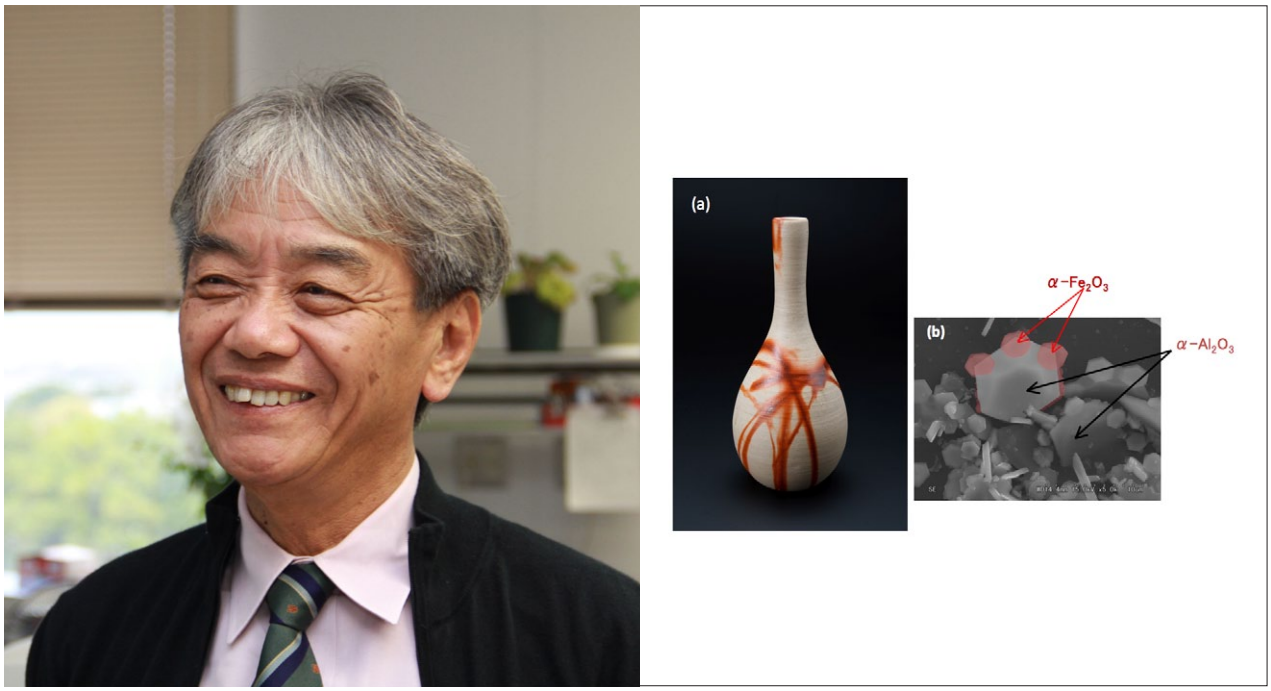
OKAYAMA UNIV. e-Bulletin



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News

Okayama University Attends Licensing Executives Society (LES)

Okayama University's Intellectual Property Office attended the Licensing Executives Society (LES) 2013 annual meeting held in Philadelphia, USA from September 22 to 25, showcasing the university's research achievements to the world. This is the first time that the Intellectual Property Office has opened a booth at an international event.
The booth displayed Okayama University's world-class research achievements, including the stretching system for 3-D cell culture and the peptide gel scaffolds gained through the successes of Dr. Keiji Naruse and his colleagues in the Graduate School of Medicine, Dentistry and Pharmaceutical Sciences.

Participants earnestly discussing Okayama University's research

Scene of Okayama University's booth

Leaflets were distributed describing promising research projects such as the new synthesis route of the Roche intermediate for Tamiflu by Associate Professor Teruhiko Ishikawa of the Graduate School of Education, and a novel culture model for the maturation of mast cells by Professor Satoshi Tanaka of the Graduate School of Medicine, Dentistry and Pharmaceutical Sciences.

As Okayama University also acted as a sponsor of the "Networking Break", a break time designated for the formation of networks between participants, a large Okayama University sign was placed in the rest area. A link to the Okayama University website was also posted on the LES website. Through these activities, the Intellectual Property Office introduced Okayama University's research achievements to 1000 intellectual property experts from around the world, including USA, Canada, Europe, and China.

Contact:
Intellectual Property Office
Organization for Research Promotion and Collaboration
Okayama University
TEL: 086-251-8472

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News

Project launched to train educators from Senegal

An opening ceremony was held on 7 October 2013 marking the launch of the Strengthening Mathematics, Science, and Technology Education Project (PREMST2)—run jointly by the Japan International Cooperation Agency (JICA) and the Republic of Senegal—as ten educators and project coordinators from Senegal started training at Okayama University. The participants received tuition in mathematics and sciences until 28 October.

Vice-Director Taguchi giving his address

One of the reasons for the low academic abilities of children in Senegal compared to other African nations has been attributed to the lack of knowledge and teaching skills of its teachers.

This project aims to resolve such issues for Senegal's educators, where participants learn new skills through lectures and practical exercises focused on mathematics and science, as well as observing classes and lesson planning sessions at primary schools affiliated with the Faculty of Education at Okayama University.

The educators from Senegal attending the opening ceremony

The opening ceremony was attended by Dr. Masaru Kaga, Dean of the Graduate School of Education, Dr. Masahiro Taguchi, Vice-Director of the International Center, and Noriaki Nishiyama, Director of the JICA Chugoku International Center, and the participants. Vice-Director Taguchi gave a message of encouragement, saying, "We look forward to this course laying the foundation for realizing exemplary classes to be used not only in the schools of the members of this course, but widely throughout the whole of Senegal."

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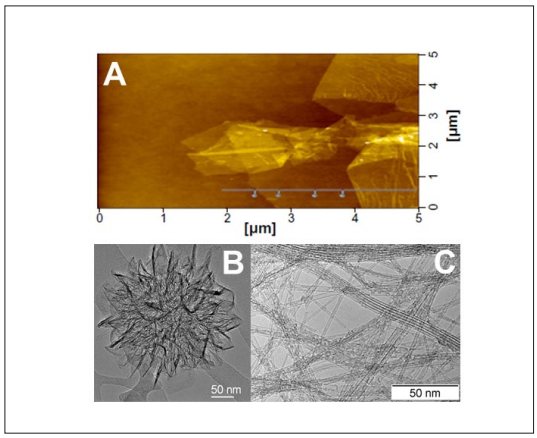
News

Selection for the Center Of Innovation (COI STREAM) Program

On 30 October 2013 the Ministry of Education, Culture, Sports, Science and Technology (MEXT) announced the selection of Okayama University's Advanced Nanocarbon Center for Composite Structural Materials (ANCS: Research Leader: Dr. Koji Matsuura, Graduate School of Medicine, Dentistry and Pharmaceutical Sciences) for the Center of Innovation Science and Technology based Radical Innovation and Entrepreneurship Program (COI STREAM). Specifically, Kanazawa Institute of Technology (KIT) will serve as the core site in the program and Okayama University and the National Institute for Materials Science (NIMS) fulfill satellite roles.

Dr. Koji Matsuura, Graduate School of Medicine, Dentistry and Pharmaceutical Sciences

Twelve core sites and eleven satellites out of 190 applications for COI STREAM were chosen, each site receiving a maximum of 1 billion yen in R&D costs for up to nine years, forming twelve globally competitive Centers of Innovation (COI) as major industry-academia collaborative research sites.



Advanced nanocarbons (ANC): Carbon-based materials with controlled nano structures and novel functions which are currently being developed at Okayama University.

Okayama University was selected under the auspices of KIT's project: Construction of Next-generation Infrastructure System Using Innovative Composite Materials: Enabling Society to Coexist with Earth for Centuries in Safety and Security. In order to achieve the goals of the program, KIT will collaborate closely with Okayama University and NIMS, and participating institutions on projects to make light, strong, and resistant materials using nanocarbons.

Further information

Regarding the public selection results for MEXT's COI STREAM program (In Japanese)
http://www.mext.go.jp/a_menu/kagaku/coi/1340937.htm

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News

Assoc. Prof. Dr. Takashi Yorifuji Attends World Health Organization Meeting

Associate Professor Dr. Takashi Yorifuji of Okayama University's Graduate School of Environmental and Life Science participated in October 2013 (Lyon, France) as the only expert from Japan in a working group to evaluate the relationship of outdoor air pollution and carcinogenicity under the International Agency for Research on Cancer (IARC) of the World Health Organization (WHO).

Expert members and observers participating in the working group (Dr. Yorifuji is eighth from right in the second row)

The working groups consisted of experts on epidemiology, exposure, bioassays, and mechanisms. Associate Professor Yorifuji was a member of the epidemiology group that was comprised of seven researchers from around the world. The epidemiology group has deliberated the relationship of cancers such as lung cancer to outdoor air pollution, based on worldwide epidemiology papers, and has concluded that "a relationship between outdoor air pollution, in particular particulate matter, and lung cancer has been consistently found and the evidence is sufficient."

The IARC, combining the findings of the epidemiology group, bioassays group and mechanisms group, has classified outdoor air pollution and particulate matter as carcinogenic to humans (Group 1) out of its five levels of carcinogenicity. The results of the evaluation are scheduled to be published on the IARC's website as a WHO monograph.

Associate Professor Yorifuji said that "Air pollution and particulate matter are recognized as having a relationship to lung cancer even in regions with lower levels of air pollution than Japan, such as the United States; we certainly need ongoing measures against air pollution in Japan."

International Agency for Research on Cancer (IARC):
http://www.iarc.fr/

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Feature

Research and applications of iron oxide nanoparticles

From the mysteries of producing red colors in traditional Japanese Bizen stoneware to iron-oxidizing bacteria for lithium ion batteries, Professor Jun Takada is at the forefront of research on innovative iron oxide nanomaterials.

Professor Jun Takada

Professor Jun Takada is at the Graduate School of Natural Science and Technology at Okayama University. "I spent thirty years investigating how craftsman were able to render the beautiful red colors in Bizen and Arita pottery," explains Takada. "This research revealed the important role of iron oxide particles for producing the colors. I am now working on innovative applications of nanometer scale iron oxide materials produced by 'iron-oxidizing bacteria'. I have made a transition from fine ceramics and Bizen stoneware to fuel cells and biotechnology!"

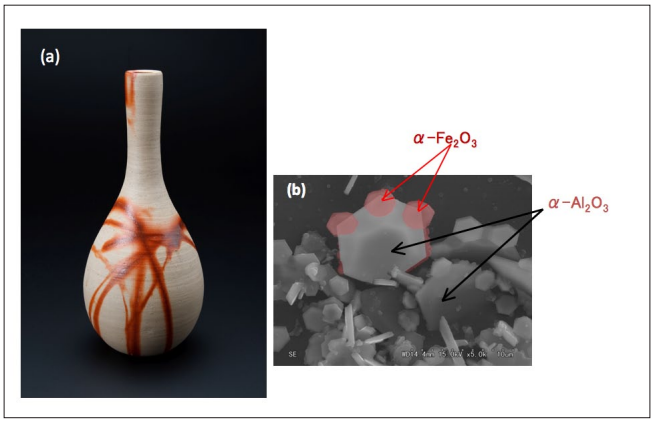

Fig.1 Hidasuki pattern on Bizen stoneware

Bizen ware has a history of more than a thousand years. The pottery has distinctive 'hidasuki' or 'fire-marked' reddish-brown colors(Fig.1) and is produced using iron rich clay mined from rice fields in the Bizen area of Okayama Prefecture. Intriguingly, the red colors are rendered by wrapping straw around the stoneware and not by glazing. But why does the straw, which was originally used to separate pieces of stoneware in kilns, produce the red colors where the straw is in contact with the surface of the clay?

 © Okayama University

"Our research showed the Bizen clay had a high content of iron lesser concentrations of other elements including silicon, calcium, magnesium, and sodium," explains Takada. "The red patterns are produced by the precipitation of corundum (α-Al_2O_3) followed by the formation of hermatite (α-Fe_2O_3) around it during the cooling process."

More specifically, potassium in the straw reduces the melting point of the surface of the Bizen clay, which leads to the formation of an approximately 50 micrometer thick liquid in the surface of the hot clay, where the aforementioned reactions occur. Furthermore, the research identified the formation of sandwich like crystals of α-Fe_2O_3/α-Al_2O_3/α-Fe_2O_3 particles during the reaction in the slow cooling.(Fig.1)

"The main outcome of the research was the importance of hematite in formation of the hidasuki-red patterns," says Takada. "We also found a relationship between the growth of hematite particles and the color of the resulting Bizen ware."

Takada and colleagues also produced so called Al-substituted hematite, where the substitution of Al suppressed grain growth of hematite and the tone color became stronger with increasing aluminum.(Fig.2) They found that particles of about 100 nm produced yellowish

Fig.2 Al-substituted iron oxide- for novel red pigment-

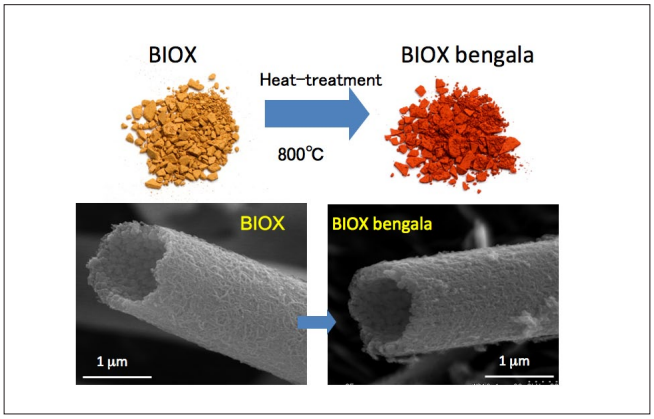

Fig.3 Novel red-colored iron oxide

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red, and larger particles sizes led to red and eventually dark purple colors. This research finally enabled the researchers to produce hematite based powders that do not contain hazardous elements such as chrome or lead, and there by increases the range of applications of these materials, especially producing Aka-e decoration on the over glazed Arita ware.

Inspired by his research on hematite and iron oxide particles for producing red colors, Takada initiated new research on the preparation of nanostructure tubes and fibers of iron oxides—known as biogenous iron oxides (BIOX)(Fig.3)—produced by so-called iron-oxidizing bacteria. "The yellowish brown precipitate found in a groundwater spring is due to the presence of extracellular fibrous bundles produced by iron oxidizing bacteria such as *Leptothrix ochracea*," says Takada. "Our research shows that this otherwise useless looking material has some extremely important applications." Indeed, research by Takada on the physical properties of the BIOX matrix showed this iron oxide to have an amorphous state made of organic/inorganic hybrid structure of ~3 nm sized nanoparticles of a many different elements including carbon, phosphorous, silicon, and iron.

Important applications of BIOX include as an anode material of Li-ion batteries, catalysts, color pigmentation, and innovation based on this materials high affinity to human cells. "Our studies on the formation of BIOX show that extracellular secretion of bacterial polymers triggers deposition and binding of aquatic inorganics such as Fe, Si, and P, which results in the unique organic/inorganic hybrid," says Takada. "This low cost BIOX is an eco-friendly and nontoxic functional material with a wide range of applications, including producing fine ceramics and arts, which are the roots of this research."

Publications

T. Ema, et al, "Robust porphyrin catalysts immobilized on biogenous iron oxide for the repetitive conversions of epoxides and CO_2 into cyclic carbonates", Green Chemistry, 15 , 2485, (2013)

H. Hashimoto, et al, "Nano-micrometer-architectural acidic silica preparaed from iron oxide of *Leptothrix ochracea* origin", Applied Materials & Interfaces, 5, 5194, (2013).

H. Ishihara, et al, "Initial parallel arrangement of extracellular fibrils holds a key for sheath frame construction by *Leptothrix* sp. strain OUMS1", *Minerals*, 3, 73, (2013).

H. Hashimoto, et al, "Preparation, microstructue, and color tone of microtubule material composed of hematite/amorphous-silicate nonocomposite from iron oxide of bacterial origin", Dyes and Pigments, 95, 639, (2012).

J. Takada and H. Hashimoto, "Characteristics of biogenous iron oxide microtubes formed by iron-oxidizing bacteria, *Leptothrix ochracea*" , Handbook of Metal Biotechnology, ed. by M. Ike et al, Pan Stanford Publishing, pp.139, (2012).

T. Suzuki et al, "Environmental microbiology: silicon and phosphorus linkage with iron via oxygen in the amorphous matrix of Gallionella ferruginea

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stalks", Applied and Environmental Microbiology, 78, 236 (2012).

K. Mandai et al, "Iron oxide-immobilized palladium catalyst for the solvent-free Suzuki-Miyaura coupling reaction", Tetrahedron Letters, 53, 329, (2012).

T. Ema et al, "Highly active lipase immobilized on biogenous iron oxide via an organic bridging group: the dramatic effect of the immobilization support on enzymatic function," Green Chemistry, 13, 3187 (2011).

M. Furutani et al, "Initial assemblage of bacterial saccharic fibrils and element deposition to form an immature sheath in cultured Leptothrix sp. strain OUMS1", Minerals, 1, 157, (2011).

T. Sakai et al, "Chemical modification of biogenous iron oxide to create an excellent enzyme scaffold," Organic Biomolecular Chemistry, 8, 336 (2010).

Y. Kusano, et al, "Science in the art of the master Bizen potter", Accounts of Chemical Research, 43, 906, (2010).

H. Asaoka, et al, "Reproduction of Japanese traditional pigment based on iron oxide powders with yellowish red color", Materials Research Society Symposium Proceedings, 712, 435, (2002). ---Al

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Research Highlights

A genetically engineered telomerase-specific oncolytic adenovirus "Telomelysin" eliminates quiescent human cancer stem cells by promoting their cell cycle entry

Growing evidence suggests that small subpopulations of human cancer cells—termed cancer stem cells (CSCs) or tumor initiating cells—are responsible for tumor recurrence. Since chemotherapy and radiotherapy selectively target proliferating cancer cells, quiescent CSCs are resistant against these DNA-damaging modalities. Mobilization of quiescent CSCs is known to sensitize them to cell death signals. Since adenoviruses interact with the cell cycle machinery as part of their replication, Toshiyoshi Fujiwara (Prof. of Okayama U.) and colleagues explored the use of an engineered telomerase-specific oncolytic adenovirus to kill CSCs from human gastric cancers, which they hypothesized might be more effective compared to conventional therapies.

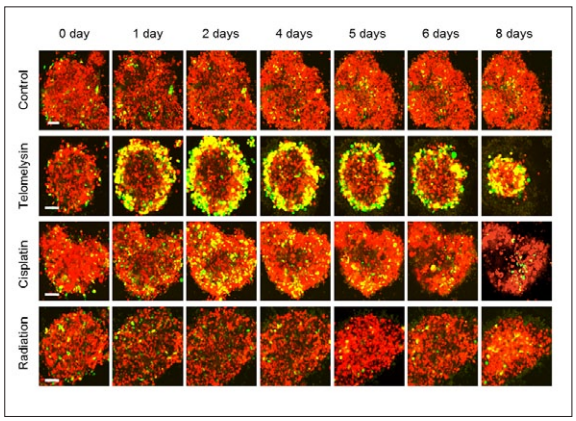

Figure caption: Visualization of eliminating dormant tumor spheres by virus infection. The cells in G0/ G1, S, or G2/M phases appear red, yellow, or green, respectively.

They established $CD133^+$ CSCs from human gastric cancer MKN45 and MKN7 cells and confirmed their stemness properties. They have previously constructed an attenuated adenovirus 5 vector (Telomelysin, OBP-301), in which the telomerase promoter element drives expression of E1 genes, which are responsible for viral replication. Fluorescent ubiquitination cell cycle indicator (FUCCI) system demonstrated that Telomelysin induced cell cycle mobilization from G0/G1 to S/G2/M phase and subsequent cell death in quiescent $CD133^+$ CSCs by mobilizing cell-cycle related proteins. FUCCI also enabled three-dimensional visualization of the cell cycle behavior in tumor spheres showed that $CD133^+$ CSCs maintained stemness by remaining in G0/G1 phase. They demonstrated that Telomelysin mobilized quiescent CSCs in tumor spheres and xenografts into S/G2/M phases where they lost viability and CSC property, and became chemosensitive.

Telomelysin infection is an effective mechanism of cancer cell killing in solid cancer and is potentially a new therapeutic paradigm to eliminate quiescent CSCs. Based on these promising results, they have started a Phase I/II clinical study of Telomelysin with radiotherapy for esophageal cancer. An 82-year-old female was first treated on 29 November 2013, and a total of 12 patients are scheduled to be enrolled in the trials.

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Reference:

- Authors: Shuya Yano, Hiroshi Tazawa, Yuuri Hashimoto, Yasuhiro Shirakawa, Shinji Kuroda, Masahiko Nishizaki, Hiroyuki Kishimoto, Futoshi Uno, Takeshi Nagasaka, Yasuo Urata, Shunsuke Kagawa, Robert M. Hoffman, and Toshiyoshi Fujiwara.
- Title of original paper: A genetically engineered oncolytic adenovirus decoys and lethally traps quiescent cancer stem-like cells in S/G2/M phases.
- Journal, volume, pages and year: Clinical Cancer Research 2013 Dec 1;19(23):6495-505.
- Digital Object Identifier (DOI): 10.1158/1078-0432.
- Journal website: http://clincancerres.aacrjournals.org/content/19/23/6495.long
- Affiliations: Department of Gastroenterological Surgery, Okayama University Graduate School of Medicine, • entistry and Pharmaceutical Sciences.
- Department website: http://www.ges-okayama-u.com/

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Research Highlights

The first recovery of significant rock sections from fast-spreading lower oceanic crust

Three-quarters of the Earth's oceanic crust formed at fast-spreading ridges is composed of plutonic rocks whose mineral assemblages, textures, and compositions record the history of melt transport and crystallization between the mantle and the seafloor.

Despite the importance of these rocks, sampling them *in situ* is challenging owing to the overlying upper crust rocks.

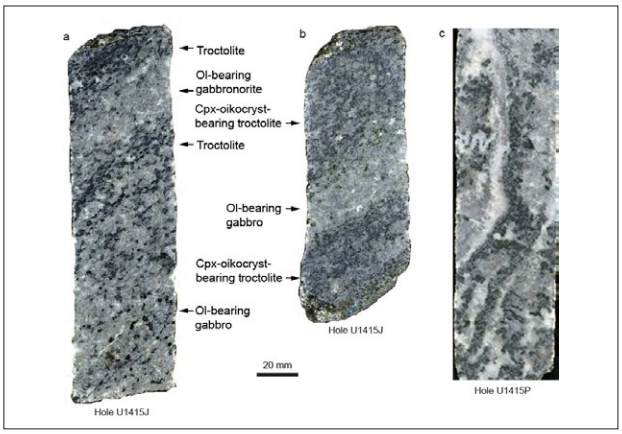

Figure caption: Core images of typical gabbroic rocks recovered during IODP Expedition 345, showing examples of simple modal layering (a, b) and irregular banding (c).

The first cored rocks from the lowermost oceanic crust formed at a fast-spreading ridge were recovered at the Hess Deep rift in the equatorial Pacific Ocean during the Integrated Ocean Drilling Program (IODP) Expedition 345. The scientific party of the expedition, including Dr. T. Nozaka (Department of Earth Science, Okayama University), have analyzed and described the recovered rock samples.

The recovered rocks were observed and analyzed using onboard equipment, including optical microscopy, X-ray diffraction, X-ray fluorescence spectrometry, and inductively coupled plasma atomic emission spectrometry.

The dominant plutonic rock types recovered were olivine gabbro and troctolite with primitive chemical compositions. Cumulate texture and modal layering/banding are prevalent, but mineral assemblage and layering/banding structure are highly variable in these rocks. An unexpected finding is orthopyroxene showing evidence of its early crystallization. Geochemical analysis of the primitive plutonic rocks in combination with that of shallow-level rocks provides the most completely constrained estimate of the bulk composition of fast-spreading oceanic crust so far.

The heterogeneity in mineralogy and structure suggest that compositionally diverse melts are extracted from the mantle and partly crystallize before mixing to produce the more homogeneous magmas that erupt. The findings of this study provide a key to understanding the geochemical evolution of the oceanic lithosphere.

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Reference:

- Authors: K.M. Gillis et al. (IODP Expedition 345 Scientific Party)
- Title of original paper: Primitive layered gabbros from fast-spreading lower oceanic crust.
- Journal, volume, pages and year: *Nature* **505**, 204-207 (2014).
- Digital Object Identifier (DOI): 10.1038/nature12778
- Journal website: http://www.nature.com/nature/journal/v505/n7482/full/nature12778.html

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Research Highlights

Blood Screening Test for Malignant Pleural Mesothelioma

Malignant pleural mesothelioma (MPM) is an aggressive tumor with a poor prognosis. Since both MPM and benign asbestos pleurisy (BAP) are associated with exposure to asbestos with similar symptoms and imaging findings, pathological validation by means of an invasive pleural biopsy of the parietal pleura is strongly necessitated. Therefore, there is a critical demand for a non-invasive test for the detection of MPM.

Junichi Soh, Shinichi Toyooka (Prof. of Okayama U.) and colleagues have previously shown that microRNA-34b/c (miR-34b/c) plays an important role in the pathogenesis of MPM and is frequently down regulated by DNA methylation in approximately 90% of MPM cases (*Clin Cancer Res* 2011). Now, they established a new digital methylation specific PCR (MSP) assay to estimate the degree of miR-34b/c methylation in serum-circulating DNA.

Digital PCR was originally developed as a tool for the amplification of individual molecules for purposes of identifying and counting individual DNA molecule sequence alterations with highly sensitive manner. Here it was applied to determine coding mutations, loss of heterozygosity, SNP polymorphisms and DNA methylation. Researchers' digital MSP assay quantified the degree of miR-34b/c methylation by counting the number of miR-34b/c methylated wells per sample. The degree of miR-34b/c methylation in MPM cases was significantly higher than that in BAP cases or healthy volunteers. In addition, advanced MPM cases tended to have higher degree of miR-34b/c methylation than early MPM cases.

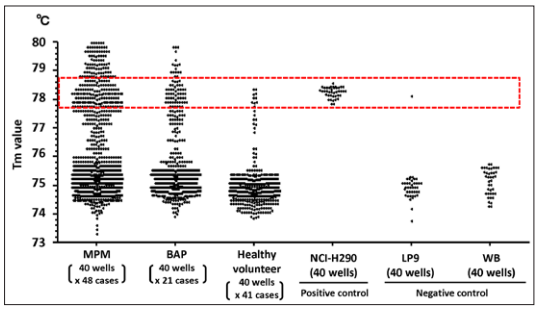

Figure 1 A distribution map showing the Tm values for all wells in all the cases and the positive range for miR-34b/c-methylated well. The positive well for miR-34b/c methylation being bounded by dotted square has the Tm within the mean value ± 3 standard deviations of positive control sample (NCI-H290). WB refers to water blank.

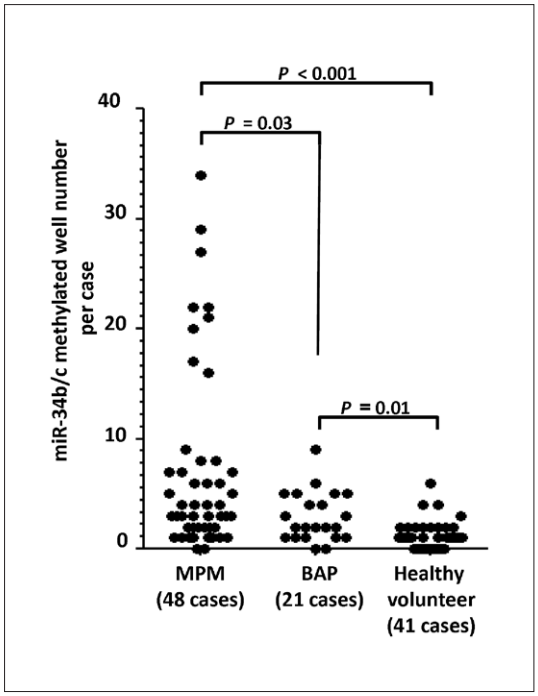

Figure 2 Comparison of the numbers of miR-34b/c methylated wells among three groups.

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The digital MSP assay can quantify miR-34b/c methylation in serum-circulating DNA. This approach is useful for the establishment of a new blood-based diagnosis for MPM.

Reference:

- Authors: Junichi Soh and Shinichi Toyooka
- Title of original paper: The degree of microRNA-34b/c methylation in serum-circulating DNA is associated with malignant pleural mesothelioma.
- Journal, volume, pages and year: *Lung Cancer*, 82, 485-90 (2013)
- Journal website: http://ousar.lib.okayama-u.ac.jp/metadata/52119
- Digital Object Identifier (DOI): 10.1016/j.lungcan.2013.09.017
- Affiliations: Department of Thoracic Surgery, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama, Japan.

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Research Highlights

Cancer stem cell niche: progenies of CSCs maintain properties of CSCs

Cancer stem cells (CSCs) play critical roles in tumor development by giving rise to heterogeneous differentiated cancer cells in a balance with their self-renewal. This property of CSCs is considered to be regulated in the special microenvironment, CSC niche.

However, the contribution of differentiated progenies of CSCs, as components of CSC niche, has not been elucidated.

Now, Prof. Seno and colleagues at Okayama University have shown that differentiated progenies of CSCs promote self-renewal of parental CSCs, and further control differentiation properties of CSCs.

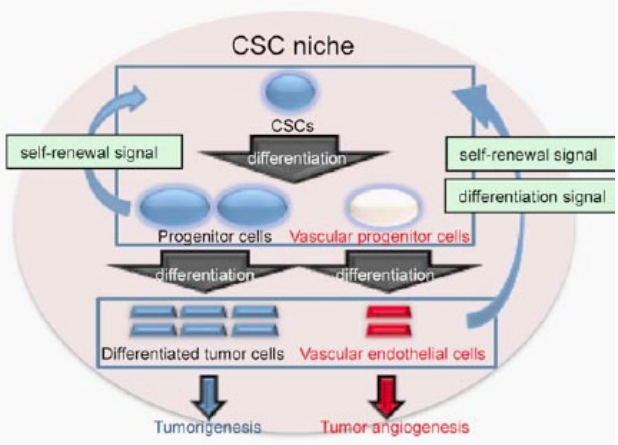

Figure caption: A model of the CSC niche created by CSCs themselves.

Using a mouse CSC model cell line (miPS-LLCcm) derived from mouse iPS cells, the self-renewal capacity of CSCs population of miPS-LLCcm was evaluated by spheroid formation assay in the presence or absence of conditioned medium prepared from miPS-LLCcm bulk culture (CM-ad). And also in vitro differentiation into vascular endothelial cells of miPS-LLCcm was assessed under various conditions.

The self-renewal capacity of CSCs in miPS-LLCcm was enhanced in the presence of CM-ad. Interestingly, vascular endothelial lineage differentiation decreased when the CSCs population of miPS-LLCcm cells was cultured without differentiated progenies.

These results indicate that factor(s) from differentiated cancer cells affected CSC's characters. In this context, progenies of CSCs actively contribute to maintain CSC properties. Thus, CSCs create a niche by themselves.

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Reference:

- Authors:Shuichi Matsuda, Ting Yan, Akifumi Mizutani, Tatsuyuki Sota, Yuki Hiramoto, Marta Prieto-Vila, Ling Chen, Ayano Satoh, Takayuki Kudoh, Tomonari Kasai, Hiroshi Murakami, Li Fu, David S. Salomon, Masaharu Seno.
- Title of original paper: Cancer stem cells maintain a hierarchy of differentiation by creating their niche.
- Journal, volume, pages and year: *International Journal of Cancer* (Epub ahead of print, 2013).
- Digital Object Identifier (DOI): 10.1002/ijc.28648
- Affiliations: Department of Biotechnology, Graduate school of Natural Science and Technology, Okayama University.
- Department website: http://www.gnst.okayama-u.ac.jp/en/dc_division/chem_en.html

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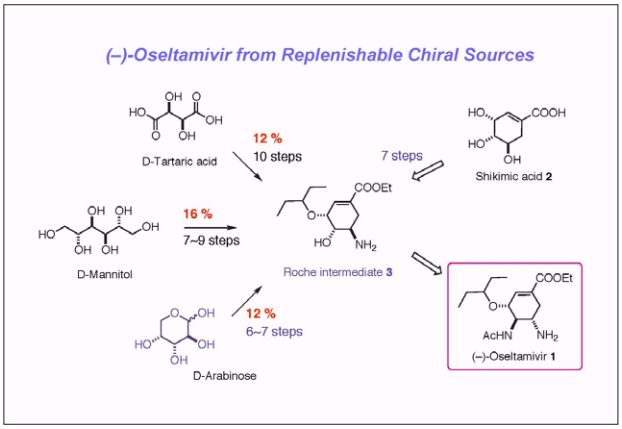
Intellectual Property and Enterprise

New Route for Synthesis of Roche Intermediate for (–)-Oseltamivir from Replenishable Sources

Teruhiko Ishikawa, Graduate school of Education, Okayama University



(–)-Oseltamivir from Replenishable Chiral Sources

The emergence of new flu viruses such as H5N1 had led to increasing concerns about a lethal influenza pandemic. In response to such fears governments can prepare an ample supply or stockpile of oseltamivir phosphate (Tamiflu), an orally active influenza neuraminidase inhibitor currently used for the treatment of influenza A and B viral infection.

Tamiflu is manufactured by the Roche's method starting from (–)-shikimic acid. However, the starting material is a rare, naturally occurring product, the scarcity of which impedes on-demand production as a generic drug. Hence, developing alternative effective methods to synthesize Tamiflu with more reliable sources of starting materials are highly desired. Here, we disclose a new, practical route to the Roche intermediate for Tamiflu synthesis.

Our synthesis method has the following features:

(1) The method utilizes inexpensive and replenishable natural sources such as D-mannitol, D-tartaric acid, or D-arabinose as starting materials, and is thus free from the inevitable disadvantages that the shikimic acid route presents.

(2) The method enables the synthesis Roche intermediate, and subsequently, the synthesis of Tamiflu using established plant scale processes.

(3) Synthetic transformations are conducted in the range of 0 °C to room temperature using safe and inexpensive reagents, which underscores the practicality of this method for application to process chemistry.

US Patent US8524940 B2 (Sep. 3, 2013)

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US & EU Representative of Intellectual Property Office,
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Email: takasenda@okayama-u.ac.jp

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Topics : Letters from alumni

Nan Bin Mad Sahar

Senior Lecturer
Department of Computer Engineering
Faculty of Electrical and Electronic Engineering
Universiti Tun Hussein Onn Malaysia (UTHM)

Viewing cherry blossom with colleagues

Skiing with colleagues

Members of the Suzuki Lab

It seemed like it was yesterday that I posted my application form to the Okayama University post graduate admissions office hoping for a brighter future. The next thing I recalled were memories of the blooming pink Sakura and the azure spring sky that accompanied me at the beginning of my journey to the unknown. I can attest that the journey to acquire the scroll that was my graduation certificate was a hard one. My eventual graduation was proof that I could conduct research, the validity of which was confirmed by objective assessment.

In 2007 I decided to further my studies under the supervision of a very dedicated and wise professor. Indeed, I will forever cherish his kindness in guiding me and I hope that one day, I can be a charismatic professor as him too. Prior to starting my doctoral course I conducted an informal survey of those who had walked the path of a postgraduate student. The question I often asked was, "How did it feel during and after completing the courses?" The answer I often received was that the master's courses were 'hard' and 'easy', while doctorates were hard during and after.

Undeniably it was difficult, challenging, and everything in between. I sum up my experience in the following words: It does not matter where you 'dine' but with whom you 'dine'. And that was what made my experience at Okayama University all the more worthwhile. The people that shaped my university life—the professors, lecturers, administration staff, and especially friends helped mold the person I am now. I owe a debt gratitude to each and every one of them.

It has been three years now, since I left Okayama University. As a university lecturer in southern Malaysia, I have been utilizing all the experiences I had gained while at Okayama University to teach students at my university here in Malaysia. I hope that one day they too will contribute to the society to create a better future.

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Topics : Okayama Travelogue

Contemporary art on islands in the Seto Inland Sea

The Tsushima Campus of Okayama University is a short 15 minute taxi ride north of Okayama Station. A 50 minute train ride in the opposite south westerly direction from Okayama Station leads to Uno Port, where visitors can enjoy spectacular views of the islands of Naoshima, Teshima, and Inujima in the Seto Inland Sea. Intriguingly, in spite of the short 20 minute ferry ride from Uno Port to Naoshima, the island is part of Kagawa Prefecture, in Shikoku.

The Naoshima, Teshima, and Inujima islands are home to inspiring contemporary art museums known collectively as the Benesse Art Site Naoshima opened by Benesse Holdings, Inc. and the Fukutake Foundation in 2004.

One of the highlights of the Benesse Art Site Naoshima is the Chichu Art Museum designed by Japan's Tadao Ando, with most of the buildings being located underground so that the museum blends into the natural beauty of the island. The permanent exhibits include masterpieces by Claude Monet, James Turrell, and Walter De Maria.

The islands are a popular attraction for visitors from all over the world some of whom take the opportunity to stay overnight at one of the wide range of hotels on the islands for a leisurely look at the exhibits and breath taking sites of the inland sea.

Benesse Art Site Naoshima: http://www.benesse-artsite.jp/en/

Guide to Naoshima: http://www.naoshima.net/en/index.php

NOTE: All the photographs in this article were taken in Naoshima.

Chichu Art Museum
Photo: FUJITSUKA Mitsumasa

Yayoi Kusama "Pumpkin"
Photo: Shigeo Anzai

SANAA "Marine Station Naoshima"
Photo: Osamu Watanabe

 © Okayama University

Topics : Club Activities

Okayama University Women's Ice Hockey Club

Members of the Okayama University Women's Ice Hockey Club celebrating after a game.

The women's club was set up in 2007. The Club currently has approximately 16 players and 8 'managers' who look after the players. Notably, all the new members of the club are complete beginners when they join. The students are from many disciplines ranging from medicine to economics.

"A positive attitude with the ability to keep standing up no matter how many time you fall is important to become a good ice hockey player," says Moeko Oda "It's a fast game, with many quick changes, so players must be resourceful and alert and watch your team mates carefully. We are grateful to all the people who support us and provide the facilities to practice and play ice hockey"

The members of the club practice at the Okayama International Skate Rink in Okayama city, and Health Pia, in Kurashiki city. "All the players are also affiliated with the Okayama Ladies Ice Hockey team," explains Moeko. "We regularly practice with the Okayama Ladies well as training by ourselves. The Okayama Ladies team coach helps to train."

The Okayama team has two major tournaments ahead of them. The first one is the Miyabi Cup in March and the other is the All Japan Women's Ice Hockey Tournament. "We have won the Miyabi Cup for two consecutive years," says Moeko. "We are a very bright and lively team. Join us!"

Website:
http://www3.hp-ez.com/hp/icehockeyokayama/

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