Evaluation of Research Activities at Tohoku University and Means to Increase our International Presence

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Vice President
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June 3, 2010
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   Education, Research, Social Contribution,
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     University Association

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1 Outline of Tohoku University

History
Tohoku University was founded in 1907 as the third imperial University of Japan, following the Tokyo imperial University and Kyoto imperial University.

Mission Statement
Tohoku University is committed to the “Research First” principle and “Open Door” policy since its foundation, and is internationally recognized for its outstanding standards in education and research. The university contributes to world peace and equity by devoting itself to research useful in the solutions of societal problems and for the education of human resources in the capacities of leadership.

Organization
Faculties(10) Graduate Schools(16)
Professional Graduate Schools(3) Research Institutes(5)
Administration Bureau, University Library, University Hospital, Inter-Department Institutes for Education and Research, University Collaborating Institutions

Number of Students
18,478
(as of May 1, 2009)

Number of Faculty and Staff Members
5,756
(as of May 1, 2009)
② Inoue Plan 2007

- Tohoku University Action Plan, introduced in March 2007
- Aim to be ranked within the top 30 universities globally within the next 10 years
- Focused on five key areas (Education, Research, Social Contribution, Campus Environment and Organization/Management)
- Revised annually according to the changing environment and the steady progress
Education

Improve the Quality of our Liberal Arts Education

“Student Learning Advisor” System

~ Support freshmen learning by senior students ~

(photo at University of California, Berkeley)

Japanese University Ranking 2010
by Asahi shimbun Publications Inc.

Having a good reputation among high schools,
Tohoku University is 1st!
Internationalize Education

Training students capable of playing active roles in international fields

Study Abroad Program
at University of Sydney (Australia)

Practical English course

Project for Establishing Core Universities for Internationalization (Global 30)

16 Courses taught in English

<table>
<thead>
<tr>
<th>3 Undergraduate Courses</th>
<th>International Mechanical and Aerospace Engineering Course Undergraduate</th>
<th>October 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Advanced Molecular Chemistry Course</td>
<td>October 2011</td>
</tr>
<tr>
<td></td>
<td>Applied Marine Biology Course</td>
<td>October 2011</td>
</tr>
<tr>
<td>13 Graduate Courses</td>
<td>International Doctoral Program in Engineering, Information Sciences and Environmental Studies</td>
<td>October 2001</td>
</tr>
<tr>
<td></td>
<td>International Graduate Program for Advanced Science</td>
<td>October 2004</td>
</tr>
<tr>
<td></td>
<td>International Graduate Program in Human Security</td>
<td>April 2005</td>
</tr>
<tr>
<td></td>
<td>International Program for Environmental Sustainability Science</td>
<td>October 2009</td>
</tr>
<tr>
<td></td>
<td>International Mechanical and Aerospace Engineering Course-Graduate</td>
<td>October 2010</td>
</tr>
<tr>
<td></td>
<td>International Materials Science and Engineering Course</td>
<td>October 2010</td>
</tr>
<tr>
<td></td>
<td>International Program in Economics and Management</td>
<td>October 2010</td>
</tr>
<tr>
<td></td>
<td>Information Technology Course</td>
<td>April 2011</td>
</tr>
<tr>
<td></td>
<td>International Course of Life Sciences</td>
<td>April 2011</td>
</tr>
<tr>
<td></td>
<td>Interface Oral Health Science Course</td>
<td>October 2011</td>
</tr>
<tr>
<td></td>
<td>Network Medicine Course</td>
<td>April 2012</td>
</tr>
<tr>
<td></td>
<td>Basic Medicine Course</td>
<td>April 2012</td>
</tr>
<tr>
<td></td>
<td>International Graduate Program in Language Sciences</td>
<td>October 2013</td>
</tr>
</tbody>
</table>

Support Systems for International Students

- Establish the President Fellowship
- Found the overseas office in Russia for shared utilization by universities
- Secure the houses for international students
Increase Competitive Research Fund

**Reduction in Management Expenses Grants (MEG)**

- 2004: $543 million
- 2005: $545 million
- 2006: $540 million
- 2007: $519 million
- 2008: $507 million

$36 million reduction

**Growth in Externally Funded Grants and Contracts**

- 2004: $232 million
- 2005: $255 million
- 2006: $301 million
- 2007: $336 million
- 2008: $376 million

$144 million growth
## Grants-in-Aid for Scientific Research <KAKENHI>

<table>
<thead>
<tr>
<th>Institution Name</th>
<th>Number of Projects</th>
<th>Amount of Grants (in millions of dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Direct funding</td>
</tr>
<tr>
<td>1 The University of Tokyo</td>
<td>3,090</td>
<td>199</td>
</tr>
<tr>
<td>2 Kyoto University</td>
<td>2,403</td>
<td>115</td>
</tr>
<tr>
<td>3 Osaka University</td>
<td>2,016</td>
<td>86</td>
</tr>
<tr>
<td>4 Tohoku University</td>
<td>1,969</td>
<td>83</td>
</tr>
<tr>
<td>5 Kyushu University</td>
<td>1,480</td>
<td>49</td>
</tr>
<tr>
<td>6 Hokkaido University</td>
<td>1,390</td>
<td>48</td>
</tr>
<tr>
<td>7 Nagoya University</td>
<td>1,331</td>
<td>52</td>
</tr>
</tbody>
</table>

“Allocation of KAKENHI 2009”
Ministry of Education, Culture, Sports, Science and Technology (MEXT) Feb.1,2010

## Research Hubs in Tohoku University

- **World Premier International Research Center Initiative (WPI Program)**
  
  Advanced Institute for Materials Research (WPI-AIMR)

- **Global COE (Centers of Excellence) Program**
  
  12 programs, 8 fields

- **Funding Program for World-Leading Innovative R&D on Science and Technology (FIRST)**
  
  Micro System Integration Center
  Center for Spintronics Integrated systems

(WPI-AIMR Integration Lab Building)
Social Contribution

Publicize research and educational results to the general public

Science Café／Liberal Arts Salon

Local residents (high school students etc.) are invited to join university academics to contemplate a variety of science-related topics and thereby become more closely acquainted with science.
Open University Facilities to the Public

Tohoku University Centennial Hall (Kawauchi Hagi Hall)

Campus Environment
Tohoku University now takes big leaps into the next 100 years by positioning the Aobayama New Campus Development as momentum for accomplishing development.

Cut CO2 emissions by 10% between 2008 and 2012 (2% annual reduction)

- Introduction of an environmental management system aimed at creating an environmentally friendly eco-campus
- Steady implementation of the “Tohoku University plan to reduce greenhouse gas emissions”
Organization/Management

“Enterprise of Knowledge”
Establish a Management Infrastructure

- Acquire and Utilize Human Resources
  - Acquiring a diverse range of human resources
  - Create a new personnel affairs system for Tohoku University
  - Implement an evaluation system

- Reimburse Risk
  - Management System
  - Ensure Strict Compliance

- Strategic Management of Human and Material Assets

- System of University Administration for International Competitiveness

- University Administration with a Sense of Unity among Tohoku University Faculty and Staff, Students, and the Local Community
  - Stable, independent financial foundation
  - Strategic investment
  - Significantly expand the Tohoku University Endowment Fund
  - Reinforce the financial foundations of the University Hospital
**System of University Administration for International competitiveness**

**Secure the High-Quality Professors**
- Distinguished Professor
- Professors who are leading in the fields of education, research, social contribution

**Reinforce the Financial Foundations**
- Improvement of the Quality of Education and Research
- Expansion of Student Support Systems
- The Aobayama New Campus

**Nurture talented young researchers**

**Reinforce Governance Structure**

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### 3 Tohoku University in the World (1)

#### QS/THES 2009

<table>
<thead>
<tr>
<th>World rank</th>
<th>Peer review</th>
<th>Citations per faculty</th>
<th>Faculty/students</th>
<th>Recruiter review</th>
<th>International faculty</th>
<th>International students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvard</td>
<td>1</td>
<td>100</td>
<td>100</td>
<td>98</td>
<td>100</td>
<td>85</td>
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<tr>
<td>Cambridge</td>
<td>2</td>
<td>100</td>
<td>99</td>
<td>55</td>
<td>80</td>
<td>100</td>
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<tr>
<td>ETHZ</td>
<td>20</td>
<td>97</td>
<td>89</td>
<td>100</td>
<td>98</td>
<td>98</td>
</tr>
<tr>
<td>Manchester</td>
<td>28</td>
<td>90</td>
<td>58</td>
<td>72</td>
<td>100</td>
<td>90</td>
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<tr>
<td>UCB</td>
<td>38</td>
<td>100</td>
<td>100</td>
<td>25</td>
<td>100</td>
<td>86</td>
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<tr>
<td>Tohoku</td>
<td>97</td>
<td>67</td>
<td>58</td>
<td>98</td>
<td>58</td>
<td>36</td>
</tr>
</tbody>
</table>
In 2009, received an external evaluation by the European University Association (EUA)

Excerpts from Evaluation Report

- However, given the continuous improvements at the top institutions and comparable ambitions of other internationally oriented research universities of similar position, **joining the top ranks would be very much of an uphill struggle.**

- It would certainly require sterner institutional steering, including:
  - **rigorous prioritisation of scientific areas with the best position**
  - examining the performance and addressing the future of underperforming units
  - concerted hiring to improve areas with lesser performance but high potential

### Our Path Toward Becoming a World-Class University

**Contribution to Humanity**
- Create World-Class Research Results
- Produce Future Leaders

Awareness of the leading role in the international society

**Reinforce Research Activities**
- Utilize the university’s strengths and make attractive research-cores
- Improve the research foundations necessary for sustainable development

**Increase our International Presence**
- Improve international public relations
- Reinforce a global network

Foundation of Research University
Evaluation for Reinforcement of Research Activities

- Utilize the university’s strengths and make attractive research-cores
- Improve the research foundations necessary for sustainable development
- Promote strategic research aimed at finding solutions to the challenges facing the world today
- Improve the quality of core research from a long-term perspective
- Meet the challenge of opening new key fields of research (interdisciplinary research)

- Determine the research field having the potential to be Tohoku University’s research-core
- Focus our human resources and financial resources on the field appearing as the competency

SciVal Spotlight Circle Map (1)

- Tohoku University has strengths in the field of math & physics, chemistry and engineering
- Especially, material science, semiconducting materials, superconductor science are active fields

⇒ Select the research field having the potential to be Tohoku University’s research-core from more subdivided research fields
Competencies in life science areas and multi-disciplinary research areas (e.g. Biomedical Engineering) declared in Inoue Plan appear on the map.

⇒ Analyze in detail Tohoku University’s strengths and weaknesses by combining the various evaluation tools

Means to increase our International Presence

- Improve international public relations
- Reinforce a global network

Inoue Plan

- Reinforce our international dissemination
- Promote cooperative research through the establishment of a global network

- Nurture promising fields non-appearing as the Competency (ex. publicize outstanding research results in English, in the field of cultural social sciences)
- Reinforce international activity such as international cooperative research by the individual researchers
Expansion of International Activities

- Utilize the Tohoku University Network
- Hold the Tohoku University Day around the world

“Expansion of International Activities”

**T.I.M.E.**
21 Countries, 52 Universities

- Technische Universität Berlin
- Technische Universität Wien
- Ecole Centrale Paris
- Eidgenössische Technische Hochschule Zürich
- Universidad Politécnica de Madrid
- Politecnico di Milano
- Seoul National University
- Eidgenössische Technische Hochschule Zürich
- University of British Columbia
- University of California
- Stanford University
- University of Sydney
- National University of Singapore
- Chulalongkorn University
- The University of Sydney

**AEARU**
4 Countries, 17 Universities

- Tsinghua University
- Peking University
- National Taiwan University
- National University of Singapore

**APRU**
16 Countries, 42 Universities

- Tohoku University
- Stanford University
- University of California
- University of Sydney
- National University of Singapore
- Chulalongkorn University

**THANK YOU !**

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Professor Akihiro Kijima
Vice President
Tohoku University

June 3, 2010
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