

Introduction

Over twenty million people live in the Tokyo area. I am one of them for more than a year now. I got the opportunity to perform a study project in the field of structural biology within an excellent research environment and to take a PhD course at the University of Tokyo.

In contrast, I was born and grew up in a small village in Switzerland where everyone knows everyone. The quality of life there is very high. I felt good living there, and with regards to a professional career, it is a promising place to complete an education. My aim is to finish my education with a doctorate.

Before my departure I should have asked myself a few questions. Do I really want to go abroad and live and study in a country so far away from my family, hometown and friends, where I am an individual among millions? Will I get lost among all those people? I do not know anybody. I have to make new friends and probably I will not be able to stay in contact with all my friends in Switzerland. I will have many problems in daily life due to the foreign language, and the communication with the people will not be easy, not to mention all those puzzling Chinese characters. Do I really want to go to a country where the culture and especially the language are so different from mine and very difficult to learn? Will I be able to cope with a totally different environment dominated by the bustling city life I never experienced before?

When I planned my stay in Japan I did not ask all those questions. I did not want to ask, otherwise, I might have stayed at home. Above all, I did not want to find the answers without experiencing it myself. Actually I did not have the time for such questions because I had to decide about going to Japan within less than one month. Furthermore, I could not plan many things apart from the flight, the accommodation and my first employment at a research institute. As for the remaining things, such as enrollment at a university, and other questions which I never thought of before going to live in Japan, I could not arrange these from Switzerland. I had to face and experience them first.

Finally, I took the chance and hurled myself into the „Japan adventure“ on the one hand to accomplish the final part of my academic education and on the other hand to find the answers to all the questions above and many others...

^a schmucki@gsc.riken.jp

In the first part of this report, I would like to briefly introduce my research project. As I am still at the beginning of my studies, there are no results yet to present here. The following section is about the Japanese language education. I did not study Japanese before I came to Japan. After my arrival in Japan I started taking free lessons organized by volunteers in Yokohama. My language skills were quite rudimentary and I did not improve much. The SJCC scholarship enabled me to go to a language school and take Japanese lessons on a regular basis as described in the second chapter.

In the last chapter I will present some experiences made during my first year in Yokohama and then when I moved to the dormitory in Tokyo. I will describe a few difficulties which occurred when applying for the university and my daily life in Tokyo.

I hope that the following report provides assistance for other students who are planning to go to Japan for their studies.

Research project

After finishing my studies of physics at ETH Zurich I was looking for a PhD position in the field of computational physics and biophysics in which I wrote my diploma thesis. I received the exceptional opportunity to take a doctor's course at the University of Tokyo^b while doing my research project at RIKEN Genomic Sciences Center in Yokohama^c.

My research topic is focused on the development of new software used for the structure determination of biomolecular proteins by Nuclear Magnetic Resonance spectroscopy (NMR). The RIKEN research institute provides an excellent infrastructure and many resources. My study is within the framework of the National Project on Protein Structural and Functional Analyses (Protein 3000 Project^d). This research project aims to obtain deep insight into the biological network by solving the structures of proteins of biological and medical importance. The main goal of the project is the investigation of over 3000 fundamental structures and functions of the major proteins. As proteins play significant roles in our bodies and as their irregular behavior causes various diseases, it is important to study protein structures and functions to regulate them and to speed up drug development.

^b http://www.u-tokyo.ac.jp/index_e.html

^c <http://www.gsc.riken.go.jp/eng/group/protein/index.html> or <http://www.riken.jp/s-world/gallery/e/index2.html>

^d <http://www.gsc.riken.go.jp/eng/gsc/project/protein.html>



The RIKEN Research Institute, Yokohama Campus.

In the following section, I will briefly introduce the background and basic concept of my research project.

Biomolecular proteins are composed of a sequence of amino acids. This amino acid sequence is representative for a protein. Depending on its local environment, each atom (nuclear spin) of the amino acid has a characteristic resonance frequency that can be detected by NMR experiments. Hydrogen atoms (protons) that are less than 5 Ångstroms ($5 \times 10^{-10} \text{m}$) apart from each other in the protein interact by the Nuclear Overhauser Effect (NOE). The NOE interaction between nearby atoms gives rise to signals ("peaks") in NMR spectra with 2, 3 or 4 frequency dimensions. A NOESY spectrum provides information on a network of thousands of short distances between hydrogen atoms in the protein. However, to make this information useful, it is necessary to identify for each peak in the spectrum the pair of atoms in the protein that is responsible for it. This essential but difficult step of the protein structure determination process by NMR is called assignment. A characteristic resonance frequency is assigned to each atom occurring in the sequence of amino acids. However, several hydrogen atoms usually share almost the same resonance frequency. This "overlap" makes it difficult and very cumbersome to assign manually each peak to a unique hydrogen atom pair. The assignment of NOESY peaks is performed fully automatically with sophisticated computer programs. Automation is essential for the overall efficiency of NMR protein structure

determination. Usually, manual assignment by an experienced person requires several months of work and is subject to personal decisions which can lead to serious errors. From the knowledge of short atom–atom distances and the amino acid sequence of the protein, the arrangement of the atoms in space is calculated using an appropriate computer algorithm. The whole structure calculation requires a large amount of computation power.

The final result of the NMR structure determination is the three–dimensional structure of the protein in solution. The protein structure can reveal the function of the protein and form a basis for the development of drugs against human diseases.

My research project is focused on the development of a new computer algorithm as to perform the assignment of the resonance frequencies completely automatic without any manual interaction. Furthermore, it is planned to apply this algorithm on new proteins so as to determine their three–dimensional structure with the method described above.

Japanese Language Education

International students of the University of Tokyo have the possibility to take one of various Japanese language courses offered by several departments. However, either the classes are primarily for Monbukagakusho scholarship students^e or the number of students allowed in a class is so large (up to 40 students) that learning efficiently is hardly possible. Furthermore, those classes are held at Hongo Campus in Tokyo, but my research institute is located in Yokohama. Even the commuting time would be longer than the lesson duration itself. This is the reason I decided to search for a language school which suits my situation better.

At first I was looking for a school on the internet which can fulfill the following criteria. I wanted to take lessons two or three times a week in the evening or on the weekend. The class should be small enough so that the learning is effective and the location must be convenient as not to lose too much time with commuting. On the internet I found many language schools and in the end I even took some free trial lessons. The search for a good school by myself was quite time consuming and in fact I did not find a school which optimally suited for my situation. However, on the notice board at RIKEN Research Institute I found an information sheet about a small Japanese language teaching

^e Japanese Government Scholarship, see <http://www.mext.go.jp/english/index.htm>



Japanese language teaching through JALS teacher.

organization which is not present in the internet. It is called Japan Academic Language Society (JALS) and offers Japanese language education for foreign staff working at RIKEN. JALS was established in 1994 to provide Japanese lessons for foreigners at non-profit-price (the fee for private lesson is comparable to the fee that an average Japanese language school charges for their small group lesson held two or three times a week). Every teacher has completed a one-year special training course for Japanese language teachers after graduation from university and also holds a teacher's license to teach at public schools in Japan.

At RIKEN, JALS teachers have been teaching many students for more than five years. The number of students is still increasing year after year. Furthermore, the Japanese Society for the Promotion of Science (JSPS) and the European Union (EU) have already authorized JALS to teach Japanese language to their trainees and researchers.

JALS offers private lesson as well as small classes with two or three students. The course program ranges from introduction to Japanese language, the study of Kanji, practical conversation training to advanced topics, customized for each student according to its language level.

Finally, I decided to take private lesson two times a week for one hour and a half each. This schedule allows me to make progress week after week, but still having enough time for my research project. The teaching material we are using is "Minna no Nihongo", where we have finished volume one within the first six months. In addition to this textbook, we use other teaching aids such as exercises as to strengthen newly learned language patterns, additional grammatical notes from other textbooks and Kanji character training sheets. There are two experienced teachers assigned to the lesson. I think that it is an advantage for a student being taught by different teachers since it improves listening comprehension of the spoken language. For the next semester, I am eager to continue studying Japanese because the progress I achieved so far is really remarkable, and this motivates me very much to learn more. If I can communicate in Japanese, life in Japan and especially living in a dormitory together with many other international students who speak Japanese already very well, becomes much richer and more interesting.

Living and studying in Tokyo

Before enrollment at the University of Tokyo, I was living in a small single room accommodation in the city of Yokohama, about 45 minutes commuting time away from the research institute. Although the apartment was owned by the municipality, the rent was quite high due to the vicinity of the railway station. Located on the top floor of the fifteen stories building, I enjoyed a beautiful view over the area nearby. However, the environment was very noisy because of the railways and a big road close to it, namely on both sides of the building. I think this kind of accommodation is typical for a city in Japan: a small room in a huge, anonymous building, an expensive rent, surrounded by many other buildings and infrastructures such as railroad and express roads. In addition, I did not have any contact with my neighbors. Nevertheless, I think it was a good experience to have lived at this place for one year since I now understand what the housing situation in a Japanese city is like for many people.

The situation changed completely when I became a university student. Although doing my research at the institute in Yokohama, I could apply for the dormitory in Odaiba called Tokyo International Exchange Center (TIEC). TIEC was opened in 2001 and serves as a "high-quality living environment and intellectual exchange forum for graduate students and researchers from Japan and abroad". In addition to the exchange that comes from living in a shared



Two of the four residence buildings of Tokyo International Exchange Center in Odaiba.

environment, Tokyo International Exchange Center sponsors various international and cultural programs to promote exchange between residents and non-residents.

"Through such exchange activities, Tokyo International Exchange Center strives to play a part in the building of a worldwide intellectual network and the creating of new ideas and technology that cross generations" is postulated on its website^f. This dormitory is unique and the infrastructure is excellent. All rooms are fully equipped; there is a gym and an exercise room, a music room as well as a study room. Nevertheless, the rent for a room is quite cheap.

The application was done through the office for international students of the Graduate School of Science of the University of Tokyo. The procedure consisted only of filling out an application form. In contrast, the entrance procedure for the doctor's course program was a bit more complex. I had to pass several tests and fill out many documents in Japanese. I needed assistance for every step of the application procedure, either to fill in some forms or just to translate papers and information material.

With hindsight, the application was a good experience and I learnt several things. In fact, it was easier to enter the university than I had expected at first. The main difficulty was that, during the application procedure, which took several months, I did not know exactly what the admission conditions were. The responsible persons from the department I wanted to apply for could not tell me either because at that time, the whole admission system was undergoing substantial modifications. Therefore, even though the application deadline was

^f http://www.tiec.jasso.go.jp/residence/index_e.html

set, I could not prepare for possible entrance tests because nobody knew if there were tests and, if so, what kind of tests I had to pass. Once, it was said that I would have to write an exam in Japanese. Another time, I was told that my future professor and supervisor will have to prepare an entrance exam especially for me. However, everything turned out differently, but well, as I am going to explain.

As for the Department of Biochemistry and Biophysics which I am now affiliated with, I needed a master's degree in a field of sciences, a sufficiently high score for the TOEFL (Test of English as a Foreign Language) and GRE test (Graduate Record Examinations⁹). In conclusion, fortunately, Japanese language was not needed to enter the doctor's course of this department. As I graduated from ETH Zurich and having a "diploma" in physics, a translation of the diploma issued by ETH containing the information that the "ETH Diplom" is equivalent to a master's degree was sufficient.

After the application was approved, I had to do a presentation in front of some representatives of the department. The talk was about my former research topic (diploma thesis project) and the future project I intend to work on (development of computer algorithms). The decision of admission was taken right after the presentation by the professors of this department. The decision turned out positive.

Before coming to Japan and even several weeks before the application deadline, I did not know much about how to enter the university as described above. I was so glad about the positive decision and admission to the university. Finally, I was allowed to begin with the doctor's course from April of this year, one year after my arrival in Japan.

The next steps after my admission to the university were to change my visa status and to find a scholarship in order to finance the cost of living and the university fees which are much higher in Japan than in Switzerland. In Japan, PhD students are normally financed by a scholarship, their parents or even a part-time job. There are numerous stipends from governmental and private foundations, and at first, it was difficult to get a general idea. The application procedure is always through the university and one should complete the forms as accurately as possible because the rules are strict. However, the staff of the office for international students of the Graduate School of Science, as well as my tutor, assisted me with filling out all the forms in Japanese.

The application procedures for the various scholarship foundations are quite

⁹ both tests are organized by ETS (<http://www.ets.org>)



One early morning we bought fresh, raw fish at the famous Tsukiji fish market and had Norimaki Sushi for lunch at the dormitory.

different. While the JSPS doctor's course fellowship program^h requires one to complete not less than twenty sheets, some private foundation's forms consist of about four pages and the university stipend I focused on were only two pages. Likewise, the duration, deadlines and amount of the monthly allowance of the particular scholarships also differ very much.

Finally, it turned out that I was approved to receive a scholarship from the Graduate School of Science for the oncoming three years. A scholarship entrance ceremony has been held especially for the new scholarship students. It was very interesting and surprising to experience this kind of celebration, namely a ceremony before graduation from university, "only" to receive the scholarship. Besides a short presentation by the president of the school, each student received a scholarship certificate and the obligatory group photo with the students and representatives was taken. Additionally, I have been the only

^h <http://www.jsps.go.jp/english/index.html>



In the morning, trains going out of Tokyo are almost empty (left). In the opposite direction it is usually very crowded (right). The average commuting time is more than one hour, per way!

student from a western country attending this ceremony. After the scholarship problem was solved I could concentrate on my research project again.

At the moment, I am working on the development of a computer algorithm and still, it will take a while for the completion. My weekly schedule is as follows, from Monday until Friday I go to the RIKEN laboratory in Yokohama to do research and two times a week I am taking Japanese language lessons. In the evening, I am studying Japanese and doing my homework. Sometimes I go to the dormitory gym or practice music as well as meet with friends. Besides this, I am teaching basic English to Japanese children from the neighborhood. I am doing this once a month with my Japanese friend who is also living in the same dormitory. Occasionally, there are gatherings, meetings for events at the TIEC, Nabe, Norimaki and birthday parties. And last but not least, once in a while, my colleagues and dormitory mates come together for chatting in Japanese and having a drink.

On weekends, I usually stay at the dormitory or I go out somewhere in Tokyo with friends. My favorite places in Tokyo are Shinjuku because of the variety of people, restaurants and entertainment. Shibuya area is also a favorite place



Exciting city around the clock. An architectural highlight is the new Dentsu building in Shiodome (left) and the Queens Square in Yokohama with roller coaster in front (right).

because of the shopping and Yoyogi park for its greenery. I like Shiodome for its architecture and because this place is less crowded with people than others in Tokyo. Of course, I like Odaiba very much. That is where I spend most of my time on the weekends, either staying at the dormitory area or going for a walk along the Tokyo Bay when I can think about life, the universe and everything or just watch the arriving cargo ships at the port or the airplanes approaching Haneda Airport.

Another activity at the TIEC is the weekly program for children called "Nyokki". Every Saturday morning, some of the kids living in the TIEC gather for two hours. We play games, do origami and prepare for oncoming festivals such as the TIEC Odaiba Festival in autumn or the Summer Festival, as well as chatting in Japanese and sometimes in English or other languages depending on the origin of each child.

When I was a student in Zurich I used to sing in a chorus. Before coming to Japan, I was looking for an opportunity to continue singing in a choir and perform in concerts. Luckily, on the internet, I found the Tokyo International Singers T.I.S. and right after my arrival in Japan, I joined this mixed chorus.



A highlight of my chorus activity in Japan was the concert at the Minato Mirai Hall in Yokohama with the Kanagawa mixed chorus.

We performed several concerts at different places in Tokyo and Kanagawa prefecture. Usually, we sing classical music but the summer concert in July at the Suntory Small Hall is always some modern music such as Jazz or pop songs. There are two rehearsals every weekⁱ at the National Olympics Memorial Youth Center^j in Yoyogi Park. Roughly estimated, half of the members are Japanese the other half consists of foreigners and most of them come from America and England. It is a good occasion not only to practice singing but also to make new friends from all over the world and to improve my Japanese. Once, the members of another Japanese chorus asked me to participate in their concert at the famous Minato Mirai Hall in Yokohama, because we had performed the same music with T.I.S at the same time. It was very interesting to be in a chorus with only Japanese people, being the only foreigner. Everybody knew me and the chorus members were very kind and obliging. That was an unforgettable experience, especially the party after the successful concert with the extensive photo shoot.

ⁱ <http://tokyo-singers.org/>

^j <http://www.nyc.go.jp/e/>

Likewise, there is another nice experience which has its seeds in my chorus activity, namely when my mother came to Japan to visit me. During her stay, my chorus performed a concert which she attended with pleasure as well as the party that followed. At that opportunity, my chorus friend got to know my mother and she informed us about her plans of going to visit Europe for several months this summer. So, in the end, my friend could also visit my parents and stay at their house for more than a week and enjoy the daily life with a Swiss family. I think it was a good experience for both my friend and my parents.

As I am busy now with learning Japanese, I am taking a break and am not going to chorus practice for this semester. However, I am looking forward to participating in the summer concert next year. Alternatively, I will go to Karaoke more frequently. That is another activity I have gotten to know and like during my stay in Japan...

Summary

During my stay in Japan, there have been moments when I did not know what will be in the near future. There were only questions and no answers, as I mentioned in the introduction, for example when I had to apply for the university. I could not plan my future; I had to take one step forward without knowing the next. Sometimes, I just could wait and hope that everything goes well.

With hindsight, I realized that I could overcome those difficulties, in some cases alone, in others with external support. Nevertheless, I am sure that it was a good decision to come to Japan for my PhD study. I have learnt and undergone much more than I ever expected.

As experienced during my exchange year in Paris five years ago, I have met a lot of interesting people and made some good friends from all over the world. I have gotten to know parts of a culture which were totally unknown to me before. At first, I did not come to Japan to study Japanese language but meanwhile, I realized that I really want to learn it and use it for the daily communication. Furthermore, I began to like this language partially due to my progress. Obviously, my stay is focused on performing my PhD but I do not forget about enjoying the other sides of life besides studying. I have made some very good friends and I am beginning to like the city of Tokyo.

Another important aspect, especially in terms of my academic education, is to have insight into another university besides ETH Zurich and another education system, different from the one I have undergone in Switzerland. I think it is

essential to know about the educational system and the significance of universities in society and working life, especially for daily "research life" in collaboration with my Japanese colleagues and possibly for my future career.

I am not done yet with my stay in Japan or, in short, with my "Japanese adventure" – there are two and a half years more to go. For sure, there will be some more problems to solve and experiences to undergo. However, I am looking forward to it and I am confident that I can overcome them as well and that all will turn out alright.

To cut a long story short, everyday life in Japan is new and interesting. I never get bored. All this gives me the necessary energy and power to master the forthcoming challenges. And so far, I do not regret my decision. On the contrary, I found the answers to the questions I asked in the beginning, and I am curious about the new ones and the answers to them.

I am deeply grateful to the members of the SJCC Scholarship Foundation for the generous and straightforward financial support. This sponsorship rendered it possible to start learning the Japanese language as well as to finance the university fees and a part of my daily living expenses. I would like to express my special acknowledgement to the chairman of the Scholarship Foundation Mr. Paul Dudler as well as Mr. Felix Moesner from the Swiss Embassy in Tokyo for his support and encouragement.

In conclusion, I wish that through my stay in Japan I will be able to contribute now and in future to a good and fruitful relationship between people from Japan, Switzerland and other countries I get to know during this stay.

Roland Schmucki