

# 白眉 — The Hakubi Project

## A Unique Opportunity for Outstanding Young Talent

The Hakubi Project was established by Kyoto Univ. in 2009 to foster outstanding young researchers. The program recruits twenty international researchers per year as associate and assistant professors. It gives them a valuable opportunity to devote themselves entirely to their research. The project is open to any researcher in any academic field. **WEB** [www.hakubi.kyoto-u.ac.jp/eng](http://www.hakubi.kyoto-u.ac.jp/eng)

### ECON-HIS Making Medicine a Business

*The economic history of the Japanese health system.*

In developed countries, health presently represents approximately 10% of the GDP. While it was still essentially a charitable activity at the end of the 19<sup>th</sup> century, medicine shifted towards becoming a fast-growing business during the 20<sup>th</sup> century. Focusing on technological innovations Dr. Donzé's research aims to gain an understanding of how this change was made.

The first medical technology with a major impact on the health care system was the X-ray machine. Developed mainly by German and American electric appliance manufacturers after the discovery of X-rays by Roentgen in 1895, the X-ray machine contributed to changing the way medicine was practiced during the first third of the 20<sup>th</sup> century. Together with other equipment, such as operation tables, it transformed hospitals into "medico-technological platforms."

Patients began to pay to have access to such new technologies, which contributed to the emergence of a health care market centered on hospitals.

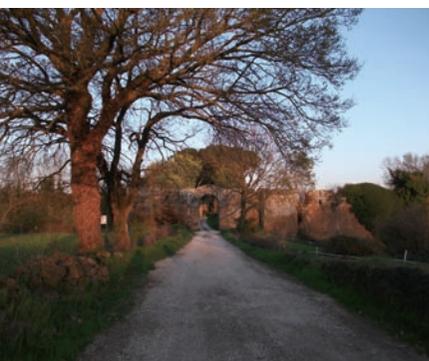
**Dr. Pierre-Yves Donzé**

Associate Professor, *The Hakubi Center for Advanced Research*  
[sites.google.com/site/pydonze/](http://sites.google.com/site/pydonze/)



### LINGUIS Are Changes in Language beyond Our Control?

*A clue from the pious people of Ancient Italy.*



Porta di Giove ('Jupiter's Gate') in the twilight, in the remains of the city of Falerii Novi, Italy

It has been taken for granted that languages may change over the course of time. Remember *The Tale of Heike*, Dante's *Divine Comedy*, or Shakespeare's dramas that you may have studied in high school. The languages of such written works are quite different from their modern counterparts. How did such linguistic development occur? A variety of reasons may be adduced. The research of Dr. Nishimura focuses on verbal activities like praying in the languages of Ancient Italy, including Latin, and assumes that such religious contexts compelled people to show as much reverence as possible for deities and to go so far as to distort some lexical items for this purpose. Dr. Nishimura also seeks to apply this approach to other contexts, even to modern languages.

**Dr. Kanehiro Nishimura**

Assistant Professor, *The Hakubi Center for Advanced Research*  
[www.hakubi.kyoto-u.ac.jp/eng/02\\_mem/h23/nishimura.html](http://www.hakubi.kyoto-u.ac.jp/eng/02_mem/h23/nishimura.html)



Table d'opérations DE QUERVAIN-M. SCHAEERER S. A. BERNE, modèle X.

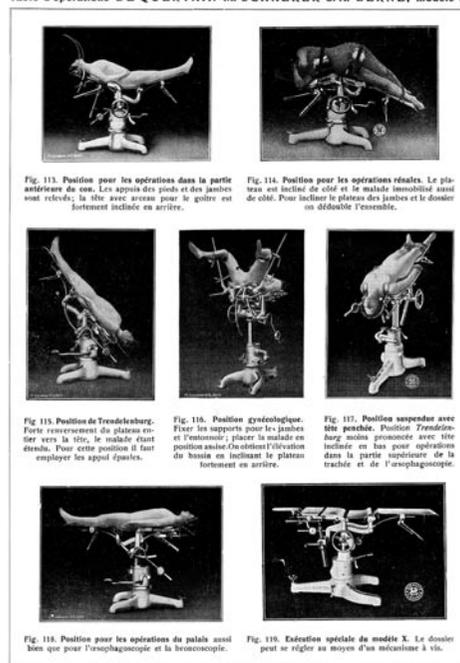


Fig. 113. Position pour les opérations dans la partie antérieure du nez. Les appuis des pieds et des jambes sont relevés; la tête avec arcous pour le goître est fortement inclinée en arrière.

Fig. 114. Position pour les opérations rénales. Le plateau est incliné du côté et le malade immobilisé aussi de côté. Pour incliner le plateau des jambes et le dossier on déboîte l'ensemble.



Fig. 115. Position de Trendelenburg. Forte réversion du plateau incliner vers la tête, le malade étant étendu. Pour cette position il faut employer les appui épaules.



Fig. 116. Position gynécologique. Fixer les supports pour les jambes et l'entonnoir; placer le matelas en position anglaise; maintenir l'élevation du bassin en inclinant le plateau fortement en arrière.



Fig. 117. Position suspendue avec tête penchée. Position Trendelenburg moins prononcée avec tête inclinée en bas pour opérations dans la partie supérieure de la trachée et de l'œsophagoscope.



Fig. 118. Position pour les opérations du palais nasal bien que pour l'œsophagoscopie et la broncoscopie.

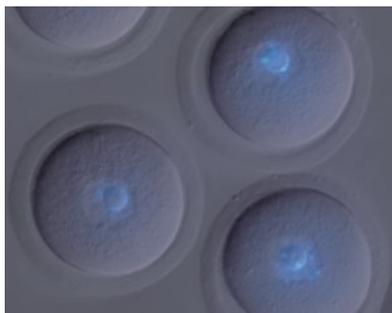


Fig. 119. Exécution spéciale de modèle X. Le dossier peut se régler au moyen d'un mécanisme à vis.



## BIO-CHEM The Usefulness of the Useless

*Finding new nucleolus function through apparently inactive oocyte nucleolus.*



Nucleoli are spherical organelles that make parts for cellular protein factories called ribosomes. Ribosome synthesis ceases in fully-grown oocytes and fertilized eggs, however, Dr. Ogushi has found that nucleoli in oocytes are absolutely essential for early embryonic development. To reveal new aspects of the nucleolus and its molecular components, Dr. Ogushi is now determining the proteins and RNAs present in their structure in collaboration with the University of Oxford in the UK. Evolutionarily, nucleoli are first observed when organisms start to package their huge genome into the small cell nucleus, which is not present in bacteria and archaea. Dr. Ogushi has also recently found

that oocyte nucleoli are required for proper nucleus formation. It would be very interesting if organisms had evolved nucleoli in order to package the genomic information correctly into the cell nucleus.

### Dr. Sugako Ogushi

*Assistant Professor, The Hakubi Center for Advanced Research  
Academic Visitor, Prof. Nasmyth Group, Department of Biochemistry, University of Oxford  
[www.hakubi.kyoto-u.ac.jp/eng/02\\_mem/h23/ogushi.html](http://www.hakubi.kyoto-u.ac.jp/eng/02_mem/h23/ogushi.html)*



With Prof. Nasmyth Group, Dr. Ogushi is forth left on the front.

## ECOL Dialects Used by Plants

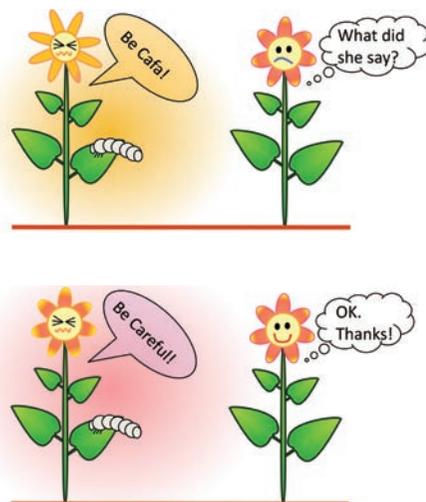
*Plant-to-plant communication through volatiles.*

Damaged plants release volatiles. If neighboring plants receive those volatiles, they become more resistant. This phenomenon is called plant communication, and it has been reported in more than ten species of plants. Dr. Shiojiri and her colleagues analyzed the volatiles of the sagebrush plant (*Artemisia tridentata*) which is already known to communicate using volatiles. The volatiles from individual sagebrush plants are different. Dr. Shiojiri's group found that the similarity of volatiles correlates with the degree of kinship between the plants. Moreover, they demonstrated that if plants receive volatiles which are similar to their own, they became more resistant than those which receive different volatiles. In other words, plants have dialects to better communicate with their relatives. Dr. Shiojiri and her colleagues are seeking to explain why plants need such dialects.



### Dr. Kaori Shiojiri

*Assistant Professor, The Hakubi Center for Advanced Research  
[www.hakubi.kyoto-u.ac.jp/eng](http://www.hakubi.kyoto-u.ac.jp/eng)*



## What's in a Name?

The term hakubi (白眉), literally means 'white eyebrows' in Japanese (白 : white, 眉 : eyebrows). The word originates from a Three Kingdoms era (220-280 AD) Chinese legend: "Three kingdoms saga (三国志)". According to the legend, one of the kingdoms, called Shu (蜀), was home to five brothers with extraordinary talents. The fourth brother, 馬良季常 (Baryo Kijo), who was particularly outstanding, had white hairs in his eyebrows, and so the term hakubi has come to refer to particularly talented individuals.



馬良季常 (Baryo Kijo) (Yiyaka Anmitsu)

## FOSTERING THE NEXT GENERATION

# The John Mung Program

## Opportunities to Explore Global Frontiers

Kyoto University launched the John Mung Program in 2012, as a project to support mid- and long-term research by junior faculty members at leading academic institutions overseas.

**WEB** [www.kyoto-u.ac.jp/ja/research/young/support/john\\_man/](http://www.kyoto-u.ac.jp/ja/research/young/support/john_man/)

### **INFO-SCI** University of Colorado

*Natural language processing research.*

I am visiting the University of Colorado at Boulder, which is located at an elevation of 1,600 meters, and is famous for altitude training. I am working on natural language processing research, particularly natural language understanding, with Prof. Martha

Palmer who is an authority in this field. During my time at the University of Colorado at Boulder, I would like to achieve breakthrough results to contribute to the advancement of natural language understanding and artificial intelligence. I believe that this research will be able to elucidate human linguistic intelligence, which is one of the most essential human intelligences.



**Dr. Daisuke Kawahara** *Associate Professor, Graduate School of Informatics*  
[nlp.ist.i.kyoto-u.ac.jp/member/kawahara/index-en.html](http://nlp.ist.i.kyoto-u.ac.jp/member/kawahara/index-en.html)



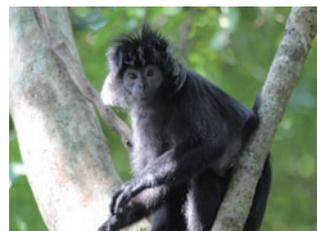
### **ZOOL** Bogor Agricultural University

*Studying the Javan lutung, a wild primate species.*

At Bogor Agricultural University (IPB) in Indonesia, I am studying the Javan lutung, a wild primate species living in western Java. The IPB has great facilities for conducting various kinds of analyses, and good staff in the field of forestry. I'm enjoying my discussions with them after hard work in the field. I also actively communicate with Indonesian students through lectures and informal counseling. During my stay in Indonesia, I would like to elucidate the social system of the lutung, about which little information has been available so far. Through the John Mung Program, I would like to become someone who can act as a bridge between Japanese and Indonesian primatologists and students.



**Dr. Yamato Tsuji**  
*Assistant Professor, Primate Research Institute*  
[kyouindb.iimc.kyoto-u.ac.jp/j/sW0wN](http://kyouindb.iimc.kyoto-u.ac.jp/j/sW0wN) [blog.goo.ne.jp/yamato\\_tsuji](http://blog.goo.ne.jp/yamato_tsuji)



## Also Supporting Students



As part of its efforts to cultivate the next generation of leading internationally-minded talent, Kyoto University has recently established The John Mung Program, which provides students with the opportunity to study-abroad at leading universities overseas.

THE people are very friendly and full of energy for research at the University of Cambridge. I have acquired a lot of cutting-edge knowledge beyond my imagination, including technical skills and cultural knowledge about the UK. The most important thing is the opportunity to develop friendships with international scholars who are ambitious and talented. Such connections will help us to become global leaders who can be active all over the world.

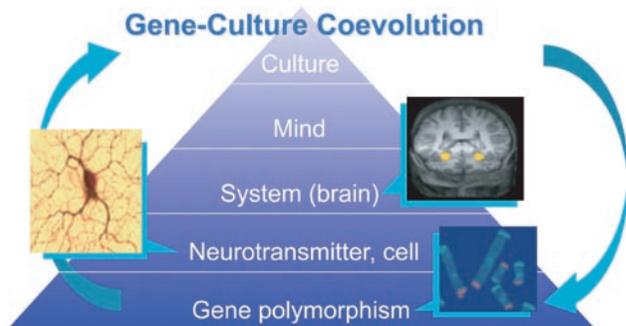
*Author: Nao Minakata*  
*Graduate School of Engineering*





**BIOL** **Northwestern University**

*Examination cultural influences on genetic and behavioral responses.*



As a senior visiting scholar, I visited the Social, Affective and Cultural Neuroscience laboratory (Prof. Chiao's Lab) at Northwestern University (NU) for a collaborative project to examine cultural influences on genetic and behavioral responses in Japanese and Asian-Americans. One of my great experiences at NU was the opportunity to communicate with researchers from many countries. Through having a wide range of academic discussions with them, I hope that my stay at NU will contribute to enhancing my relations with international researchers in psychology, as well as to the development of a new research field.



◀ With Prof. J. Chiao

**Dr. Michio Nomura**  
Associate Professor, Graduate School of Education  
[www.design.kyoto-u.ac.jp/faculty/m-nomura.html](http://www.design.kyoto-u.ac.jp/faculty/m-nomura.html)



**INSECTOL** **CNRS, Gif sure Yvette**

*Disease resistant behavior in insects.*

*Bon appetite, itadakimasu or sahia taieba*—in the restaurant of the institute, we start lunch with those words. Thanks to the John Mung Program, I have been engaging in research at Center national de la recherche scientifique (CNRS), the largest governmental research organization in France, to analyze how *Drosophila* can detect microbes with their taste system and brush them off their cuticula to limit pathogenic infections. With the help of Prof. Marion-Poll who is one of the most well-known researchers



in the field of insect physiology and my lab-mates, this project has given me many great surprises and much inspiration, and I'm really grateful for their kindness and friendliness. I would like to make this opportunity beneficial not only for my research, but also for my host lab in France and the lab in Japan.

**Dr. Aya Yanagawa**

Assistant Professor, Research Institute for Sustainable Humanosphere  
[www.rish.kyoto-u.ac.jp/W/LIH/15/yanagawa.php](http://www.rish.kyoto-u.ac.jp/W/LIH/15/yanagawa.php)

**Which type of stimulus can induce cleaning behavior in insects?**

**S**TUDYING at the University of Cambridge has provided me with an amazingly fruitful experience. In my host laboratory there were many PhD students who have various interesting careers. This experience has greatly stimulated my curiosity and I have decided to become a globally active scientist to contribute to a better world.

Author: **Takuma Nakamura**  
Graduate School of Engineering



**T**HIS summer, I studied at the University of Cambridge and engaged in a short-term-project. I belonged to a laboratory in the Chemical Engineering Department and studied with various students from the UK, and also from other different countries including China and Thailand. It was really exciting that I could talk with them about my research every day. Everything I experienced is sure to have a great influence on my research life.

Author: **Hidaka Asonuma**  
Graduate School of Engineering

