Overview of Pharmaceutical Business at JT

July 4, 2017
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President, Pharmaceutical Business

FORWARD-LOOKING STATEMENTS

This presentation contains forward-looking statements. These statements appear in a number of places in this presentation and include statements regarding the intent, belief, or current and future expectations of our management with respect to our business, financial condition and results of operations. In some cases, you can identify forward-looking statements by terms such as “may”, “will”, “should”, “would”, “expect”, “intend”, “project”, “plan”, “aim”, “seek”, “target”, “anticipate”, “believe”, “estimate”, “predict”, “potential” or the negative of these terms or other similar terminology. These statements are not guarantees of future performance and are subject to various risks and uncertainties. Actual results, performance or achievements, or those of the industries in which we operate, may differ materially from any future results, performance or achievements expressed or implied by these forward-looking statements. In addition, these forward-looking statements are necessarily dependent upon assumptions, some or all of which may not be realized.

Risks, uncertainties or other factors that could cause actual results to differ materially from those expressed in any forward-looking statement include, without limitation:
(1) decrease in demand for tobacco products in key markets;
(2) restrictions on promoting, marketing, packaging, labeling and usage of tobacco products in markets in which we operate;
(3) increases in excise, consumption or other taxes on tobacco products in markets in which we operate;
(4) litigation around the world alleging adverse health and financial effects resulting from, or relating to, tobacco products;
(5) our ability to realize anticipated results of our acquisition or other similar investments;
(6) competition in markets in which we operate or into which we seek to expand;
(7) deterioration in economic conditions in areas that matter to us;
(8) economic, regulatory and political changes, such as nationalization, terrorism, wars and civil unrest, in countries in which we operate;
(9) fluctuations in foreign exchange rates and the costs of raw materials; and
(10) catastrophes, including natural disasters.
### History

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>Jul.</td>
<td>Established the pharmaceutical business division.</td>
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<tr>
<td>1993</td>
<td>Sep.</td>
<td>Opened the Central Pharmaceutical Research Institute. (Takatsuki, Osaka Pref.)</td>
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<tr>
<td>1999</td>
<td>Jan.</td>
<td>Founded Akros Pharma Inc. (U.S.)</td>
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<tr>
<td></td>
<td>Oct.</td>
<td>Formed a business tie-up with Torii. (Torii is in charge of manufacturing and sales while concentrating R&amp;D activities at JT)</td>
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*Product history*

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Event</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>*The rights to this drug has been held by Novartis since March 2015 due to a business transfer</td>
</tr>
</tbody>
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### Business Model

**Out-licensing**

- **Advantage:** Cost efficiency / Good use of partner’s expertise.
- **Disadvantage:** Time loss (We must stop development while we negotiate out-licensing agreement) / Profits must be shared with partners.

*Partially implemented by Torii(allergens, etc.)*

<table>
<thead>
<tr>
<th>Domestic Markets</th>
<th>Overseas Markets</th>
</tr>
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<tbody>
<tr>
<td>JT * (Takatsuki, Osaka Pref., Yokohama and Hadano, Kanagawa Pref.)</td>
<td>Akros Pharma Inc. (U.S.)</td>
</tr>
<tr>
<td>JT* (Chuo, Tokyo)</td>
<td>Torii Pharmaceutical (Chuo, Tokyo)</td>
</tr>
</tbody>
</table>

**Implemented by partners**

JT out-licensed exclusive rights to develop and commercialize our compounds. JT receive milestone payments complied with progress in development and royalties linked to sales.
Organization

Central Pharmaceutical Research Institute
Pharmaceutical Frontier Research Laboratories
Chemical Research Laboratories
Biological/Pharmacological Research Laboratories
Drug Metabolism & Pharmacokinetics Research Laboratories
Product Development Laboratories
Toxicology Research Laboratories

Approx. 600 personnel

R&D

Clinical development

Approx. 1,800 personnel

Akros Pharma Inc.
(Approx. 50)

Clinical development division
(Approx. 100)

Torii Pharmaceutical
(Approx. 1,050 includes 500 MRs)

Approach to R&D focus area

- Targeting diseases with strong Unmet Medical Needs
- Focusing First-In-Class (FIC) drugs
- Implementing a drug discovery strategy in view of a future paradigm shift in therapeutic method
- Specializing in small molecule compounds

Current Focus Area

(i) Metabolic diseases
(ii) Autoimmune/Inflammatory diseases
(iii) Viral infection
(Reference) Torii’s focus area and main products

1. Renal diseases and hemodialysis
   - REMITCH CAPSULES, oral therapeutic agent for pruritus in hemodialysis patients; co-developed by JT, Torii and Toray
   - REMITCH OD Tablets, oral therapeutic agent for pruritus in hemodialysis patients; co-developed by JT, Torii and Toray
   - Riona Tablets, therapeutic agent for hyperphosphatemia; co-developed by JT and Torii

2. Skin diseases
   - ANTEBATE, topical corticosteroid

3. Allergens
   - CEDARTOLEN SUBLINGUAL DROP, allergen immunotherapy drugs
   - MITICURE House Dust Mite Sublingual Tablets, allergen immunotherapy tablet

4. HIV infection
   - Truvada Combination Tablets, Stribild Combination Tablets, Genvoya Combination Tablets and Descovy Combination Tablets

Torii is working in close cooperation with JT to search and develop new in-licensed compounds, and also devotes efforts to develop new dosage form and additional indication of existing products, and R&D in allergens.

<<Status of clinical development (as of the end of June 2017)>>
- JTT-751 (Riona Tablets), iron-deficiency anemia (Oral)- Phase 2 (co-developed by JT and Torii)
- TO-203, house dust mite induced allergic asthma (Allergen Immunotherapy)(Sublingual tablets)- Phase 2/3 completed
- TO-203, house dust mite induced allergic rhinitis in children (Allergen Immunotherapy) (Sublingual tablets) - Application
- TO-206, Japanese cedar pollinosis (Allergen Immunotherapy)(Sublingual Tablets )- Application

R&D expenditure, revenue and profit

Making continuous and stable R&D investment

Unit: ¥billion

Note:
- The figures for the years until 2009 are based on Japanese GAAP and the figures for the years since 2010 are based on IFRS.
- In 2014, JT changed accounting period, with the closing date moving from March 31 to December 31.
- R&D expenditures for the years until 2004 are based on non-consolidated statement and the estimate for 2017 has not been disclosed.
**Profit growth drivers**

- **Progress in R&D/market launch**
  - Reaping the fruits of past R&D activities
  - Steadily launching new drugs

- **Major products recently launched**
  **Striibild Combination Tablets** (antiviral agent for HIV)
    - Overseas: Out-licensed to Gilead Sciences FDA approval in Aug. 2012
    - Japan: Sold by Torii MHLW approval in Mar. 2013
  **Genvoya Combination Tablets** (antiviral agent for HIV)
    - Overseas: Out-licensed to Gilead Sciences FDA approval in Nov. 2015
  **Mekinist** (MEK inhibitor)
    - Worldwide: Out-licensed to GlaxoSmithKline and Novartis* FDA approval in May 2013
  **Riona Tablets** (therapeutic agent for hyperphosphatemia)
    - Japan: Sold by Torii MHLW approval in May 2014

- **Revenue**
  - Growing sales of out-licensed products
    - Increased royalty revenue from out-licensed products / Milestone revenue related to the progress in drug development
  - Driving growth of domestic revenue with recent launch of anti-HIV drugs, Riona Tablets, etc.

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**Pipeline (as of the end of June 2017)**

<table>
<thead>
<tr>
<th>Code/*development phase (Generic name)</th>
<th>Potential Indication/Dosage form</th>
<th>Mechanism</th>
<th>In-house/licensing</th>
<th>Supplementary explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>JTZ-951 Japan: Phase 2 Overseas: Phase 1</td>
<td>Anemia associated with chronic kidney disease /Oral</td>
<td>HIF-PH inhibitor</td>
<td>In-house *Out-licensed to JW</td>
<td>(Competing candidates) Roxadustat: Global Ph3 Daprodustat: Global Ph3</td>
</tr>
<tr>
<td>JTE-052 Japan: Phase 3</td>
<td>Autoimmune/allergic diseases /Oral, Topical</td>
<td>JAK inhibitor</td>
<td>Co-development with Torii *Out-licensed to LEO</td>
<td>Most advanced clinical study is for atopic dermatitis in Japan</td>
</tr>
<tr>
<td>JTE-051 Overseas: Phase 2</td>
<td>Autoimmune/allergic diseases /Oral</td>
<td>Interleukin-2 inducible T cell kinase (ITK) inhibitor</td>
<td>In-house</td>
<td>No program in clinical stage is reported from any companies</td>
</tr>
<tr>
<td>JTT-251 Overseas: Phase 1</td>
<td>Type 2 diabetes mellitus /Oral</td>
<td>PDHK inhibitor</td>
<td>In-house</td>
<td>No program in clinical stage is reported from any companies</td>
</tr>
<tr>
<td>JTK-351 Japan: Phase 1</td>
<td>HIV infection /Oral</td>
<td>HIV integrase inhibitor</td>
<td>In-house</td>
<td>—</td>
</tr>
<tr>
<td>JTE-451 Overseas: Phase 1</td>
<td>Autoimmune/allergic diseases /Oral</td>
<td>RORγ antagonist</td>
<td>In-house</td>
<td>While competition to develop RORγ antagonist drugs is intense, JT is not lagging behind competitors.</td>
</tr>
<tr>
<td>JTT-751 (ferric citrate) Japan: Phase 2</td>
<td>Iron-deficiency anemia/Oral</td>
<td>Oral iron replacement</td>
<td>In-license (Keryx Biopharmaceuticals) Co-development with Torii</td>
<td>*Additional indication</td>
</tr>
</tbody>
</table>

**Notes:**
- The clinical trial phases presented above are based on the first dose.
- Out-licensed to JW Pharmaceutical (South Korea) under a license agreement for exclusive rights to development and commercialization in South Korea for application to oral medication.
- Out-licensed to LEO Pharma (Denmark) under a license agreement for exclusive rights to development and commercialization in the world outside Japan for topical use in dermatological indications.
For the future

- **R&D investment**
  - Continuous and stable R&D investment independent from revenue fluctuations

- **Open innovation**
  - Creation of FIC new drugs that fulfill Unmet Medical Needs.
    - New drug targets
    - Drug Efficacy / Development technologies
    - Advancing into cutting-edge fields (leading to future drug creation)
  - Active engagement in partnering and licensing rather than public invitation programs.
    - Building mutual trust and respect
    - Dispatching researchers

*Reference

Public invitation programs: a³, COCKPI-T FINDS, TaNeDS, PRISM
Comprehensive partnerships: AK Project, TK Project

- **Enhancement of in-licensing** (expansion of the domestic pipeline)
  - Group-wide in-licensing activity in co-operation with JT and Torii
  - Participating in BIO conferences / Organizing partnering conferences (overseas)

Conclusion

- **With the entire group working together to deliver new drugs to patients as soon as possible.**

  - **3 Key Principles**
    - Carrying on full effort for the patients
    - Targeting FIC, small molecule compounds
    - Continuous and stable R&D investment

  - **4 Key Strategies**
    - Continue to out-license our New Molecule Entities globally
    - Put more emphasis on in-licensing for the Japanese Market
    - Determine indications and clinical development plan with both global licensing and domestic sales franchise in mind
    - Contribute to JT Group profit through R&D for products of next generation and maximizing the value of existing products