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High expectations for breakthrough drug development

We take a drug when we have a headache, fever or a stomachache. There are many types of drug, from over-the-counter drugs to those that require doctor's prescription, and those used when we are hospitalized due to a disease or injury.

These drugs are created using a variety of substance. It is said that about one-third of drugs currently available are based on substances derived from natural products. For example, FK506 (tacrolimus) – an immunosuppressant – is a drug created in Japan based on a substance discovered in the soil of Mt.

Tsukuba.

It is very difficult to create drugs completely artificially. But nature offers an unlimited source of undiscovered substances, which are a great treasury allowing us to explore substances for potential drugs.

Associate Professor Suenaga, featured in this issue, focuses on marine organisms among the many natural resources. Many substances derived from marine organisms are known to have unique chemical structures and biological activity. As such, they are coming to the fore as a major source of substances for candidate pharmaceuticals. Intensive studies on these substances began in the 1970s.

However, the amount of promising substances available from marine organisms is extremely limited. What's

more, their molecular structures are so complex that it is difficult to chemically synthesize them – a major impediment to practical application.

Under such circumstances, "Eribulin" designed and synthesized based on Halichondrin B, which was obtained from a kind of sponge (*Halichondria okadai*), was authorized as an anticancer agent in April 2011. It is Japan's first anticancer agent derived from a marine organism. The discoverer of Halichondrin B is Dr. Daisuke Uemura who belonged to Keio's Faculty of Science and Technology (April 2008 – March 2011).

Studies into substances derived from natural products are on the rise. Expectations are high for the birth of an increasing number of new pharmaceuticals based on such substances.

Science and Technology Information

The KLL Industry-Academia Collaboration Seminar "Exploring Electron Properties!"

Date: February 24 (Fri.), 2012 15:00 ~ 17:30

Place: Multi-purpose Room 1, 2nd floor, Kyosei-kan Bldg. on Keio Hiyoshi Campus

Admission free; Prior applications required

<http://www.kll.keio.ac.jp/>

This is a KLL-organized seminar for industry-academia collaboration. This seminar is intended to introduce research endeavors for the quest of physical properties and workings of electrons which will contribute to the foundation of innovative electronics technology. The seminar will be followed by a social and opinion-exchange meeting. Please apply for participation via the above URL.

Strategic Management Chair for Creating Innovations (a Sony-donated chair) Open Symposium 2011 Toward a New Phase of Development of Humankind and the Future: "The 4th Symposium – Toward the Creation of New Values"

March 2, 2012 (Fri.), 18:00~

Place: Fujiwara Hiroshi Memorial Hall, Kyosei-kan Bldg. on Keio Hiyoshi Campus

Admission free; Prior applications required

<http://www.koukai-sympo.net/portal/>

This is the final open symposium in the 4-event series under the Sony-donated chair which is set in the Graduate School of Science and Technology. Dr. Mario Tokoro, Chairman and CEO of Sony Computer Science Laboratories, Inc., who is also a specially appointed professor of our Graduate School, will preside over the symposium, inviting guests: Mr. Shinichi Takemura (professor of Kyoto University of Art and Design, and representative of Earth Literacy Program) and Dr. Hideaki Koizumi (director-status fellow of Hitachi, Ltd.). Please apply for participation via the above URL.

Editor's postscript

Associate Prof. Suenaga compares his research work to treasure hunting. "My work is to locate 'treasures' which are minuscule amounts of active substances from among the countless organisms living in the immense oceans and foster them," he remarks. During an interview, I found something symbolic of his research life that requires "tenacity and toughness" – large-sized notebooks worthy of at least six years of work that he has been using since he served as a teacher at the University of Tsukuba. His untiring research, based on a long-term perspective, is bound to inspire unprecedented discoveries that will support our good health.



(Saori Taira)



The Yagami Campus in snowscape.

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