FORWARD-LOOKING STATEMENTS
Forward-looking statements, such as those relating to earnings forecasts and other projections contained in this material, are management’s current assumptions and beliefs based on currently available information. Such forward-looking statements are subject to a number of risks, uncertainties, and other factors. Accordingly, actual results may differ materially from those projected due to various factors.
Pharmaceuticals Business

1. Business Structure of Pharmaceuticals Business
   / Mid- to Long-term Growth for the Pharmaceutical Business

2. Situation in 1st Half of FY2017/3

3. Strategy and Progress in Each Area
   1) CDMO of Biopharmaceuticals
   2) Radiopharmaceuticals
   3) Small-molecule Pharmaceuticals and Others

4. Progress in Each Pipeline
   (Avigan®, T-817MA, ITK-1, T-4288, FF-10501, FF-10502, FF-21101, FF-10101, FF-10102)

1.(1) Business Structure of Pharmaceuticals Business

Small-molecule pharmaceuticals

Toyama Chemical
Development / manufacturing of low-molecular drugs

FUJIFILM Finechemicals
Manufacturing of raw materials

FUJIFILM Pharma
Development / manufacturing / sales of pharmaceuticals

FUJIFILM Pharmaceuticals
Technological Resources

Compound design technology
Analysis technology
Original nano-technology
Image Diagnosis technology
Quality control/high productivity technology
Collagen technology

FUJIFILM Diosynth Biotechnologies
Manufacturing of biopharmaceuticals

FUJIFILM RI Pharma
Development / manufacturing / sales of radiopharmaceuticals

Perceus Proteomics
Discovery of antibody medicines

FUJIFILM KYOWA KIRIN Biologics
Development / manufacturing / sales of biosimilars

FUJIFILM Pharmaceutical & Healthcare Research Laboratories
Aiming at comprehensive healthcare company covering prevention, diagnosis, and treatment

1. (2) Expansion of Healthcare Business Field

Prevention
- Functional cosmetics
- Supplement
- Haircare

Diagnosis
- X-ray Imaging (CR/DR/Film)
- Medical IT system
- Endoscopes
- Radiopharmaceuticals for diagnosis
- Ultrasound
- Diagnostic system for influenza

Treatment
- Small molecule
- Biopharmaceuticals
- Regenerative medicine
- Autologous Cultured Epidermis
- Autologous Cultured Cartilage

<Stage 2>
New drugs will make a contribution to earnings. Move toward overseas market by licensing out

<Stage 1>
CDMO of biopharmaceuticals lead the growth

Expected timing for new drug launch:
- FF-10501
- FF-21101
- ITK-1
- FF-10101
- FF-10102
- T-817MA
- T-4288

Cancer
Antimicrobials
Others
2. Situation in 1st Half of FY2017/3

<Existing drugs> Both sales and profit decreased due to the effect of GE drugs
- GE drugs of Zosyn have been launched onto the market. Conducted LCM measures including sales activities of the bag kit of drugs launched last year.
  - Started sales of biosimilar drug Insulin BS (Glargine) in July. Expecting to initiate to sales expansion by promoting the operability of the pen-type device, which has a favorable reputation in the market.
  - Launched PROOFIT, the audit support system, in April, offering new solutions to the market.
  - Signed a license agreement for Avigan with Zhejiang Hisun Pharmaceuticals of China.

<CDMO of biopharmaceuticals> Both sales and profit increased after strengthening the production system
- Sales increased with favorable orders making up the sharp appreciation of the yen. Achieved an increase both in sales and profits compared with previous year.
  - Signed an agreement with Merck to use its large-scale microbial-biologics facility in Ireland in June. Working to strengthen production capacities.

<Radiopharmaceuticals> Sales increased (record high), profits also increased excluding investment in PET diagnostic drug business
- Expanded its market share in SPECT market.
- Going ahead with the preparation for PET diagnostic drug business

3. Strategy and Progress in Each Area : 1) CDMO of biopharmaceuticals

FUJIFILM Diosynth Biotechnologies (FDB)
~CDMO of biopharmaceuticals leads the growth in the pharmaceuticals business~

<Environment>
- The market of CDMO of biopharmaceuticals is expected to grow by +8% / year.
- The customer needs have been diversified from R&D use to commercial production.

<Outlook for the growth CDMO market for biopharmaceuticals>

<Technologies of FDB>
- Microbial culture : pAVEway™, a high-end technology of microbial culture
- Mammalian culture : Apollo™, a high performance mammalian expression platform
- Vaccine manufacture : High containment manufacturing and mobile clean rooms of FDBT
3. Strategy and Progress in Each Area : 1) CDMO of biopharmaceuticals

**Responding to the expanding / diversifying market needs by expanding facilities**

- As the acquisition of customers and orders have been proceeding smoothly, the plants are in almost full operation. Improvements in productivity and strengthening of the facilities are under progress in three sites (UK, North Carolina, Texas)

- The clean rooms have been expanded, and five 1,000-litre tanks will be added according to customer’s needs. Further expansion will be conducted in a timely manner.

- It is planned to run the large-scale facility by FY2019/3 utilizing Merck’s facility (20,000-litre) in order to respond the diversified needs from high-mix low-volume production to mass production.

- Using these measures, we can double the size of facilities in FY2019/3.

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3. Strategy and Progress in Each Area : 2) Radiopharmaceuticals

**FUJIFILM RI Pharma**

- The sales of SPECT diagnostic drug are increasing because of the expanding market share by introduction of new product OctreoScan and others.

- Working to expand sales by entering the PET diagnostic drug business

  - Construction of 2 R&D sites for PET diagnostic drug both on the east and west sides of Japan has completed.
  - The facilities of diagnostic drug for accumulated amyloid-beta (Aβ) is expected to start operation in 2017.
  - In addition to SPECT, the PET diagnostic drug business will be one of the pillars for business growth of radiopharmaceuticals business.

Alzheimer’s Disease ; Strengthening the business with an eye toward total healthcare, covering the fields of prevention (supplement / T-817MA), diagnosis (PET diagnostic drug for Aβ), treatment (T-817MA).
3. Strategy and Progress in Each Area

: Small-molecule Pharmaceuticals etc.

**Toyama Chemical**

Working to minimize the impact of drug price revision and expansion of GE drugs by several measures.
- Promoting LCM of main drugs: Zosyn and Ozex
- Improving profits by improving R&D efficiency and reducing cost of factories.
- Increasing sales / profits by introducing new drugs, acquiring distribution rights for existing drugs, and increasing sales succession

**FUJIFILM Pharma**

Gained approval for biosimilar drug: Insulin BS (Glargine) and started sales in July, 2016 in Japan. Working to strengthen the sales foundation for new drugs.
- Increasing sales / profits by acquiring distribution rights, strengthening sales structure through increasing MR.
- Improving profitability by new drugs: Treatment drug for intraoral candidiasis is expected to be launched in 2018.
- Offering new solutions: Launched PROOFIT, the audit support system.

**DDS (Drug Delivery System)**

- Nano-dispersion technology: Application of proprietary nano-dispersion technology
  - Alcohol free for transdermal drug, improvement of absorption for oral drugs.
- Liposome: Encapsulate drugs in liposome to deliver efficiently to the affected area.
  - Preparing for clinical trials of several anti-drug agents.
- Micro-needles: Contain drug in soluble microscopic needles to supply via the dermis.
  - Aseptic facility for human clinical trials is expected to be completed in FY2017/3.

4. Progress in Each Pipeline

**<Development policy>**

Our target is to create only one, number one drug with new action mechanisms, in areas with unmet medical needs

**<Pipelines / Progress of R&D>**

<table>
<thead>
<tr>
<th>Pipeline</th>
<th>Indication</th>
<th>Status of progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVIGAN®</td>
<td>Infectious diseases</td>
<td>Analyzing the result of U.S. Ph III</td>
</tr>
<tr>
<td>T-817MA</td>
<td>Alzheimer’s disease</td>
<td>Enrollment of the last patients has been completed both in Japan and the U.S.</td>
</tr>
<tr>
<td>ITK-1</td>
<td>Solid tumors</td>
<td>Recruitment for Ph III clinical trials in Japan was completed in April</td>
</tr>
<tr>
<td>T-4288</td>
<td>Infectious diseases</td>
<td>Ph III clinical trials started based on favorable results from Ph II in Japan</td>
</tr>
<tr>
<td>FF-10501</td>
<td>Blood cancer</td>
<td>Poster and oral presentation was delivered at ASH</td>
</tr>
<tr>
<td>FF-10502</td>
<td>Solid tumors</td>
<td>Ph I in U.S. Partial response observed in one patient.</td>
</tr>
<tr>
<td>FF-21101</td>
<td>Solid tumors</td>
<td>Tumor uptake was confirmed in U.S. Ph I</td>
</tr>
<tr>
<td>FF-10101</td>
<td>Blood cancer</td>
<td>IND application was submitted in the U.S. and obtained approval from FDA to start clinical trials</td>
</tr>
<tr>
<td>FF-10102</td>
<td>Autoimmune disease</td>
<td>Poster presentation was delivered at ASH</td>
</tr>
</tbody>
</table>
**T-705 (AVIGAN®) / T-817MA / ITK-1**

**<T-705 (AVIGAN®)>**
- **Situation with Phase III in the U.S.**: Preparing to target approval application in FY2018/3.
- **Toward Ebola virus disease**: The Guinean government adopted Avigan tablet administration as the standard treatment for the Ebola virus disease. Avigan tablet to treat about 2,000 people were provided as one of the supplies procured with the Japanese government’s emergency grant aid.
- **Patent license agreement**: Fujifilm signed a patent license agreement for Favipiravir, an effective ingredient of Avigan with Zhejiang Hisun Pharmaceuticals in June 2016. Working to expand the Avigan business in each country.

**<T-817MA>**
- Alzheimer’s disease drug
- **Phase II clinical trials** in Japan and the U.S.
  - The clinical trials are conducted and proceeding as scheduled and the enrollments of the last patients has been completed both in Japan and the U.S.

**<ITK-1>**
- “Tailor-made” cancer peptide vaccine
- **Recruitment of Phase III clinical trials was completed in Apr. 2016.** Observation of survival period. Key-open of Phase III data is scheduled in FY2019/3.

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**T-4288 / Solithromycin**

- **Efficacy of the drug**: A new fluoroketolide antibiotic
- **Market size**: Over 68 billion yen (in Japan)
- **Features**: T-4288 shows strong antibacterial activity against S. pneumonia and Mycoplasma pneumonia resistant to existing macrolide agents and is highly evaluated as next generation of antibiotics by Japanese specialists in infectious disease and international academic societies of microbiology.
  - The results of the Phase II study in Japan showed T-4288 was comparable to or more effective than a reference drug, levofloxacin, in patients with Community-acquired Pneumonia (CAP). The safety profiles were not different from global Phase III studies.
  - Phase III studies for patients with respiratory or otolaryngologic infections are initiated in December 2016.

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>Clinical success rate (TOC*)</th>
<th>ITT*2</th>
<th>PPS*3</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-4288 (QD)</td>
<td>77.3% (34/44)</td>
<td>85.0% (34/40)</td>
<td></td>
</tr>
<tr>
<td>T-4288 (BID/QD)</td>
<td>72.7% (32/44)</td>
<td>77.5% (31/40)</td>
<td></td>
</tr>
<tr>
<td>Levofloxacin</td>
<td>61.7% (29/47)</td>
<td>67.4% (29/43)</td>
<td></td>
</tr>
</tbody>
</table>

*T-4288 (QD): Day 1: T-4288 800 mg once a day, Day 2-5: T-4288 400 mg once a day
T-4288 (BID/QD): Day 1: T-4288 400 mg twice a day, Day 2-5: T-4288 400 mg once a day
Levofloxacin: Day 1-5: levofloxacin 500 mg once a day

- The licenser of T-4288, Cempra Inc., had conducted the global Phase III studies for patients with Community-acquired Bacterial Pneumonia (CABP). In the studies, T-4288 demonstrated non-inferiority against moxifloxacin. New Drug Administration (NDA) submission to FDA was done in April, 2016.
**FF-10501 (1)**

- **Indication:** Myelodysplastic Syndromes (MDS) / Acute Myeloid Leukemia (AML)
- **Market size:** 100 billion yen (worldwide)
- **Development Status:** JP and U.S. Phase I study completed, Phase IIa will be initiated soon in the U.S.
- **Publications:** The followings were presented at ASH in San Diego (Dec. 2016)
  1. G. Garcia-Manero et al. Phase 1 Results of FF-10501-01, a Novel Inosine 5’-Monophosphate Dehydrogenase Inhibitor, in Advanced Acute Myeloid Leukemia (AML) and Myelodysplastic Syndromes (MDS), Including Hypomethylating Agent (HMA) Failures. #1640, December 3, 5:30 PM - 7:30 PM (Poster presentation)
  2. H. Yang et al. Anti-Leukemia Effect of FF-10501-01, a novel Inosine 5’-Monophosphate Dehydrogenase Inhibitor, in Acute Myeloid Leukemia. #2756, December 4, 6:00 PM - 8:00 PM (Poster presentation)

**1. U.S. Phase I study results**

**Presenter:** Professor Guillermo Garcia-Manero, MD, Principal Investigator for FF-10501, Dept. Leukemia, MD Anderson Cancer Center, TX, USA

- 30 patients with Advanced AML and MDS, including HMA failures, 16M and 14F (24 AML, 6 MDS) were treated in 7 dose cohorts (50 – 500 mg/m² PO BID) for 14 days
- All adverse events were not related to FF-10501 showing good safety profile
- Efficacies observed in AML (N=24) were 3 partial remissions (12.5%), 8 disease stabilization (33.3%, >4 cycles) with maximum 28 cycles, and in MDS (N=6) were 1 marrow complete remission (16.7%), 4 disease stabilization (66.7%, >3 cycles) with maximum 17 cycles

**FF-10501 (2)**

3. S. Goyama et al. Inhibition of Impdh As an Effective Treatment for MLL-Fusion Leukemia. #750, December 5, 11:45 AM (Oral presentation)

**Associate Professor Susumu Goyama, MD, Division of Cellular Therapy, The Institute of Medical Science, The University of Tokyo, Tokyo, Japan.**

**3. FF-10501 prolonged survival in a mouse model of pediatric AML induced by MLL-AF9**

![Graph showing survival rates with and without FF-10501](image)

- **Graph details:**
  - Control vs FF-10501 survival rates
  - p=0.0007

**Details:**

- MLL-AF9 (wild-type) leukemia cells, 1x10⁶ cells/mouse BMT
- FF-10501: 160 mg/kg, P.O. (Mon, Wed, Fri, from day 4 until animals deaths)
## FF-10502

**Indication:** Advanced Solid Tumors including Pancreatic Cancer and Lymphomas

**Market size:** 100 billion yen (worldwide)

**Development Status:**
- **Phase I clinical trial has been conducted** at MD Anderson Cancer Center (Filip Janku, MD) and Sarah Cannon Research Institute (Gerald Falchook, MD) in the U.S.
- Enrollment of 27 patients (9 dose cohorts, 3 pts per cohort) is planned and 5 cohorts have been treated with FF-10502
- **Partial response was observed** in one patient
- Major adverse event is gastrointestinal disorders including vomiting, which are similar to those observed with gemcitabine

**Features:**
- FF-10502 enters to the cell nucleus and kills tumor cells by inhibiting DNA polymerases
- FF-10502 strongly suppressed tumor metastasis and prolonged survival in tumor bearing mice which were superior to gemcitabine suggesting its efficacies in patients with pancreatic cancer who failed to respond to gemcitabine
- Development of highly efficient compound synthetic route using Fujifilm’s organic synthesis technology has opened business opportunities
- Results of clinical and non-clinical studies will be presented at the meeting of the American Association for Cancer Research in April 2017

## FF-21101

**Indication:** Advanced/Recurrent Non-small Cell Lung/Pancreatic cancer

**Market size:** 360 billion yen (worldwide)

**Phase I clinical trial is ongoing** at MD Anderson Cancer Center in the U.S.

**Interim results of Phase I** were presented on June 27th at the World Innovative Networking in Personalized Cancer Medicine Symposium 2016.

- Imaging revealed tumor uptake in 3 of 4 patients administered FF-21101({sup 111}In)
- FF-21101 was well tolerated in all patients who went on to receive FF-21101({sup 90}Y)

(Features of Radioimmunotherapy)
- Less side effects
- The efficacy for patients who have weak immune response can be expected.
- Nuclear imaging as companion diagnostics leads to effective individual treatment.

- Developing antibody in Perseus Proteomics, developing radiolabeling in FRI manufacturing of antibody in FDB; Utilizing Fujifilm group synergies
The details were presented at ASH meeting on 5th Dec. 2016 in San Diego

FF-10102-01: A Novel, Highly Selective Spleen Tyrosine Kinase Inhibitor, to Be in Clinical Application for Treatment of Autoimmune Disease and B cell Malignancies.

Chieko Kinouchi, Kazuya Taguchi, Tadaaki Ioroi, DPhil, Hayato Ogura, Susumu Shimoyama, Mari Yamamoto, Akiko Iino, Yoshinasa Maeda, DPhil, Hiroshi Kato, Hideyasu Fujiwara, DPhil, Shintaro Nagiwa, DPhil, Hiroyuki Iwamura, DPhil, David J Kuter, MD, DPhil, Yoshihiko Miyakawa, MD, DPhil, Takaaki Nakamura, DPhil, Yasuhiro Shimada

【Indication】Autoimmune disease (ITP etc.) and malignancy (B cell malignancies)

【Features of FF-10102】
- Good safety profile in human is expected from the high kinase selectivity for SYK
- Prevention of platelet destruction by inhibiting antibody production and platelet phagocytosis
- Stronger inhibition of B cell growth compared with other compounds in clinical phase
- Orally available small molecule

Macrophage population eating platelets
FF-10102 inhibited phagocytosis of platelets

Inhibition of platelet phagocytosis

Inhibition of antibody production

B cell growth inhibition

Pipelines

<table>
<thead>
<tr>
<th>Development code</th>
<th>Therapeutic category</th>
<th>Formulation</th>
<th>Region</th>
<th>Development stage</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-705</td>
<td>Anti-influenza drug</td>
<td>Oral</td>
<td>Japan</td>
<td>Approved</td>
<td>Approved in March 2014 (AVIGAN®)</td>
</tr>
<tr>
<td>T-3811</td>
<td>Quinolone synthetic antibacterial drug</td>
<td>Oral</td>
<td>U.S.A.</td>
<td>P II</td>
<td>Submitted an application for permission</td>
</tr>
<tr>
<td>T-2307</td>
<td>Antifungal drug</td>
<td>Injection</td>
<td>U.S.A.</td>
<td>P I completed</td>
<td>Already launched as Geninax in Japan</td>
</tr>
<tr>
<td>T-817MA</td>
<td>Alzheimer's disease drug</td>
<td>Oral</td>
<td>U.S.A.</td>
<td>P I</td>
<td>Undertaking clinical trials with the Alzheimer's Disease Cooperative Study</td>
</tr>
<tr>
<td>T-4288</td>
<td>Fluoroketolide antibacterial drug</td>
<td>Oral</td>
<td>Japan</td>
<td>P I</td>
<td>Engaging in the search and identification of biomarkers with the CIR of Kyoto University</td>
</tr>
<tr>
<td>Bio</td>
<td>Castration-resistant prostate cancer drug</td>
<td>Injection</td>
<td>Japan</td>
<td>P II</td>
<td></td>
</tr>
<tr>
<td>FF-10501</td>
<td>Relapsed or Refractory myelodysplastic syndrome drug</td>
<td>Oral</td>
<td>Japan</td>
<td>P I completed</td>
<td>Promoting clinical trial with the MD Anderson Cancer Center</td>
</tr>
<tr>
<td>FF-10502</td>
<td>Advanced/recurrent pancreatic/ovarian cancer drug</td>
<td>Injection</td>
<td>U.S.A.</td>
<td>Preparing for P I</td>
<td>Promoting clinical trial with the MD Anderson Cancer Center</td>
</tr>
<tr>
<td>FF-21101</td>
<td>Advanced/recurrent non-small cell lung/pancreatic cancer drug (armed antibody)</td>
<td>Injection</td>
<td>U.S.A.</td>
<td>P I</td>
<td>Promoting clinical trial with the MD Anderson Cancer Center</td>
</tr>
<tr>
<td>Bio</td>
<td>Diagnostic drug for prostate cancer (Radiopharmaceuticals)</td>
<td>Injection</td>
<td>Japan</td>
<td>P I</td>
<td></td>
</tr>
<tr>
<td>F-1311</td>
<td>Acute Myeloid Leukemia (AML) drug</td>
<td>Oral</td>
<td>U.S.A.</td>
<td>Preparing for P I</td>
<td></td>
</tr>
<tr>
<td>FF-10101</td>
<td>Autoimmune disease drug</td>
<td>Oral</td>
<td>U.S.A.</td>
<td>Europe/Japan Non clinical trial</td>
<td></td>
</tr>
</tbody>
</table>

Note: FK3327 (a biosimilar of adalimumab) of FUJIFILM KYOWA KIRIN Biologics (FKB), an equity method affiliated company is under phase III clinical trial in U.S.A. and other countries. FKB238 (a biosimilar of bevacizumab) of JV between FKB and AstraZeneca is under phase III clinical trial in U.S., Europe and other region.
At Fujifilm, we are continuously innovating — creating new technologies, products and services that inspire and excite people everywhere.
Our goal is to empower the potential and expand the horizons of tomorrow’s businesses and lifestyles.

FUJIFILM Holdings Corporation
Corporate Communication Office, Corporate Planning Div.

Progress of Pharmaceuticals & Regenerative Medicine Business


<Pharmaceuticals Business>
- Investment in a venture for drug discovery, Perceus Proteomics in 2006
- Acquisition of radiopharmaceuticals manufacturer (FUJIFILM RI Pharma) in 2006
- Acquisition of Toyama Chemical—Full Entry to pharmaceutical business in 2008
- Establishment of FUJIFILM Pharmaceutical Research Lab in 2009
- Establishment of FUJIFILM Pharma as a sales organization in 2009
- Acquisition of biopharmaceutical CMO (current FDB) in 2011
- Establishment of JV with Kyowa Hakko Kirin (current FKB) in 2012
- Collaboration in research with Kyoto University, CiRA. In 2014
- Collaboration in research and clinical test with MD Anderson in 2014
- Decision to entry to PET diagnosis in 2015
- Acquisition of Kalon (FDB) in 2014

<Regenerative Medicine Business>
- Establishment of Regenerative Medicine Development Office in 2013
- Acquisition of J-TEC in 2014
- Acquisition of CDI in 2015
Advantages of our Pharmaceutical business

Utilize photographic technology in pharmaceuticals technology

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis technology</td>
<td>Analysis technologies cultivated through analysis and assessment of photographic film.</td>
</tr>
<tr>
<td>Original nano-technology</td>
<td>Drug Delivery System (DDS) that stably combines and delivers nano-sized elements to the targeted parts of the body.</td>
</tr>
<tr>
<td>Image diagnosis technology</td>
<td>Technologies cultivated through medical diagnosis, from X-ray films to image diagnosis and imaging technologies from FUJIFILM RI Pharma.</td>
</tr>
<tr>
<td>High reliability, High quality manufacturing technology</td>
<td>High-reliability/high-quality and low-cost manufacturing technologies (engineering technologies) cultivated through various products, including photographic film.</td>
</tr>
<tr>
<td>Study of Collagen</td>
<td>The main element of film is collagen Technologies that make use of collagen’s characteristics in various products.</td>
</tr>
</tbody>
</table>

**Indication:** Acute Myeloid Leukemia (AML)

**Features:** Highly potent against FLT3 mutations conferring resistance to competitor (New mechanism)

* Irreversible inhibitor discovered by Fujifilm utilizing the synthetic and analytical technologies
* IND application of Phase I was submitted in the U.S. in 2Q 2016, obtained approval from FDA to start clinical trials.
* Phase I is planned to be started in 4Q FY2017/3.

**Inhibits growth of all cells expressing mutated FLT3 conferring resistance to competitor (animal models)**

Inhibits growth of all cells expressing mutated FLT3 conferring resistance to competitor (animal models).

**U.S. Preparing for Phase I**

Data are represented as mean volume +/- SD. Each group consists of 5 animals.

* p<0.05 as compared to vehicle control by Dunnett’s Multiple Comparison Test.
Anti TfR Antibody

- Strongly bind to cancer cell, and exert strong cytotoxicity to Blood Cancer by blocking iron uptake.
- Fully human antibody with High Affinity to tumor antigen.
- PPMX is conducting Pre-Clinical Study, targeting Phase 1 for Adult T-cell Leukemia, supported by Japan Agency for Medical Research and Development (AMED).

Mode of Action

- Antibody blocks iron uptake.

Mouse Xenograft Model (Blood Cancer)

At Fujifilm, we are continuously innovating — creating new technologies, products and services that inspire and excite people everywhere. Our goal is to empower the potential and expand the horizons of tomorrow’s businesses and lifestyles.
1. Regenerative medicine business of Fujifilm

<Main announcements about Regenerative Medicine>

Making the Business base

- 2014.12 Japan Tissue Engineering became a consolidated subsidiary
- 2015.5 Cellular Dynamics International became a consolidated subsidiary
- 2015.10 Cellular Dynamics International Japan was established

Progressing the development of cell therapy

- 2016.6 Entered into cooperative research for the treatment of retinal degenerative disease using iPS cells with US National Eye Institute (NEI)
- 2016.9 Reached a basic agreement with Cynata Therapeutics, Fujifilm is to have an option to acquire licenses about GvHD treatment utilizing allogeneic iPS cell-derived mesenchymal stem cells
- 2016.9 Established a joint venture, Opsis Therapeutics to develop cell therapies for treatment of retinal diseases utilizing iPS cells
- 2016.10 CDI was granted iPS cell generation patent in Japan

Further strengthening the portfolio and development of cell therapy business
2. Contribution of Drug Discovery Support

Forecast of regenerative medicine business

Activities toward sales increase of drug discovery support

<Improvement of function of cell>

Individual cell → Adding value

3D structure

<Establishment of guidelines in drug discovery support>

Assessment methodology of toxicity using cells has been studied in consortium

Making the cell a de facto standard by establishment of guidelines

Solutions toward customers (pharmaceutical companies)

To reduce the developing cost, period, and improve the success rate
3. Latest Trends in Drug Discovery Support

Standardization of safety assessment tests using iPS cell-derived differentiated cells is to started

Combination of iCell cardiomyosites and MEA Maestro (axion) enables us to acquire the data that fills the gap compared with the test using single cell or tissue.

Preclinical studies by high-reliability and high-reproducibility arrhythmogenesis assessments using human iPS cell-derived differentiated cells are to started soon.

Activities to produce guidelines

Collaboration

Proposal for revisions to the assessment of QT interval prolongation risk

Expected to be revised in 2017 (forecast)

3. Latest Trends in Drug Discovery Support

<iPS disease cell banking contracted by CDI>

<table>
<thead>
<tr>
<th>Disease areas</th>
<th>Lines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant epilepsy, autism, cerebral infantile paralysis</td>
<td>450</td>
</tr>
<tr>
<td>Autism</td>
<td>200</td>
</tr>
<tr>
<td>Non-alcoholic steatohepatitis</td>
<td>166</td>
</tr>
<tr>
<td>Familial dilated cardiomyopathy</td>
<td>650</td>
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<tr>
<td>Alzheimer's disease</td>
<td>235</td>
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<tr>
<td>Age-related macular degeneration, glaucoma, proliferative diabetic retinopathy</td>
<td>500</td>
</tr>
<tr>
<td>Idiopathic pulmonary fibrosis</td>
<td>250</td>
</tr>
<tr>
<td>Patients total</td>
<td>2,451</td>
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<tr>
<td>Normal individuals</td>
<td>550</td>
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<tr>
<td>Total</td>
<td>3,001</td>
</tr>
</tbody>
</table>

1,200 lines are available

iPS cell banking of drug discovery for 250 patients of left ventricular load hypertrophy

To be launched soon
3. Latest Trends in Drug Discovery Support

<Scientific Trend about Exosomes>

**Exosomes**

Exosomes are vesicles contain RNA and proteins. Exosomes are either released from the cell and incorporated into other cells. Recently, Exosomes are becoming the subject of extensive research focusing on applications for diagnosis and treatment, since they are known to act as the medium for communication between cells.

■ To develop diagnosis / treatment methods using Exosomes…

Data on containments of Exosomes both in the normal timing or when affected by several diseases is so important. However, Exosomes easily change according to the changes in the individuals, and unstable after collected.

Stable and standard Exosomes are necessary for analysis and data collection.

Exosomes made from iPS cell-derived differentiated cells produced from a single clone under fully controlled conditions become stable.

→ These standard Exosomes have the potential to act as tools to make significant progress in Exosome research.

4. Business Developments in Cell Therapy (iPS cells)

【Pipeline】

Self-developed: Partnership with KOL in US, targeting the fields of eyes, nerves, and hearts.

<table>
<thead>
<tr>
<th>Disease</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age-related Macular Degeneration</td>
<td>RPE Pre-Clinical Studies</td>
<td>IND</td>
<td>Phase I</td>
<td>Exploratory Studies</td>
<td>Pre-Clinical Studies</td>
</tr>
<tr>
<td>Retinitis Pigmentosa</td>
<td>PRP Exploratory Studies</td>
<td>Pre-Clinical Studies</td>
<td>IND</td>
<td>Phase I</td>
<td>Exploratory Studies</td>
</tr>
<tr>
<td>Parkinson’s</td>
<td>DA Exploratory Studies</td>
<td>Pre-Clinical Studies</td>
<td>IND</td>
<td>Phase I</td>
<td>Exploratory Studies</td>
</tr>
<tr>
<td>Heart Failure</td>
<td>CM Exploratory Studies</td>
<td>Pre-Clinical Studies</td>
<td>IND</td>
<td>Phase I</td>
<td>Exploratory Studies</td>
</tr>
<tr>
<td>Cancer</td>
<td>CAR-T Exploratory Studies</td>
<td>Pre-Clinical Studies</td>
<td>IND</td>
<td>Phase I</td>
<td>Exploratory Studies</td>
</tr>
<tr>
<td><strong>Potential market scale (WW)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age-related Macular Degeneration</td>
<td>1.7 trillion yen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retinitis Pigmentosa</td>
<td>1.3 trillion yen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parkinson’s</td>
<td>1.0 trillion yen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart Failure</td>
<td>1.4 trillion yen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cancer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Estimated by Fujifilm based on materials of METI, 2014*
4. Business Developments in Cell Therapy (iPS cells)

-FUJIFILM has reached an agreement with Cynata to invest 3 million U.S. dollars. Following the signing of the contract, Fujifilm will receive the third-party allocation of Cynata’s new shares.
-Through this, Fujifilm will have the option to acquire the development, manufacturing, and sales licensing rights of Cynata’s iPSC-derived MSC (Mesenchymal stem cell) for the treatment of GvHD (Graft-versus-host disease).

1) Clinical trials of Cynata

Being provided the cGMP designed iPS master cell bank of CDI, it is planned to conduct clinical trials for treatment of steroid-resistant GvHD with allogenic iPSC-derived MSC:

Sep. 2016
UK regulatory body approved the start of clinical trials

Clinical trials of steroid-resistant GvHD patients to start in Dec. 2016

2) Expected sales for the treatment of GvHD using iPS cell derived MSC (million USD)

Estimated by Fujifilm

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4. Business Developments in Cell Therapy (iPS cells)

<Number of patients of Age-related Macular Degeneration and Retinitis Pigmentosa>

<table>
<thead>
<tr>
<th>Age-related Macular Degeneration</th>
<th>Number of patients</th>
<th>Actual cost of treatment</th>
<th>Actual therapeutic effects</th>
<th>Treatment plan of Fujifilm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Late AMD</td>
<td>2.6 million</td>
<td>Wet 45%</td>
<td>Anti-VEGF drugs 414.1 billion yen (2014)</td>
<td>Stopping the deterioration of eyesight</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dry 55%</td>
<td>No remedy</td>
<td>Retinal Pigment Epithelial + Photoreceptor</td>
</tr>
<tr>
<td></td>
<td>Late AMD 0.48 million</td>
<td>Wet 77%</td>
<td>Anti-VEGF drugs 55.7 billion yen (2014)</td>
<td>Stopping the deterioration of eyesight</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dry 23%</td>
<td>No remedy</td>
<td>Improvement of eyesight</td>
</tr>
<tr>
<td>Europe</td>
<td>Late AMD 3.30 million</td>
<td>Wet</td>
<td>Anti-VEGF drugs 361.8 billion yen (2014)</td>
<td>Stopping the deterioration of eyesight</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dry</td>
<td>No remedy</td>
<td>Retinal Pigment Epithelial + Photoreceptor</td>
</tr>
<tr>
<td>Retinitis Pigmentosa</td>
<td>0.1 million</td>
<td></td>
<td>No remedy</td>
<td>Retinal Pigment Epithelial + Photoreceptor</td>
</tr>
<tr>
<td></td>
<td>30 thousand</td>
<td></td>
<td></td>
<td>Retinal Pigment Epithelial + Photoreceptor</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>1.4 million (estimated)</td>
<td></td>
<td>Retinal Pigment Epithelial + Photoreceptor</td>
</tr>
</tbody>
</table>

METI 2012, reports of Barclays
4. Business Developments in Cell Therapy (iPS cells)

Example of cell therapy - Ocular program
Retinal Pigment Epithelial (RPE) and Photoreceptor (PRP)

1. Autologous iPSC-RPE
2. HLA-compatible iPSC-RPE (near-allogeneic)
   - FCDI-NEI CRADA Project
3. HLA-compatible iPSC-PRP (near-allogeneic)
4. HLA-compatible iPSC-PRP

Number of AMD patients

<table>
<thead>
<tr>
<th>Nation</th>
<th>Dry AMD</th>
<th>Wet AMD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>1.16 million</td>
<td>1.44 million</td>
</tr>
<tr>
<td>America</td>
<td>1.10 million</td>
<td>2.20 million</td>
</tr>
</tbody>
</table>

Barclays report

In US
- No. 1 cause of blindness
- Affected 1/4 of people over 65 years old

Existing drug: Anti-VEGF
- Market size: 8,700 million USD (WW)
- Only offers delay of disease progression

There is no effective treatment
- In addition to stopping the progression by RPE transplantation, aiming to improve eyesight by PRP transplantation

4. Business Developments in Cell Therapy

iPS cell bank with HLA homozygotes types

CDI ❌ Bone Marrow Bank

Phase I: Completed Pilot Bank (n=5)
- Master Cell Banks of 5 donors completed (2 of them were produced based on GMP standards)

Phase II: In progress US Bank (n=12)
- 12 donors = 50% population coverage
- Corresponding to the regulations of US and Europe

- Early creation of differentiation business to gain a large market share
- Tie-ups with potent researchers
- Acquiring and increasing grant for research
- Acquiring consignment iPS cell bank for treatment use in Europe / Asia
4. Business Developments in Cell Therapy

<Granted patents of CDI in Japan>
CDI has been granted a patent in Japan related to technology required for the safe and efficient generation of iPS cells.

[ Patent Details ]
Patent name: Generation of induced pluripotent stem cells (iPS cells) from small volumes of peripheral blood
Patent no.: Japan patent 5984217
Key points of patent:
- The use of human peripheral blood cells for generating iPS cells
- The use of episomal vectors to introduce genes for reprogramming the cell
- The introduction of two or more genes using a single episomal vector
- No use of feeder cells when cultivating the cells

Aiming to harness synergies across the Fujifilm Group, by leveraging assets including Fujifilm's engineering technology and the quality management systems in place at J-TEC in order to expand its iPS cells contract manufacturing business.

4. Business Developments in Cell Therapy (somatic cells)

J-TEC became a consolidated subsidiary in December 2014.
4. Business Developments in Cell Therapy (somatic cells)

<Business performance of J-TEC>

- It is expected to achieve profitability in FY2017/3 by the sales increase of JACE, JACC and company-wide cost reduction measures.