

The Technology of Pig Oocyte Maturation in South Korea

Zhenglu Wang, Bioenvironmental Sciences, Texas A&M University
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I am an international student from China. South Korea is a very close neighbor to my home country, which is only 1.5 hours away from Beijing by plane. Though South Korea and China share some similarity in culture, there are still many differences between the two countries. How can South Korea be so developed with such small territorial size and limited resources? This is the question I always asked myself. Agricultural biotechnology in South Korea is very advanced, particularly in animal science. With this summer program, I had a chance to explore the difference of agricultural biotechnology in US, China, and South Korea.

I lived on campus of Chungnam National University for about 4 weeks. Chungnam National University is located in Daejeon City, which is located in the central region of South Korea. During my time in South Korea, I took Agricultural Biotechnology in Korea and Korean language. The abundant information provided in the class helped me deepen the understanding of some specific topic, such as GMO & cloning.

The most exciting part of this study abroad program was the 5 field trips to different places, such as Korean Research Institute of Bioscience and Biotechnology, cheese factory, pasture, vinegar industry, traditional village, etc. Based on the biotechnology knowledge I learned in the class, apply them into real life makes this experience precious and practical.

On this trip, the most impressive thing to me was to experience maturation of pig oocyte experiment in animal cloning lab. I discuss more about this experience in this poster presentation.

Internship Objectives - Maturation of pig oocytes

Introduction: the purpose of *in vitro* maturation oocyte systems is to produce oocytes of comparable quality to those derived *in vivo*. The present study was designed to examine the surface morphological changes of the cumulus-oocyte complex (COC) and nuclear maturation in a culture system.

Material and Methods:

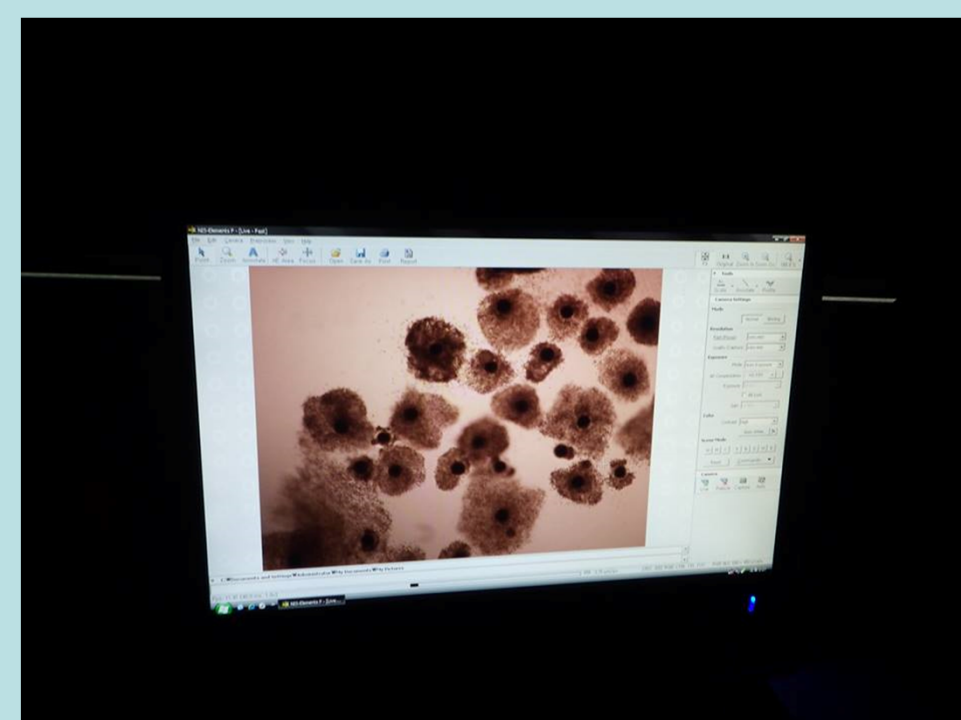
1. Prepare IVM (*in vitro* maturation)

- 1.1 put IVM-M tube into incubator one day ahead.
- 1.2 wash porcine ovaries collected from a slaughterhouse with saline.

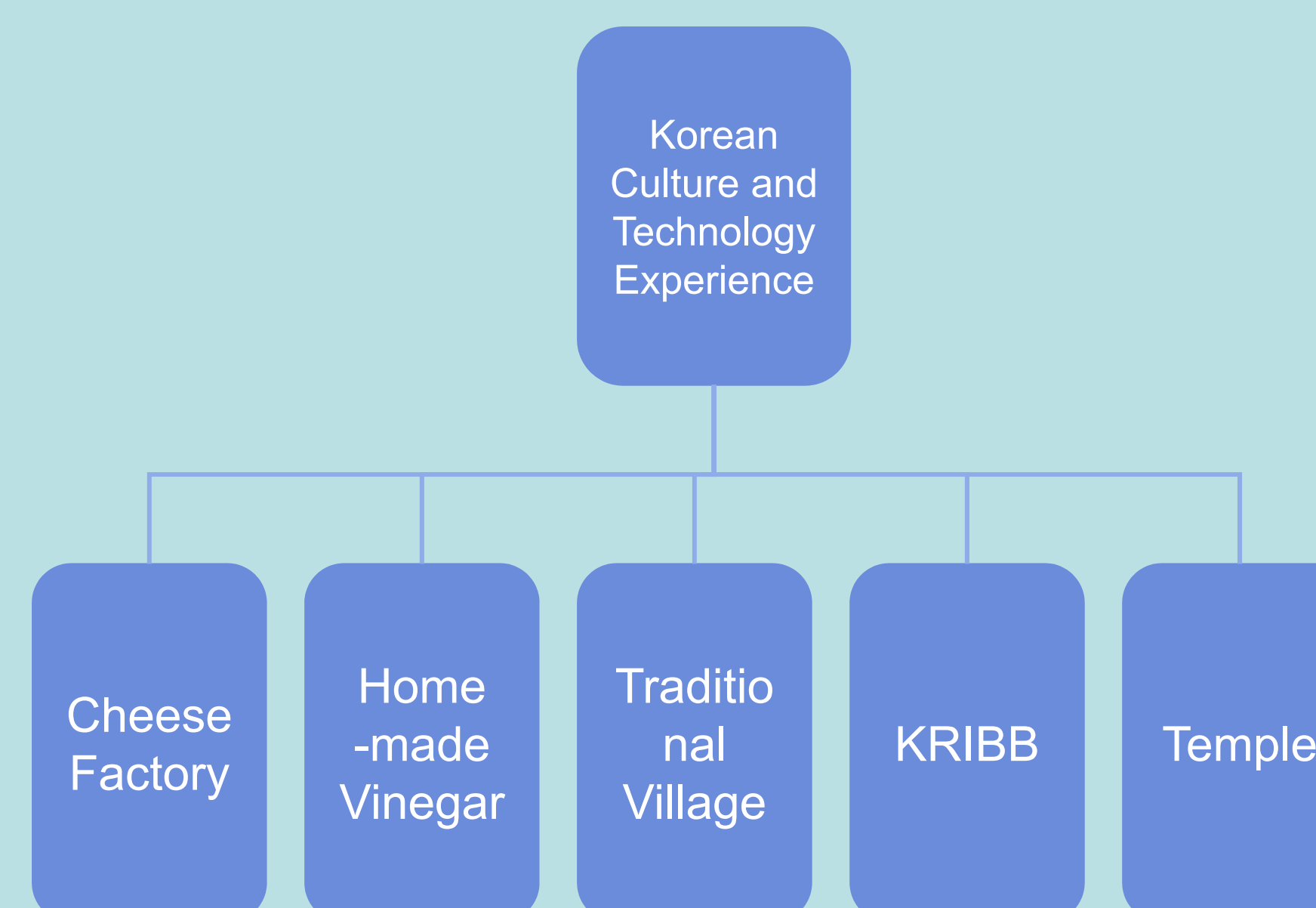
2. IVM (*in vitro* maturation)

- 2.1 aspiration: procedure for collecting follicular fluid from antral follicles.
- 2.2 deposit the sediment of follicular fluid, then transfer the sediment to a clean dish, wash the sediment with 5ml saline, remove the supernatant. Wait for further sedimentation; repeat the same process 2 more times.
- 2.3 add 5-6ml saline into dish, place 3 drops of saline into a separate dish, select COC (cumulus-oocyte complexes).
- 2.4 wash the selected COCs 3 times using the 3 drops saline prepared in step 2.3.
- 2.5 place 3 drops IVM (in vitro maturation) in separate dish, wash COCs 3 times.
- 2.6 fill each well of a 4-well dish with 500ml of IVM, transfer 30-50 COCs into each well to incubate 22 hours.

Result; You cannot see the result very clear in this picture. The maturation rate of pork oocyte in IVM (*in vitro* maturation) is 47.5%. It means pig oocytes can be successfully cultured in IVM (*in vitro* maturation).



Field Trips



All these sites indicate that Korea is a cultural and technological balanced country. All of these things are interrelated.

Relationship to Career Goals

This trip is really fruitful because of my unique identity - a Chinese student studying at Texas A&M with visit to Chungnam National University. Everything to me was a comparison among three countries. For example, automobile industry, in the U.S., vehicles are relatively bigger, which cause more environmental problems such as higher exhaust gas emission. But under well established regulations, these problems can be solved by controlling the emission or importing environmental friendly automobiles, such as Toyota & Hyundai. In Korea, you can see their own brand of automobiles almost everywhere and they are smaller, at the same time, more economical. Compare to these two countries, China, don't have that many better quality domestic brands. So we depend heavily on foreign brands. The problem is China is the world factory and the integrity of environmental regulation system is not consummate yet. So automobile industry, to China, is a both economically and environmentally disaster. From this example what I want to express is that my world perspective is changing constantly, which I believe will help me to better adapt the intricate world and give me a profound understanding of environmental issues not only in China, but all around the world.

References

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