Regenerative Medicine Initiatives in Osaka

Nov 8, 2016
Bio Europe 2016
Cologne, Germany
OSAKA at a glance

- Area: 1,899 km²
- Population: 8.8 million
- Population density: 4,660/km²
- GDP: 443.5 billion dollars (2012)

- Number of establishment: 449,766
  (7.4% of the nation)
- Share of SMEs: 99.6%
Competitive advantages in OSAKA

n **Industry gathering**
  - Pharmaceutical companies
  - Medical device manufacturers

n **knowledge accumulation**
  - Renowned universities and research institutes
  - Abundant expertise pool
  - Saito life science park

n **Established government, industry and academia business networks**
  - Osaka Bio Headquarters
  - Protein-Mall Kansai
Scientific Expertise

Focused technology areas

- Immunology
  - Basic research, imaging, informatics
- Vaccine
  - Adjuvant, new vaccine technology
- Regenerative medicine
- Pre-emptive medicine
  - Life-style related diseases
Ongoing clinical Studies using human stem cells in Japan

Source: http://www.skip.med.keio.ac.jp/frontline/hub/

Senri Life Science Foundation/Osaka Bio Head Quarters
Map of the medical institutes engaged in the clinical researches of advanced medicine and regenerative medicine in Osaka area

- iPS cell
- age-related macular degeneration
- Spinal cord injury

Senri Life Science Foundation/Osaka Bio Head Quarters
Number of clinical researches related to regenerative medicine in Japan (as of Nov. 2014).

The pursuit of clinical studies related regenerative medicine in Osaka area has been increasing year by year and the number of clinical studies in Osaka University and National Cerebral and Cardiovascular Center is higher than other regions.

Source: ヒト幹指針への適合性が承認され我が国で実施されているヒト幹細胞臨床研究

Senri Life Science Foundation/Osaka Bio Head Quarters
Promising regenerative medicine in Osaka

**Corneal reconstruction**
Osaka University (Prof. Nishida)

Autologous oral mucosal epithelium cell sheet transplantation

In the case of Stevens-Johnson syndrome

preoperative  
Postoperative 1 year

**Severe cardiac failure**
Osaka University (Prof. Sawa)

Skeletal myoblast sheets

Grafting the sheet to patients with dilated cardiomyopathy

Femoral muscle

myoblast cell culture

TERUMO have received the conditional approval by Ministry of Health, Labour and Welfare (MHLW) on Sep 18, 2015
Companies engaged in regenerative medicine and its products in Osaka area

Senri Life Science Foundation/Osaka Bio Head Quarters
Heart Sheet®

- Autologous skeletal myoblast sheets
  - Time to prepare: 7 weeks
  - Necessary sheet for treatment: 5 sheets
- Target disease: severe heart failure caused by ischemic heart disease
- Official insurance price
  - Kit A (collect muscle tissue, culture myoblast cells) ¥6,360,000
  - Kit B (preparation of sheet): ¥1,680,000/sheet

Calculated cost for heart failure treatment: ¥14,760,000
(¥ 6,360,000 + ¥1,680,000 X 5)
Issues we need to consider

- Cost-benefit performance
- National Health Insurance (NHI) coverage
- Necessity of regenerative medicine treatment
- Standardization of technologies
- Overseas regenerative medicine supporting materials
What should we do for progress of regenerative medicine industry in Osaka?

- The regenerative medicine industry require not only regenerative medicine products but also various type of supporting materials and tools.
  - Transportation, Equipment and apparatus, Cell Processing and Storage, Plasticware, Consumables, Reagent and culture media, automated culture apparatus and so on.

- Boost SMEs entering to regenerative medicine supporting business because the highest potential SMEs with state of the art technology are gathering in Osaka region and they are eager to expand their business.
In summary

High accumulation of SMEs having high quality of technologies in Osaka region and they are eager to expand their business to new frontier fields. But they don’t have budget, knowledge on regenerative medicine and talents.
Active Osaka Promotion Fund

**Objective**

- To develop a new business by taking advantage of local resources (technology, manpower, etc.) and to contribute to promotion and revitalization of Osaka industries and local community.
- Set up under the cooperation between the public and private sectors.

**Supporting fields**

- Medicine, iPS cell related R&D, and medical devices
- Managed scientifically by Senri Life Science Foundation

**R&D Subsidies for SMEs in Osaka**

- ¥5,000,000 (approx. €37,000)/year
- 2-3 Years
New SMEs engaging in regenerative medicine and their products (2016, OSAKA)

Refrigerated stored bag for living tissue & Packaging

Automatic Cell Processing System

Thermo-controlled transportation

REIMEI Inc.

Ophthalmology

COSMETEC JAPAN

Dermatology

In Vitro 3D Culturing Platform with Hybrid Gel Cubes for Multidirectional Observations

Senri Life Science Foundation/Osaka Bio Head Quarters
Hub for international regenerative medicine

- The smart city is still at the design stage
- Central part of Osaka city
Protein-Mall Kansai

The 2\textsuperscript{nd} Generation
Objective

In collaboration with northern Osaka bio medical cluster, Protein Mall Kansai aim to encourage the Osaka area’s SMEs engaging in the field of life science and to acquire the international competitiveness.
We offer services to members for fostering the realization through major daily activities

Protein Mall KANSAI

Share of Information among members
• Business & Academic Seminar

Partnering & Alliance Activities
• One to One Partnering
European Biotech & Pharma Partnering Conference, Osaka

- Date: Oct. 11, 2016
- Hosted by bioXclusters plus, Osaka Bio Headquarters, Senri Life science Foundation
- Co-hosted with EU Japan Centre
- 181 participants, 103 companies
- 288 meetings
Attractive place for regenerative medicine business!

Osaka is attractive place to start for regenerative medicine business.

We are pleasure to support you to find productive business partners in Osaka.
Thank you for your attention!

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