2016
Pharmaceuticals

Investment Opportunities
In Korea
Korea’s healthcare industry is growing thanks to the technological advancement of pharmaceuticals, medical devices and healthcare services and the government support for the entering into the global markets of healthcare-related companies.

**Achievement of Korea’s Healthcare Industry**

- **Pharmaceuticals**: World’s first biosimilar antibody approved in EU (‘12)
- **Devices**: World’s largest market share in ultrasound imaging devices (‘14)
- **Services**: Contract concluded to export KRW 70 billion hospital system to Saudi Arabia (‘14)


<table>
<thead>
<tr>
<th>Industry Overview</th>
<th>Competitiveness</th>
<th>Success Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status of pharmaceutical industry</td>
<td>Status of highly skilled human resources in the pharmaceutical and biotech industry</td>
<td>Celltiron</td>
</tr>
<tr>
<td>Korean pharmaceutical market</td>
<td>R&amp;D investment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Innovative research pipelines</td>
<td></td>
</tr>
</tbody>
</table>

**Where to Invest**

Location descriptions

1. Incheon FEZ Bio Cluster
2. Osong2 Biomedical Cluster (MFG)
3. Daegu Medivalley (MFG)
4. Jecheon Biovalley
5. Osong High-Tech Medical Cluster (R&D)
6. Daegu Medivalley (R&D)
7. Seoul Area
8. Pangyo2 Techno-Valley
9. Daeduk Innopolis
The size of Korea’s pharmaceutical market reached USD 19 billion in 2014, making it the world’s 13 largest market. Although domestic market growth has been stagnant, pharmaceutical companies are actively expanding into overseas markets. Over the last 5 years, annual exports and imports increased by an average of 20% and 11%, respectively.

Especially, the biopharmaceutical industry is recently enjoying a huge boom in Korea with its total production value increasing by USD 2 billion with 12% CAGR.
Competitiveness

Current status of highly skilled human resources in the pharmaceutical and biotech industry

Research workforce breakdown by educational background of pharmaceutical industry

- Bachelor's degree: 1,509
- Master's degree: 3,184

Research workforce breakdown by educational background of biotech industry

- Bachelor's degree: 15,420
- Master's degree: 7,411

* Source: Korea Health Industry Development Institute (2014), Analysis report of pharmaceutical industry in 2013

Expansion of private and government’s R&D investment

In 2012, Korea’s pharmaceutical companies invested approximately USD 1.1 billion into research and development. The investment volume is expected to grow with a high CAGR of 15.5% until 2020, showing the private sector’s strong commitment to research and development.

In order to develop blockbuster products, the Korean government is nurturing the biotechnology (BT) industry and plans to increase its R&D investment to USD 10 billion by 2017. It also plans to strengthen the R&D collaboration network to quickly respond to the innovative trends of the global market.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Investment into BT (%)</th>
<th>KRW (Trillion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT</td>
<td>18.41%</td>
<td>52.5B</td>
</tr>
<tr>
<td>BT</td>
<td>18.22%</td>
<td>51.78B</td>
</tr>
<tr>
<td>ET</td>
<td>15.06%</td>
<td>39.09B</td>
</tr>
<tr>
<td>NT</td>
<td>4.51%</td>
<td>10.95B</td>
</tr>
<tr>
<td>ST</td>
<td>4.75%</td>
<td>12.27B</td>
</tr>
<tr>
<td>the rest</td>
<td>38.09%</td>
<td>97.66B</td>
</tr>
</tbody>
</table>

* Source: KISTEP, 2015
Successful technology transfer cases of ‘Korean Innovative Pharma’ (15)

• After the inception of the ‘Special Act on Pharmaceutical Industry Promotion and Support’ in 2012, the Korean government designated 36 “innovative pharmaceutical companies” to build its capacity and competitiveness for drug R&D.

• Among them, Hanmi, CJ healthcare, Boryung, BC world Pharm, Samjin, Ilyang, and Genexine recorded a profit of USD 7 billion from technology transfer.

Success Case

Celltrion

• The first CMO foreign invested company in Korea
• Established in 2002 by Vaxgen (US Biopharma) via JV investment
• Supply agreement with global US Pharma in 2005 and listed on the KOSDAQ
• Plant1 received cGMP facility approval by the US FDA in 2007
• Additional investment in 2011 by Singaporean equity investment fund from TEMASEK (Ion Investment)
• Approved as the world’s first biosimilar in 2012 by KFDA(MFDS), 2013 by EMA, 2014 by Health Canada, and 2016 by US FDA
• Total no. of employees: 1,017
• Possesses biggest aggregate value among stock-listed companies
Where to Invest

Location Descriptions

1. Incheon FEZ Bio Cluster
   An ideal investment site located in the Incheon Free Economic Zone for the export and import of biopharmaceutical materials/products and offers geological benefits and administrative support. The cluster offers convenient living conditions for foreigners such as educational and medical services from high quality international schools and medical centers in the region.

2. Osong2 Biomedical Cluster (MFG)
   An outstanding business environment for state-of-the-art biopharmaceuticals. The cluster was created by the government with an aim to stimulate development of the bio-tech industry in the local communities through deregulation and simplified administrative procedures for biomedical products.

3. Daegu Medivalley (MFG)
   Developing synthetic drugs and IT based cutting-edge medical devices in collaborative relations with core research centers in Daegu Medivalley, as a rising medical cluster.

4. Jecheon Biovalley
   A highly promising complex with plenty of business opportunities for biomaterials thanks to its abundant supply of oriental herbal ingredients as well as an adequate infrastructure for bio-tech companies.

5. Osong High-Tech Medical Cluster (R&D)
   A world-class R&D cluster for innovative biopharmaceuticals and is being strongly supported by the government via deregulation and simplifying of administrative procedures for biomedical R&D.

6. Daegu Medivalley (R&D)
   A rising medical hub in Korea with R&D facilities including New Drug Development Center, Medical Device Development Center, Laboratory Animal Center, Clinical Drug Manufacturing Center, etc.

7. Seoul Area
   A superb business environment in the Seoul metropolitan area providing world-class education, industrial & cultural infrastructure for integrated knowledge-based industries, geological accessibility for economic benefits, and abundant human resources.

8. Pangyo2 Techno-Valley
   One of the leading innovation clusters in Korea providing an optimum ecosystem for dynamic ventures in the areas of bio-technology. Features outstanding geo-economic benefits of Seoul’s metropolitan areas, such as abundant human resources, transportation accessibility, cultural properties and convenient living conditions.

9. Daeduk Innopolis
   A widely-recognized R&D cluster in Korea that is home to many state-owned and private R&D institutes and leading science and engineering schools of various fields. Ideal location for integrated R&D of bio & pharmaceutical companies.
1. Incheon FEZ Bio Cluster

Investment Highlights

Location Description
An ideal investment site located in the Incheon Free Economic Zone for the export and import of biopharmaceutical materials/products and offers geological benefits and administrative support. The cluster offers convenient living conditions for foreigners such as educational and medical services from high quality international schools and medical centers in the region.

Key Rationale
• Abundant business opportunities with prominent bio-tech companies such as Samsung Biologics and Celltrion
• International business bases located nearby such as Songdo International City and Incheon Free Economic Zone
• Optimum industrial ecosystem thanks to incoming world-class bio-tech universities, research institutes and R&D centers

Location Overview

Target Area
• Total Area: 2,053,000 m²
• Available Area: 9,500 m²
• Type: Sale in lots
• Land zoning: FEZ
• Requirement: Foreign Investment Company
• Support of lease and tax: only for companies exceeding required foreign investment amount

1 USD = 1,200 KRW
Case References

**Successful case of foreign investment in Songdo Bio valley**

- With investments from successful companies like CELLTRION, Samsung BioLogics, Samsung Bioepis, DMBio and Ajinomoto Genexine, Incheon has emerged as the manufacturing center for bio-medicine.

**Celltrion**

- Established by a joint venture between Vaxgen and Singaporean equity investment TEMASEK in 2002, the company was the first ever to invent Biosimilar, and has an estimated sales of USD 333 million per year. It currently has 900 employees.

**Samsung Bioepis**

- Established by a joint venture between Biogen Idec Inc. and Samsung BioLogics in 2012. The company conducts research on bio-medicine products and has an estimated annual sales of USD 64 million.

**DMBIO**

- Established by a joint venture between DONGA and Meiji Seika Pharma. Plans to produce bio-medicines by 2018.

**Ajinomoto Genexine**

- Established in 2012 November by joint venture between domestic bio venture companies such as Genexine and Ajinomoto (capital amount of USD 29 million). It currently has 36 employees.
- Produces animal cell growth medium using amino acid technology.

Business Considerations

**Accessibility & Settlement**

**Transportation**

- **Airport**: Incheon International Airport (20km), Gimpo International Airport (25km)
- **Port**: Incheon Port (5km)
- **Railroad**: Near to Incheon Subway line 1
- **Road**: Seohaean Highway Namdong Complex IC (6km)

**Living Conditions**

- Seoul/Seoul-Incheon region includes 18,190,000 residents which is 35.6% of total population
- Region includes 70 universities with 789,000 students in total, and there are 43 community colleges with 304,000 students.
- Gachon University Hospital with 24 high-level hospitals and 146 general hospitals, 102 oriental treatment hospitals, 66 dentistry, which provides all-around medical services
- Region locates 60 large theatres, 615 medium sized theatres, 4,966 libraries, which all provides premium cultural environment.
- Region provides 25 foreign schools, 14 foreigners' responsible hospitals, which all provides premium medical services for foreigners.
Business Cluster

Major corporations in the region
- Center of medicine manufacturing: Samsung BioLogics/Samsung Bioepis/Celltrion Pharm Inc/Berna Biotech Korea/Jinromoto Genexine, Donga-Mejii Seika BIO, etc
- Cosmetics: Seoul Cosmetics/MAIIM/Somang Cosmetics/Kolmar Cosmetics Research Center, etc
- Fundamental medical ingredient suppliers: Daebong LS/Jungwon Alutech/Dassocos, etc
- Species suppliers: ORIENTBIO Inc, etc. numerous companies provide animal clinical tests
- Medicine process machines with packaging: Yonwoo Co, Sungwoo Land, AJC/DMT/Samchang/Chongwoo Co

Potential Customers
- Incheon covers 51.2% of medical demand in the region of Seoul-Incheon, and there are 24 high-level general hospitals, 146 general hospitals, 102 oriental medicine clinics and 66 dental clinics.
- In Incheon, there is a complete industrial continuum for medicine/bio production. There are companies that manufacture medicine and test clinical animals, while also package materials. There is thus good synergy between multiple firm chains.

Related Organization
- Similar research institutes: BINEX KBCC Co, National Institute of Biological Resources, Rehabilitation Engineering Research Institute, Incheon Institute of Health and Environment, National Institute of Environmental Research, Korea Testing and Research Institute, Lee Gil Ya Cancer and Diabetes Institute, JCB(Joint center for biosciences), Utah-Inha DDS & Therapeutics Research Center, etc
- Company supporting institutes: Incheon Free Economic Zone, Incheon Technopark, etc

Infrastructure

Utilities
- Water: 18,200 m³ per day
- Waste water management: Songdo Sewage Treatment Plant (processing amount: at first 10,000 m³ per day)
- Electricity: 240MVA, 354,380 MWH / per year
- Communication: 70,315 leased lines
- Energy plan: energy consumption from various sources

Labor Condition
- Regional population:

<table>
<thead>
<tr>
<th>Population</th>
<th>Available labor force</th>
<th>Bachelor’s</th>
<th>Master’s</th>
<th>PhD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nation-wide</td>
<td>51,327,916</td>
<td>31,600,268</td>
<td>7.9%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Chungbuk zone</td>
<td>18,188,169</td>
<td>11,702,777</td>
<td>8.0%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Cheongju</td>
<td>2,902,608</td>
<td>1,863,021</td>
<td>8.1%</td>
<td>1.1%</td>
</tr>
</tbody>
</table>

- Average wage: US$ 40,654 per year
(Calculated from employees of 10 biomedics/cosmetics firms (listed) with an average of 4.7 years of employment.)

Core Resource Supply
- Human resource: There are 70 universities which produce 126,000 alumni each year. There are 43 community colleges which produce 79,600 alumni each year.
- Clinical hospital: Gachon University Hospital and 24 high-level general hospitals, 146 general hospitals, 102 oriental medicine clinics, 66 dental clinics
- Preclinical trials CRO: There are various CROs with clinical and preclinical trials capacities including Orient Bio.
- Smooth route to supply and export through Incheon International Airport and Incheon Port.

Government Support

Government support for foreign investment companies
- Factory site support (Long-term lease, rent reductions, balance assistance for land purchase, etc)
- Cash grant (Employment/education/training subsidy, production facilities subsidy)
- Tax reduction (if requirements are satisfied)
- Municipalities offer support and further incentives are negotiable
- Funding issues with small to medium sized business funds are supported by the Incheon Metropolitan City Business Center
2. Osong 2 Biomedical Cluster (MFG)

Investment Highlights

Location Description
An outstanding business environment for state-of-the-art biopharmaceuticals. The cluster was created by the government with an aim to stimulate development of the bio-tech industry in the local communities through deregulation and simplified administrative procedures for biomedical products.

Key Rationale
- Administrative, R&D, and manufacturing infrastructure for the high-tech medical cluster designated by the government
- Ideal environment provided for companies in the bio-tech industry to flourish

Location Overview

Target Area
- Total Area: 3,283,000 m²
- Available Area: 1,219,000 m²
- Type: Sale in lots
- Land zoning: Industrial Complex
Case References

Bioindustry integrated region with major domestic medical product manufacturers

- LG Life Science
  - Established in 2002. Sales equivalent to USD 339 million. Total no. of employees: 1,385
  - Pharmaceutical company focusing on innovation through domestic R&D centers
  - Investment of USD 166 million in facilities: 165,000 m² (completed in 2010)
  - Invested in manufacturing of growth hormone vaccines

- CJ Healthcare
  - Established in 1984. Privatized from CheilJedang as independent medical organization in 1984. Sales equivalent to USD 275 million. Total no. of employees: 1,156
  - Investment of facilities: 145,000 m² (completed in May 2010)
  - Manufacturing EPO and anti-cancer drugs

- Samjin Pharm
  - Established in 1968. Sales equivalent to 168 million dollars. Total no. of employees: 625
  - Investment of land: 32,000 m² (completed in 2013.03)
  - Manufacturer of ulcer treatment pills and paracetamol

Business Considerations

Accessibility & Settlement

Transportation

- **Airport**: Cheongju International Airport (20km), Incheon International Airport (169Km), Gimpo International Airport (159Km)
- **Railroad**: KTX OSONG ST (3Km) (Seoul in 40min) Gyeongbu and Honam lines junctions
- **Road**: Cheongju IC (7Km) is connected to 6 highways, including Gyeongbu, Jungbu, Jungahang, Jungbu and Naeryuk Expressway

Living Conditions

- 5,640,000 permanent residents in the region encompassing Cheongju, Daejeon, Cheonahn, and Sejong
- Around 388,000 attendants at 34 universities including KAIST and Chungbuk University
- Good medical infrastructure with 4 university hospitals including Chungbuk University Hospital, as well as 18 general hospitals, and 1700 hospitals/clinics
- Good living environment with Korea’s largest international school located in Daejeon (1,364 students in total) and medical institutes specialized in treatment for foreigners
- Excellent leisure infrastructure with golf clubs, amenities and parks, museums and theaters, libraries as well as other cultural facilities located within 20km
**Business Cluster**

**Major Corporations**
- Complete medicine (inc. animals) manufacturers: LG Life Sciences, CJ Health, Suheung Capsule, Choongang Vaccine Laboratory, etc.
- Cosmetics manufacturers: Hankook Cosmetics Manufacturing, UNILEVER, etc.
- Medicine with cosmetics manufacturers(beginners): Bionics, etc
- Clinical animal, Biomaterials: Optipharm, etc
- Medicine process machines with packaging: Pacific packaging, SR techno etc

**Potential Customers**
- Accounts for 10.2% of national demand for medical services. 4 high-level general hospitals and 18 general hospitals.
- In Osong, there is a complete industrial continuum for medicine/bio production. There are companies that manufacture medicine and test clinical animals, while also package materials. There is thus good synergy between multiple firm chains.

**Related Organization**
- Research support facilities: New Drug Development Center, Laboratory Animal Center, Clinical Drug Manufacturing Center, National Biobank of Korea, National Center for Medical Information & Knowledge, National Center for Stem Cell & Regeneration Medicine, National Aging Research Institution, High-risk Pathogen Research Institute, etc
- Administrative agencies: Ministry of Food and Drug Safety, National Institute of Food and Drug Safety Evaluation, Centers for Disease Control and Prevention, National Research Institute of Health, Korea Health Industry Development Institute, Korea Human resource Development Institute For Health & Welfare, and Health administrative institutes with Chungbuk Technopark

**Infrastructure**

**Utilities**
- Water: 26,000 m³ per day
- Waste water management: 18,000 m³ per day
- Industrial wastage: built landfill, region made available for 84,106 m³ wastage
- Electricity: built electrical substation
- Communication: plans to build 2,091 industrial leased lines, 9,127 residential lines (13,508 in total)

**Labor Condition**
- Regional population:

<table>
<thead>
<tr>
<th>Population</th>
<th>Available labor force</th>
<th>Bachelor’s</th>
<th>Master’s</th>
<th>PhD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nation-wide</td>
<td>51,327,916</td>
<td>31,600,268</td>
<td>7.9%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Chungbuk zone</td>
<td>5,648,190</td>
<td>3,414,477</td>
<td>6.9%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Cheongju</td>
<td>1,006,496</td>
<td>624,004</td>
<td>6.8%</td>
<td>1.3%</td>
</tr>
</tbody>
</table>
- Average wage: USD 40,654 per year
(Calculated from employees of 10 bio-medics/cosmetics firms(listed) with an average of 4.7 years of employment.)

**Core Resource Supply & Environment**

**Administration support:** Deregulation efforts to establish a corporate-friendly environment for active R&D activities and product commercialization.

- Human resource: Increase in workforce with approximately 57,600 graduates from 34 universities and 45,000 graduates from 60 community colleges every year
- Medical material: Easy accessibility to oriental herbs and crude drugs due to regional characteristics of Chungbuk area
- Clinical animal trial: Supply of clinical animals from in-cluster animal test centers and other adjacent animal test companies
- Clinical trial hospitals: Clinical trial beds in 4 high-level general hospitals and 18 general hospitals

**Government Support**
- Government support for foreign-invested companies
  - Factory site support (long-term lease, rent discounts/exemption, subsidy for the price different between sales price and market price in case of land purchase, etc.)
  - Cash grant (employment/education/training subsidy, production facilities subsidy)
  - Tax reduction (if requirements are satisfied)
- Research & development collaboration with government organizations and R&D fundraising from locan/central government. Please refer to the appendix for more detailed description of incentives provided by the Act.
- Support from municipal governments will be provided independently after consultation
3. Daegu Medical Cluster (MFG)

Investment Highlights

Location Description
Developing synthetic drugs and IT based cutting-edge medical devices in collaborative relations with core research centers in Daegu Medivalley

Key Rationale
- Establishing a medical hub along with Medivalley as a core area of Daegu City which claims Medicity Daegu as its development strategy
- Creating a medical industry ecosystem for the development of new drugs and medical devices by the companies located within the Cluster along with local medical universities and research centers
- Creating synergic effects on the IT convergence technology industry in a relation with Medivalley

Location Overview

Target Area
- Total Area: 1,087,000㎡
- Available Area: 137,660㎡
- Type: Sale in lots
- Land zoning: special r&d zone

Related Companies
- Company related to medicine manufacturing: Kyungnam Biotech, LG Chem, Kosmo, moderna, KEC, LANB, Kyorin Pharma, SK Biotech, SK Life Science, etc.
- Company related to medical equipment: LG Innotek, Samsung Electronics, Celsion, etc.
Case References

DENTIS
• Established in 2005, estimated sales: 27 million dollars, employment 214
• Manufacture implants and 3D printers
• Signed investment agreement for constructing manufacturing plant in MFG zone (Daegu City, 2012)
• Subsidy (Daegu, 2015). Completion of manufacturing plant (2015), 15% of total employees works in R&D, and continues to invest in new business opportunities

Cretem
• Established in 2003, estimated sales: 20 million dollars, employment 148
• Number of patents: 37 Korea, 18 international, ISO9001, CSA, FCC, CE
• Its headquarter, the R&D center, and the manufacturing facility will be relocated in Daegu Medical Cluster from Gyeonggi Province.
• Main products: pharmacy automation devices, medical robots

CMTECH
• Established in 2002, manufacture and research medical appliances (listed in KOSDAQ)
• Estimated sales: 3.8 million dollars, Employment: 28
• Based on previous experience in production of material, CMTECH changed business to medical R&D and technology development (within duration of 8 years).
• Main products: Medical plasma sterilizer (Endoscope feasible in temperature under 60 degrees)

Saeyang
• Established in 1976, estimated sales 17 million dollars, Employment: 83
• Signed MOU with Daegu City for its investment in the establishment in the Daegu Medical Cluster for its manufacturing facility in 2014
• Main products: micro motor hand-piece

Business Considerations

Accessibility & Settlement

Transportation
• Airport: Daegu International Airport (12 domestic routes) 8Km, Kimhae Int Airport (40 domestic routes) 100Km
• Railroad: Daegu Medical Cluster – 20 minutes to Dongdaegu Station (100 minutes for Dongdaegu Sta. to Seoul Sta.)
• Road: Connects DongDaegu IC with 7 highway gates (Gyeongbu, Guma, Jungang, 88, Jungbu Inland, Iksan-Pohang, Daegu-Busan)
• Port: 1 hour away from 5 international sea ports (Pohang, Ulsan, Masan, Busan, Busan New Seaport)

Living Conditions
• Daegu-Gyeongbuk region has population of 5,200,000, concentrates 10.2% of total population
• Region locates 21 Universities with 236,600 students, and are 34 colleges with 105,000 pupils
• Premium education environment
  - Top-ranked in the 2012 national academic achievement test (middle school seniors)
  - Ranked 1st in the 2012 national academic aptitude test (average score)
• 12 general hospitals, 175 hospitals, 837 oriental medicine clinics, 835 dental hospitals/clinics, 1,158 pharmacies all situated to provide premium medical services
• Region locates 25 large theatres, and 30 libraries all providing premium cultural experience
• 1 international school, 160 foreigner specialized hospitals all provides premium medical service to foreigners
### Business Cluster

**Major Corporations**
- Complete medicine: Dongsung Pharmaceutical/Daewoo Pharmaceutical/Hanlim Pharm/Huniz/Daewoo Pharmaceutical/Korean Pharmacy, Shinshwa Pharmaceutical/Jell Pharm etc
- Cosmetics: Lee Jiham Cosmetics/Thuringen Korea/NEWRONEX etc
- Medical ingredients: Dong-A ST/Nicca Korea/BTO Pharm/Ill Shim Pharmaceutical etc

**Potential Customers**

<table>
<thead>
<tr>
<th>General hospitals</th>
<th>Hospitals</th>
<th>Clinics</th>
<th>Dental hospitals/clinics</th>
<th>Oriental medicine clinics</th>
<th>Pharmacies</th>
<th>Medicinal Supply Wholesalers</th>
<th>Medical device Suppliers</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>175</td>
<td>1,607</td>
<td>835</td>
<td>837</td>
<td>1,158</td>
<td>307</td>
<td>2,857</td>
</tr>
</tbody>
</table>

**Related Organization**
- BIO medical research: Korean Brain Research Institute, 3D Convergence Technology Center, Korea Institute of Oriental Medicine, High-tech Clinical Trial Center, Gyeongju Proton Accelerator Research Center and Pohang Proton Accelerator
- Relevant Universities: 5 medical universities, 2 oriental medicine universities, 4 pharmaceutical universities, DGIST
- Administrative agencies: Daegu-Gyeongbuk Medical Innovation Foundation, Korea Evaluation Institute of Industrial Technology, Korea Industrial Complex Corporation

### Infrastructure

- Water: Purification plant and pipes are used for the cluster by the Daegu Innovative Industrial Plan.
- Waste water management: Managed according to the Daegu Innovative Industrial Plan
- Electricity: usage for electric transformer – maximum of 23,638 kVA. Demand for Electricity - 21,274 KW
- Communication: Managed according to the Daegu Innovative Industrial Plan

### Labor Condition
- Regional population:
  - Nation-wide: 51,327,916 (with an average of 4.7 years of employment)
  - Daegu zone: 7,626,969
  - Daegu: 2,493,264
- Average wage: US$ 40,654 per year

### Core Resource Supply

- Administration support: Reduced response time from regulatory change by deregulation for businesses, and provide environments for research/business
- Human resources: Region locates 21 Universities with 34,900 alumnus, 34 colleges with 27,121 alumnus (120,000 manpower with education above Bachelor’s degrees)
- Medical material: Made use of the region advantages from geographically near to collecting ingredients of oriental medicine ingredients in Gyeongbuk
- Clinical animal trial: Companies may utilize the Laboratory Animal Center in Daegu Medivalley for its clinical trials
- Daegu Joint Institutional Review Board(IRB) joint clinical support system of five general hospitals of Daegu

### Government Support

- Tax Benefits
  - National Tax: corporate tax 100% exemption for 3 years and 50% reduction for the subsequent 2 years
  - Local Tax: acquisition tax exemption/property tax 100% exemption for 7 years and 50% reduction for the subsequent 3 years
  - Eligibility: advanced technology companies OR research companies
- Land purchase support: interest-free installment for 5 years, discount for lump-sum payment (3% off for pre-payment)
- Administrative support: one-stop administrative support from site selection to moving-in, one-on-one personal support from pre-lease counseling to R&D
4. Jecheon Biovalley

**Investment Highlights**

**Location Description**
A highly promising complex with lots of business opportunities for biomaterials thanks to its abundant supply of oriental herbal ingredients as well as optimum infrastructure for bio-tech companies.

**Key Rationale**
- Strong potential for growth is the key to the expansion of the region's bio & pharmaceutical industry
- Advantage as a low-cost production site
- High supply and demand of oriental medicine as the region is a trading center for medicinal herbs

**Location Overview**

**Target Area**
- Total Area: 1,307,000 ㎡
- Available Area: 39,000 ㎡
- Type: Sale in lots
- Land zoning: Industrial complex

---

1 USD = 1,200 KRW
Case References

**YUYU**
- Established in 1941 (long history of sales/operation)
- Listed in KOSPI with sales of USD 45 million (products: osteoporosis pills, blood clot pills, embolism, etc)
- Headquarters and manufacturing plant both moved to Jechon in 2006 for economic reasons and geographic advantage

**KOLMARPHARMA**
- KOLMAR is famous in the cosmetics market and established KOLMARPHARMA in 1992
- Estimated sales: USD 45 million (products: blood pressure pills, obesity treatment pills)
- Jechon factory gained K-GMP in 2010 and headquarter moved to Jechon in 2012

**HUMEDIX**
- Oriental treatment bio firm established in 2003 in Jechon.
- Listed in KOSDAQ in 2014 with sales of USD 29 million (products: arthritis treatment pills, biomedicine and variety of drugs)
- Statistics shows constant increase of sales and profit

Business Considerations

**Accessibility & Settlement**

**Transportation**
- **Airport**: Cheongju International Airport (114km), Incheon International Airport (192Km), Kimpo International Airport (175Km)
- **Port**: Pyeongtek (149Km), Incheon Port (175Km)
- **Railroad**: Chungbuk Jechon station (4km)
- **Road**: Joongang Highway Jechon IC (0.9km) (Seoul 154km, Daejeon 159km, Daegu 222km)

**Living Conditions**
- Resident population equals 140,000; including Jechon and eastern Dongbu, population equals 2,990,000.
- 31,000 graduates out of 214,900 current students at 18 universities each year. 50,000 graduates out of 12,131 current students at 14 community colleges each year
- Optimal medical environment with 4 high-level general hospitals, 27 general hospitals, and 314 small medical facilities
- Jechon was chosen as Pheongchang Olympics’ location in 2018 which is expected to bring regional development.
There are 33 medicine bio firms in Jechon bio valley

- Complete medicine (inc. animals) manufacturers: Yuyu Pharma, Il Yang Bio PharmBioPharmPHARM, KolmarPHARMA, Humedix Co, HuonsCo, Enzymech Lifesciences Corporation, Medigen, etc
- Medical ingredients: CLS, SMC, HIMAX etc
- Oriental medicine ingredients: KT&G, HONGHAE MEDICINE
- Cosmetics: East Hill (cosmetics ingredients), DermalKorea (facial masks) etc
- Other biotech companies: Envioneer (filter)

The region accounts for 5.7% of total demand for medicine in Korea, and there are 4 high-level general hospitals, 24 general hospitals and 314 regular hospitals across the region.

Promotes oriental treatment as brand identity in medicine leisure market.

Research Institutions: Jechon Korean medicine BIO promotion foundation, Chungbuk Techno Park Bio Center, KAIST, KOREA RESEARCH INSTITUTE OF CHEMICAL TECHNOLOGY, Korea Institute of Oriental Medicine, National Research Institute of Health, Chungbuk Institute for Bio Industry, etc

Government organizations: Ministry of Food and Drug Safety, National Institute of Food and Drug Safety Evaluation, Centers for Disease Control and Prevention, National Research Institute of Health, Korea Health Industry Development Institute, Korea Human resource Development Institute For Health & Welfare etc (6 govt. agencies)

Water: industrial water: 18,000 m³ per day, living water: 3,400 m³ per day

Waste water management: taken care by JECHON CITY SEWERAGE PLANT (directed)

Electricity: 154KV, capacity of 31MVA (factory: 24,889KVA, regular: 6,274KVA)

Waste: disposed by local disposal firm by contract

Communication: 1,504 leased lines (factory 1,099LS, housing 128LS, regular 277LS)

Energy: LNG supply

Regional population:

<table>
<thead>
<tr>
<th></th>
<th>Population</th>
<th>Available labor force</th>
<th>workforce ratio to population</th>
<th>Bachelor’s</th>
<th>Master’s</th>
<th>PhD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nation-wide</td>
<td>51,327,916</td>
<td>31,600,268</td>
<td>61.6%</td>
<td>7.9%</td>
<td>1.7%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Gangwon zone</td>
<td>2,999,426</td>
<td>1,781,840</td>
<td>59.4%</td>
<td>6.8%</td>
<td>1.8%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Wonju/Jechon</td>
<td>672,624</td>
<td>400,272</td>
<td>59.5%</td>
<td>7.0%</td>
<td>1.2%</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

Average wage: USD 40,654 per year

(Calculated from employees of 10 biomedics/cosmetics firms listed with an average of 4.7 years of employment.)

Work force: 1,780,000 available workers. 31,000 graduates at 18 universities each year. 12,131 graduates at 14 community colleges each year

Raw ingredients distribution: Region concentrates distribution center for oriental ingredients, medicine manufacturers, including YUYU, Humedix, and packaging companies

Osong bio-valley medical welfare administration benefits from geographical cluster of bio companies.

Government support for Foreign investment companies:

- Factory site support (long-term lease, rent reductions, balance assistance for land purchase, etc)
- Cash grant (employment/education/training subsidy, production facilities subsidy)
- Tax reduction (if requirements are satisfied)

Support and additional incentives from the municipalities can be provided after consultation.
5. Osong High-tech Medical Cluster (R&D)

**Investment Highlights**

**Location Description**
A world-class R&D cluster for innovative biopharmaceuticals supported by the government pursuing deregulation and simplifying administrative procedures for biomedical R&Ds

**Key Rationale**
- R&D cooperation from 6 health-related administrative agencies such as the Ministry of Food and Drug Safety as well as from corporations nearby
- State-designated industrial complex for advanced medical industry. R&D infrastructure for new drugs and advanced medical devices
- Possibility for joint businesses with 70 pharmaceutical companies in the region

**Location Overview**

**Target Area**
- Total Area: 1,131,054㎡
- Available Area: 513,943㎡
- Type: Sale in lots (partly lease)
- Land zone: Advanced medical care complex (corresponding standards of foreign investment area of research and development)
Case References

Osong BIO valley – High tech medical complex complex cases

- 18 Medicine/bio/cosmetics industrial firms settled in the cluster by 2015 Sept
- Major firms: Korea Forest Center BIO, Korea University Biomedical Engineering Institute, KOLMAR, medutpx, Solgent, Macrogen, coseed

KOLMAR

- Established in 1999 (Japan's JV, Sales: 366 million dollars, cosmetics ODM, OEM))
- Employment: 711
- Osong fermentation oriental treatment research centers (nature products cosmetics research) operated

Medytox

- Established in 2002. sales: 58 million dollars, Bio medicine manufacturing venture capital firms
- Employment: 194
- First ever venture company to construct biological test facilities

Business Considerations

Accessibility & Settlement

Transportation

- **Airport**: Cheongju International Airport (20km), Incheon International Airport (169Km), Gimpo International Airport (159Km)
- **Railroad**: KTX OSONG ST (3Km) (Seoul in 40min) Gyeongbu and Honam lines junctions
- **Road**: Cheongju IC (7Km) Geoungbu, Jungbu, Jungahang, Jungbu Naeryuk expressway etc connects 6 highways

Living Conditions

- 5,640,000 residents in Cheongju, Daejeon, Cheonahn, and Sejong
- 388,000 students at 34 universities (KAIST, Chungbuk Uni. etc.)
- Premium medical environment with 4 high-level general hospitals, 18 general hospitals, 1,700 clinics
- Premium living environment for foreigners with the largest domestic university for foreigners (1,364 avg students, Daejeon) and hospitals specialized in treatment for foreigners
- Golf clubs, highways, parks, museums, stadiums and libraries within 20km
Business Cluster

Major Corporations
- Complete medicine (inc. animals) manufacturers: LG Life Sciences, CJ Health, Suheung Capsule, Choongang Vaccine Laboratory, etc
- Cosmetics manufacturers: Hankook Cosmetics Manufacturing, UNILEVER, etc
- Medicine with cosmetics manufacturers (beginners): Bionics, etc
- Clinical animal, Biomaterials: Optipharm, etc
- Medicine process machines with packaging: Pacific packaging, SR techno etc

Potential Customers
- Accounts for 10.2% of nation demand for medical services, and there are 4 high-level general hospitals and 18 general hospitals
- In Osong, there is a complete industrial continuum for medicine/bio production. There are companies that manufacture medicine and test clinical animals, while also package materials. There is thus good synergy between multiple firm chains.

Related Organization
- Infrastructure facilities: New Drug Development Center, Laboratory Animal Center, Clinical Drug Manufacturing Center, Medical Device Development Center
- Research institutes: National Biobank of Korea, National Center for Medical Information & Knowledge, National Center for Stem Cell & Regeneration Medicine, National Aging Research Institution, High-risk Pathogen Research Institute etc
- Administrative agencies: Ministry of Food and Drug Safety, National Institute of Food and Drug Safety Evaluation, Centers for Disease Control and Prevention, National Research Institute of Health, Korea Health Industry Development Institute, Korea Human resource Development Institute For Health & Welfare. 6 major government welfare administrative agencies with Chungbuk Technopark, OSONG Medical Innovation Foundation, etc

Infrastructure

Utilities
- Water: 26,000 m³ per day
- Waste water management: 18,000 m³ per day
- Industrial wastage: built landfill, region made available for 84,106 m³ wastage
- Electricity: operates electrical substation
- Communication: plans to build 2,091 industrial leased lines, 9,127 residential lines (13,508 in total)

Labor Condition
- Regional population:

<table>
<thead>
<tr>
<th>Population</th>
<th>Available labor force</th>
<th>Bachelor’s</th>
<th>Master’s</th>
<th>PhD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nation-wide</td>
<td>51,327,916</td>
<td>31,600,268</td>
<td>7.9%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Chungbuk zone</td>
<td>5,648,190</td>
<td>3,414,477</td>
<td>6.9%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Cheongju</td>
<td>1,006,496</td>
<td>624,004</td>
<td>6.8%</td>
<td>1.3%</td>
</tr>
</tbody>
</table>

- Average wage: (US$ 40,654 per year)
  (Calculated from employees of 10 biomedics/cosmetics firms listed with an average of 4.7 years of employment.)

Core Resource Supply
- Administration support: Faster regulatory response and provides optimized environment for research/industrial commercialization through deregulation of legislation program.
- Human resource: 388,000 students at 34 universities, with 57,600 graduates each year. 60 specialized high schools. 45,000 additional workforce each year.
- Medical material: Oriental treatment, oriental ingredients are mainly produced in the Chungbuk region.
- Clinical animal trial: Companies with research centers for clinical trials.
- Hospitals with clinical trials: 4 high-level general hospital and 18 general hospitals with clinical trial beds

Government Support
- Government support for foreign investment companies
  - Factory site support (Long-term lease, rent reductions, balance assistance for land purchase, etc)
  - Cash grant (Employment/education/training subsidy, production facilities subsidy)
  - Tax reduction (if requirements are satisfied)
- Research & development collaboration with government organizations and R&D fundraising from local/central government. Please refer to the appendix for further description of incentives from the Act.
- Support and additional incentive from the municipalities can be provided after consultation.
## Incentives for foreign invested companies in High Tech Medical Complex

The following support is outlined by the Special Act on the Designation and Support of High-Tech Medical Complexes

<table>
<thead>
<tr>
<th>Category</th>
<th>Legislation</th>
<th>Articles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Additional Support</strong></td>
<td>If any person to whom a loan granted for the research and development of medical services fails in the relevant project and is unable to repay the loan granted, abate or exempt the person's obligation to repay the principal and interest thereon, fully or partially, and may allow the person to repay the loan with part of his/her earnings.</td>
<td>Article 13 (Grant of Loans)</td>
</tr>
<tr>
<td></td>
<td>Any researcher of a national or public research institute may voluntarily suspend his/her employment to work for medical services. The period of the voluntary suspension of work under the extension shall not exceed three years.</td>
<td>Article 19 (Allowances)</td>
</tr>
<tr>
<td></td>
<td>The State and each local government may, by permission for commercial use, loan or sell under a negotiated contract, to any supportive institution for research and development institute of medical services</td>
<td>Article 18 (Special Cases for Commercial Use, Loan, and Sale of State-Owned or Public Property)</td>
</tr>
<tr>
<td></td>
<td>Issued visa amounts to 5 years for foreigners working for a supportive institution for research and development of medical services</td>
<td>Article 20 (Special Cases for the Immigration Control Act)</td>
</tr>
<tr>
<td><strong>Deregulation</strong></td>
<td>Foreign medical staff (doctors, dentists) are permitted to render medical services intended for medical research at medical facilities within cluster</td>
<td>Article 21 (Special Cases concerning the Medical Service Act)</td>
</tr>
<tr>
<td></td>
<td>Medical institutions may apply for insurance reimbursement for medicines, medical devices and medical technology applied to clinical patients for medical research purpose</td>
<td>Article 22 (Special Cases concerning the National Health Insurance Act)</td>
</tr>
<tr>
<td></td>
<td>Manufacturing permits and facility codes do not apply to R&amp;D institutes</td>
<td>Article 23 (Special Cases concerning the Pharmaceutical Affairs Act)</td>
</tr>
<tr>
<td></td>
<td>Simplified procedures for import or registration of drugs and medical devices (for research purposes)</td>
<td>Article 24 (Special Cases concerning the Medical Devices Act)</td>
</tr>
<tr>
<td></td>
<td>International standards applied to the approval of manufacturing and importing medicine and medical devices</td>
<td>Article 25 (Special Cases concerning the Bioethics and Safety Act)</td>
</tr>
<tr>
<td></td>
<td>• Subcommittee of the national bioethics committee located in cluster • Resident companies can jointly utilize institutional life ethics review board</td>
<td>Article 26 (Special Cases for the Patent Act)</td>
</tr>
<tr>
<td></td>
<td>Priority deliberation for research and development patent applications</td>
<td></td>
</tr>
</tbody>
</table>
6. Daegu Medivalley (R&D)

**Investment Highlights**

**Location Description**
A rising medical hub in Korea with R&D facilities including New Drug Development Center, Medical Device Development Center, Laboratory Animal Center, Clinical Drug Manufacturing Center, etc

**Key Rationale**
- Integrated with industrialization support which offers clinical testing hospitals, research equipment and supply of workforce
- Convenience and living standard of metropolitan city
- Spearheading the globalization of Korean medical industries by serving as a stronghold for globally competitive IT-based high-tech medical devices and synthetic drugs

**Location Overview**

- **Target Area**
  - Total Area: 1,054,000㎡
  - Available Area: 59,047㎡
  - Type: Sale in lots, long term rent
  - Land zoning: high-tech medical complex (foreign investment area of research and development)

1 USD = 1,200 KRW
Case References

HANLIM
• Established in 1989. Manufactures: research/develop medical products and experiments.
• Sales: 167 million dollars. Employment: 670
• Research fields: osteoporosis, bone disease, permanent inflammation, cancer
• Signed investment agreement for constructing its R&D center in Daegu Medivalley (Daegu City, 2012.)
• Agreed to run clinical animal test and new medicine development in 2013 via agreement with DGMIF
• Ran clinical tests within University hospitals in Daegu City

Dongsung
• Established in 1957, manufactures medicine and cosmetics, and records shows an estimate sales of 46 million dollars. Manufactures digestive pills, facial cosmetics, dyes, etc.
• Signed investment agreement for constructing its R&D center in Daegu Medivalley (Daegu City, 2014.)
• Recently manufactures new live bacteria medicine

Korea Pharma
• Established in 1985. Manufacture/research medicine, Sales: 46 million dollars
• Research: CNS special medicine and antibiotics
• Signed investment agreement for constructing its R&D center in Daegu Medivalley (Daegu City, 2012.)
• Collaborates with New Drug Developemnt Center for common research by support funds
• Collaborates with pharmacy universities and New Drug Development Center for inflammation disease cure, dementia, Parkinson treatment cures

Daewoo Pharmacy
• Established in 1999, employees: 270, estimated sales : USD 44million
• Portfolio for R&D : AGIs(Angiogenic inhibitors), DR(Drug-repositioning), DDS(Drug delivery system), APIs(Active Pharmaceutical Ingredients)
• Signed investment agreement for constructing its R&D center in Daegu Medivalley (Daegu City, 2012.)
• Found treatment for Hepatitis clinical test 1, Short Stature disease, uterine cancer

Business Considerations

Accessibility & Settlement

Transportation
• Airport: Daegu International Airport (12 domestic routes) 8Km, Kimhae Int Airport (40 domestic routes) 100Km
• Railroad: KTX train Dongdae region 11Km (Daegu-Seoul takes 1H40min)
• Road: Connects East Daegu IC with 7 highway gates (Gyeongbu, Guma, Jungang, Middle parts of Korea, Gwangju, Pohang, Busan)
• Port: 1 hour away from 4 international sea ports (Pohang, Ulsan, Masan, Busan, Busan New Port)

Living Conditions
• Daegu-Gyeongbuk region has population of 5,200,000, concentrates 10.2% of total population
• Region locates 23 Universities with 236,600 students, and are 23 community college with 105,000 pupil
• Premium education environment
- Top-ranked in the 2012 national academic achievement test(middle school seniors),
- Ranked 1st in the 2012 national academic aptitude test(average score)
• 12 general hospitals, 175 hospitals, 837 oriental medicine clinics, 835 dental hospitals/clinics, 1,158 pharmacies all situated to provide premium medical services
• Region locates 25 large theatres, and 30 libraries all providing premium cultural experience
• 1 international school, 160 foreigner specialized hospitals all provides premium medical service to foreigners
### Business Cluster

**Major Corporations**
- **Complete medicine**: Dongsum Pharmaceutical/Daewoo Pharmaceutical/Hantlim Pharm/Huniz/Daewoo Pharmaceutical/Korean Pharmacy, Shinwha Pharmaceutical/Jei Pharm etc
- **Cosmetics**: Lee Jiham Cosmetics/Thuringen Korea/NEWRONEX/ etc
- **Medical ingredients**: Dong-A ST/Nicca Korea/BTO Pharm/II Shim Pharmaceutical

**Potential Customers**

<table>
<thead>
<tr>
<th>Category</th>
<th>Facility name</th>
<th>Scale area (m²)</th>
<th>Gross area (m²)</th>
<th>functionalities (facilities)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General hospitals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hospitals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Clinics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dental hospitals/clinics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Oriental medicine clinics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pharmacies</strong></td>
<td></td>
<td>12,754</td>
<td>10,607</td>
<td></td>
</tr>
<tr>
<td><strong>Medical Supply Wholesalers</strong></td>
<td></td>
<td>835</td>
<td>837</td>
<td></td>
</tr>
<tr>
<td><strong>Medical device Suppliers</strong></td>
<td></td>
<td>1,158</td>
<td>307</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>2,857</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Related Organization**
- **BIO medical research**: Korea Brain Research Institute, 3D Convergence Technology Center, Korea Institute of Oriental Medicine, High-tech Clinical Trial Center, Gyeongju Proton Accelerator Research Center and Pohang Proton Accelerator
- **Relevant Universities**: 5 medical universities, 2 oriental medicine universities, 4 schools of pharmacy, DGIST
- **Administrative agencies**: Daegu-Gyeongbuk Medical Innovation Foundation, Ministry of Food and Drug Safety, Korea Evaluation Institute of Industrial Technology, Korea Industrial Complex Corporation
- **Medicity Daegu Council**: Members consist of local university hospitals, heads of general hospitals, and heads of medical related organizations (Preferential purchasing of the firms moved in Medivalley and support of clinical trials for them)

### Infrastructure

**Government**
- **Core infra-structure**: New Drug Development Center
- **Medical Device Development Center**: Medical device development center
- **Laboratory Animal Center**: Research support facilities
- **Clinical Drug Manufacturing Center**: Laboratory animal center
- **Convenient facilities**: Communication Center
- **Total**: 473,023

**Private**
- **Startup R&D**: Korea Medical Venture Center
- **Total**: 21,918

**Nation-wide**
- **Available labor force**: 61,6%
- **workforce ratio to population**: 7.9%
- **Bachelor’s**: 1.7%
- **Master’s**: 0.6%
- **PhD**: 0.4%

**Daegu zone**
- **Available labor force**: 4,692,976
- **workforce ratio to population**: 9.0%
- **Bachelor’s**: 1.1%
- **Master’s**: 0.6%

**Daegu**
- **Available labor force**: 2,493,264
- **workforce ratio to population**: 61.7%
- **Bachelor’s**: 9.7%
- **Master’s**: 1.5%
- **PhD**: 0.6%

**Average wage**: US$ 40,654 per year (Calculated from employees of 10 biomedics/cosmetics firms listed with an average of 4.7 years of employment.)

**Core Resource Supply Environment**
- **National Research Institutes located within Medivalley**: Korea Brain Research Institute, Korea Institute of Oriental Medicine, 3D Convergence Technology Center, High-tech Medical Genome Research Center, Medical Technology Testing Training Center, Foreign Medical Expert Training Center(K-Medical Center), Laboratory Animal Resource Bank, High-tech Clinical Trial Center
- **Administration support**: Reduced response time from regulatory change by deregulation for businesses, and provide environments for research/business
- **Human resources**: Region locates 21 Universities with 236,600 students, and are 34 colleges with 105,000 pupil
- **Medical material**: Made use of the region advantages from geographically near to collecting ingredients of oriental medicine ingredients in Gyeongbuk
- **Clinical animal trial**: Companies may utilize the Laboratory Animal Center in Daegu Medivalley for its clinical trials
- **Daegu Joint Institutional Review Board(IRB)**: joint clinical support system of five general hospitals of Daegu

### Government Support
- **Tax benefits**: Various tax benefits to relieve financial burdens of companies
- **Financial support**: Site and investment subsidiary by Daegu City, Special support for large investment company (within 50% of the total investment)
- **Employment and training subsidiary**: Transition to metropolitan area / construction and expansion in local areas
- **Foreign-invested company**: Support for companies with at least 30% of foreign investment
- **R&D budget support**: Support for drug and advanced medical device research and development
- **Land purchase support**: Interest-free installment for 5 years, discount for lump-sum payment (3% off for pre-payment)
### Daegu Medivalley (R&D) Appendix

<table>
<thead>
<tr>
<th>Additional Support</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Incentives for foreign invested companies in High-tech Medical Complex</strong></td>
</tr>
<tr>
<td>- The following support is outlined by the Special Act on the Designation and Support of High-Tech Medical Complexes</td>
</tr>
<tr>
<td><strong>Category</strong></td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>If any person to whom a loan granted for the research and development of medical services fails in the relevant project and is unable to repay the loan granted, abate or exempt the person’s obligation to repay the principal and interest thereon, fully or partially, and may allow the person to repay the loan with part of his/her earnings.</td>
</tr>
<tr>
<td>Any researcher of a national or public research institute, may voluntarily suspend his/her employment in order to work for medical services. The period of the voluntary suspension of employment under the extension shall not exceed three years.</td>
</tr>
<tr>
<td>The State and each local government may, by permission for commercial use, loan or sale under a negotiated contract, to any supportive institution for research and development institute of medical services.</td>
</tr>
<tr>
<td>Issued visa amounts to 5 years for foreigners working for a supportive institution for research and development of medical services.</td>
</tr>
<tr>
<td>Any foreign medical doctor or dentist who meets the standards may conduct medical activities for the purposes of R&amp;D of medical services in a medical institution in High-tech Medical Complex.</td>
</tr>
<tr>
<td>The medicines, medical appliances, or medical technology applied to any person under clinical trials conducted for R&amp;D of a medical institution in High-tech Medical Complex are deemed medical care benefits.</td>
</tr>
<tr>
<td>Any resident R&amp;D institute of medical services that desires to manufacture any medicine/medical appliance developed as a result of its research shall obtain item permission of the Minister of Food and Drug Safety. If any supportive institution for research and development of medical services or any resident research and development institute of medical services obtains approval for import from the Minister of Food and Drug Safety with regard to the item and quantity of any medicine/medical appliance imported, such institution is deemed to have obtained the permission for import.</td>
</tr>
<tr>
<td>The National Bioethics Committee shall install a sub-committee for High-tech Medical Complex to have the sub-committee deliberate on the matters specified by Ordinance of the Ministry of Health and Welfare within High-tech Medical Complex.</td>
</tr>
<tr>
<td>The Commissioner of the Korean Intellectual Property office may authorize examiners to preferentially examine patent applications filed by any resident R&amp;D institute of medical services in connection with research and development within High-tech Medical Complex prior to other patent applications.</td>
</tr>
<tr>
<td>Article 26 (Patent Act)</td>
</tr>
</tbody>
</table>

### Others

- Able to commonly use the infrastructure/facilities and 200 senior research associates in Daegu Medivalley
- Administration support is provided by the government when investment category is within the government R&D objectives
- Various business support programs, including customized HR development, financial support
- One-stop administrative support from site selection to moving-in
7. Seoul Area

Investment Highlights

Location Description
A superb business environment in the Seoul metropolitan area providing world-class education, industrial & cultural infrastructure for integrated knowledge-based industries, geological accessibility for economic benefits, and abundant human resources

Key Rationale
• Advantage of utilizing highly-qualified researchers, strong workforce and infrastructure in the capital of Korea
• Industrial complex for integrated knowledge-based industries in Seoul
• Optimal location of bio R&D with favorable clinical testing environment and integration of primary technology research companies as well as completed pharmaceuticals/cosmetics companies

Location Overview

Target Area
• Total Area: 1,111,000 m²
• Available Area: 280,000 m²
• Type: Sale in lots
• Land zoning: General industrial complex

Location Map

- Complete med/bio/med Pharm: Co/TNFPharm/VOEDUHPharm/ DJHPharm etc.
- Medical/cosmetic materials: ICTCPharma/PMPI, PHARM etc.
- Medicines: COSMIX, BTL etc.
- Packaging processing companies: TCMBM etc.
- Complete med/bio/med Pharm: Co/TNFPharm/VOEDUHPharm/ DJHPharm etc.
- Medical/cosmetic materials: ICTCPharma/PMPI, PHARM etc.
- Medicines: COSMIX, BTL etc.
- Packaging processing companies: TCMBM etc.
Case References

**Have & Be**
- Established in 2004, Sales of USD 29 million, skin care cosmetics company
- Equity investments in Estée Lauder and Have & Be in 2015

**RAPHAS**
- Head office (DMC High-tech Industry Center), research institute (Avison Biomedical Research Center, Yonsei University)
- Main business: biodegradable micro-needle patch R&D, cosmetics ODM
- Listed on KOSDAQ with sales of approximately USD 7.8 million (2014)
- Merger with financial investment company based in Hong Kong

Business Considerations

Accessibility & Settlement

**Transportation**
- **Airport**: Gimpo International Airport (2km), Incheon International Airport (40km) Seoul Airport allows the nation with a one-day life zone to the whole of North East Asia
- **Railroad**: Pass by subway line 5, 9 and Incheon International Airport line
- **Road**: Seoul Ring expressway, Incheon International Airport Expressway, Olympic Boulevard Expressway, Gyeongin Expressway
- **Port**: Incheon Port (25km)

**Living Conditions**
- **Seoul**: has a population of 21mn which is 42% of Korea’s population
- 126,000 graduates out of 789,000 current students at 70 universities each year. 79,600 graduates out of 304,000 current students at 43 community colleges
- Premium medical environment with 24 high-level general hospitals including SNUBH, 146 general hospitals, 102 oriental treatment clinics, 66 dental clinics
- Premium cultural experience with 60 large theatres, 615 small-medium sized theatres, and 4,966 libraries
- Premium living conditions for foreigners with 25 international schools and 14 hospitals specialized in treatment for foreigners
Business Cluster

Major Corporations
- Foreign investment company: ACCESSBIO

Potential Customers
- Region takes up 51.2% of total national demand for medical services, 24 high-level general hospitals, 146 general hospital, etc
- World’s No.1 in clinical test for new medicine

Related Organization
- Korea Biomaterial Packaging Association / Korean Association of Geriatric Hospitals / Korean Hospital Association/Korea Pharmaceutical Association/Korean Medical Association/Korea Ubiquitous Health Association/Korea Biotechnology Industry Association/Korea Drug Research Association/Korea Medical Devices Industrial Coop. Association/Korea Medical Devices Industry Association/Korea Pharmaceutical Distribution Association/Korea Pharmaceutical Traders Association/Korea Pharmaceutical Manufacturers Association/Korea Animal Health Product Association etc.

Infrastructure

Water
- Industrial water 2,949 m³ per day, daily water 9363 m³ per day
- Seonam water regenerator

Wasted water management
- 1,276,196 MWh per year

Electricity
- KT, LG UPLUS, SK TELECOM, leased lines from T-BROAD

Communication
- Area other than the zone is dealt by resource recovery facility

Industrial waste
- Establishment of combined heat & power plant (total facility equals 27,164 m²; Magok region : 24,140 m², Other region : 3,024 m²) / plan for Electricity supply : 1,276,196 MWh per year

Energy supply facility

Labor Condition

- Regional population:

<table>
<thead>
<tr>
<th>Population</th>
<th>Available labor force</th>
<th>workforce ratio to population</th>
<th>Bachelor’s</th>
<th>Master’s</th>
<th>PhD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nation-wide</td>
<td>51,327,916</td>
<td>31,600,268</td>
<td>61.6%</td>
<td>7.9%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Seoul/Metropolitan</td>
<td>21,359,245</td>
<td>13,699,566</td>
<td>64.1%</td>
<td>8.0%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Seoul only</td>
<td>10,103,233</td>
<td>6,505,246</td>
<td>64.4%</td>
<td>7.9%</td>
<td>2.9%</td>
</tr>
</tbody>
</table>

- Average wage: US$ 40,654 per year
  (Calculated from employees of 10 biomedics/cosmetics firms listed with an average of 4.7 years of employment.)

Core Resource Supply

- Human resources: 126,000 graduates from 70 universities and 79,600 graduates from 43 technical colleges (67 million with Bachelor’s degrees or higher)
- Clinical hospital: 24 high-level general hospital including SNUH and 146 general hospitals
- Clinical animal trial: ORIENTBIO within the zone and many firms with clinical test labs
- There are many Medical/cosmetic material manufacturing firms including Greencross MS/KMX/HammiFineChemical/Daehe/STPharni/CHEMSITOS etc. There are many packaging companies such as SAMHWAPLASTIC/SINSIN/ASUNGPLASTIC/CHUNG JIN BIOTECH and more.
- Seoul is with no doubt an optimal industrial environment with 47 major research-oriented universities, and companies specializing in medical material/technology/fundamental technology research and medical materials.

Government Support

- Government support for Foreign investment companies
  - Factory site support (Long-term lease, rent reductions, balance assistance for land purchase, etc)
  - Cash grant (Employment/education/training subsidy, production facilities subsidy)
  - Tax reduction (if requirements are satisfied)
  - Support and additional incentives from the municipalities can be provided after consultation.
8. Pangyo 2 Techno-valley

Investment Highlights

Location Description
One of the leading innovation clusters in Korea providing dynamic venture ecosystems for bio-tech businesses and features outstanding geo-economic benefits of Seoul, such as abundant human resources, transportation accessibility, cultural properties and convenient living conditions.

Key Rationale
- Established dynamic venture ecosystem as an urban valley mainly focused on IT and BT sectors
- Advanced researchers and benefits of urban location
- Superior environment for cooperating with universities and industry including clinical trial hospital, Pasteur Research Center, Seoul National University’s convergence technology institute

Location Overview

Target Area
- Total Area: 661,000 m²
- Available Area: 661,000 m²
- Type: Sale or lease
- Land Zoning: City advanced industrial complex

Location Overview Map:
- Basic medicine material: Samsung Biologics/Samsung Bioepix/Celtrion Pharm Inc/Biema Biotech Korea/plant line Generex, etc.
- Complete Medicine Product: I-World Pharm/Young Bang/Nakasol, etc.
- Basic medicine material: ShinPoong Pharm/Korea Phaco/Chew Biopharma, etc.
- Complete Medicine Product: ShinPoong Pharm/Korea Phaco/Chew Biopharma, etc.
- Basic medicine material: Rami Pharm Co Fine Chemical/Dae He Chemical Biopharma/ST Pharm/CheonBio, etc.
- Cosmetics: Jin Cosmetic, etc.
- Packing, Container and process machines: SP&OH Medical/A-SUNG Plastics/Chungjin Electronics, etc.
- Complete Medicine Product: ShinPoong Pharm/Korea Phaco/Chew Biopharma, etc.
- Basic medicine material: KMG Pharm/Daeyho Pharmaceutical, etc.
- Basic medicine material: Pangyo Biotech Inc/KMG etc.
- Others material: Genious, Minjin, etc.
Case References

Successful story of Pangyo Bio Valley

Regional Attributes
- Valuable research development infrastructure with Seoul lifestyle
- There are 100 bio ventures and bio venture capital companies around the development institutes including Gyeonggi Bio Center, Gyeonggi Institute of Science & Technology Promotion, KOREABIO, etc
- SK Chemicals, HUONS, CHABIOTECH, INSTITUT PASTEUR etc

Institute Pasteur Korea Research
- Korean branch established in 2004 with 120 research studying biotechnology and new medicine. Moved to Pangyo in 2009
- Scale: floor space 15,000 m² (estimated 42 million dollars)
- Facility: Biosafety Level 3 facility, animal lab
- Other: Government invested USD167 million dollars for research funding from 2004 to 2014

Medipost
- Established in 2000, Medipost has an estimated sales of USD 25 million and has listed KOSDAQ shares. The company currently has 160 employees and produces stem cell treatment.

Genexine
- Established in 1999, Genexine is a spin-out from POSTECH and has an estimated sales of USD14 million dollars (with listed KOSDAQ stock), and has an estimated 120 employees
- Found treatment for Hepatitis clinical test 1, Short Stature disease, uterine cancer

Business Considerations

Accessibility & Settlement

Transportation
- Airport: Incheon International Airport (72km), Gimpo International Airport (40km)
- Port: Incheon Port (53km)
- Railroad: Shinbundang Line
- Road: Gyeongbu Highway Pangyo IC

Living Conditions
- Resident population equals to 21,560,000, which amounts for 42% of total nation population
- 126,000 graduates out of 789,000 current students at 70 universities each year. 79,600 graduates out of 304,000 current students at 43 community colleges each year.
- Premium medical environment with 24 high-level general hospital including SNUBH, 146 general hospitals, 102 oriental treatment clinics, 66 dental clinics
- Advanced cultural environment with 60 large theatres, 615 medium sized theatres, and 4,966 libraries
- Premium living environments for foreigners with 25 international schools and 14 hospitals specialized in treatment for foreigners
## Business Cluster

### Major Corporations
- **Complete medicine:** Greencross/Il Yang Bio Pharm/Ydpharmacy
- **Cosmetics:** AMOREPacific/Genic Co/SEOULCosmetics/MAIIM/SomangCosmetics/COSMEX, BTI etc
- **Medical ingredients:** Greencross MS/KMX/HANMI CHEMICAL/Dae He Chemical/STPHARAM/CHEMTROS, etc
- **Clinical animal trial:** ORIENT BIO and many companies with clinical animal trials available
- **Medicine process machines with packaging:** SAMHWAPLASTIC/ShinSungChemical/A-SUNG PLASTIC/CHUNG JIN BIOTECH, etc

### Potential Customers
- Region uses 51.2% of total nation demand for medical treatment. There are 24 high-level general hospitals, 146 general hospitals, 102 oriental medical clinics and 66 dental clinics.
- Medical products manufacturing firms: Hanmi, Greencross, ILYANG, CKDPHARAM and more; manufacturers of cosmetics: AMOREPACIFIC, COSMAX and many more. There are also Institute of Pasteur Korea and Seoul University research center with many university research centers, and there are many companies that operates packaging businesses, raw material production businesses and lends facilities which provides complete industrial environment.

### Related Organization
- **Bio medical research:** Pangyo complete research hospital group, Institute of Pasteur Korea, Green Cross Research, Advanced Institutes of Convergence Technology etc
- **Company supporting institute:** Gyeonggi Bio Center, Gyeonggi Institute of Science & Technology Promotion, Korea Biotechnology Industry Organization, etc

### Infrastructure

#### Utilities (estimated to establish)
- **Complete medicine (inc. animals) manufacturers:** Yuyu Pharma, Il Yang Bio PharmBioPharmPHARM, Korea KolmarPHARMA, HUMEDIX, HUONS, Enzychem Lifesciences Corporation, MEDIOTEN, etc
- **Medical ingredients:** CLS, SMC, HIMAX etc
- **oriental medicine ingredients:** KT&G, Honghae Medicine
- **Cosmetics:** EAST HILL (cosmetics ingredients), DERMALKOREA (mask pack) etc
- **Other biotech companies:** Environ (filter)

#### Labor Condition
- **Regional population:**
<table>
<thead>
<tr>
<th>Population</th>
<th>Available labor force</th>
<th>Bachelor’s</th>
<th>Master’s</th>
<th>PhD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nation-wide</td>
<td>51,327,916</td>
<td>31,600,268</td>
<td>7.9%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Pangyo zone</td>
<td>21,359,245</td>
<td>13,699,566</td>
<td>8.0%</td>
<td>2.3%</td>
</tr>
</tbody>
</table>
- **Average wage:** USD 40,654 per year
  (Calculated from employees of 10 biomedics/cosmetics firms listed) with an average of 4.7 years of employment.

### Core Resource Supply Environment
- **Human resources:** 120,000 graduates out of 789,000 current students at 70 Universities and 79,600 graduates out of 304,000 current students at 43 community colleges each year
- **Clinical hospital:** 24 high-level general hospitals including Bundang Seoul National Hospital and 146 general hospitals
- **Clinical animal trial:** Many companies with capacity to conducts clinical animal trials
- **Greencross MS/KMX/HANMI CHEMICAL/DAEHE/STPHARAM/CHEMTROS

### Government Support
- **Government support for Foreign investment companies**
  - Factory site support (long-term lease, rent reductions, balance assistance for land purchase, etc)
  - Cash grant (employment/education/training subsidy, production facilities subsidy)
  - Tax reduction (if requirements are satisfied)
- **Support from municipal governments will be provided independently after consultation
9. Daeduk Innopolis

Investment Highlights

Location Description
A widely-recognized R&D cluster in Korea that is home to many state-owned and private R&D institutes and leading science and engineering schools of various fields. One of the most ideal locations for the integrated R&D of bio & pharmaceutical companies

Key Rationale
• Korea’s No.1 research area with national research and development institutes and education organizations including Korea research institute of chemical technology, Korea institute of oriental medicine and KAIST
• Ease in utilizing cooperation with Osong medical valley which is concentrated with government’s health medical R&D and regulation center (6 major national research center including Ministry of Food and Drug Safety)

Location Overview

Target Area
• Total Area: -
• Available Area: -
• Type: Sale in lots or lease
• Land zoning: Special R&D and manufacturing

Related Companies
• Complete meds (incl. animal) manufacturer: HANOL BIOSPHARMA, EUNED PHARMA, LEGO CHEMIEG, Chosong Vaccine Laboratory
• Manufacturers of cosmetics: UNILEVER KOREA, NESPHEM, etc.
• Medical/cosmetic materials: BIONA, BIONEX, etc.
• Medical/chemical material associated firms: PACIFIC PACKAGE, ID/TECH, RHAC, ATECH, etc.
• others: Biotectech Co etc
Case References

LegoChem Biosciences Inc
- Established in 2006 (listed in KOSDAQ), develops new medicine components, finding new medicine candidates and licensing. Employment: 44
- Develops new antibiotics, anticogulants, cancer treatment
- Develops new ADC (Antibody-Drug-Conjugates)
- Collects technology transfer loyalty from ASTRAZENECA, SANOFI, GREEN CROSS, etc.

Pharmabcine
- Established in 2008 (preparing to list stock), research/development of medicine (antibiotics), manufacture reagent
- Dual Bispecific antibody technology was internationally recognized and licensed to a global pharmaceutical company.

Neopharm
- Established in 2000 (listed in KOSDAQ), produce functional cosmetics. Sales: 17 million USD, Employment: 76
- Develops antibiotics of cancer treatment, as well as skin treatment cosmetics in atopic skin, acne and sensitive skin.

CAVAC
- Established in 1994 (listed in KOSDAQ), develops and research animal vaccines. Sales: USD 25 million dollars, Employment: 135
- Operates biological research in animal vaccine, feed additives, disinfectant, diagnostic services

Business Considerations

Accessibility & Settlement

Transportation
- **Airport**: Chungju International Airport (30km) (2 flights to Busan/per day, 5 flights to Jeju/per day)
- **Railroad**: Gyeongbu Line Daejeon station (4km), Honam line West Daejeon Station (4km)
- **Road**: Gyeongbu·Jungbu Highway Shintanjin IC (2km), Honam Highway North Daejeon IC (1km)
- **Port**: Gunsan Port (90km) (Maximum cargo 2,183,000 m³/per day, berthing capacity – 6 berth)

Living Conditions
- Population in Daejeon is 4.5 million.
- 388,000 students at 34 Universities such as KAIST and Chungnam University. 82,000 students at 15 community colleges
- Premium medical environment with 4 high-level general hospitals including Chungnam University Hospital, 18 general hospitals, and 1,700 clinics
- Premium educational environment with the highest number of international schools (1,364 in Jeongwon and Daejeon) and hospitals specialized in treatment for foreigners
- Premium cultural experience and convenient lifestyle with golf clubs, parks, theaters (10 large and 102 mezzanine and small-sized), and libraries (1,234)
Business Cluster

Major Corporations
- Complete medicine (inc. animals) production: HANOL BIOPHARMA, UNITED PHARMA, LEGO CHEMIO, CAVAC, etc
- Manufacturers of cosmetics: UNILEVER KOREA, NEOPHARM etc
- Medical/cosmetic ingredients: BIONIA, BIOGENIX etc
- Manufacture/Test/Research facilities and packaging: PACIFIC PACKAGE, JOTECH, KMAC, ATECH
- Others: BIOTOXTECH etc

Potential Customers
- There are customers (companies) such as SuheungCapsell, Hanall CAVAC which are complete medicine manufacturers and Bioneer, Biogenics are customers as well as manufactures of complete medicine.
- Ideal industrial environment for research, testing and production of medical materials.

Related Organization
- Research institutes: KAIST, Korea Research Institute of Chemical Technology, Korea Institute of Oriental Medicine, Korea Research Institute of Bioscience and Biotechnology etc
- Administrative agencies: Geographical advantage from OSONG medical valley region as there are many medical/health research centers (MFDS with 6 government agencies) and regulatory institutes

Infrastructure
- Water: 2,280,000 m³ per day
- Waste water management: Uses sewage system within the complex (utilize: 933,000 m³ per day)
- Electricity: routes of lead-in (5 substation within complex, 1 steam/power supply), Electricity capability (Voltage: 15kV, capacity: 98MVA)
- Waste: particular waste (dealt special institutions), regular waste (dealt by Daejeon city waste landfill)
- Communication: 904,542m leased line, 697,559m cable
- Energy plan: 5 Substation (Gajung-dong, Dukjin-dong, Gwanpyung-dong, Shinil-dong, Ji-jokdong) 1 steam/power supply (operational in Shinil-dong)

Labor Condition
- Regional population:
  - Population
  - Available labor force
  - workforce ratio to population
  - Bachelor’s
  - Master’s
  - PhD
  - Nation-wide: 51,327,916
    - 31,600,268
    - 61.6%
    - 7.9%
    - 1.7%
    - 0.6%
  - Daejeon: 4,501,403
    - 2,695,480
    - 59.9%
    - 6.9%
    - 1.8%
    - 0.8%
  - Daejeon zone: 1,531,809
    - 956,975
    - 62.5%
    - 7.7%
    - 2.7%
    - 1.6%
- Average wage: USD 40,654 per year
  (Calculated from employees of 10 biomedics/cosmetics firms listed with an average of 4.7 years of employment.)

Core Resource Supply
- Human resource
  - Many first-class research and education institutes providing premium workforce
  - 58,600 graduates from 34 universities, 20,000 graduates from 15 community colleges, and 45,000 graduates from 60 industrial high schools each year.
  - Medical material: An area highly concentrated by manufacturers of oriental treatment and oriental medicine ingredients.
  - Clinical animal trial: Many companies capable of animal clinical trial such as OPTIPHARM
  - Clinical hospital: 4 high-level general hospitals and 18 general hospitals
  - Environmental support for variety of amalgamated technology: Optimal environment for amalgamated research thanks to technology from Daeduk Innopolis and other research institutes.

Government Support
- Government support for Foreign investment companies
  - Factory site support (long-term lease, rent reductions, balance assistance for land purchase, et)
  - Cash grant (employment/education/training subsidy, production facilities subsidy)
  - Tax reduction (if requirements are satisfied)
  - Support and additional incentives from the municipalities can be provided after consultation.