TOPIX

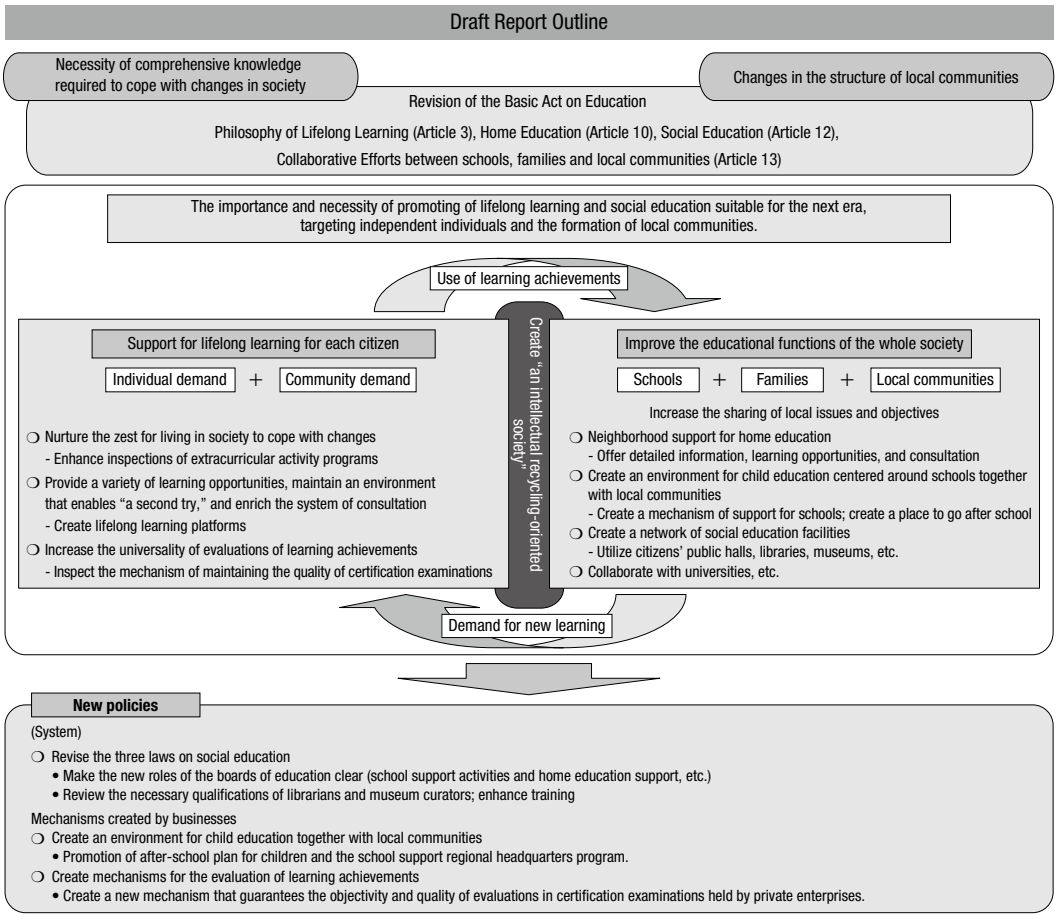
Measures to promote lifelong learning to lead the new era

On 13 June 2005 the Minister of Education, Culture, Sports, Science and Technology consulted with the Central Council for Education on "Measures to promote lifelong learning to lead the new era." The content of the consultation focused on two topics currently much in debate: 1) measures to encourage learning activities of each citizen in the country, and 2) measures to build communities based on the concentrated effort of local residents and to improve the environment in which children grow up at home and in the local community. Taking into account the current system, the consultation highlighted the need to conduct concrete inspections.

After the consultation, the Subdivision on Lifelong Learning of the Council proceeded to examine concrete policies. On 30 January 2007 it compiled an interim report of the progress up to that date and submitted a report on the discussions to the Minister of Education, Culture, Sports, Science and Technology.

In the meantime, the Basic Act on Education was revised in December 2006 for the first time in approximately 60 years in response to changes in the next generation. Starting with the reform of the Philosophy of Lifelong Learning (Article 3), efforts were made to improve regulations concerning lifelong learning and social education such as the Objectives of Education (Article 2), Home Education (Article 10), Social Education (Article 12), Collaborative Efforts between Schools, Families, and Local communities (Article 13), etc.

Based on these movements, the Council's Subdivision on Lifelong Learning continued its deliberation and on 21 January 2008 presented a draft report on its progress. The draft report consists of two parts. Part 1 touches on the demands of society i.e. the increasing necessity and significance of the promotion of lifelong learning, and from there proposes a course of direction and concrete policies that lifelong learning promotion administrations and social education administrations should aim for. Part 1 also specifies the points to consider when proceeding with these policies. On the other hand, Part 2 draws up proposals specifically targeted at personnel in charge of administration and provides a basic philosophy for promoting measures. It addresses the present situation and issues of lifelong learning promotion measures from the perspective of past measures, and then summarizes the philosophy and revisions that should be made with a particular focus on the institutional aspects of administration. Looking ahead, the Subdivision on Lifelong Learning will collect opinions on its draft report and using that result, compile a report some time in February 2008. Based on this report, the Ministry of Education, Culture, Sports, Science and Technology shall revise the three laws on social education and carry out an examination and implementation of concrete policies (For the report by the Central Council for Education or the discussions by its Subdivision on Lifelong Learning, see: http://www.mext.go.jp/b_menu/shingi/chukyo/chukyo2/index.htm).



Topics

Expansion of the time spent with children among teachers

The Basic Act on Education has been modified for the first time in approximately 60 years in December 2006. To realize the principles of education required for a new era, improvements are being made to adopt new systems beginning with the three laws related to education in 2007.

In order for these practices of education rebuilding to take full effect in the future, it is necessary to ensure superior human resources as teachers and to support hard-working teachers, and also schools, families, communities, and the government must work together.

Additionally, from the Survey of Teacher Working Conditions conducted in 2006, it was learned that: a) overtime hours added up to approximately 34 hours per month on average, b) approximately 2 hours on average were spent on work with no direct interaction with children, such as school management and dealing with issues outside schools. Taking these conditions in consideration, expansion of the time spent with children among teachers becomes a pressing issue.

1. Efforts for the budget for fiscal year 2008

With the above situations in consideration, the costs for improving the staffing levels of teachers and other personnel, as well as utilizing human resources outside schools and outsourcing office work has been capitalized within the budget plan for fiscal year 2008.

In working towards improvement in the staffing levels of teachers and other personnel, a) strengthening the school management functions by appointing a Senior Management Teacher, b) improving the support for special needs education (special support service in resource rooms in elementary and lower secondary schools), and c) promotion of dietary education (nutrition teacher) will take place to improve the quorum to 1,195 personnel, where the statistics include an increase of 1,000 personnel.

For the utilization of human resources outside schools, a new program of utilizing retired teachers has recently been established, and 7,000 retired teachers and experienced workers will be placed in schools.

Moreover, in outsourcing office work, the "Regional Headquarters for School Assistance" will be placed in 1,800 locations to promote the regional establishment of a support framework for school education.

2. Efforts for reducing burden at schools

In expanding the time spent with children for teachers, lessening the burden of office work at schools is necessary, for example, by reducing the amount of research and papers from the government and the board of education.

In November 2007, MEXT started the "project team for reducing burdens at schools" with the cooperation of related bodies, and compiled a "midterm summary" in December 7, 2007.

In the "midterm summary," the need for reducing office work related to research and papers has been proposed. Specifically, a careful selection of research items, an improvement of research subjects and research frequency, establishing a contact point for researches conducted by the government and the board of education, and presenting an annual research plan beforehand have all been raised to reduce the overload.

In addition, the revision of methods for research studies (model business) is also a topic currently under discussion. Research studies play an important role of improving the quality of education and contributing to resolve the problem. However, from the viewpoint of lessening the burdens at schools, it needs to reduce the operational burdens by simplifying and rationalizing research classes and reports.

Furthermore, the utilization of Senior Management Teachers and the issue concerning the utilization of ICT are currently under discussion within the project team for overall rational management.

Given the results of the "midterm summary," MEXT will be giving a careful selection of research items for all surveys, and also integrate 12 out of 28 complete enumerations conducted annually.

Topics

How each national university corporation has been making efforts after becoming incorporated

1) Cases that became possible after becoming incorporated (Before, these were impossible from an institutional standpoint)

❍ Recruitment of top researchers at special pay rates
Recruit world top-level researchers by offering special pay
(University of Tokyo)

❍ Introduction of a discretionary labor system
Introduced a professional system of flexible working hours where instructors are free to determine their hours for education and research
(Tokyo Medical and Dental University)

❍ Investment in TLO
- With the purpose of giving back the achievements in research to society in an organized and efficient way, five million yen was invested in Niigata TLO Inc. (Niigata University)
- In order to promote university-industry cooperation (technological transfer), 170 million yen was invested in Todai TLO, Ltd. and over 50% of the total shares issued was acquired, with the aim of integrating business operations with the on campus industry-academia main office. (University of Tokyo)

❍ Introduction of an annual salary system
Apply annual salary system to professors by special invitation whose appointments start in 2006 or later.
Annual salaries reflect the result of a performance evaluation which the president makes every three years. (Japan Advanced Institute of Science and Technology, Hokuriku)

❍ Exemption of school fees for top students
(Before, students needed to have financial difficulties)
Introduced a full-scholarship system for students who achieve top grades
(Yamaguchi University and others)

❍ Employment of business executives with the president's discretionary budget
Recruited Risona Bank Saitama branch manager as an administrative councilor, whose position is equivalent to the head of a department. (Saitama University)

❍ Liberalization in budget implementation
Construct a system of internal advance payments until the scheduled distribution of outside funding. (University of Tokyo and others)

2) Cases that were possible with certain restrictions before, and are now at the complete discretion of the university after becoming incorporated

❍ Hold concurrent posts with enterprises – Side business
- Approve taking positions as executives or external auditors at companies that the university conducts technology or transfers with, subject to proper regulations (University of Tokyo)
- Regard the side business as an official work when the business is offered from local autonomous organizations which is beneficial to the education and research activities of the university, and also that is unpaid. (Miyagi University of Education)

❍ Carry budgets forward to the following fiscal year
Done by all national university corporations

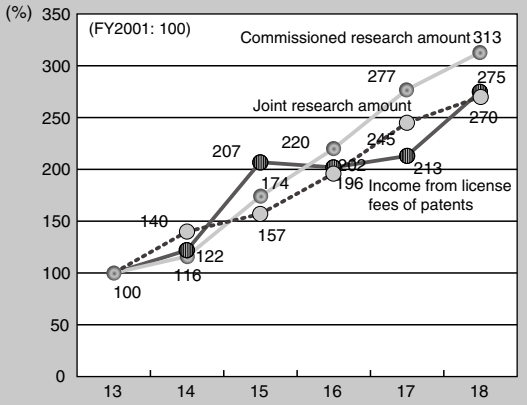
❍ Flexible recruitment of outside personnel
- To use the wide-ranged knowledge of society to the benefit of the university, appoint business management professionals or local top businessmen as members of the management committee (Hokkaido University)
- Based on proposals by members of the management committee who come from outside of the university, establish the "University education – Student services organization" aiming to improve the student service system and ensure smooth operation (Gunma University)

❍ Established new organizations on campus (research center, administrative organization, university-industry cooperation center, overseas administrative office, etc.) and allocated personnel
Regarding human resources, revised the policy on the number of regular staff and introduced a point system where the heads of departments can decide the jobs and number of people within the points allocated to each department. (Gifu University)

3) Cases that were progressed faster after becoming incorporated (1)

❍ Strategic and important resource allocation made under the president's leadership
Set a discretionary budget for the president 87 universities (all universities)
Set a discretionary limit of personnel and budget to the president 71 universities
- Distribute strategic spending allocated to each department based on actual records of activities into three areas: spending to strengthen activities of each department based on the number of applicants for admission and on the contribution to standard education (education part), spending to strengthen activities of each department based on grants-in-aid for scientific research (research part) and discretionary spending of each head of department. (Kanazawa University)
- Regarding expenditures incurred when implementing the fiscal year plan, based on evaluations of progress from each administration officer the president will make decisions on how to ensure that the fiscal year plan is realized in an effective and efficient way and review the allocation of resources (Kochi University)

❍ Active promotion of university-industry cooperation and the acquisition of external funding, etc.
Joint research: FY2001 5,264 cases 11.2bn yen
FY2006 12,405 cases 30.3bn yen
Commissioned research: FY2001 5,701 cases 35.1bn yen
FY2006 10,082 cases 110.2bn yen
Push forward patent registration (FY2001→FY2006)
Invention registration: 2.6 times Income from license fees: 2.8 times
University ventures (FY2001→FY2006) 3.4 times
- As a result of efforts to actively contact companies utilizing internal database on research funds and information in order to expand joint research, commissioned research, donations etc., the number of cases and the income received have increased. (Shinshu University)



(Source) Cabinet Offices (Head of Science and Technology Policy and Innovation) Result of study on the science and technology-related activities among national university corporations and others (FY2006) (November 2007)

Growth in university-industry cooperation

4) Cases that were progressed faster after becoming incorporated (2)

❍ Introduced/expanded tenure system for instructors
FY2000: 44 universities 516 tenured instructors
FY2004: 77 universities 6,957 tenured instructors
In order to increase the mobility of instructors and activate the university, switched to a tenured system in 2005 after gaining agreement from 87% of existing instructors. All new instructors are hired on a tenure basis. (Shiga University of Medical Science)

❍ Improve career support
A head of the career section invited from the private sector through the nationwide open recruitment promotes organized career support activities, working together with full-time staff at the Student Support Center in cooperation with academic departments. (Ehime University)

❍ Focus on researches that meet the characteristics of the university and society's needs.
- Under the cooperation with local mold-related companies, created the Major of Die-Mold and Casting Engineering in the graduate research course on engineering. Actively take in working people and increase practical education. For that major, invite experienced personnel from local companies to give instructions, thereby building a close relationship, and award masters degrees. (Iwate University)
- Created the Department of Tourism Sciences in April 2005. In addition to receiving offers of a "Donation course," implement the "Short-term Overseas Study Program for Senior Citizens" in cooperation with travel agencies and the "Tourism and Enterprise Support Course" in cooperation with Okinawa Industry Support Center, the Employment Activation Organization, and others (University of the Ryukyus)

❍ Improve education quality and examine the results of education
- Students, instructors and staff work together to reform the curriculum in the future (Okayama University and others)
- Conduct survey on educational outcomes from alumni and employers and examine the results of education (Akita University and others)

Measures for an Urgent Increase of Doctors

In light of the recent summary on "Measures for an Urgent Increase of Doctors" on 31 May 2007 by the government and ruling parties in response to the current shortage of doctors in regional areas and certain hospital diagnosis departments, on 30 August the Ministry of Education, Culture, Sports, Science and Technology; the Ministry of Health, Labour and Welfare; and the Ministry of Internal Affairs and Communications have arranged to accelerate measures that will secure the number of doctors in regional areas. These measures will be done through specific efforts such as promotion of training for doctors in charge of local medical care centers and expansion of student's quotas in medical schools.

Increasing the enrollment limit of medical schools, concerning "Measures for an Urgent Increase of Doctors"

❍ **Temporary and urgent increase of doctor training in all prefectures**

Number to be increased: Maximum 5 for each prefecture (for Hokkaido up to 15 due to serious shortage)

Period: Starting in 2009 and lasting up to 9 years (for local public universities, starting in 2008 and lasting 10 years)

Condition: terms of scholarship (required to work within that prefecture for at least 9 years after graduation (1.5 times the period covered by the scholarship))

Universities: Implement programs that train doctors to be in charge of local medical care centers.

❍ **Increase the training of doctors in prefectures that have few doctors in training**

Target: (i) Wakayama Prefecture - Wakayama Medical University ※ Total number of doctors in training in the prefecture is under 80

(ii) Kanagawa Prefecture - Yokohama City University ※ Prefecture where enrollment limit of the Medical Department is under 80.

(The number of medical students currently enrolled is 60 for both universities)

Number to be increased: Up to 20

Period: possible starting in 2008, permanent measure

Condition: prefectures need to take measures such as increasing training, similar to those taken last year by the 10 prefectures with doctor shortages in order to get doctors to stay (scholarship terms, etc.) .

Measures for an Urgent Increase of Doctors (Government and ruling parties, 31 May 2007) (excerpt)

6. Expand training for doctors to work in regions or hospital diagnosis departments with doctor shortages

In response to the shortage of doctors in specific regions or hospital diagnosis departments, we will use scholarships to immediately and temporarily increase the number of doctors in training in order to ensure the allocation of doctors in regional areas and hospital diagnosis departments determined by the prefectures. In addition, to raise the number of doctors in regional areas we plan to expand regional frameworks in medical schools and increase the number of doctors in training in prefectures where this figure is low. We will also carry out inspections of the medical organization system that provides clinical training.

(Reference) Ministry of Health, Labour and Welfare Homepage

Measures for an Urgent Increase of Doctors (31 May 2007)

http://www.mhlw.go.jp/topics/bukyoku/isei/kinkyu/dl/taisaku01.pdf

Efforts concerning "Measures for an Urgent Increase of Doctors" (30 August 2007)

http://www.mhlw.go.jp/topics/bukyoku/isei/kinkyu/dl/taisaku03.pdf

Global COE Program

1. Background and purpose of the program

As globalization progresses and global competition intensifies in our society today, it is necessary for Japanese universities to promote the global competitiveness, and to carry out top-level education research programs in the world. As part of the government's effort to reform the universities in this direction, in FY2002 MEXT inaugurated the "21st Century COE Program" to support the establishment of world-class universities. Based on these results and by inheriting the basic concept of this program, the "Global COE Program" was launched in FY2007 ,putting more emphasis on the importance of young researchers fosterage and the internationality of the educational bases, and to further enhance and strengthen the education research functions of Japan's graduate schools. This program especially supports the establishment of globally outstanding education research bases.

2. Selection of the base

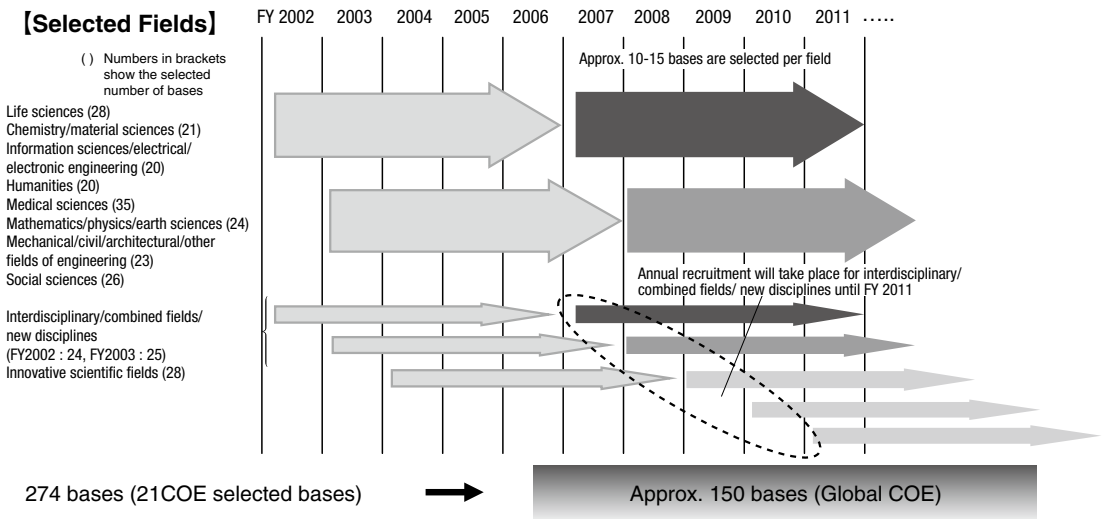
Those appropriate to apply for this program include graduate (doctoral course) level majors of all fields, (from the perspective of promoting cooperation with excellent research institutions, activities undertaken in partnership with other universities are also covered) and the application must be submitted by the president based on the strategy as a university about how it will grow into a global education research base, under a management structure centered on the president. The bases are selected by a committee of experts and intellectuals called the "Global COE Program Committee," which is run mainly by the Japan Society for the Promotion of Science (JSPC), in a fair and impartial third-party evaluation. Funding support of 50 million to 500 million yen will be granted for each program per fiscal year over a five-year-period for the selected base. A midterm evaluation will take place 2 years after the commencement of the program, and an ex-post evaluation will take place at the end of the program.

3. Results of selection

63 programs from 28 universities were selected from 281 programs from 111 universities in the five fields that were open for recruitment in FY 2007, which consists of life sciences, chemistry/material sciences, information sciences/electrical/electronic engineering, humanities, and interdisciplinary/combined fields/new disciplines.

As for FY2008, an open recruitment is planned for the five fields of medical sciences, mathematics/physics/earth sciences, mechanical/civil/architectural/other fields of engineering, social sciences, and interdisciplinary/ combined fields/ new disciplines.

Global COE Program Master Plan



Topics

Management improvement support for private universities and junior colleges

<The state surrounding school juridical persons>

In Japan, approximately 80% of all students attending universities and junior colleges are enrolled in private schools. Private universities and junior colleges provide attractive programs for students of all backgrounds, and play an important role in promoting Japan's education research.

On the other hand, the management environment of private universities and junior colleges are currently undergoing a difficult situation as a whole, with the recent impact of the declining birthrate. In order for these institutions to keep providing high-quality education research in the future, it is necessary for school juridical persons to build up a stable management base. For this reason, school juridical persons are working towards management improvements through various efforts, and MEXT is providing private universities and junior colleges with management instruction and counseling, while giving respect towards their autonomy.

<Efforts of school juridical persons for management improvement>

In March 2007, MEXT put together the "Case studies for strengthening university management: A guide towards successful university management" by delegating the task to the Promotion and Mutual Aid Corporation for Private Schools of Japan. This report was formed by putting together various management improvement reinforcement cases that were successful among national, public, private universities and junior colleges, and contains many cases related to private universities and junior colleges.

<Support of management improvement by MEXT>

Along with the establishment of the "Management training office for school juridical persons" in 2003 to improve the training/consulting framework, "Measures for school juridical persons with management difficulties" has also been put together based on the pillars of "Respect of independence of private schools" and "Securing learning opportunities for students," and was published in May 2005.

Moreover, starting in 2007 a new budget has been created for the "Special support budget for the promotion of improving under-enrollment" (budget of approx. 400 million yen for FY2007) as a subsidy to support current expenditures for schools such as private universities. Since 2007, this subsidy has been applied to schools, including private universities, which have shown efforts in improving and increasing the efficiency of their management on a school-wide scale to deal with under-enrollment. Ongoing support will be given to school juridical persons for their independent efforts towards management improvement.

Efforts of school juridical persons for management improvement

*taken from the "Case studies for strengthening university management"

Management improvement with president's leadership

Proactive efforts for management improvement with the cooperation of school personnel made possible through the president's active participation in meetings and by listening to the opinions of school personnel.

Improving and strengthening quality of education

Provide education in the interest and concerns of students through the teacher assessment system, carrying out small class education and career education, and reorganizing faculties and departments.

Strengthening student recruitment activities

Secure more students by improving the school prospectus, entrance exam reforms and strengthening job-hunting support.

Securing other sources of income

Secure sources of income other than student payment by strengthening the call for donations and developing profitable businesses.

Measures by MEXT and the Promotion and Mutual Aid Corporation for Private Schools of Japan

MEXT

Management Training Office for School Corporations

Guidance and counseling for ensuring sound management of school corporations.

Committee System for Examining Management of School Corporations

Survey on managerial, operational and financial conditions by commissioners such as private school experts and certified public accountants.

"Measures for school corporations with management difficulties" (May 2005)

Sorts out policies on guidance and counseling for avoiding financial strain and on response to management difficulties, based on the "respect and independence of private schools."

Promotion and Mutual Aid Corporation for Private Schools of Japan

Consulting Center for Private School Management

Provides management analysis and counseling upon request by school corporations.

"Management reform of private schools and response to management difficulties" (August 2007)

Guidance and counseling for improving management based on quantitative indicators. Display model checklists for school corporations to self-check management status.

Development of a "highly visible research center"
–World Premier International Research Center (WPI) Initiative

Background:

Over recent years, global competition in recruiting the best and brightest researchers has intensified. To maintain and improve Japan's scientific and technological standing, we will need to position ourselves within the global flow of outstanding human resources while creating research platforms that will naturally attract and amass such human resources in Japan.

Given this imperative, it is the aim of the WPI Initiative to establish research centers of high caliber that will win high esteem throughout the world for the outstanding results they produce. Like Bio-X at Stanford University, the MIT Media Lab, Janelia Farm at Howard Hughes Medical Institute (HHMI), or MRC Laboratory of Molecular Biology in the United Kingdom, these research centers should be capable of attracting frontline researchers from around the world and of advancing research that integrates cutting-edge fields while pioneering new domains of scientific pursuit.

Program Overview:

Based on the 3rd Science and Technology Basic Plan and a long-term strategy initiative "Innovation 25," this initiative aims, through focused support on advanced research institutions in Japan and promoting the independent measures of each institution such as bringing in organizational reforms and others, to establish "globally visible research centers" which attract world-class researchers willing to work in a superb research environment.

Program Content:

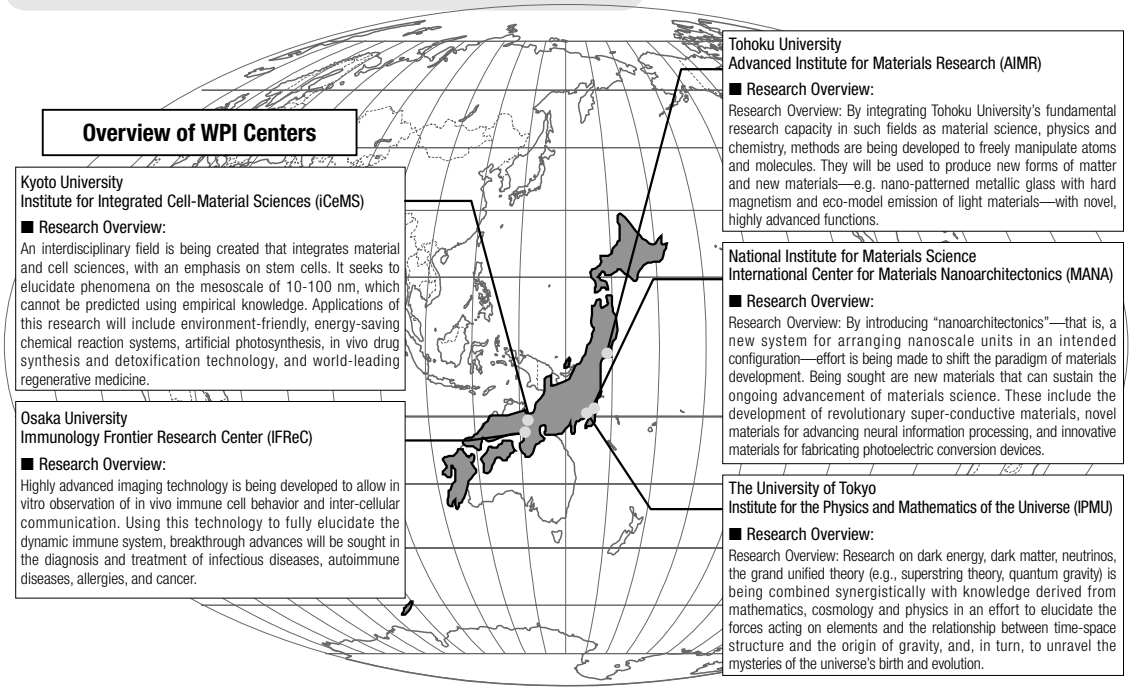
❍ High caliber research = Critical mass (a mass over a certain limit) of outstanding researchers
- Bringing together top-level researchers within a host research institution in the research field in which Japan is strong.
- Inviting top-notch researchers from all over the world

❍ Attractive research environment of top international standard
- Strong management system and director leadership.
- Use of English, performance-based remuneration system
- Strong support functions
- Facilities and equipment appropriate for a top world-level research center

❍ Open recruitment for FY2007
Support period: 10 years (Interim evaluation at every five years)
*Possible 5-year extension for projects with outstanding results

- Bring universities and research institutions to the world standard.
- Fostering world–class researchers through globally competitive research environment
- Creating seeds of innovation by advancing cutting-edge research

Overview of WPI Centers



Kyoto University
Institute for Integrated Cell-Material Sciences (iCeMS)

■ Research Overview:

An interdisciplinary field is being created that integrates material and cell sciences, with an emphasis on stem cells. It seeks to elucidate phenomena on the mesoscale of 10-100 nm, which cannot be predicted using empirical knowledge. Applications of this research will include environment-friendly, energy-saving chemical reaction systems, artificial photosynthesis, in vivo drug synthesis and detoxification technology, and world-leading regenerative medicine.

Osaka University
Immunology Frontier Research Center (IFReC)

■ Research Overview:

Highly advanced imaging technology is being developed to allow in vitro observation of in vivo immune cell behavior and inter-cellular communication. Using this technology to fully elucidate the dynamic immune system, breakthrough advances will be sought in the diagnosis and treatment of infectious diseases, autoimmune diseases, allergies, and cancer.

Tohoku University
Advanced Institute for Materials Research (AIMR)

■ Research Overview:

Research Overview: By integrating Tohoku University's fundamental research capacity in such fields as material science, physics and chemistry, methods are being developed to freely manipulate atoms and molecules. They will be used to produce new forms of matter and new materials—e.g. nano-patterned metallic glass with hard magnetism and eco-model emission of light materials—with novel, highly advanced functions.

National Institute for Materials Science
International Center for Materials Nanoarchitectonics (MANA)

■ Research Overview:

Research Overview: By introducing "nanoarchitectonics"—that is, a new system for arranging nanoscale units in an intended configuration—effort is being made to shift the paradigm of materials development. Being sought are new materials that can sustain the ongoing advancement of materials science. These include the development of revolutionary super-conductive materials, novel materials for advancing neural information processing, and innovative materials for fabricating photoelectric conversion devices.

The University of Tokyo
Institute for the Physics and Mathematics of the Universe (IPMU)

■ Research Overview:

Research Overview: Research on dark energy, dark matter, neutrinos, the grand unified theory (e.g., superstring theory, quantum gravity) is being combined synergistically with knowledge derived from mathematics, cosmology and physics in an effort to elucidate the forces acting on elements and the relationship between time-space structure and the origin of gravity, and, in turn, to unravel the mysteries of the universe's birth and evolution.

Topics

Creation of iPS cells (induced Pluripotent Stem cells) from human skin cells successful

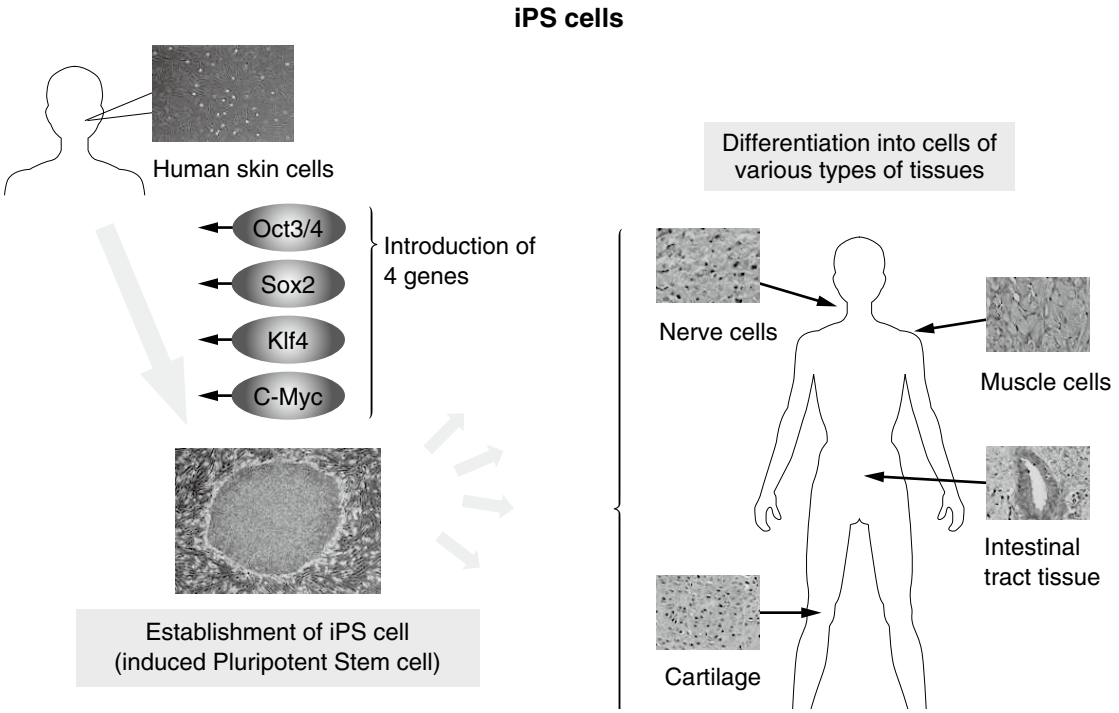
In November 2007, Kyoto University's Professor Shinya Yamanaka announced his success in creating iPS cells (induced Pluripotent Stem cells) that have the potential to differentiate into various types of human cells and tissues such as nerves, bones, and viscera, from human skin cells. This is the first achievement in the world following the success with mice presented in August 2006.

A zygote differentiates into all types of human cells and tissues such as nerves, the myocardium, and cartilage; as a result, our bodies are formed. We call the ability of a cell to differentiate into various types of cells that form the human body as "pluripotency", and once the cell has differentiated into cells of skin tissues etc., it loses its pluripotency and cannot become a cell of other tissues. However, Professor Yamanaka's team has succeeded in regaining the pluripotency by introducing four genes (later proved possible with three) into human skin cells that had previously lost this pluripotency.

With further progress in this research, the generation of cells of various tissues such as nerves and muscles from patients' cells will be made possible. The obtained tissues can be used as regenerative medicine (cell transplantation therapy) to treat diseases such as skin damage, spinal cord injury, juvenile-onset diabetes, myocardial infarction, leukemia, osteoporosis, and others.

Traditionally, ES cells (Embryonic Stem cells) have been used for research of regenerative medicine. However, ethical issues do exist, because the ES cells were produced by destroying a human embryo, the beginning of a human life. Additionally, given that tissues were generated from cells that contain genetic information of someone else, there were risks of immunological rejections. However, iPS cells are capable of avoiding these problems as they are generated from the patient's own somatic cells, and thus are expected to contribute to the realization of regenerative medicine.

Furthermore, it will be possible that drug candidate materials are evaluated by examining toxicity and efficacy by using cells differentiated from iPS cells. This is expected to be a highly effective step for the development of new drugs.



The First Fundamental Lunar Explorer since the Apollo Program

On 14 September 2007 “KAGUYA” (SELENE), a lunar orbiting satellite, launched by the H-IIA rocket F13 from the Tanegashima Space Center.

KAGUYA will investigate the origins and evolution of the moon and aim to pave the way for scientific development of the moon while compiling various types of data and demonstrating the fundamental technologies that will be necessary for scientific consideration of the possibility of lunar surface activities and use of the moon in the future. SELENE (KAGUYA) is comprised of approximately three tons of matter and has a diameter of approximately five meters. When all of its solar battery panels are open it covers an area of approximately thirteen tatami mats. This plan has received attention from around the world as it the first fundamental large scale exploration of the moon since the Apollo program.

KAGUYA will investigate the moon with fourteen types of observation devices, which measure the information on its surface and sub-surface structure, the remnant of its magnetic field, and its gravity field. This information will help in explaining the origins and evolution of the moon. Additionally, KAGUYA will observe the environment surrounding the moon, including high energy particles, plasma, and others.

KAGUYA is composed of the main satellite and two small satellites, nicknamed OKINA and OUNA. The main satellite will remain in orbit around the moon and conduct overall measurements of the moon, while the two small satellites will separate from the primary satellite and will remain in communication with the primary satellite as they conduct the first ever measurements of the gravity field on the dark side of the moon. In addition, onboard the KAGUYA there is a name sheet listing the names and messages of approximately 410,000 people in Japan and abroad who have expressed an interest in KAGUYA and in the moon.

KAGUYA successfully attained an orbit around the moon on 4 October 2007 and successfully achieved separation of its two small satellites OKINA and OUNA, and initiated orbital observations on 18 October 2007. Furthermore, on 7 November 2007 the first ever successful high vision camera filming of “Earth Rise” and “Earth Set” were filmed. Going forward from now confirmations will be made of the initial operating functions of the various observation devices and comprehensive observations will be conducted.

In the future, it is expected that the information gathered by KAGUYA will be used in various research fields and will help to identify the origin and the evolution of the moon.

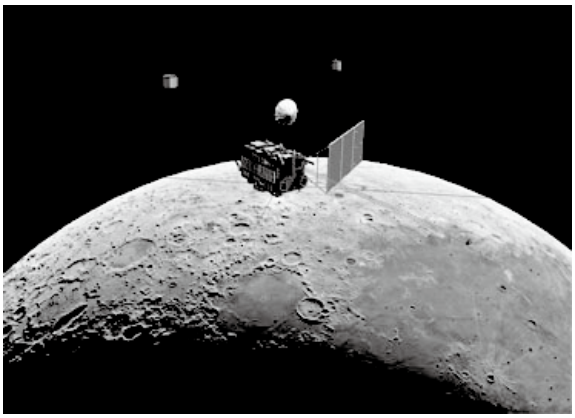


Image of the lunar orbiting satellite “KAGUYA” (SELENE)
(Source: The Japan Aerospace Exploration Agency (JAXA))

High vision image of the Earth taken from the lunar orbiting satellite
(Source: The Japan Aerospace Exploration Agency (JAXA) and
Japan Broadcasting Corporation (NHK))

Topics

Nankai Scientific Drilling - In pursuit of a breakthrough in large earthquake occurrence mechanisms -

After its completion on July 2005 and upon ending its trial operation, the deep-sea drilling vessel "Chikyu" from Japan Agency for Marine-Earth Science and Technology, while being intently watched over by the local citizens, embarked on its full-scale scientific operation on September 21 2007, leaving the Shingu Port (Shingu City, Wakayama prefecture) for the Kumano-nada area, off the coast of Kii Peninsula (approximately 80km off the shore of South East Shingu city).

Chikyu is 210m long and 57,087 tons, and it has a derrick that towers in the center of the ship with a height of 130m from the bottom of the vessel. In addition, Chikyu is equipped with a riser drilling system that enables it to drill from the depth of approximately 2,500m (4,000m in the future) under water to 7,000m under the seabed, as well as research space equipped with the latest research equipments, making it the world's largest and most superior performance scientific drilling vessel.

Currently, as an international project lead by Japan and the U.S., the Integrated Ocean Drilling Program (IODP) that will investigate environmental changes as well as the internal structure of the earth by drilling the deep seafloor is being moved forward. Within this international project, Japan has started the "Nankai Trough Seismogenic Zone Experiment" (Drilling plan of Nankai Trough Seismogenic Zone) from September 2007, using Chikyu as a flagship. The Nankai trough is a plate subduction zone located from off Tokai to off Shikoku. The main object is to understand the mechanism of a large earthquake by directly drilling one of the world's most active large earthquake zones.

On this Nankai drilling project, research on the Nankai trough will be conducted in steps by dividing it into four different stages. Through the application of Chikyu's drilling ability we will collect geological samples that will be a key to understanding the earthquake mechanism by deep drilling areas that no one has reached such as the fault branches (approximately 3,500m under the seabed) or plate boundary faults (approximately 6,000m under the seabed) of severe large earthquake zones. In addition, there are plans for long-term observations by setting measuring instruments within the bore hole of the drilling such as seismometers, strainmeters, and temperature sensors. Through these efforts, it is hoped that the great scientific discoveries such as the unveiling of the mechanism of severe earthquakes or searches for unexplored organisms will be shown. For more up-to-date information about Nankai drilling or Chikyu, please see http://www.jamstec.go.jp/chikyu/eng/index.html.

Deep-sea drilling vessel "Chikyu"
(Provided by: Japan Agency for Marine-Earth Science and Technology; courtesy of Asahi Air Co., Ltd)

Topics

The Project to support the career choice in sciences for junior/ senior high school girls

In Japan, female researchers account for only 12.4% of the research community, which is extremely low compared to other countries. Therefore, promoting activities of female researchers is one of the most important issues to achieve Japan as a nation based on creativity of science and technology and gender-equal society.

MEXT has been taking various measures to promote the activities of females in the fields of science and technology. In particular, "Project to support the career choice in sciences for junior/senior high school girls" has come into effect since FY2006 in order to provoke their interests in science and technology at the point of primary and secondary education.

This project provides opportunities for junior/senior high school girls to consider science and technology as their career choices through interactions with female researchers, engineers, and university students; or through classroom laboratories and delivery classes.

<Project Examples>

Hokkaido University: "Let's Science!" Girls, Be Ambitious!

Female undergraduates and graduates, who could be the closest role models to female junior high school students, show the excitement and enjoyment of working at research sites to them through events such as research presentations, demonstrations, and booths.

Pictures of the event held at Nishitobetsu junior high school.