



## Air Pollution in Chile

Come June, the weather in Chile has cooled considerably. As I've mentioned in previous newsletters, Santiago's location in the center of a large basin surrounded by mountains leads to the formation of photochemical smog during the winter months, and this has become a serious problem.

Touching on the issue of air pollution in South America in the opening to this newsletter is significant. According to statistics on the most polluted cities in South America, Chile has nine of the ten most polluted cities, with the exception of Lima (the capital of Peru). Santiago ranks sixth on the list, but the top five cities are all located in southern Chile. These cities have considerably smaller populations than that of the nation's capital, and are surrounded by beautiful landscapes that get abundant rain; the cause of the noxious air in these cities that is putting them close to the top of air pollution rankings, however, is connected to the daily habits of Chile's southern residents.

Wood has long been used to fuel heating and cooking systems in people's homes in southern Chile, and reliance on wood burning continues. Wood-burning stoves tend to be seen as a luxury in Japan, but in Chile, where wood is less expensive than other options, many households cannot afford to change their existing lifestyle. Moreover, both Padre las Casas (the city that leads the list) and Temuco (which ranks fifth) are located in the Araucanía, the region with the lowest average per capita income in the country, and these economic conditions are one reason why it is proving so difficult to enforce restrictions on the use of wood.

I visited Temuco on business the winter before last and was assailed by the smell of bonfire smoke as soon as I left the airport. The majority of homes I saw on the ride from the airport to my hotel had chimneys, a view I recall resembling the photograph below.

In 2017, the Chilean Ministry of the Environment launched an ambitious program to tackle air pollution that included restrictions on wood use, restrictions on factory operations, wildfire prevention measures and a reforestation campaign (PPDA: A Plan of Prevention and Decontamination of Atmospheric Pollution). As mentioned above, the involvement of both cultural factors and economic disparity in the issue of air pollution will necessitate a multifaceted approach to the problem, but these policies are bearing fruit and I sincerely hope that they will help to improve current levels of air pollution across this nation.

*Tomoyuki Odagaki, Department of Gastroenterology and Hepatology*

### South America's ten most polluted cities

1. Padre las Casas (Chile)
2. Osorno (Chile)
3. Coyhaique (Chile)
4. Valdivia (Chile)
5. Temuco (Chile)
6. Santiago (Chile)
7. Lima (Perú)
8. Linares (Chile)
9. Rancagua (Chile)
10. Puerto Montt (Chile)



For further details, see Diario Uchile:

<https://radio.uchile.cl/2019/03/06/ciudades-chilenas-son-las-mas-contaminadas-de-sudamerica/>



**LACRC** TMDU  
IN CHILE  
Latin American Collaborative Research Center  
Santiago de Chile



## Contents

Greetings .....	1
Joint Degree Program .....	2
PRENEC Progress Report .....	3
Project Semesters .....	4
LACRC Activity Report .....	5

# Joint Degree Program

This June saw a visit to Japan by two students in the JDP - one from the inaugural class, one from the second class. The trip was a preliminary visit aimed at orienting the students ahead of a sojourn of more than six months at TMDU and gave them an opportunity to survey the learning environment here and to discuss their dissertations with members of the TMDU faculty.

## Two JDP Students Visit Japan

Dr. Rafael Zanabria, a student from the second generation of the JDP, paid a two-week visit to Japan from June 9–24, 2019. During his visit, he received guidance from his dissertation director, Professor Hiroyuki Uetake, and, with the cooperation of the Department of Hepatobiliary and Pancreatic Surgery, observed surgical procedures and was involved in presentations and discussions on the writing of his dissertation with teaching staff and other members of the laboratory.

Dr. Diego Zamorano, the first student of the JDP, visited Japan from June 23–29, during which time he discussed with his dissertation director the content of the clinical subjects he will study at TMDU and the writing of his dissertation.

Though both visits were very short, they gave the two students a valuable opportunity to prepare for their studies here at TMDU.

Dr. Zanabria also had the opportunity to deepen relations with other foreign students currently studying at TMDU, and thoroughly enjoyed his time in Japan.

TMDU continues to do everything possible to ensure that foreign students' studies at the university go smoothly.



Members of the Department of Hepatobiliary and Pancreatic Surgery with Dr. Zanabria.



An informal gathering with the dissertation director, Prof. Uetake, and international students.

# PRENEC Progress Report

The following section offers a report on the latest developments in the Prevention Project for Neoplasia of the Colon and Rectum (PRENEC). The PRENEC screening program has been initiated in Concepción, in addition to the six cities of Punta Arenas, Santiago, Valparaíso, Valdivia, Osorno and Coquimbo. Due to management issues in Valparaíso and Concepción, where the project had only just been set in motion, the program has currently been suspended in these two cities. It is hoped that these issues can be swiftly resolved and the PRENEC work resumed. Awareness-building activities were undertaken in Antofagasta (a city in northern Chile) this June, ahead of the launch of the PRENEC program. A report on those activities follows.

## Educational Events in Antofagasta

Cancer awareness events hosted by Clínica Las Condes (CLC) were held over two days (June 20–21) in Antofagasta, located to the north of the country in the second largest of Chile's regions. Dr. Francisco López, Dr. Alejandro Zárate and nurse Alejandra Ponce were among the participants from CLC. In addition to seminars aimed at sharing recent findings with local doctors, nurses and medical students, there were several events for local residents featuring giant models of the colon and lungs to provide information on colorectal cancer, lung cancer, breast cancer and hereditary cancer.

An agreement on PRENEC was signed in 2016 at Hospital Regional Dr. Leonardo Guzmán, thereby initiating the countdown to the launch of the program in Antofagasta, but this was pushed back due to budget issues. It is hoped that the recent awareness-building events will speed up preparations for the launch of PRENEC in this region.



A seminar in progress.



Educational events for local residents in progress.



# Project Semester Program

Since 2010, TMDU has been dispatching fourth-year medical school students to research institutes in Chile for periods of four to six months with the aim of cultivating basic medical practice skills overseas (Project Semester Program). This year, two students were assigned to laboratories at the University of Chile, where they commenced their research in early June. The resolutions of these two students for their respective programs are presented below.

## Student Resolutions

**Mr. Yoshihiro Sawaguchi** *Department of Infectious Diseases, University of Chile*

Hello, my name is Yoshihiro Sawaguchi. There's definitely a language barrier—I've asked all the members of the laboratory to call me Yoshi, but it ends up sounding like "Yochi."

Before introducing the topic of my research, I asked everyone if they knew about gastroenteritis. Gastroenteritis affects around 4.5 million people annual, whilst gastroenteritis-associated deaths approach 1.66 million, with many of those occurring in children under five. This terrible disease is often caused by either norovirus or astrovirus. My research involves analyzing (genotyping) these two viruses.

Currently, conversation in the laboratory is half Spanish, half English, a little like the pop pidgin developed by Japanese comedian Lou Oshiba, but I am studying Spanish with the aim of being able to converse solely in that language by the time I return to Japan. I would also like to thank the many people at LACRC and the University of Chile for their support during my time here. I will do everything I can to produce useful research.



The view from the veranda of my lodgings.

**Mr. Taiki Harada** *Department of Cognitive Neuroscience, University of Chile*

My name is Taiki Harada and I am a fourth-year medical student. For the first few weeks of my time here, I struggled with the basics of day-to-day living, but things have settled down considerably now and I'm able to enjoy myself.

I am a member of Neurosisistemas, the neural systems laboratory here at the University of Chile. The field of cognitive neuroscience encompasses numerous fields, including response inhibition in the brain and the mechanisms of human perception, studies on which are being conducted through experiments on rats and humans and computer-based neural network simulations, among others. My first task was to decide on a detailed project through discussions with other lab members from various disciplines, and it's looking increasingly likely that the theme of my research will be brain simulation and modeling. I'll spend the first month of my stay laying the foundation: reading relevant papers and acquiring necessary programming skills. Everyone in the laboratory is extremely kind and knowing that I can rely on them both during work and after school hours is making my stay very enjoyable. Recently, I've come to believe that keeping to a fixed routine will help me to achieve a good balance between my research and my Spanish studies, and I'm endeavoring to stick to that plan.

Finally, I would like to say a big thank you to local staff, the fellow members of my laboratory and my professor, Pedro Maldonado. Thank you for your ongoing support.



Street art in the historic quarter of Valparaíso, a world heritage site.

# LACRC Activity Report

## Gastric Cancer Screening Project in Southern Chile

Held annually, the stomach (gastric) cancer-screening project, which is sponsored by the Chilean Association of Digestive Endoscopy, took place this year in several cities in southern Chile (Curanilahue, Pitrufquén, Victoria and Nueva Imperial) beginning on April 16. At the invitation of Curanilahue Hospital, gastroenterologists from Japan (including Dr. Ishida M.D. of Kobe University and Dr. Tomoyuki Odagaki, Assistant Professor at LACRC, who were in attendance from April 22–25 to provide guidance on endoscopic techniques).

The aim of this project is to facilitate clinical research on stomach cancer in Chile, including epidemiological studies and the detection of new biomarkers, and to eliminate endoscopy waiting lists in southern Chile. Shortages of hospital equipment and gastroenterologists in regional cities throughout Chile mean that patients have to wait several years for an endoscopy.

Extending over a two-week period, the project at Curanilahue Hospital covered a total of 200 patients. During this period, the hospital was able to conduct the number of endoscopies it would normally conduct over a five-month period, contributing substantially to resolving the waiting list issue in Curanilahue.



A commemorative photo with the staff of Curanilahue Hospital.



From left to right: Dr. Odagaki, Dr. Ishida of Kobe University, Dr. Jorquera, Dr. Donoso, and Dr. Carfagnini.

### Editor's Note

"There's no place like home," so the proverb goes, and I would certainly agree. Having become seriously ill in Japan, on my return to Chile I devoted six months to restoring my health. I am delighted and inordinately grateful to be working with my colleagues again here at the university after a leave of absence of almost two years.

I will strive ever harder to be of assistance to you all and look forward to your ongoing support. (Jaime Urrejola, LACRC)

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