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Swiss Confederation
Commission for Technology and Innovation CTI

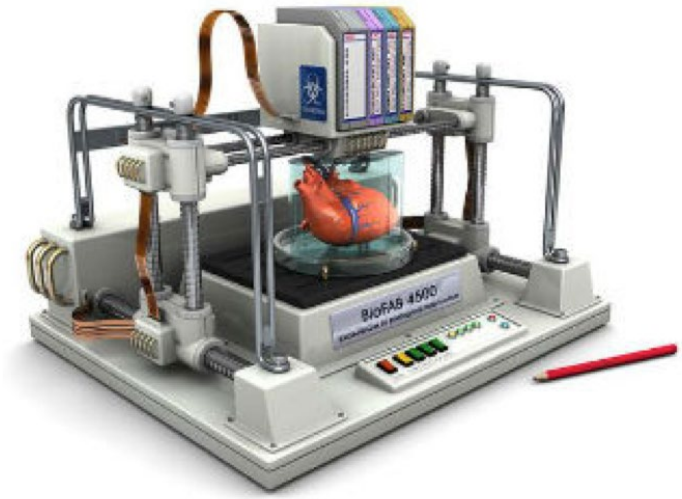
Editorial

Nic Alexakis

This July, the CEO of the Swiss Biotech Association had the opportunity to be part of a Swiss delegation to South Korea. Alongside the signing of a Memorandum of Understanding (MoU) with Korea Bio, there was an opportunity to visit a number of interesting companies – see below. Please let the office know if you want further information about the R&D activities of these companies. An overview of the developments of Swiss Biotechnology was given to more than 150 delegates during the stay.

Rokit Receives $3 Million From South Korea to Develop 3D Bioprinter for Skin Regeneration

Published by Sandra Helsel



(3Ders.org) — South Korea's Rokit announced that it has received $3 million from the South Korean government to develop a 3D bio-printing system for skin regeneration. Rokit, along with the Korean Institute of Science and Technology, Seoul National University Bundang Hospital, Hanyang University and the Korea Institute of Machinery and Materials, will be focusing their efforts on developing a 3D bio-printer system that is capable of producing living tissues that are suitable for transplantation. In total, the project is expected to last three years.

Rokit has been among the fastest growing companies in Asia's rapidly growing additive manufacturing industry. The company has already created a line of desktop 3D printers, including the H700, Pro, Multi, AEP, S and Chocosketch printer models.

Global No.1 Desktop 3D Printer in 2018

http://.en.3disonprinter.com

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NTN partners:
Swiss Biotech Association
biotechnet switzerland
Project partner:
SWITZERLAND GLOBAL ENTERPRISE
enabling new business

PCL
SG Cap Technology based IVD Total Supplier

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Company **PCL, Inc**
CEO **Soyoun Kim**
Location #701, 99, Digital-ro 9-gil, Geumcheon-gu, Seoul, 153-777 Republic of Korea

Multiplex In Vitro Diagnostics Leader, PCL, Inc.

is an in-vitro diagnostics company headquartered in Seoul, South Korea with a US office in Boston, Massachusetts. Staffed with experienced scientists and business professionals, PCL develops and markets low-cost biochips and diagnostic assays based on its proprietary molecule-capturing technology, SG Cap™. PCL is currently working with companies in Brazil, Germany, Sweden, and the United States, and is seeking to expand its reach by partnering with other global technology and market leaders.

SG Cap™ can immobilize large amounts of any molecule without the use of affinity tags, anchors, or modifications. Functional groups and epitopes remain biochemically available for interactions with binding partners, increasing the sensitivity and specificity of assays.

PCL offers three categories of products based on SG Cap™: Blood-based diagnostic tests (Hi3®), research reagents (SolB™) and drug discovery R&D services (SG-ID™). The SolB™ reagent forms a porous, three-dimensional gel matrix that captures hundredfold more protein than competing two-dimensional surfaces. SolBTM can be used to develop custom biochips for the detection of targets in complex samples. PCL's blood-based multiplex diagnostic tests screen for HIV, HCV, and HBV simultaneously. The lead product, Hi3-1®, recently received Korean FDA (MFDS) approval for export. Other products in development using this multiplex immunoassay platform include assays for respiratory illnesses and cancer. Lastly, PCL's SG-ID™ service identifies targets for chemical drugs as well as characterizing interactions between antigen-antibody pairs, protein-aptamer pairs, and more.

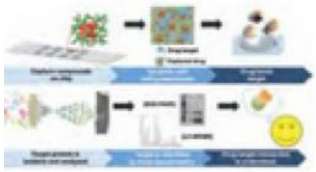
Main Product

1. Hi3-1® Multiplex Blood Testing Kit

- Novel diagnostic method for HIV and HCV, using nanoporous sol-gel based protein microarray
- Clinical sensitivity and specificity for these tests are 100% and >99.5%, respectively
- Ideal for blood banks and blood product companies
- CE mark expected in 2016

2. SolB™ Complete Kit

- Versatile biochip material for many applications
- Drug target identification by compound-target protein binding
- Multiple disease diagnostic chip
- Detection of protein expression in cell lysates
- Reverse-phase protein microarray for high quality proteomics data



3. SG ID™

- Drug target identification and screening for various molecular interactions

Product Portfolio

Blood Screening kit		Portable Diagnostic system	
Product Name	Test item	Product Name	Test item
Hi3-1	HIV,HCV	Ai	Influenza A/B/H1N1
Hi-3	HIV,HCV, HBsAg	Ar	RSV A/B
Hi-4	HIV,HCV, HBsAg, HTLV	As	Strep-A
Hi-5	HIV,HCV, HBsAg, HTLV, syphilis	Cancer6	AFP,CEA,CA19-9, ALPPL2, PIVKA-II
H-6	HIV,HCV, HBsAg, HTLV, Chagas, Anti-Hbc		

Approved By ISO13485

Platform Technologies

Through integration of the proprietary platform technologies, the drug discovery process at CrystalGenomics is rapid, efficient and productive.

Technology	Uses
SPS™ (Soluble Protein Solution)	To obtain soluble forms of disease related proteins that are usually insoluble when over-expressed in heterologous systems.
SCP™ (Structural Chemo Proteomics)	To rapidly generate novel leads using 3-D structure information of target proteins.
SDF™ (Structural-based Drug Factory)	To productively optimize novel leads to drug candidate compounds using 3-D structure information of the complexes of target proteins and inhibitors.

www.pclchip.com

Company Overview of EyeGene, Inc.

EyeGene, Inc., a biotechnology company, researches and develops therapeutics for eye related diseases in South Korea and internationally. The company also engages in the research and development of biological drugs for the treatment of age related degenerative diseases. Its products include EG-Mirotin, a therapeutic for non-proliferative diabetic retinopathy; EGS for ophthalmic anti-scarring; DRM for diabetic retinopathy detection; EGVac, an immune adjuvant product; EG-Decorin, a therapeutic for pressure ulcers; and EG-HPV, a vaccine for cervical cancer.

EyeGene, Inc. was founded in 2000 and is headquartered in Seoul, South Korea:

- B-910, 401, Yangcheon-ro Gandseo-gu Seoul,
- 157-801 South Korea
- Founded in 2000
- Phone: 82 2 322 1687
- Fax: 82 2 302 4359

www.eyegene.co.kr

CrystalGenomics: Two Stages of Diabetic Retinopathy

Diabetic retinopathy is generally classified into two stages; non-proliferative and proliferative diabetic retinopathy depending on severity and aggravation levels. Non-proliferative diabetic retinopathy (NPDR) represents early stage diabetic retinopathy, and shows symptoms of pericyte loss, thickening of the basement membrane, hemorrhage, and emergence of abnormal new capillaries in the retina. During proliferative diabetic retinopathy (PDR), loss of blood vessels and neovascularization are periodically repeated, fibrous tissues are adhered and retinal detachment occurs.

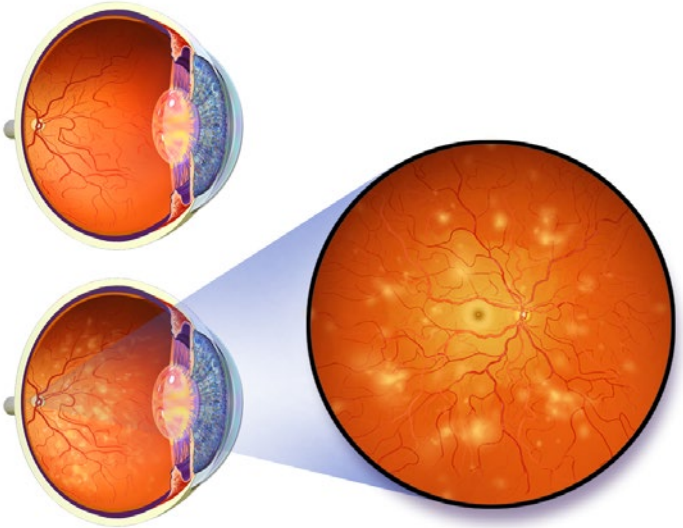


Illustration depicting diabetic retinopathy

Unmet Needs for a Diabetic Retinopathy treatment

Approximately 5.3% of Americans aged over 18 have diabetic retinopathy, which accounts for 2.5% of the total United States population. However, the relatively most effective and commonly used treatment, laser photocoagulation, is only a temporary remedy with a significant drawback in that the treatment cannot guarantee the same effective results to all patients.

Recently, anti-angiogenic drugs inhibiting choroidal neovascularization are being used to temporarily relieve the symptoms of severe diabetic retinopathy, and delay progression to irrevocable stages. However, there is the disadvantage that these new novel drugs are intravitreal injections and come at a high price.

Mechanism of EG-Mirotin

EG-Mirotin is an innovative new biologic drug that targets to alleviate symptoms and treat Non-proliferative diabetic retinopathy, which is the early stage of diabetic retinopathy. It is effective in treating bleeding and edema in patients with early stage diabetic retinopathy.

EG-Mirotin, a human recombinant protein, stabilizes and normalizes abnormal and partially damaged blood vessels. The mechanistic action of EG-Mirotin not only treats the fundamental symptoms of early stage diabetic retinopathy, it is also able to prevent the progression to the latter severe proliferative stages of diabetic retinopathy.

Features and Development Status of EG-Mirotin

EG-Mirotin demonstrates potent efficacy on patients with early stage diabetic retinopathy as it works to stabilize and normalize the endothelial cells of the newly formed microvasculature (during normal angiogenesis). As there are no approved drugs for diabetic retinopathy, EG-Mirotin, given successful development and commercialization is likely to create and generate a significant blue ocean market.

In addition, EG-Mirotin, as a human recombinant protein, can be administered via either subcutaneous or intramuscular injections unlike the current intravitreal therapeutics for severe diabetic retinopathy. As such, any risks involved due to an invasive drug delivery method can be alleviated, and EG-Mirotin is likely to be extremely cost-competitive due to feasibility of mass production using yeast.

After receiving regulatory clearance for our Investigational Medicinal Product Dossier (IMPD) from the European Medicines Agency (EMEA) in January 2013, we have recently completed Phase I clinical trials. We expect EG-Mirotin to enter a Phase IIa study in early 2014.

www.crystalgenomics.com

Yuhan Corporation: Overview

- ProvideB the best Products
- The R&D Priority
- A Global Best Partner

Provide the best Products for the people

After returning from the USA in 1925, Dr. Ilhan New witnessed the hardship in his country under Japanese imperialism. He founded the Yuhan corporation in 1926 with the belief that only healthy people could reclaim their sovereignty and he sought to solve widespread public health problems. Over 80 years, the founding creed to make the best medicines and contribute to public health has been succeeded by us through our intense research and development activities and successful collaboration with multinational pharmaceutical companies. As a result, Yuhan is one of the most respected companies in Korea for 20 consecutive years, according to the annual Korean Management Association Consulting (KMAC) survey.

Yuhan has been playing active role in global citizenship since its foundation in 1926. Even before global citizenship was conceptualized, Dr. New believed that was the duty and responsibility of business to develop itself for the prosperity of all society, and his own personal commitment to this was the donation of all of his personal property throughout his life up until his death. Yuhan is continuously making its social contribution by establishing a system where part of the company's profits is returned to society. This endeavor has been domestically and internationally recognized through various organizations and publications.

The R&D Priority

Yuhan has always emphasized research and development as its top corporate priority. The company approaches R&D through innovative, nimble and translational methodologies. This three-fold dynamic allows Yuhan to continue its over-arching commitment to enhancing quality of life. True to the company's founding mission, Yuhan focuses its R&D efforts on developing the kinds of products people need most. By developing therapies for treating inflammatory, autoimmune, oncologic and metabolic diseases, Yuhan has significantly advanced the science and understanding of these prevalent disease processes. This rich body of knowledge and wealth of experience positions Yuhan on the cutting edge for developing unique, innovative, finished products and to partnering successfully with other developers.

Yuhan: A Global Best Partner

Equipped with state-of-the-art research capabilities and manufacturing facilities compliant with the United States Food and Drug Administration (FDA) current Good Manufacturing Practices (cGMP) regulations, Yuhan is growing into a global pharmaceutical company that offers one-stop custom synthesis services from R&D to commercial production of active pharmaceutical products (APIs) and intermediates. Yuhan has undergone successful audits by many international regulatory agencies such as the FDA, the European Medicines Agency and the European Directorate for the Quality of Medicines (EMEA/EDQM), Australia's Therapeutic Goods Amdinistration (TGA) and Japan's Pharmaceuticals and Medical Devices Agency (PMDA).

Yuhan's overseas business activities include :

- New drug development projects with multinational partners
- Developing and optimizing cost-effective synthetic processes for APIs and intermediates
- Providing quality APIs and intermediates for commercial use and for use in clinical studies

Yuhan has successfully provided high-quality APIs and intermediates for the following disease treatments: antivirals (HCV and HIV), antibiotics, antihistamines, antidiabetics, beta-lactamase inhibitors, CNS intermediates, and PEGylated compounds for international markets.

Yuhan continues to expand its overseas markets by supplying finished products. The process began in 2010 with the out-licensing to China of Yuhan's Revanex, the world's first acid pump antagonist (APA). Revanex is now supplied world-wide to India, Southeast Asia, South America and the Middle East, improving the health and quality of life for individuals suffering from peptic ulcers and gastritis-related mucosal injury.

http://eng.yuhan.co.kr

Genexine: Overview

MAKE INCURABLES CURABLE

Genexine is pioneering next generation biotherapeutics to treat and save the lives of patients with serious diseases.

Genexine is a clinical stage biotechnology company focused on the development and commercialization of innovative immunotherapeutics and next generation novel long-acting biologics. Our goal is to bring to patients medicines that will transform their lives.

ORPHAN

Pipeline	Compound	Indication	Research	Pre-Clinical	Clinical Phase		
					I	II	III
GX-H9	hGH	Adult Growth Hormone Deficiency	●	●	●	●	○
		Pediatric Growth Hormone Deficiency	●	●	●	●	○
GX-G8	GLP-2	Short Bowel Syndrome	●	●	○	○	○

CANCER

Pipeline	Compound	Indication	Research	Pre-Clinical	Clinical Phase		
					I	II	III
GX-188E	DNA Therapeutic Vaccine	Cervical Intraepithelial Neoplasia 3	●	●	●	●	○
		Cervical Intraepithelial Neoplasia 2/3	●	●	●	●	○
		HPV Cancers	●	●	●	○	○
GX-I7	IL-7	Persistent HPV Infections	●	●	●	○	○
		Lymphopenia	●	●	●	○	○
		Solid Tumors	●	●	○	○	○

www.genexine.com

WEF Report

Which countries are best at converting economic growth into well-being?

For while gross domestic product is great at measuring the goods and services produced by a country, it does a pretty shoddy job of capturing the things that actually matter to most of us. After all, what good is a booming economy if very few people benefit from it?

But while most experts agree that GDP has its limitations, nobody quite knows what to replace it with. If GDP is a poor assessment of the things that matter, what could be a more accurate measure? How can we determine which countries are not only thriving, but also managing to convert this economic growth into well-being for their citizens?

A new way of measuring progress

Researchers at the Boston Consulting Group have found an alternative: the Sustainable Economic Development Assessment. The index tracks 160 countries across three elements: economics, sustainability and investment. These elements are made up of 10 dimensions, which include factors such as income equality, health, education and infrastructure.

By measuring how countries perform across all these dimensions, the SEDA establishes which countries are managing – or in some cases failing – to use both their absolute wealth and their economic growth to improve the lives of their citizens. The index not only ranks countries by current levels of well-being, it also looks at how much progress they have made between 2006 and 2014.

www.weforum.org

WORLD ECONOMIC FORUM

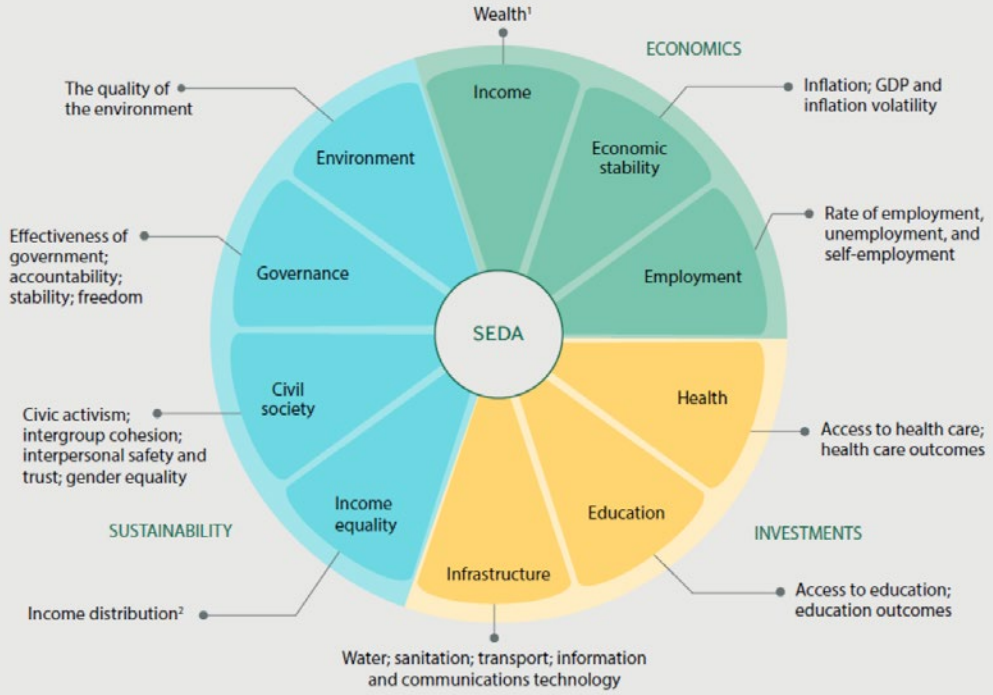
Countries best at converting economic growth into well-being

According to the Sustainable Economic Development Assessment

1. Norway
2. Netherlands
3. Finland
4. Germany
5. Austria
6. Denmark
7. Switzerland
8. Iceland
9. Belgium
10. Sweden

Source: Boston Consulting Group

EXHIBIT 1 | SEDA's Ten Dimensions of Well-Being



Source: BCG analysis.
¹Wealth is measured as GDP per capita (purchasing-power parity, current international $) for current-level scores, and GDP (constant local currency unit) for recent-progress scores.
²Income distribution is based on the Gini coefficient.

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