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■ News

## 100th year anniversary commemorative ceremony for the Institute of Plant Science and Resources

The university held a commemorative ceremony for the 100<sup>th</sup> anniversary of the Institute of Plant Science and Resources at Kurashiki Geibunkan Hall on October 2nd 2014. Besides President Kiyoshi Morita and the faculty of the university, approximately 260 people including researchers and local members of the public celebrated the milestone. Yoko Yamamoto, director of the institute, said during her greeting; “I would like this institute to continue as an active research center where people from both domestic and international backgrounds can interact, and I would like to continue our focus on fostering young researchers.”

Early evening on the same day, a party of commemoration was held at Kurashiki Ivy Square. The attendees received a commemorative beer made for the event, together with a kind of dacquoise dessert made with barley, called “Haruna Nijo HKI”, developed by the university.

The Institute of Plant Science and Resources was established as Ohara Institute for Agricultural Research in 1914 by Magozaburo Ohara, a resident of Kurashiki. After the transfer of control to Okayama University, it continues to function as a research center for plant science in Japan.



Commemorative ceremony held at the Geibunkan Hall



President Kiyoshi Morita celebrating the milestone



Professor Yoko Yamamoto extending her greetings.



Barley dacquoise, commemorative publication, and commemorative beer.

■ News

## The Opening Ceremony at the Junko Fukutake Terrace

The café “Junko Fukutake Terrace” (commonly known as the J Terrace), built on the west side of the main gate at the Tsushima Campus, is now complete and has been opened. The café was built using a donation by Junko Fukutake, Deputy Director of the Fukutake Education and Culture Foundation. The Opening Ceremony was held on October 17th at the J Terrace.

Approximately 70 people attended the ceremony including deputy director Junko Fukutake, President Kiyoshi Morita of our university, Kazuyo Sejima from the architectural firm “SANAA”\*, who designed the J Terrace, and Ryue Nishizawa. President Morita greeted everyone by stating: “People from all over the world will surely gather here at the J Terrace. I would like this university to become even more open to developments for social spaces in future.”

Deputy director Junko Fukutake also spoke, saying: “By using the J Terrace in a variety of ways, just like the Junko Fukutake Hall (J Hall), I would like everyone to have the opportunity to meet people from all different background and create miracles.” The 5 representatives then cut the ribbon and celebrated the café’s completion.

The J Terrace is an architectural structure with a beautiful concrete and glass curve, designed with the theme, “a place where people gather and dialogue is generated.” The glassed-in space projects an image of mutual connection. Established together with the “J Terrace Café” run by the Sakai Panning Corporation (Minami Ward, Okayama City), it is a public open-type terrace that everyone can freely use.

“SANAA”\*

SANAA (Sejima and Nishizawa and Associates) is an architect unit (specifically, an architectural firm) founded by Kazuyo Sejima and Ryue Nishizawa. In 2010, SANAA was awarded the Pritzker



The opening of the Junko Fukutake Terrace (J Terrace).



The Junko Fukutake Terrace is available for everyone.

Architecture Prize - the Nobel Prize in the architectural world. Their work includes the Louvre-Lens Museum (annex of the Louvre) in France and the 21st Century Museum of Contemporary Art in Kanazawa. SANAA also designed the J Hall of the Shikata campus and the pergola of the Tsushima campus for our university.

## ■ News

### International Exchange Event “Erasmus Day”

Okayama University, in its engagement with the “Erasmus Mundus Program,” a program to promote student and researcher exchanges between Europe and Asia, held an International exchange event, or “Erasmus Day,” on October 20<sup>th</sup> 2014.

This program, developed by the European Union (EU), is intended to improve the quality of advanced education, and its main objective is cooperation of educational institutions and the promotion of exchanges between student and researchers between Japan and EU. Okayama University participated in the “2010 - 2014 Erasmus Mundus BEAM Program” as a consortium school. We have conducted research exchanges with cooperating institutions in Europe and elsewhere, centered on both teachers and post-doctoral students. From 2013, we implemented the “Erasmus Mundus EASED Program”, centered on the field of ecological energy, in order to encourage the strengthening of international cooperation and the globalization of educational research.

Naoshi Ikeda, professor at the Graduate School of Natural Science and Technology and the Erasmus Mundus partnership Implementation Committee chairperson, introduced our university’s efforts in implementing the EASED program at the event. Students and researchers who had been abroad to study using this program, along with foreign students currently on exchange here at Okayama, reported on their research in English. They described what their study abroad was like, their cross-cultural exchange experiences, and more.

Two graduate students from the l'Université de Montpellier, a university conducting the Erasmus Mundus MaMaSELF Program, introduced the “MaMaSELF” (Material Science Major Master Course Program) Program.



Participants of the “Erasmus Day”.



Participants listening intently to the lecture.

Bernard Chenevier, a senior research administrator, explained a new Erasmus project, the “Erasmus+”, which started this year. He addressed the audience by saying, “I hope participation in this program is wide-ranging in many fields - regardless of whether you are from humanities courses or science courses.”

Okayama University aims to become a world class research university by fostering global-minded human resources who can flourish on the world stage. We aim to strengthen our global competitiveness through various international exchanges in research and education.



■ News

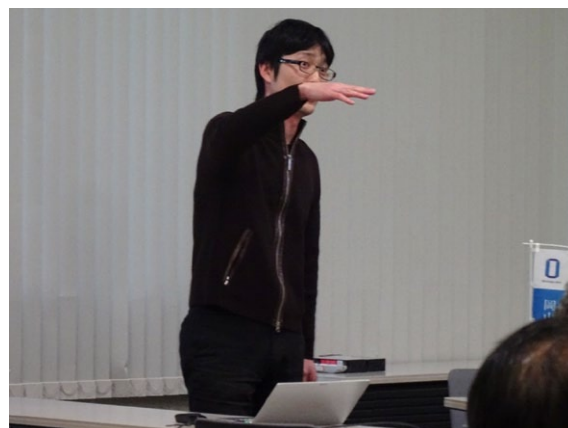
## 2nd URA International Research Seminar

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Okayama University's Research Administrator (URA) office hosted its 2nd International Research Seminar on November 12th 2014 at the 50th Anniversary Hall. The objective of the seminar was to promote the globalization of Okayama University's research capability.

Michel Pons, research director at the French National Centre for Scientific Research (CNRS) and director of the laboratory "Le Laboratoire de Science et Ingénierie des Matériaux et Procédés (SIMaP)", lectured on material science research, and the development of multifunctional materials carried out at his laboratory. In his talk, he emphasized the importance of interdisciplinary research, stating that: "In our laboratory, all physicists, material and fluid mechanics specialists and chemists study the preparation, forming, and assembly of materials, as well as their properties for structural and functional applications to energy, microelectronics, and metallurgy, to name but a few. They combine experimentation and modeling from the atomic level to full process scale on the basis of experimental preparation and characterization facilities." He also provided some examples of their cutting-edge, world-leading research such as silicon purification using thermal plasma.

The seminar was followed by presentations by three young researchers from Okayama University, Hideki Hashimoto and Takashi Teranishi from the Graduate School of Natural Science and Technology, and Yuta Nishina from the Research Core for Interdisciplinary Sciences.



Assistant Professor Hashimoto presents his research on iron oxides created by microorganisms



Assistant Professor Teranishi presents his research on dielectric conductive oxides



Associate Professor Nishina presents his research on oxidized graphene



The seminar provided all the participants an opportunity to share their knowledge and ideas, and also to discuss the possibility of collaborative research and cooperation in the fields of material science and related areas.

Okayama University was one of the top 19 research universities in Japan selected by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) to receive support for the implementation of its Research Enhancement Project, which was launched in 2013. This seminar was organized as part of this project.

The official name of this project is the "Program for Promoting the Enhancement of Research Universities".



Research Director Doctor Pons giving his lecture

■ Feature

**Innovative methods for cancer treatment: World's first cancer stem cell model from iPS cells**

Professor Masaharu Seno, Lab of Nano-Biotechnology at the Department of Biotechnology, Graduate School of Natural Science and Technology, Okayama University,

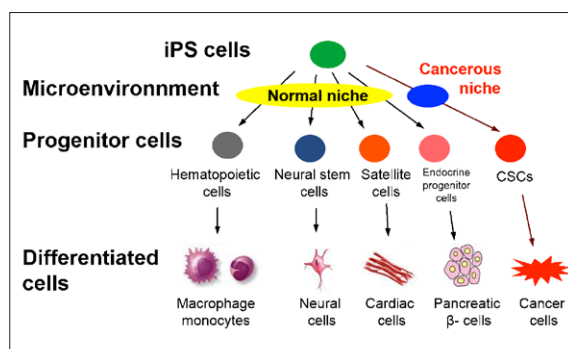
Cancer has been the top cause of death in Japan since 1981 with an estimated 300 people out of 100,000 dying of the disease annually.

Professor Masaharu Seno, head of the Lab of Nano-Biotechnology at the Department of Biotechnology, Graduate School of Natural Science and Technology, Okayama University, is focused on finding new methods to treat the disease. “My research is focused on the development of innovative methods for cancer treatment,” says Seno. “Specifically, my group is using induced pluripotent stem cells (iPSCs) to develop cancer stem cells (CSCs). Recently, we reported that cancer stem cells produced from mouse iPS cells, that then differentiate, are actually necessary for the maintenance of the cancer cells themselves. Understanding the mechanism governing the development of cancer is a major advance for the treatment of cancer.”

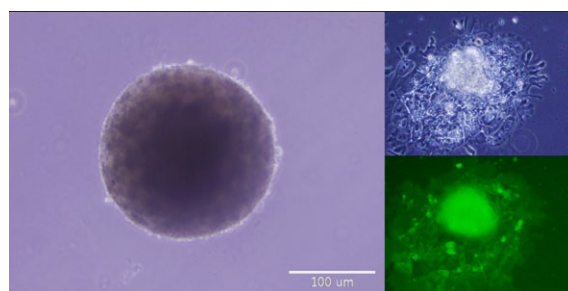
Professor Seno points out that his group’s success lies in producing cancer stem cells from iPS cells, which when transplanted into nude mouse, retains the stem cell like properties overcoming the ethical issues. “CSCs from iPSCs and from mice also provides an abundant supply of many different kinds of cancer cells for experiments,” adds Professor Seno. “We are planning to produce a library of CSCs for customized cancer treatment.”



Professor Masaharu Seno



iPS cells and microenvironment



CSCs from Human iPSC. A, a spheroid of CSCs in nonadhesive culture. B, CSCs in adhesive culture. C, staining of undifferentiated cells in panel B.

In the future Professor Seno is planning to collaborate with industrial partners to develop CSC libraries in the form of a consortium to manage cell libraries. The ready availability of CSCs would enable the establishment of novel systems to evaluate agents for cancer therapy “including those which were previously dropped by pharmaceutical companies”.

The research on cancer is an extension of Professor Seno’s expertise in the design of “functional physiologically and biologically active molecules for medicine and public health”. Other projects include the development of highly efficient, in vivo drug delivery systems (DDS) using nano-capsules of proteins or lipids to reduce side effects associated with conventional approaches; novel procedure for profiling tissues and cells for DDS; and design of novel mutant proteins of betacellulin (BTC) for the tissue regeneration therapy of pancreatic islets in diabetes therapy.

## Publications

2012

Chen L, Kasai T, Li Y, Sugii Y, Jin G, Okada M, Vaidyanath A, Mizutani A, Satoh A, Kudoh T, Hendrix MJ, Salomon DS, Fu L, Seno M

A model of cancer stem cells derived from mouse induced pluripotent stem cells.

PLoS One. 2012;7(4):e33544.

doi: 10.1371/journal.pone.0033544

2013

Matsuda S, Yan T, Mizutani A, Sota T, Hiramoto Y, Prieto-Vila M, Chen L, Satoh A, Kudoh T, Kasai T, Murakami H, Fu L, Salomon DS, Seno M.

Cancer stem cells maintain a hierarchy of differentiation by creating their niche.

Int J Cancer. 2013 Dec 3.

doi: 10.1002/ijc.28648.

2014

Shigehiro T, Kasai T, Murakami M, Sekhar SC, Tominaga Y, Okada M, Kudoh T, Mizutani A, Murakami H, Salomon DS, Mikuni K, Mandai T, Hamada H, Seno M.

Efficient drug delivery of Paclitaxel glycoside: a novel solubility gradientencapsulation into liposomes coupled with immunoliposomes preparation.

PLoS One. 2014 Sep 29;9(9):e107976.

doi: 10.1371/journal.pone.0107976.

Yan T, Mizutani A, Chen L, Takaki M, Hiramoto Y, Matsuda S, Shigehiro T, Kasai T, Kudoh T, Murakami H, Masuda J, Hendrix MJ, Strizzi L, Salomon DS, Fu L, Seno M.

Characterization of cancer stem-like cells derived from mouse induced pluripotent stem cells transformed by tumor-derived extracellular vesicles.

J Cancer. 2014 Jul 5;5(7):572-84.

doi: 10.7150/jca.8865.

Chen L, Mizutani A, Kasai T, Yan T, Jin G, Vaidyanath A, El-Aarag BY, Liu Y, Kudoh T, Salomon DS, Fu L, Seno M.

Mouse induced pluripotent stem cell microenvironment generates epithelial-mesenchymal transition in mouse Lewis lung cancer cells.

Am J Cancer Res. 2014 Jan 15;4(1):80-8.

Website: [http://www.cyber.biotech.okayama-u.ac.jp/senolab/e\\_kenkyuu.html](http://www.cyber.biotech.okayama-u.ac.jp/senolab/e_kenkyuu.html)

## Research Highlights

### Discovery of a remarkable new species of land snail restricted to arid environments in small islands and coastal areas of the central Seto Inland Sea, Japan

The islands and coastal areas around the Bisan Straits in the central Seto Inland Sea, between Honshu and Shikoku, are well known as semi-arid regions that have an extremely small amount of rainfall compared with other parts of Japan. Therefore, the diversity of land snail species is quite poor and no endemic species are known to exist in this region.

Notably, all species of land snails commonly found around the Bisan Straits are drought resistant. One of them, *Satsuma ferruginea* (Pilsbry, 1900) (Camaenidae), is found across wide areas of western Japan. The species is known to display geographic variation in morphology of the reproductive system and be confused taxonomically. Around the type locality of the species, that is, Kagawa and Okayama prefectures, rod-like and hook-like flagellum forms were recognized by an amateur malacologist Akira Tada.



Fig.1

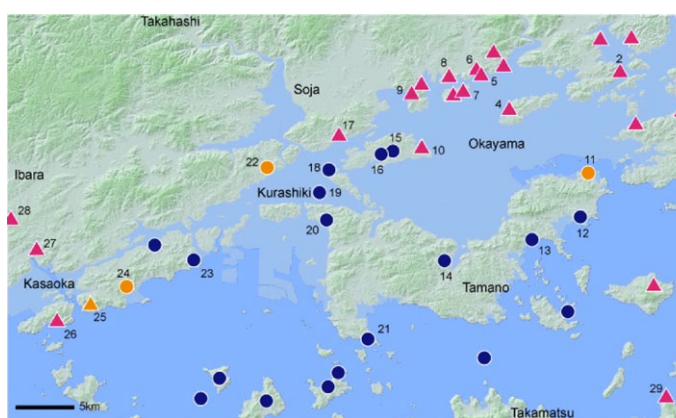


Fig.2

Recent field surveys and molecular phylogenetic analysis by Yuichi Kameda and Hiroshi Fukuda showed that currently, the two forms have parapatric distributions and limited gene flow. The hook-form populations correspond to *S. ferruginea*, and the rod-form species was described as a new species *S. akiratadai*. Remarkably, *S. ferruginea* and *S. akiratadai* are not distinguishable in any external (shell and head-foot of animal) characteristics. Therefore, *S. akiratadai* has long been misidentified as being *S. ferruginea*. This is an exceptional case in the taxonomy of shell-bearing molluscs, because in most cases different molluscan species show differences in their shells.

*Satsuma akiratadai* is likely to be endemic to the islands around the Bisan Straits, because their current distribution is limited to islands and hilly terrain areas in the Okayama Plain that had been separate islands before an increase in sedimentation activity and artificial land reclamation since the

6th Century. Furthermore, *S. akiratadai* occurs in arid environments, suggesting that the species was diverged from *S. ferruginea* and adapted to the drier climate.

Thus, the distribution patterns of these two species are likely to reflect the unique environmental conditions and geographic history of this region.

#### Reference:

- Authors: Yuichi Kameda and Hiroshi Fukuda.
- Title of original paper: Redefinition of *Satsuma ferruginea* (Pilsbry, 1900) (Camaenidae), with description of a new cryptic species endemic to the coasts and Islands of the central Seto Inland Sea, western Japan.
- Journal, volume, pages and year: *Venus* **73**, 15–40 (2015).
- Digital Object Identifier (DOI): None.
- Journal website: <http://www.malaco-soc-japan.org/>
- Affiliations: Center for Molecular Biodiversity Research, National Museum of Nature and Science, and Conservation of Aquatic Biodiversity, Graduate School of Environmental and Life Science, Okayama University.
- Department website:  
<http://www.kahaku.go.jp/english/institution/molecule/index.html>  
[http://www.okayama-u.ac.jp/user/agr/profile/nougaku04\\_4.html](http://www.okayama-u.ac.jp/user/agr/profile/nougaku04_4.html)

#### Figure caption:

Fig. 1. Shells of *Satsuma ferruginea* (left three columns) and *S. akiratadai* (right three columns).

Fig. 2. Estimated land areas around the Bisan Straits of about 1500–2000 years ago. Populations of *Satsuma ferruginea* and *S. akiratadai* are represented as triangles and circles. Populations with introgression and/or intermediate genital morphology are shown in orange symbols. Base map was drawn with Kashmir 3D (<http://www.kashmir3d.com/>) based on elevation data provided by Geospatial Information Authority of Japan.



## Research Highlights

### The firebrat, primitive insect, exhibits a unique circadian clock resembling that of mammals

Most animals show daily rhythms that are generated by an endogenous mechanism, the so-called circadian clock, consisting of transcriptional/translational feedback loops, in which *Clock* (*Clk*) and *cycle* (*cyc*) genes are the key elements.

Although *cyc* is known to be expressed in a daily rhythmic manner in many insects, little is known about its regulation.

Yuichi Kamae, Outa Uryu, Taiki Miki, and Kenji Tomioka at Okayama University, have identified the orphan nuclear receptor genes *HR3* and *E75* as the major regulators of the rhythmic expression of *cyc* in a primitive insect, the firebrat *Thermobia domestica*, by molecular cloning and RNA interference technology. The *HR3* and *E75* are orthologs of mammalian clock genes, *Rora* and *Rev-erba*, respectively that regulate the rhythmic expression of *Bmal1*, a mammalian homolog of *cyc*.

Knocking-down of either *HR3* or *E75* gene was found to alter the rhythmic expression profiles of not only *cyc* but also other clock genes, leading to a disorganized molecular oscillatory state of the firebrat's circadian clock. The disorganization results in a loss of behavioral circadian rhythms.

The results suggest that the *HR3* and *E75* genes are involved in the circadian clock as regulators of the *cyc* gene, like in mammals, and more importantly as phase regulators of other clock genes. They also implicate that the firebrat has a unique circadian clock in which the preservation of an appropriate phase relationship among clock genes is required for manifestation of overt behavioral rhythms.

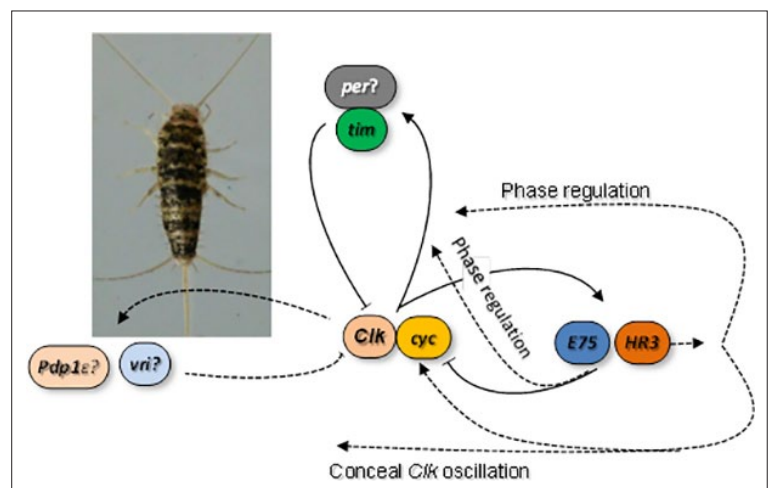
#### Reference:

Authors: Yuichi Kamae, Outa Uryu, Taiki Miki, Kenji Tomioka (2014)

Title of original paper: The nuclear receptor genes *HR3* and *E75* are required for the circadian rhythm in a primitive insect.

Journal volume pages: PLoS ONE, 9(12): e114899.

Digital Object Identifier (DOI):10.1371/journal.pone.0114899



Journal website: <http://www.plosone.org/>

Affiliations: Graduate School of Natural Science and Technology, Okayama University

Figure caption:

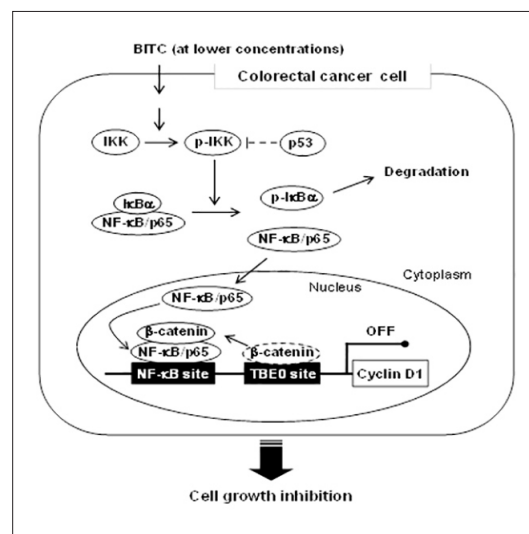
The firebrat, *Thermobia domestica*, and the proposed hypothesis of its circadian clock machinery.

## Research Highlights

### Seeds of novel anti-cancer drug development: A papaya seed ingredient selectively regulates the proliferation of colorectal cancer cells

In almost all human colorectal cancers,  $\beta$ -catenin aberrantly accumulates in the nucleus and activates the expression of its target genes such as cyclin D1, which contributes to cell proliferation. Isothiocyanates (ITCs), mainly derived from cruciferous vegetables, are well known as having anti-tumor activities *in vitro* and *in vivo*. Benzyl ITC (BITC)— an ITC compound derived from papaya seeds— inhibits colorectal cancer cell proliferation, but details of the molecular mechanisms governing this action remain unclear.

Now, Naomi Abe, Yoshimasa Nakamura and colleagues at Okayama University and Kagoshima University have revealed a new molecular mechanism showing that BITC inhibits the proliferation of colorectal cancer cells through NF- $\kappa$ B signaling pathway.



Mechanism for the anti-proliferation by BITC.

The researchers found that BITC enhanced the nuclear translocation of transcription factor NF- $\kappa$ B in p53-mutated colorectal cancer cells, repressed cyclin D1 transcription by the change of  $\beta$ -catenin binding pattern to the promoter sequence of cyclin D1, and finally inhibited the proliferation of colorectal cancer cells through this pathway. Both p53 and  $\beta$ -catenin ordinarily function in normal cells, suggesting quite a low possibility for BITC to activate the NF- $\kappa$ B pathway and thereby cause side effects.

These findings may contribute to the development of new drugs for colorectal cancer treatment and a deeper understanding of the safety of food chemicals.

#### Publication and Affiliation

Naomi Abe<sup>1,2</sup>, De-Xing Hou<sup>3</sup>, Shintaro Munemasa<sup>1</sup>, Yoshiyuki Murata<sup>1</sup> and Yoshimasa Nakamura<sup>1</sup>. Nuclear factor-kappaB sensitizes to benzyl isothiocyanate-induced antiproliferation in p53-deficient colorectal cancer cells. *Cell Death Dis.*, 5, e1534 (2014); doi:10.1038/cddis.2014.495

<sup>1</sup>Graduate School of Environmental and Life Science, Okayama University, Okayama 700-8530, Japan

<sup>2</sup>Research Fellow of Japan Society for the Promotion of Science

<sup>3</sup>Department of Biochemical Science and Technology, Faculty of Agriculture, Kagoshima University, Korimoto 890-8580, Japan

\*corresponding author, e-mail address: [yossan@cc.okayama-u.ac.jp](mailto:yossan@cc.okayama-u.ac.jp)

Journal website: <http://www.nature.com/cddis/journal/v5/n11/full/cddis2014495a.html>

- Authors: Abe N, Hou D-X, Munemasa S, Murata Y, Nakamura Y
- Title of original paper: Nuclear factor-kappaB sensitizes to benzyl isothiocyanate-induced antiproliferation in p53-deficient colorectal cancer cells
- Journal, volume, pages and year: Cell Death and Disease 5, e1534 (2014).  
<http://ousar.lib.okayama-u.ac.jp/metadata/53019>

## ■ Research Highlights

### Simple, compact, highly sensitive SQUID based magnetic field measurement system to detection of a very small magnetic signals

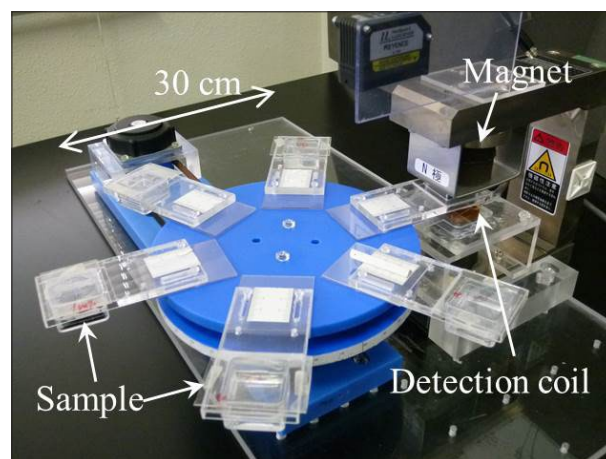
All materials exhibit unique magnetic properties that are specific to each material. Therefore, we can obtain a lot of information about the material by measuring its reaction to magnetic fields. However, it is difficult to evaluate the magnetic properties of paramagnetic and diamagnetic materials because they show a very small response to the external magnetic fields that is difficult to detect with conventional magnetic sensors. In general superconducting quantum interference devices (SQUID) are the most sensitive magnetic sensor and are used to evaluate the properties of paramagnetic and diamagnetic materials. However, measurement systems using SQUID are large and there are severe limitations on the size and composition of samples that can be measured.

So there is still demand for compact, reliable and simple methods for measuring the magnetic properties of solid and liquid samples.

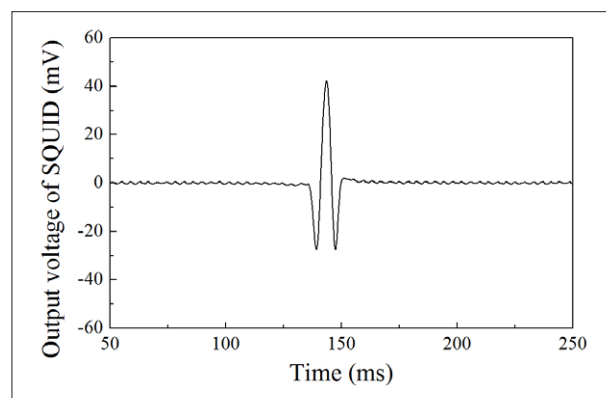
Here, Kenji Sakai, Toshihiko Kiwa, Keiji Tsukada and colleagues at Okayama University have

developed a highly sensitive system for measuring the magnetic properties of magnetics. The system is laptop size despite the incorporating a SQUID sensor, and solid, liquid, and powder samples can be measured by simply putting them in a sample case without any pretreatment (Fig.1).

The researchers successfully used the new system to measure the very small magnetic signal from water due to its diamagnetic nature. (Fig. 2). As an application of this system, the moisture content of a material was evaluated and they found that the magnetic signal intensity of the material depended on the content of water in the material. These results show the new system can be used as a tool for high sensitivity, nondestructive and noncontact measurement of moisture content in materials. Moreover, the researchers also detected a relaxation processes during the magnetic response of materials. This measurement approach is useful to determine the state of materials and detect the individual



[Figure 1]



[Figure 2]

properties of materials in a mixed solution. The new system is expected to be used in fields, such as nondestructive evaluation and biomedical analysis.

#### Reference:

- Authors: Kenji Sakai, Naohiro Okamoto, Yuuta Watanabe, Mohd Mawardi Saari, Toshihiko Kiwa, and Keiji Tsukada
- Title of original paper: Moisture content evaluation using improved high-Tc SQUID-based rotating-sample magnetometer.
- Journal, volume, pages and year: *IEEE Transactions on Applied Superconductivity*, **25**, 3, 1601205 (2015).
- Digital Object Identifier (DOI): 10.1109/TASC.2014.2363353
- Journal website: <http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=6926834>
- Affiliations: Graduate School of Natural Science and Technology, Okayama University.
- Department website: [http://www.gnst.okayama-u.ac.jp/index\\_e.html](http://www.gnst.okayama-u.ac.jp/index_e.html)

#### Figure caption:

Figure 1 Developed compact and highly sensitive magnetic property evaluation system. The sample is fixed on a turn table and rotated. The signal from a sample is detected by a detection coil inductively connected to SQUID.

Figure 2 Detected magnetic signal from pure water using the developed measurement system. A difference in the output voltage of SQUID was observed at around 150 ms, which corresponds to the time required by the sample to pass above the detection coil.



## ■ Intellectual Property and Enterprise

### Innovation in resuscitation

In Japan in 2012, 127,000 patients were transported by ambulance owing to cardiac arrest. Ten percent of these patients were treated by witnesses to their initial cardiac arrest before the ambulance arrived. Although these patients often survived, only ten percent regained a good quality of life after their heart attack – the other ninety percent suffered varying degrees of brain damage during resuscitation. This highlights a need for innovation in resuscitation techniques in the field.

Research has shown that cooling the temperature of the brain can lessen the chances of damage during resuscitation. By cooling the blood in the carotid artery which runs near the pharynx and upper esophagus in the throat, the temperature of the brain is subsequently reduced. Researchers at Okayama University recently developed a pharyngeal cooling system (see Fig. 1) which has been evaluated in 19 emergency centers across Japan. The bilateral common carotid arteries run near the pharynx and upper esophagus (Figure 2).

The system comprises a pharyngeal cooling cuff and a circulator. The cuff is inserted into the patient's throat, and works by circulating cold saline (5 °C) through the cuff for 2 hours. Pharyngeal cooling can be initiated before or shortly after the return of spontaneous circulation (ROSC) in the patient, without having adverse effects on ROSC or the pharyngeal epithelium. Using the pharyngeal cooling system can significantly decrease tympanic temperature (the temperature within the ear – a reflection of body and brain temperature) within



Figure 1  
The pharyngeal cooling system developed by Okayama University and Daiken Medical Co.

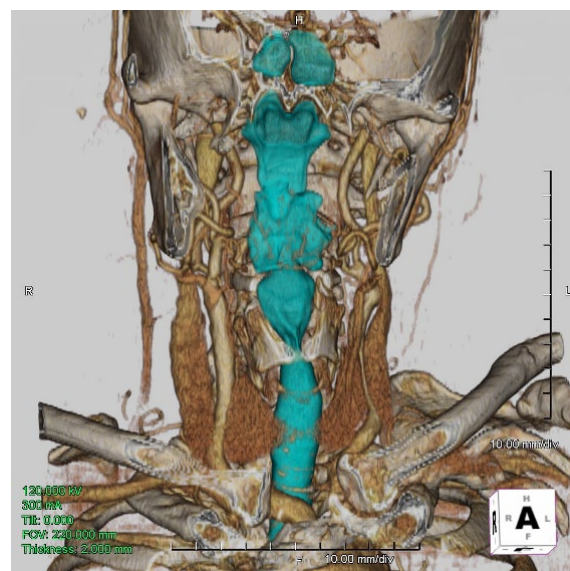


Figure 2  
3D-CT image of the human neck  
A: External jugular vein, B: Internal jugular vein, C: Carotid artery,  
D: Pharynx

40min of arrival at an emergency center (Fig. 3). This system was approved in Japan in February 2014.

However, the existing pharyngeal cooling system was designed to be used in emergency centers, and therefore needs commercial power supply. The pharyngeal cooling cuff also needs airway protection, in the form of tracheal intubation, before it is inserted into the patient's throat. In order to improve resuscitation in the field, the same team is now developing a transportable pharyngeal cooling system. The airway will be protected by a newly designed pharyngeal cooling cuff, and circulator will be operated by a battery power supply. With this system, physicians and emergency services will be able to protect the brain and airways during resuscitation, allowing successful cerebro-cardio-pulmonary resuscitation in the field.

★Contact: Mototaka Senda, Ph.D.,  
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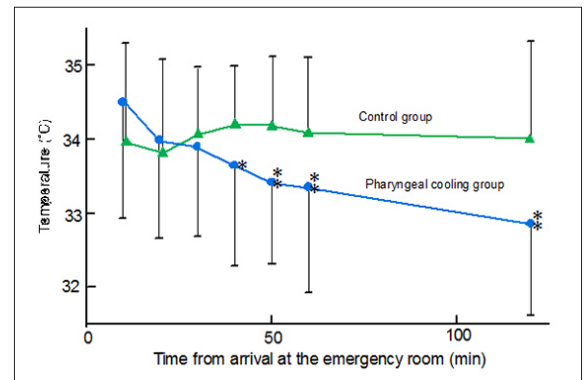
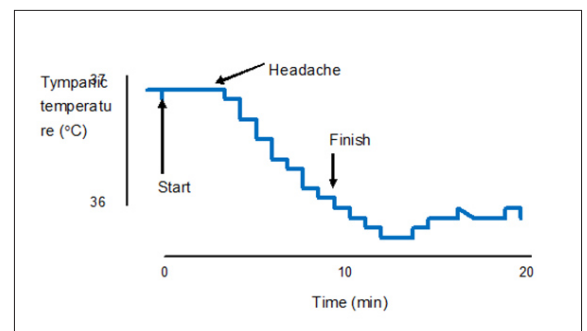


Figure 3 Changes in tympanic temperature after arrival at the emergency center. Pharyngeal cooling was initiated as soon as possible after arrival.



Appendix Changes in tympanic temperature when eating 300 g of shaved-ice treat in 10 min. During the study, body temperature was unchanged indicating that shaved ice worked as selective brain cooling. Since brain weighs only 1400 g, 300 g of shaved ice can decrease brain temperature.

## ■ Topics : Letters from alumni

### Dr. Omer Faruk Hatipoglu

Assistant Professor  
Department of Medical Genetics  
Turgut Ozal University (ANKARA)

My Name is Omer Faruk Hatipoglu. I am a currently an assistant professor at the Department of Medical Genetics at Turgut Ozal University Medical School in Ankara. I spent 10 years in Okayama from April 2003 to March 2013 during my postgraduate and postdoctoral studies and I have collected some unforgettable memories during my stay. Let me share some of them with you.

I studied for my doctorate at the Molecular Biology Laboratory under the supervision of Professor Yoshifumi Ninomiya and Associate Prof Satoshi Hirohata and received my Doctor of Medicine degree from Okayama University in March 2009.

My Japan adventure started in 1996 after I had just graduated from high school in Istanbul, Turkey. First, I registered at a language school to learn Japanese before taking the “language and science” examination (Japanese Language Proficiency Test, JLPT).

I got accepted into the Tokyo Agriculture and Technology for my undergraduate course in Genetics Department. I was the only Turkish undergraduate student in that university at that time and as far as I know, I am the only Turkish graduate to this day.

When I was looking for a master’s program after graduation, my Turkish friends who studied in Okayama before suggested that I consider Okayama University. They told me that Okayama was a perfect city for a student and that the university was top quality. I was accepted to Prof Ninomiya’s group and I met a very warm environment there. We were very much like a family. Later on, the number of Turkish students in the lab increased and reached a total of 4.

I really liked Okayama town, too. I was travelling between the lab and my house comfortably by bicycle and not like by train as I used to in Tokyo.



Climbing Mount Daisen with Prof Ninomiya



Three Turkish students from the lab with Prof ninomiya and Prof Hirohata - 2006

About 1 month after my arrival, there was a welcome party for me. I was very surprised and also happy to see 2 professors and around 30 others to attend an event which was held just for me. We had a very social lab environment. We had a party almost every month. However, for certain reasons, we as the Turkish students couldn't eat every food item in those parties and social events. Our Japanese friends were very understanding and they tried to accommodate us by asking us what we can eat what we cannot eat. They even let us organize the outdoor picnics so that it was easier for us. They would happily eat and drink with us whatever we had prepared. I cannot forget their kindness in this respect.



Akitada Conference 2010

Prof Ninomiya and Prof Hirohara took me along with them to many conferences around the world. Now that I am a supervisor myself, I know how costly it can be to bring your students with you to overseas trips. Therefore, I would like to thank my supervisors and Okayama University for giving me those opportunities.

Finally I wanna share with you a memorable moment I had with Prof Ninomiya.

In 2006 Prof Ninomiya and I went to Mount Daisen for hiking. Both of us were amateurs in terms of mountain climbing. We started climbing around noon time. The interesting thing was there were no others who were going up. We only saw people coming down from the mountain. When we reached the peak after 4 hours, we were extremely delighted. When we started our descend, we realised that going down the mountain was much harder than going up. Halfway down the mountain, it started getting dark and we were so exhausted we found it very hard even to stand, let alone walk! We were worried that the police or the fire brigade would start looking for us. But fortunately, we managed to reach the bottom of the mountain late at night!



Okayama Turkish Cultural Center, New Year Party - 2008

Overall, I am very pleased and grateful for the education I received in Okayama University. I would like to thank everyone, especially Prof Hirohata and Prof Ninomiya, who made my stay in Okayama memorable one with all their help and guidance.



## ▪ Topics : Okayama Travelogue

### Shizutani School, Bizen City, Okayama, Japan

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Japan's oldest school for the education of common people

Built in 1670, Shizutani School is Japan's oldest school for educating common people. The school was constructed at the behest of Ikeda Mitsumasa, the feudal lord of Bizen and head of the local government at the time. The school was unique because it enabled children from Samurai families and those from the families of commoners to get the same education.

Visitors can see the stone walls main auditorium— now designated as a National Treasure—and intricate roof made of tiles of Bizen pottery. Close inspection of the structure of the roof of the school reveals three layers of tiles, laid one on top of another to prevent rain from seeping into the building.

The school is located in a quiet and peaceful area surrounded by Chinese pistache trees and gardens, which makes it a relaxing place to visit all year round.

#### Further information

Shizutani School

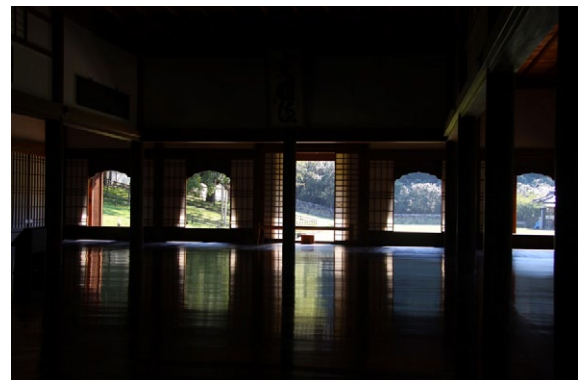
<http://shizutani.jp/shiseki/index.html>

Okayama Prefectural Government Tourism Division

<http://www.okayama-japan.jp/en/>



Shizutani School: Main Auditorium (Photograph courtesy of Okayama Prefectural Government Tourism Division)



Shizutani School: Inside the main auditorium (Photograph courtesy of Okayama Prefectural Government Tourism Division)



Shizutani School: Chinese pistache trees in the gardens. (Photograph courtesy of Okayama Prefectural Government Tourism Division)

## ■ Topics : Club Activities

### Caving club: For students with curiosity about the world below our feet

“The Okayama University Caving Club was established in 1967,” says Syota Takami, leader of the club. “We currently have 41 members from a wide cross section of majors and age groups of students at Okayama University.”

What are the traits of the club? Almost all new members do not have any previous experience of caving, there are more male than female members, and intriguingly, many of the members are studying science and engineering majors.

“The ability to cooperate with other people is important in caving,” says Takami. “Our members have such skills.”

Takami confides that caving can sometimes be scary. “But there are many things that we can see inside caves that do not exist above ground. People who explore caves enjoy new challenges and are brimming with curiosity.”

Okayama University Caving Club meets to practice climbing using rock climbing facilities in Okayama City. The club also participates in “cave rescue” competitions and finished in third place in the 2014 competition.

“We also gather to enjoy barbeques and events not directly related to caving,” says Takami. “Come and join us!”



Entrance to a cave with an entrance of 30 meters

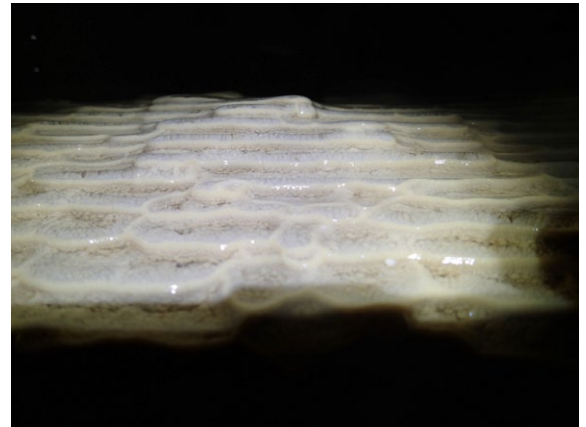


Practicing going into a cave hole with a single piece of rope



Okayama University Caving Club website:

<https://ja-jp.facebook.com/pages/%E5%B2%A1%E5%B1%B1%E5%A4%A7%E5%AD%A6%E3%82%B1%E3%82%A4%E3%83%93%E3%83%B3%E3%82%B0%E3%82%AF%E3%83%A9%E3%83%96/604431316236771>



Unusual products inside a cave



Bats inside a cave