PMDA’s Efforts in Medicinal Area
- Cultivate Human Resources & Science Board -

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Today’s Presentation

1. Council for Science and Technology Policy, Cabinet Office
2. Establishment of the Science Board
3. Current Status of Pharmaceutical Affairs Consultation on R&D Strategy
4. Advancing Regulatory Science and Collaboration with Academia

September 2006 Abe Cabinet
October 2006 Establishment of Committee for the Investigation of Innovation Promotion, Science Council of Japan

It is said that the word "Innovation" is derived from the Latin "Innovare" (renew) (= "in" (within) + "novare" (change)). In Japanese, the word is rephrased to mean technological renovation and management reorganization or simply renovation or renewal, but innovation also means using new technology and ways of thinking in existing materials and structures to create new value and to make significant changes in society. “Innovation 25” is a long-term strategy initiative for the creation of innovation contributing to the growth with an eye on the year 2025.

(Preventive medicine for individual, Cell & Tissue Products-related technology, advanced nurse-robot, magic bullet for dementia)

Medical Innovation (November 2010) ← Democratic Party

Japanese Government established a multi-disciplinary group tasked with setting the agendas for medical innovation and research in the country for a ten to twenty-year period, and follow up them up to 50 years.

Office of Medical Innovation (First General; Yusuke Nakamura, Present; Yoichiro Matumoto)
Science & Technology Basic Plan

- Aiming at a Nation that is Creative in Science & Technology -

Basic Plan 1st Stage
(FY1996 - 2000)
• 17 Trillion Yen
• Building New R&D System

Basic Plan 2nd Stage
(FY2001 - 2005)
• 24 Trillion Yen
• Policy Strategically focusing on Science Technology
• Science Technology System Innovation

Basic Plan 3rd Stage
(FY2006 - 2010)
• 25 Trillion Yen
• Making Promotion Strategy by the filed, Screening Strategic Science Technologies &National Key Technologies
• Human Resources
• Increasing Resources for Competent Researches

Basic Plan 4th Stage
(FY2011 - 2015)
• 25 Trillion Yen
• Promotion of the Two Major Innovations as a Pillar of Growth: Green Innovation & Life Innovation

Establishment of PMDA
Innovative Medicinal seeds from Academia in Japan

ACTEMRA® Injection (Tocilizumab (r-INN))

● Target Identification / Target Validation

Professor Tadamitsu Kishimoto (Osaka University, Japan) identified IL-6 related to Castleman’s disease (Blood 1989; 74:1360-1367)

● Extensive research & Development

ACTEMRA® (Tocilizumab) is a humanized monoclonal antibody targeting IL-6 receptor developed by Osaka University and Chugai Pharmaceutical Co., Ltd.

Approved in JAPAN; April 2005 (First marketing authorization)
Innovative Medicinal seeds from Academia in Japan

XALKORI® capsules (Crizotinib(INN))

Approved in JAPAN; May 2012
(International Birth Date: Aug. 2011)

● Target Identification / Target Validation

Professor Hiroyuki Mano (Jichi Medical University, Japan) identified EML4-ALK fusion gene in non-small-cell-lung cancer (Nature 2007; 448:561-6 etc.,)

● Extensive research & Development

XALKORI® (Crizotinib) is the ATP competitive inhibitor of tyrosine kinase of the Hepatocyte growth factor receptor developed by Pfizer Inc.
Innovative Medicinal seeds from Academia in Japan

1950  ➔  ➔  ➔  ➔  201X

University of Tokyo

OLYMPUS GASTROCAMERA GT-I

Copyright: The Japan Society of Mechanical Engineers.

University of Tsukuba

"HAL" (Hybrid Assistive Limb®)

Copyright: CYBERDYNE INC
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Environments surrounding PMDA

What should PMDA do next in the course of achievement of acceleration?

**<Fiscal Year 2011 Plan>**

<table>
<thead>
<tr>
<th>品目</th>
<th>Total Review Period</th>
<th>Regulatory Review Period</th>
<th>Applicants' time</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Drug (Priority)</td>
<td>9month</td>
<td>6month</td>
<td>3month</td>
</tr>
<tr>
<td>New Drug (Standard)</td>
<td>12month</td>
<td>9month</td>
<td>3month</td>
</tr>
</tbody>
</table>

**<Record>**

- **Total Review Period New Drug (Priority)** (median)
  - FY 2007: 12.3mths
  - FY 2011: 6.5mths (9.2mths)
- **Total Review Period New Drug (Standard)** (median)
  - FY 2007: 20.7mths
  - FY 2011: 11.5mths

**Increasing Number of Executives and Regular Employees**

<table>
<thead>
<tr>
<th>Department</th>
<th>Apr 1st 2012</th>
<th>Apr 1st 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>256</td>
<td>678</td>
</tr>
<tr>
<td>Review Department</td>
<td>154</td>
<td>438</td>
</tr>
<tr>
<td>Safety Department</td>
<td>29</td>
<td>136</td>
</tr>
<tr>
<td>Number</td>
<td>53件</td>
<td>80件</td>
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</tbody>
</table>
① Being required to conduct review and consultation understanding of the research activities in state-of-the-art technologies such as antibody drug, Companion diagnostics, artificial heart, cellular & tissue-based products, medicine, cancer vaccine etc.,.

② Being required to adequately conduct review and consultation in the state of the art technologies from early stage of development for prompt supplying of products among the medical work front,.

③ Requiring a cooperation with academia, to continuously train for reviewers to catch up accelerating innovative technologies and contribute practical use of state of the art technologies.
For PMDA To Be More Science-Based

Establishment of the Science Board

The Science Board was established in May 2012 to discuss how PMDA can better cope with products with advanced science & technology, in each developmental stage such as basic research, development support, product review, and post market safety measures.
Science Board and Office of Review Innovation

**Director General**

- **Secretariat Director**
- **Associate Director General**

**Mission**

Reform PMDA reviews and related services based on science with consideration for actual medical practices

**Office of Review Innovation**

**Science Board**

- Committee members: External experts from Academia
- Declare Conflicts of Interest
- Not involved in the Review Process of individual products

**Committee**

Recommendation on PMDA tasks
Improvements in the scientific aspects of review

**Subcommittee**

Deliberation on problems in each field
Collaboration with PMDA working team (RS research, guideline development, etc.)

**PMDA Office**

- Review/Audit/Inspection
- RS
- Safety
- SGD

**Projects Across Multi-Offices in PMDA**

- Pharmaceuticals
- Medical Devices
- Bio-based Products
- Cell & Tissues-Based products

RS: Office of Regulatory Science
SGD: Office of Standards and Guidelines Development
Rotating Science Board member

Outstanding researchers who have knowledge and experience concerning scientific evaluation on Pharmaceuticals and Medical Devices

Leading development for innovative technology

Discuss how PMDA can better cope with products with advanced science & technology
Strengthen Review System in PMDA

- Enhance partnership with academia -

Set up Office of Review Innovation (April 2012) and the Science Board (May 2012)

Concerned with Academia

Science Board

Director General, Office of Review Innovation

Subcommittee (Drug)
Subcommittee (Medical Device)
Subcommittee (biologics)
Subcommittee (cell-and tissue-based products)

Associate director General
Deputy Associate director General

Secretariat Director

Executive Director (Review Research)

Director Center for product evaluation

Deputy Center Director for medical Devices
Deputy Center Director for Cellular-and Tissue-based products

Chief Executive

Special Assistant

Senior Executive Director (Technology Management)

Executive Director (General Coordination)

Executive Director (Review Research)

Director General (Review Research)

Associate director General
Deputy Associate director General

Review Section

Safety Section
Relief Section
Administration Section

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Main Roles of Science Board

**Extracting Issue**

**Committee**
- Thrashing out Science & Technology potentially applied to innovative products (Drug/Medical Device) in the near future among the Cutting-edge of Exploratory Research,
- On the advanced scientific technology, Requesting the subcommittee to discuss further for providing review and consultation services appropriately in PMDA.

**Subcommittee**
- On the subject of advanced scientific technology, profound researchers and the PMDA reviewers deliberate assessment tools in order to provide review and consultation services appropriately.

**Coach for issues**

**Committee**
- Discussion on the proposed subjects
- Requesting adequate subcommittee to discuss further for the issues.

**Subcommittee**
- Profound researchers and the PMDA reviewers deliberate the referred issues from the Science Committee.

**Review Offices**
- Exchange Opinions
  - Study meetings with profound researchers
- Exchange Opinions
  - Problem consciousnesses in PMDA
  - Anxious to exchange views on subjects with the Science Committee.
Possible Issues on Science Board

**Under Discussion**

**Pharmaceuticals & Bio products**
- Discussion about personalized medicine
- Nonclinical Pharmacology studies on anticancer pharmaceuticals

**Medical Devices**
- Discussion about
  - Registry for Medical Device
  - Category of application for Generic Medical Device
  - Development for combination product

**Cell- & tissue- Based products**
- Discussion about
  - Tumorigenicity
  - Requirement for CPC
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Pharmaceutical Affairs Consultation on R&D Strategy

Valley of Death
- Short of funds, Knowledge on Regulation and development strategy

Strategic Consultation

Quality Study
Non-Clinical Study
Clinical Trial
Up to the level of POC studies

* Further studies are handled by the Regular Consultation

Consultation on quality or toxicity study of biologics, cell-and tissue-based products
Consultation on endpoints or sample size of early clinical trial

Basic Research
Pharmaceutical and Medical Devices candidates

Practical Use
Innovative Products
Flow of R&D Strategy Consultation

Regulation

Data Package

Discussion

Introductory Consultation (No Charge)

Pre-Consultation (No Charge)
- Not binding
- 30 minutes

Face-to-Face Consultation (charged)
- Binding
- Written record to Applicant
- 2 hours

370 Consultations

331 Consultations

54 Consultations

(7/1/2011 – 12/28/2012)
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1. Summary
It is one of the educational and research method for the education in graduate schools to take advantage of utilities and/or human resources of extramural National Institutes and/or private laboratories which conduct higher level research.

2. Position of the system
A graduate school may, when deeming it to be effective from an educational standpoint, graduate school students allow to take the necessary research guidance in extramural laboratory etc., (Article 13 in the requirements for establishing graduate schools). The Program of collaborative graduate schools is systematically implement in this system.
Program of Collaborative Graduate Schools

PMDA

Collaboration

Graduate school

• PMDA Staffs
  – Engaging on education/research in the university as visiting professor etc.
  – Conducting the research and pursuing Ph.D. as graduate student

• Graduate school students
  – Accepted graduate students from university are provided for research guidance learning about PMDA’s operation and pursing Ph.D.
Program of Collaborative Graduate Schools

Agreement with 15 Universities
(as of November, 2012)

- Yamagata University
- Musashino University
- Kyoto Pharmaceutical University
- Okayama University
- Shujitsu University
- Kobe University
- Osaka University
- Gifu Pharmaceutical University
- Gifu University
- University of Tsukuba
- Chiba University
- Teikyo University
- Yokohama City University
- Shizuoka Prefectural University
- Nagoya University
Promoting practical use of innovative drug, medical device, Cell- & Tissue-based product

(1) Enhancement on Approval Review / Safety Measure in Response to the Progress of Technology 【1.2 billion yen】
   ○ Develop draft guideline/guidance based on Regulatory Science
   ○ Promote human resource exchange between PMDA & research institutes

(2) Developing guideline/guidance for innovative drug/medical device/biologics to streamline regulatory review based on Regulatory Science 【366 million yen】

(3) Strengthen measure for the safety of unknown risk for innovative technology 【0.35 billion yen】

(4) Dealing with globalization of production and distribution of Drug, Medical Device, Cell- & Tissue-based product 【0.18 billion yen】
Promoting of personal exchange

Drug
- Cancer / Alzheimer Disease / Pediatric
- Biomarker
- Gene therapy/Nucleic acid medicine / nanotechnology

Medical Devices
- Innovative Therapeutic apparatus
- Combination product
- Quantitative non-clinical Evaluation
- Endoscope

Cell & Tissues
- iPS / ES cells
- Stroke / Spinal Cord injury
- Clinical Path Initiative
- Establish on Reflection Paper for evaluation

Exchanging program in FY2012
- Planning employment for 18 researchers from university, Research Institute etc., as accepted graduate students
- Planning temporary transfer from 28 PMDA staffs (including non-regular staff) to University, Research Institute etc.
• **Science Board** was established to be more science based review / consultation in PMDA.

• **Pharmaceutical Affairs Consultation on R&D Strategy** is offering consultation to innovative products developed by academia/venture businesses.

• **Exchanging program** between Academia and PMDA will cultivate human resources, and also develop draft guideline/guidance.
Thank you for your attention!

http://www.pmda.go.jp/