured the concentration of testosterone, progesterone, and estradiol by enzyme immunoassay. We found no significant difference between the males and the females for the three hormones, and no significant difference between the breeding and the non-breeding seasons, except for the estrogen. It is difficult to explain our results. We were expecting to find higher concentration levels during the breeding season, and higher testosterone levels in males than in females for example.

This course was a good opportunity to remind me the methods of molecular biology. My bachelor degree was on molecular biology and biochemistry, so I was already familiar to these methods. However since I did not practice them for about three years, it was good to renew with these methods.

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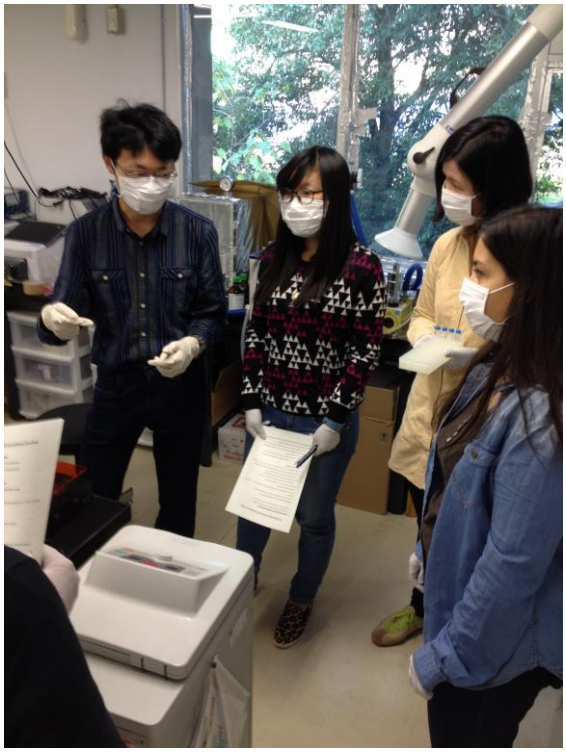
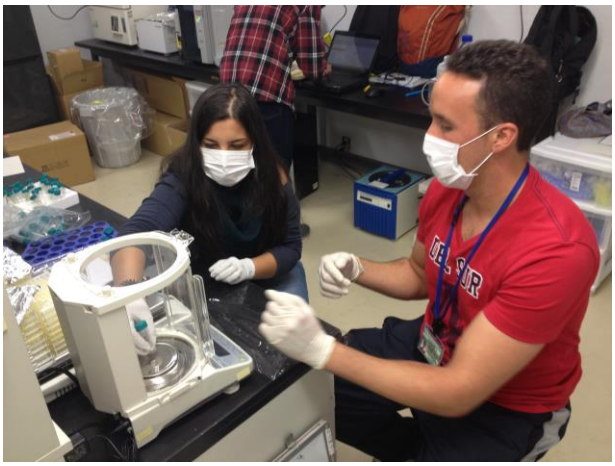
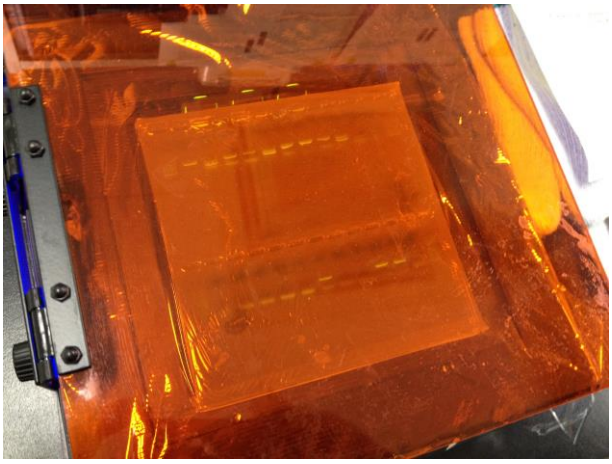


Student waiting for the centrifugation to end



Students measuring the weight of fecal pellet



Results of the electrophoresis

6. Others

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