

Canada-Japan Co-op Program Experiential Report

花王株式会社

Kao Corporation

Ichikai, Tochigi, Japan

1st Kansei Science Laboratory

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Introduction

Roughly 40 Canadian students each year are matched with prestigious internships in Japan through the Canada Japan Co-op Program. Although the program has a history of providing placements to students in a variety of disciplines, the vast majority of the available internships lie in engineering. As a student studying Biomedical Science at the University of Ottawa, I was lucky to secure a rare internship directed towards molecular biology.

My internship began in September 2014 and ended in December of the same year. I was hired by Kao Corporation as a researcher in the 1st Kansei Science Research Laboratory, based out of Ichikai, Tochigi. The purpose of this report is to summarize my experience in Japan; detailing my life as a Kao employee and my time as a guest in a foreign country.

About Kao Corporation

In 1887, Nihon Yuki Company was founded as a soap manufacturer domestic to Japan. With over a century of expansion, today Nihon Yuki Company is called Kao Corporation and is an international conglomerate. Kao Corporation is a major developer of chemicals and consumer products in the areas of beauty, human health, and home and fabric care.

In 1934, Kao founded their first research facility, called Housework Science Laboratory, to begin to take a scientific approach to product development. In 1971, research expanded and the laboratory was renamed the Kao Life Science Laboratory. The research done by Kao Corporation strives to enrich the lives of consumers, while maintaining a status of sustainability.

Although the Kao Corporation itself is not very well known in Canada and the United States, many of Kao's brands are familiar to Westerners, such as Jergens, Biore, and John Frieda.

Kao Corporation became interested in accepting Canadian co-op students as a small means to achieve international exposure.

Tochigi Research Laboratories

Tochigi is the northernmost prefecture of the Kantō region in mainland Japan. The capital of Tochigi, Utsunomiya, can be reached by train from Tokyo in one and a half hours. Ichikai, home to one of Kao's largest operations, is 40 minutes past Utsunomiya by bus. The Tochigi branch of Kao is also home to a large factory which produces paper products.

Kao Corporation's research in Tochigi is divided into four branches: Safety Science, Sanitary Science, Biological Science, and Kansei Science. Each branch has a dedicated group of employees who work around the clock. The scope of the research done in Tochigi is vast, but it all shares the common goal of improving Kao's consumer products.

It is not a mistake that Tochigi Research Laboratories are located in a rural area; hidden away from the hectic metropolis that is Tokyo, Tochigi affords an environment with fewer distractions to the employees. High expectations are placed on the workers and the outcome is often innovative research yielding highly useful data.

Kansei Science Laboratory

The Kansei Science Laboratory in Tochigi consists of 12 employees, with two other sister laboratories situated in Tokyo. Kansei is the Romanization of the Japanese word for *sensory*, therefore, along with my coworkers, I conducted research that related to human sensory systems such as taste, touch and smell. My direct supervisor's research focused on the human olfactory system, thus olfaction was also my focus during my placement at Kao.

Each day in the laboratory was hands-on and I was able to learn new skills in a setting where beginner's mistakes were tolerated. I knew that my supervisor's foremost goal was to teach me experimental procedures; however I still felt pressure to obtain useful results in my daily work. This environment motivated me to work quickly and carefully, but to still feel comfortable asking for help when I needed it. As I gained confidence my skills improved, and towards the end of my placement I was working independently and designing my own experiments.

In addition to being a great place to conduct research, Kansei Science Laboratory also became a large part of my social life in Japan. My co-workers welcomed me to the country with several drinking parties, and there was hardly a week following my arrival that I didn't meet up with different members for after-work activities.



Biological Science Laboratory's First Year *Doki*

Specific Research Tasks

The focus of my research was the human olfactory system, specifically human olfactory receptors and their associated ligands. Although a relatively simple assay can determine which ligands bind to which receptors, human olfaction is largely uncharacterized and there is much research to be done before the field is mastered. Ligand binding does not follow a one-to-one lock and key binding model; instead receptors are capable of binding many different odorants resulting in a specific pattern of activated receptors, which is how we perceive different scents. There are approximately 400 defined human olfactory receptors, yet humans are able to perceive and discriminate between thousands of different odorants. Only when the specific binding capabilities for each different receptor are defined can patterns emerge to allow us to have a full understanding of the human olfactory system.

Receptors can be characterized *in vitro* by inducing their expression in cell lines using transfection procedures and subsequently measuring their response to select odorants. In the laboratory, I was responsible for maintaining my own cell cultures for use in experimentation. If I accidentally miscounted how many plates I would need on a certain day or contaminated my stock, I would have to wait a few days until one of the other members of my lab had spare cells they could share with me to reseed. I manipulated subsets of my cell cultures daily for use in transfection and became quite comfortable with the procedures involved.

In addition, I was asked to perform human sensory tests using the data obtained with my *in vitro* results. I was given the opportunity to design the entirety of the sensory trials I used, which was invaluable experience. There were many occasions before my departure when I was told that Japanese companies are very different from Canadian companies because they will consider their co-op student as more of an observer than a researcher. However, I found the

opposite was true. I was given responsibilities that were at first intimidating, but I found that I was able to rise to the challenges my supervisor provided for me on a daily basis.

Living in Tochigi

Kao provided me with a room in the company dormitory, which was a 7-8 minute bus ride away from the laboratory. My room was a reasonable size and was equipped with a traditional Japanese futon, a small desk and chair, and a television wired with basic cable. It took me a couple of weeks to get used to the smell of *tatami*, but eventually it was not noticeable. Although the dorm housed both males and females, the women were placed in a wing of their own which was off-limits to the men.

I easily fell into a routine while I was living in the dormitory. My days would begin at 6:00am, when I would shower and get ready. There was a large Japanese-style public bath located on the first floor of the women's dorm for showering and bathing. I was at first uncomfortable with the openness of the showers and the shared *ofuro*, but with time Japanese-style bathing became very relaxing. After I had finished getting ready for the day, I would eat breakfast at the dormitory cafeteria – which alternated between traditional Japanese breakfast of fish, rice and *natto*, and Western-style breakfast of toast, eggs and meat – before taking the company bus to work at 7:35.

The company provided my lunch in the cafeteria and also allowed me a purchase of one bottled drink from the company store each day. Lunch food was always varied, with a noodle option and a rice option available. I never found myself hungry during the day, as there were often snacks and candies passed around my office to be shared.

Days at work were usually very busy and would pass by quickly. The first bus to the dormitory from the company did not depart until 6:00pm, so although my work hours technically ended at 5 o'clock, I never left until much later. I did not find this to be a problem, however; as there was always work to be done. Particularly, towards the end of my placement I routinely stayed at work until 7 or 8:00pm.

Most evenings after work would be spent in the dormitory. It is next to impossible to get around Ichikai without a car, as there is no public transportation, so my choice of after work activities was limited. On an average evening, I would eat dinner in the dormitory cafeteria, go for a walk to the convenience store down the road, and go back to my room to rest and watch TV or read. However, some evenings would be busier. I was a member of the company's Flower Arrangement Club which took place on Tuesday evenings, and on Thursday evenings I would attend a Japanese class for foreigners in Utsunomiya. My *doki*, the Kao employees who were also new to the company in 2014, would plan *nomikai* at the company *Izakaya* a few times a month to celebrate arrivals, birthdays and departures. These parties always took place on weeknights, and I would arrive to work the next morning exhausted but happy that I was able to bond with my new Japanese friends. In addition, I had a devoted group of co-workers who would often take me out for dinner so I would be able to experience all of their favorite Japanese cuisine.

Communicating in Japanese

I arrived in Japan with a minimal knowledge of the Japanese language, and I unfortunately must admit that I left Japan with only slightly improved skills. During my stay in Japan, I communicated almost exclusively in English. Many of the employees at Kao took

advantage of my English fluency: I was frequently asked to review English presentations and emails before they were sent to co-workers at the American branches of Kao. Despite this, I habitually found myself speaking in very simple English in order to be understood. Although almost all of the people I would encounter on a daily basis spoke English at a conversation level, they would often become confused if I spoke too quickly or used abstract sentence constructs. Overall, my non-verbal communication skills improved vastly. Gestures, facial expressions and context clues became very important in daily interactions.

Travel

My stay in Japan was very short, but I was still able to travel around and see some famous tourist destinations. On my first weekend a group of my co-workers took me to see Nikko, which is the home of the Toshogu Shrine and renowned for its beauty. Over the duration of my stay, my *doki* were often my travel companions. They took me to the nearby Mashiko for a pottery lesson, on endless shopping trips in Utsunomiya, and to Disney Sea for my final weekend.

In addition to travelling with my *Doki*, I also would travel with other CJCP interns. I was fortunate to have an overlapping placement with a second internship student at Kao, and we became close friends. On several occasions we travelled to Tokyo together to see everything the city had to offer. In the autumn, I went to Kyoto with a couple of CJCP interns to see the leaves change colour.

I found travelling in Japan very easy. The public transportation system is comprehensive and relatively inexpensive (if you travel on local trains instead of Shinkansen). With a small amount of planning, it is easy to get anywhere you need to go.



At Senso-ji in Tokyo



Fushimi-Inari Shrine in Kyoto



CJCP 2014 in Tokyo

Reflections and Recommendations to Future Students

My stay in Japan will absolutely be the most memorable four months of my life. I am astonished by how warmly I was welcomed and how comfortable my transition to a new culture was made. My experience with the Canada-Japan Co-op Program was tremendously fulfilling, both professionally and personally. I entered Japan with the intention of testing my limits and immersing myself in another culture, and I was not disappointed. Although Japanese culture is vastly different from Canadian culture, the international co-op experience was invaluable. My supervisors at Kao Corporation taught me the skills I needed to succeed and allowed me to work towards my research goals at my own pace. Although my work term was short (only 4 months) the work I did was highly beneficial to my team's objectives and could result in a new patent for the company! I could never have imagined that I could take away so much from only a few months. To students considering applying: never again will you be young enough and free enough to pick up your life and move half-way across the world! CJCP will expand your horizons and you will undoubtedly create memories that you will cherish throughout your lifetime.



Biological Science Laboratory's First Year *Doki* End of Year Party