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A big difference in the spread of Covid-19 between Japan and Sweden, despite mild social restrictions in both countries

Tadaharu Tsumoto, Director, JSPS Stockholm

These days it is hard to resist a temptation to write an essay referring to Covid-19, although I am not a specialist in the fields of infectious diseases or virology. We are now witnessing a spread of Covid-19 through almost all countries in the world as real pandemic. In response to this, many countries took strict measures such as “lockdown” of social activities to prevent this virus from spreading in the community. As well known internationally, however, Sweden did not impose the strict restrictions of social activities. At the beginning of last April the Public Health Agency of Sweden released the guidelines in an attempt to reduce the spread of virus. These are to keep person-to-person distance more than 2 meters, to avoid large gathering, not to visit elderly care home, to stay at home if you are ill or older than 70, and to practice good hygiene such as washing hands. It is to be noted that these are just recommendations without legal or mandatory bindings.

In Japan, the Government declared the state of emergency on April 7 in the seven prefectures including Tokyo, and expanded it to whole the country on April 17. This declaration was accompanied by the restriction of some types of social activities and the request to close restaurants, coffee bars, movie theaters, entertainment and amusement shops such as pachinko parlors. However, these restrictions were not mandatory with no fines nor penalties. Such mild restrictions in Sweden and Japan make a strong contrast to the very strict regulations in most European countries such as Italy, France, Denmark, Norway and others. What are consequences of these two different types of restrictions? It is apparently too early to draw a conclusion. So far, however, I am impressed by a big difference in the degree of spread of the virus between Japan and Sweden despite that both countries took the very mild restriction policies, as mentioned above. In Japan the number of infected patients (PCR-positive persons) drastically decreased in May and the declaration of emergency was lifted on May 14 in most regions and finally on May 25 in all Japan. Now (late June) the number of newly positive persons ranges from about 40 to 70 per day, and the total number of the infected patients and the deaths are 18,034 and 965, respectively, on June 24. In Sweden, on the other hand, the number of the newly infected persons are about 800-2,000 per day and still increasing every day. On June 23 it has attained 60,837, and the total number of deaths is 5,161. Considering that the total population of Sweden is about one-tenth of that of Japan, I am impressed once again by the big difference in the frequency of the infected patients and the death toll between the two countries.

Why are there such a big difference between the two countries? There are already many comments and suggestions to try to answer this question, and I am not in a particularly good position to answer this because I am not a specialist in the field of infectious diseases and do not have enough data at my hands. In this essay, therefore, I would like to describe just my impression and personal view. As I mentioned in the previous issue of this newsletter (Vol. 30, 2017 Autumn Issue), most Japanese make a bow each other when they encounter or meet their friends or acquaintances. Usually they do not make body contacts. On the other hand, most Swedish people shake hands and embrace or hug each other. Even after the release of the above-mentioned guidelines from the Public Health Agency of Sweden, I often saw along streets that most Swedish people, in particular young people, ignore the social distancing recommendation and make hug each other. Hand-shaking or hugging seems to be their autonomous, reflex-like movements. Another difference in people’s behavior between Sweden and Japan is to wear a face mask. Recently the World Health Organization (WHO) suggests that wearing a face mask is effective to prevent an infected person from...
transmitting the virus to others. Thus, wearing the face mask of various types becomes very popular these days in many European countries where such a habit was not seen in the past. Even so, I have found that almost nobody in Sweden wears a face mask. In Japan as already known in the past, wearing face masks was a kind of conventional popular habits. Almost all people in streets wear masks these days in Japan. Thus, it seems to me that the very mild restrictions in Sweden without face masks are not enough to protect Covid-19 from spreading in community. This may be one of reasons why so many infected patients are still detected in Sweden, although there must be many other factors such as the frequency and target group of PCR tests. Finally I would like to say again that we have to wait for another couple of years to find an answer to the question of whether the mild restriction policies of Sweden and Japan are correct or not in order to prevent Covid-19 virus from spreading in our community.


Staff introduction

Deputy Director Shinji Ide
I was appointed as the new Deputy Director of JSPS Stockholm Office on 1st May. I am still in Japan due to Covid-19, but I look forward to seeing and collaborating with you all as soon as possible.

Liaison Officer Marika Tashima
I am now back after being away on parental leave for about 1,5 years. Since the birth of my baby, the world has drastically changed with the Covid-19 pandemic spreading and affecting everyday life. I sincerely hope that you all are safe and feeling well.
The 4th Norway-Japan Academic Network

On February 26, 2020, the 4th Norway-Japan Academic Network Seminar was held at the Research Council of Norway. From JSPS Stockholm, Deputy Director Takao Yoshihara, new Deputy Director Shinji Ide and International Program Associate Mayu Yoshinaka attended.

Guest speakers were Prof. Jim Tørresen, University of Oslo, and Dr. Shiori Koga, Nofima, Dr. CJ Beegle-Krause, SINTEF and Prof. Thomas Ågotnes, University of Bergen. They talked about their current research and interesting experiences of research collaborations between Norway and Japan.

The seminar was attended by about 20 Norwegian and Japanese researchers, all enthusiastically interacting with each other.

A report by Dr. Koga can be found on page 7.

Japan Alumni and Researcher Assembly in Denmark FY2019

On March 6, 2020, Japan Alumni and Researcher Assembly in Denmark FY2019 was held at University of Copenhagen Southern Campus. The theme of the seminar was “Transitional Exchange in Arts”. From JSPS Stockholm, Director Tsumoto and International Program Associate Yoshinaka attended.

The invited guest speakers were Prof. Michio Hayashi from Sophia University, Japan, Prof. Emerita Tania Ørum from University of Copenhagen, Prof. Mette Sandbye from University of Copenhagen and Assoc. Prof. Karen Kitani Harsbo from the Royal Danish Academy of Fine Arts. The topic of their talks were their current research on interactions in arts between Denmark and Japan.

The seminar was followed by a reception which gave the about 50 Danish and Japanese researchers a chance to mingle in a relaxed setting.

The speakers engaged in a panel discussion.
Visit to Tallin University and Tallin University of Technology, Estonia

On March 9, 2020, Deputy Director Yoshihara and International Program Associate Izumi met with Ms. Kätlin Keinast, Head of International Cooperation, and Mr. Madis Saluveer, Head of Department of Research Funding, at Tallinn University. We informed of JSPS activities and the various JSPS programs available, and discussed future collaboration. Later, we also met with Dr. Jaak Aaviksoo, Rector of the Tallinn University of Technology. Rector Aaviksoo is has experience of research in Japan as a former JSPS fellow, and we exchange opinions on how to enhance the academic collaboration between Estonia and Japan.

The 1st ACF Board Meeting of FY2020

On June 4, 2020, the JSPS Alumni Club in Finland (ACF) held its first board meeting of FY2020. The meeting was held online and led by Chair Jyrki Saarinen with all board members present. From JSPS Stockholm, Director Tsumoto, Deputy Director Ide and Liaison Officer Tashima attended. Topics of discussion were focused on this year's upcoming activities and the current situation with the Covid-19 pandemic.
The 8th Sweden-Japan Academic Network

Yoshifumi Futaana, Docent/Associate Professor, Swedish Institute of Space Physics (IRF)

The 8th Sweden–Japan network seminar was held on 5th February, at the Swedish Museum of Natural History in Stockholm. It was my great pleasure to give an invited presentation on solar system explorations entitled “Chasing water in the Solar System: Exploration of the Moon, Mars, Venus, and the Jupiter system.” After the discovery of extra-solar system planets, for which the discoverers received the Nobel prize in physics in 2019, solar system exploration stands at a very unique position; although telescopes have found many potentially habitable planets beyond the solar system, direct measurements in place are only possible for those in the solar system.

Exploration programs require huge resources, both financial and personnel. The activities therefore become highly international, including collaboration with Japanese institutions. The Swedish Institute of Space Physics (IRF) provided a plasma instrument to the Japanese Martian mission, NOZOMI, in the 1990s. JAXA (Japan Aerospace Exploration Agency) and several universities have participated in the development of space instruments at IRF. Collaborative research projects, including exchanges between many Japanese and Swedish scientists and students, are active. Such long-lasting collaborations were also introduced in the talk.

Why should we understand water? It is because water is an essential chemical element that supports life, in combination with energy and minerals. Our earth possesses a wealth of liquid water in the oceans. However, the cases of other planets are still a mystery. Can they host (or have they hosted) water? In what form does water exist? How stable is water on the planets? The search for water is a key topic of solar system explorations. In addition to scientific interests, aggregated water is, if it exists, a potential resource for human activities in space. This seminar overviews solar system explorations in the context of searching for water based on the investigations by IRF in collaboration with Japan. The Moon is dry. There is, however, presumably ongoing global water production; protons ejected from the Sun can directly react with the oxidized lunar surface to produce water molecules. Using a remote sensing plasma instrument, we have successfully visualized the ongoing proton impacts on the lunar surface. The measurements prove the direct access of the protons to the lunar surface, which implies ongoing water production at the lunar surface. Water on Mars and Venus is interesting in the context of the history of planets and their habitability. When these planets were formed, they must have had a wealth of water as is true for present Earth. Where has the water gone? Water loss to space over billions of years has been argued for decades. We are measuring the current loss of water from Mars and Venus using ESA’s planetary orbiters, and strong evidence of ongoing water loss from these planets has been found. However, the total amount of water lost to space over the four billion years cannot be explained. Is water still somewhere in planets, or are there yet unidentified loss mechanisms to space? These are open questions for future explorations. The final topic of the presentation was the new space mission to Jupiter, named JUICE. JUICE is the ESA mission to investigate Jupiter and its moons. The large moons of Jupiter can host oceans under the crust, which are potentially habitable environments. We are preparing the JUICE mission to launch in 2022 and study the environment of the Jovian moons. The arrival to Jupiter is in 2030, seven and half year after the launch.

After the science session, I had opportunities to communicate with many researchers and students in different scientific fields. They have shown much enthusiasm about solar system exploration and water in space, and posed a lot of interesting questions. I was excited by talking with them accompanied by good Japanese food and drinks. It was a great honour to give a popular seminar, and I sincerely appreciate the JSPS Stockholm office staff, the co-sponsoring organisations, Prof Tomas Karlson at KTH, and all the audience that participated in the seminar.

The 4th Norway-Japan Academic Network

Shiori Koga, Postdoc, Norwegian Institute of Food, Fisheries and Aquaculture Research (Nofima)

I’m honoured to share my research with the readers of JSPS Stockholm Newsletter. This report is based on a presentation I gave at the last Norway-Japan Academic Network where I introduced my research in February. This academic network gives good opportunity to meet Japanese scientists who work in Norway as well as foreign researchers who have been to or are planning to work in Japan. The researchers are from across many different academic fields. I think this makes the network special and I have really enjoyed meeting researchers with very different backgrounds and expertise.

I received both my bachelor’s and master’s degree from Kyushu University (Fukuoka, Japan) where I studied agriculture and plant sciences. The topic of my master thesis was physiology of the rice plant. My research in Norway started from January 2010 when I got a PhD position at the Norwegian University of Life Sciences (NMBU). Currently I work as a post doc at the Norwegian Institute of Food, Fisheries and Aquaculture Research (Nofima). Since my PhD, my research goal has been to improve the bread-making quality of Norwegian wheat.

Research on wheat quality started in the 1950s in Norway. At that time, Norwegian wheat varieties were not suitable for making bread, mainly due to lack of climate adaptation to the prevalent weather conditions such as cool temperatures and frequent rain during the harvesting period. The goal for the researchers and breeders was to improve the quality of Norwegian wheat varieties to that end. In the 1970s, production of bread wheat for domestic human consumption became an agricultural policy goal in Norway. Since then, the quality of Norwegian wheat has been improved and production of bread wheat has increased. In good seasons in recent decades Norwegian wheat accounts for up to 70% of the bread wheat consumed in the country.

Norwegian milling and baking industries require relatively “strong” wheat compared to neighbouring Nordic countries. This is because the Norwegian bakeries adapted to the use of imported wheat with strong quality during the 20th century. Also, Norwegian consumers prefer bread with high proportion of wheateal and less bread improvement additives. Therefore, strong wheat qualities are required for baking. Owing to

Norwegian wheat breeders, current Norwegian wheat varieties have the potential to meet the quality that the industry requires. However, the bread-making quality of Norwegian wheat still can vary largely depending on weather conditions. Consequently, Norwegian milling and baking industries have been facing problems to deal with this unpredictable quality variations. Annual analysis of new harvest often shows poor bread-making quality in seasons with lower temperature and frequent rain.

Because the bread-making properties are determined by the gluten quality, I have been studying the relationship between environmental factors (such as temperature, rain, nitrogen fertilization, and fungal infection) and gluten quality of Norwegian bread wheat. Gluten proteins are the storage proteins in wheat grain. When wheat flour is mixed with water, the gluten proteins form a unique viscoelastic network that can retain gas and thus provide the porous crumb structure in a bread.

During my PhD, my research focus was on the effect of temperature on bread-making quality of Norwegian wheat. I was investigating whether Norwegian wheat. I was investigating whether lower temperatures during grain filling could affect the bread-making quality. Contrary to the

Dr. Koga during her lecture.
hypothesis, the studies concluded that low temperature itself did not cause poor bread-making quality. Wheat grain had good gluten quality even though grain filling occurred at the lowest temperature (13 °C) in a controlled environment. On the other hand, grain with poor quality was observed from wheat grown under lower temperature in a growth tunnel and field experiments. Therefore, I hypothesised that environmental factors related to low temperature caused poor bread-making quality.

Lower temperature often coincides with rain during summer in Norway. Such humid conditions lead to a higher prevalence of infection by pathogenic fungi. Analysis of samples with extremely poor gluten indicated that grain was highly infected by pathogenic fungi and had high protease activities that could lead to degradation of gluten proteins. Therefore, me and my colleagues have investigated the effect of fungal infection on the bread-making quality during the following project. The results supported our hypothesis that fungal infection is one of the main reasons for reduced bread-making quality. Analysis of wheat grain infected by the pathogenic fungi Fusarium in greenhouse and in field trials confirmed that some Fusarium spp. secrete proteases that degrade gluten proteins both in developing grain and during processing. Moreover, the on-going project investigates the effect of rain during grain filling on the bread-making quality as poor gluten quality was often observed in seasons with frequent rain.

It has been almost 10 years since I started working in Norway. I'm very pleased to work with an important cereal crop in Norway and thereby contribute to the society. I work with researchers from other European countries, however, I did not have a chance to collaborate with Japanese researchers so far. My goal is to have a research collaboration with Japan in the near future.
In this section we ask Japanese researchers to present their experiences and research in the Nordic/Baltic countries. This time, we asked Dr. Asuka Tachi, visiting researcher at Karolinska Institutet, to present her research and experiences in Sweden.

What are you currently researching in Sweden?
Basic research; Treatment for Irradiation induced brain injury and Hypoxic-ischemic encephalopathy. Epidemiological research; Long term effect of perinatal term for child development.

How did you get interested in your research subject?
As an obstetrician and gynecologist, perinatal encephalopathy (cerebral palsy) is a very familiar so I wanted to work on it. Also, I was very interested in what a long-term effect the perinatal period would have on my baby and mother, but in Japan we finally set up a unified database of perinatal-neonatal departments. I chose Sweden to conduct perinatal epidemiological studies using the Nordic strength of big data.
**Why did you choose your current institution to conduct your research?**

Sweden was the first country I traveled abroad with my own money in my University days. I visited a friend, a postdoc in Karolinska, attended a meeting, and thought "I would like to study here someday". And I liked Pippi, so at Junibacken I thought, "I want to come with my child someday."

Finally, I decided to study in Sweden because my family would enjoy it.

**What has been the most challenging in your research so far?**

It's all about the whole family enjoyable. I enjoy studying and living with my family very much. My kids have many friends at school. However, my husband, came with my convenience, worked as researcher but missed clinical work. Finally he got the access to visit Hospital and then I felt relieved.

It is unusual for the whole family to have a clear purpose to live abroad, so I guess this issue would be common in every family.

**Compared to Japan, what is your impression of the research environment in Sweden?**

In Japan, I worked as a clinician in the day shift, and was on night duty once or twice in a week so I had little time to spend with my family. In Sweden, I just do the research I want to do, but also spend enjoyable time with our families. This is supported by not only my family, but my boss and colleagues.

Sweden is the best environment where I can have both what I want to do and time to spent with my family.

**Do you have any advice for young scientists who dream of going to Sweden to do research?**

When we look back on our life here, think of it as a good time for each other.

**Awarded a scholarship with my husband by the Queen.**

Photo: Swedish Royal Court, [https://www.kungahuset.se/](https://www.kungahuset.se/)

This report presents the results of the research visit of Püren Guler at the National Institute of Advanced Industrial Science and Technology (AIST) as part of BRIDGE Fellowship. One of the objectives of this visit is increasing the internationalization and networking activities. By applying a collaborative grant project, this objective has been realized. Another objective is the visiting researcher, Püren Guler, benefiting from the research expertise of the host institute, AIST, by learning their research activities and the methodologies that they have developed and, then, finding ways of applying them for her own research topic. The host institutes research is focused on computer vision methodologies applied for human action analysis and recognition, while the visiting researcher is focused on robotic manipulation. In robotic manipulation applications, visual perception is an important tool to perceive the environment (e.g., human actions, objects) for the robot. Hence computer vision methodologies that enable robotic visual perception is an important part of robotic research. Therefore, this visit enables the host and visiting researchers from these two different fields (robotic manipulation and computer vision) to exchange research ideas and their expertise. During this visit, the visiting researcher spend time on:

- introducing her research activities on robotic manipulation
- getting to know the research conducted, methodologies developed and research tools used in the host institute,
- discussing the ways of collaboration by integrating the host institute’s methodologies into her own research.

Internationalization is an important aspect in strengthening research and higher education by establishing international partnerships. Especially, internationalization is correlated with an increase of the number of high-impact publications [1]. Hence, through this visit, the visiting researcher aim to strengthen the international collaboration and scientific co-production between Sweden and Japan in general and between Orebro University and AIST in particular. This objective has been realized through the application together with the host institute for the Mobility grant given by STINT [2] on September 2019. If this grant is accepted, more research collaborations will start in the next two years between the host and visitor researchers, and help to increase internationalization of both institute.

In addition, this visit enables the visiting researcher to learn about the research topic and methodologies developed in the host institute. The visiting researcher’s research focus is robotic manipulation and works as a post-doc researcher in a project on tracking articulated manipulators, e.g., robotic arms, through visual sensors [3]. In this project, the aim is to estimate the state of articulated manipulators by using visual depth sensor measurements for autonomous control of the manipulators. Due to recent success of deep learning techniques in robotics, e.g., learning how to grasp objects [4], they conduct research on using deep learning frameworks in estimating the state of articulated manipulators from camera image streams. The aim is to regress the state of the articulated manipulators directly from the spatio-temporal features extracted from camera images through deep learning framework. The host researcher, Dr. Hirokatsu Kataoka, is a research scientist at computer vision research group at AIST. His research is focused on using 3D spatio-temporal deep learning frameworks for human action recognition from videos [5], [6], [7]. Such architectures are appropriate for tasks that deal with data that has temporally changing features such as image streams coming from a video or a camera. Hence, it is also suitable for robotic
manipulation scenarios that uses visual sensors such as camera images. Therefore, through this collaboration, the aim is to investigate the applicability of their methodology to robotic fields such as robotic perception and manipulation. Hence during this visit, the visiting researcher invests time to learn the research tools that they use (e.g., pytorch [8]) and the implementation of their methodology [9]. Since their methodology gives categorical outputs, the visiting researcher continues to work on the modifications of their algorithm for continuous targets (e.g., joint angle state) for regression from visual data.

Host Dr. Hirokatsu Kataoka and BRIDGE Fellow Püren Güler in the middle together with JSPS staff.

About the outer space and childish imagination

Marika Tashima, Liaison Officer, JSPS Stockholm

As the world is currently in a distressed situation, I thought I would share some personal anecdotes which hopefully can put a smile on your face.

I have always had a strange fascination with space. I am not exactly sure how or when it started, but I believe my big brother is the one who inspired me and introduced me to the world of Star Wars, E.T. and other alien things. I used to build spaceships in my room made from cardboard boxes and stuffed animals as co-pilots, and together we would search for aliens and explore the planetary systems. I had no idea what space agencies existed, all I knew was that Han Solo was flying the Millennium Falcon and that the Star Wars saga was most definitely a true story.

Unfortunately, I grew up and lost my childish imagination. With this, I slowly forgot about my love for space as it was not considered “cool” enough for school. Gradually, I shifted my focus to languages and I enrolled in a language oriented class in junior high school, with most of the education conducted in English. Apparently, this wasn’t exactly “cool” either, but I had fun and am still to this day, close friends with some of my classmates.

In high school, I continued with language studies which progressed into Japanese studies in university. Somehow, my fascination with space made itself reminded, and I don’t know how, but I started to follow some astronauts in the International Space Station on Twitter. In 2013, I watched in complete awe the videos by the Canadian astronaut Chris Hadfield on Youtube, where he demonstrated how to sleep, brush your teeth, play a guitar, cook food and so on board at the ISS.

Fast forward to 2015, the Japanese astronaut Soichi Noguchi was in Stockholm and together with the JSPS staff at the time, we got to meet him and chat about Swedish smorgasbord, higher education and space. As embarrassing as it is to say, I was incredibly nervous. I probably choked on my words and forgot all about what language was and whether my ears were actually functioning. For me and the childish space geek I apparently still am, meeting a real life astronaut is probably the closest thing to Star Wars that I will ever experience.

So now it is the year 2020. I was glued to the TV when on May 30, NASA astronauts Bob Behnken and Doug Hurley were launched into space. That was amazing to see and I can’t even imagine what it must have been like to have watched that in person. Time does fly, and the two astronauts are scheduled to return to Earth in August.

I try to encourage my son to talk and learn about space, but currently, all he cares about are dinosaurs, cars and the occasional bug. We may not be similar in appearance, but his personality traits remind me so much of myself as that little space child.

Open call for applications:  
JSPS Postdoctoral Fellowship (Standard) FY2021

The open recruitment for JSPS Postdoctoral Fellowship (Standard) program is now open for applications. This 12-24 months long program offers opportunities for excellent postdoctoral researchers from other countries to conduct, under the guidance of their hosts, cooperative research with leading research groups in universities and other Japanese institutions.

The application should be submitted through the host institution to JSPS Tokyo - individual applications are not accepted.

For more information and application guidelines, please go to:  
https://www.jsps.go.jp/english/e-ippan/applguidelines.html

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