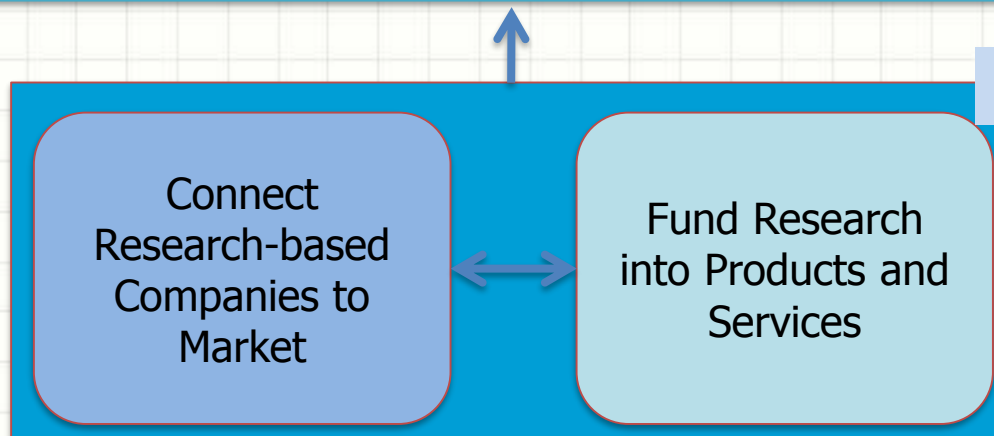


Thailand's Life Sciences Business, Investment, and Industry Development

Core Functions



Supporting Services

- Data acquisition
- Research and analysis
- IP management
- Providing services

Prepare Infra & Talent

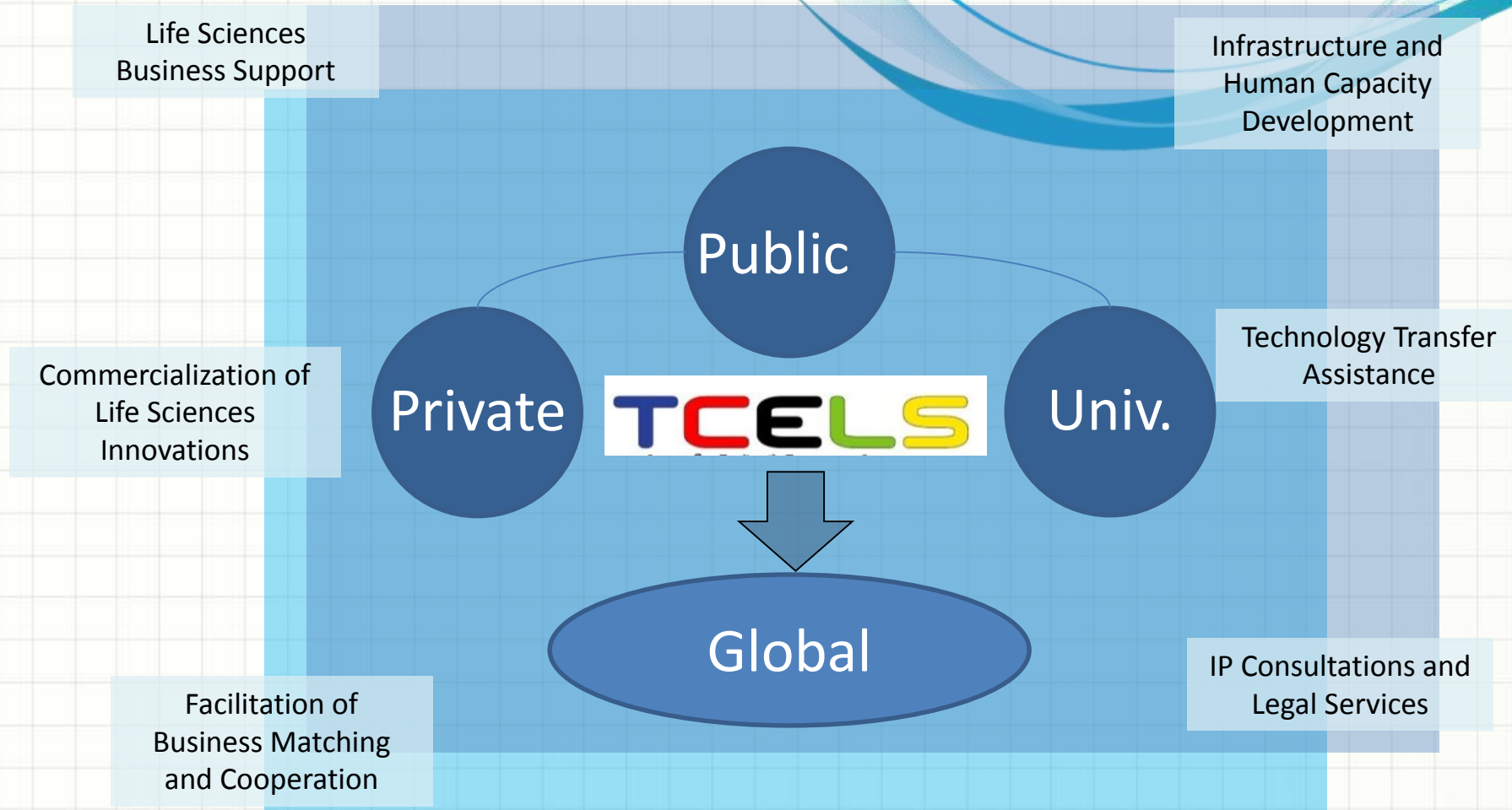
Business Intelligence

Outreach

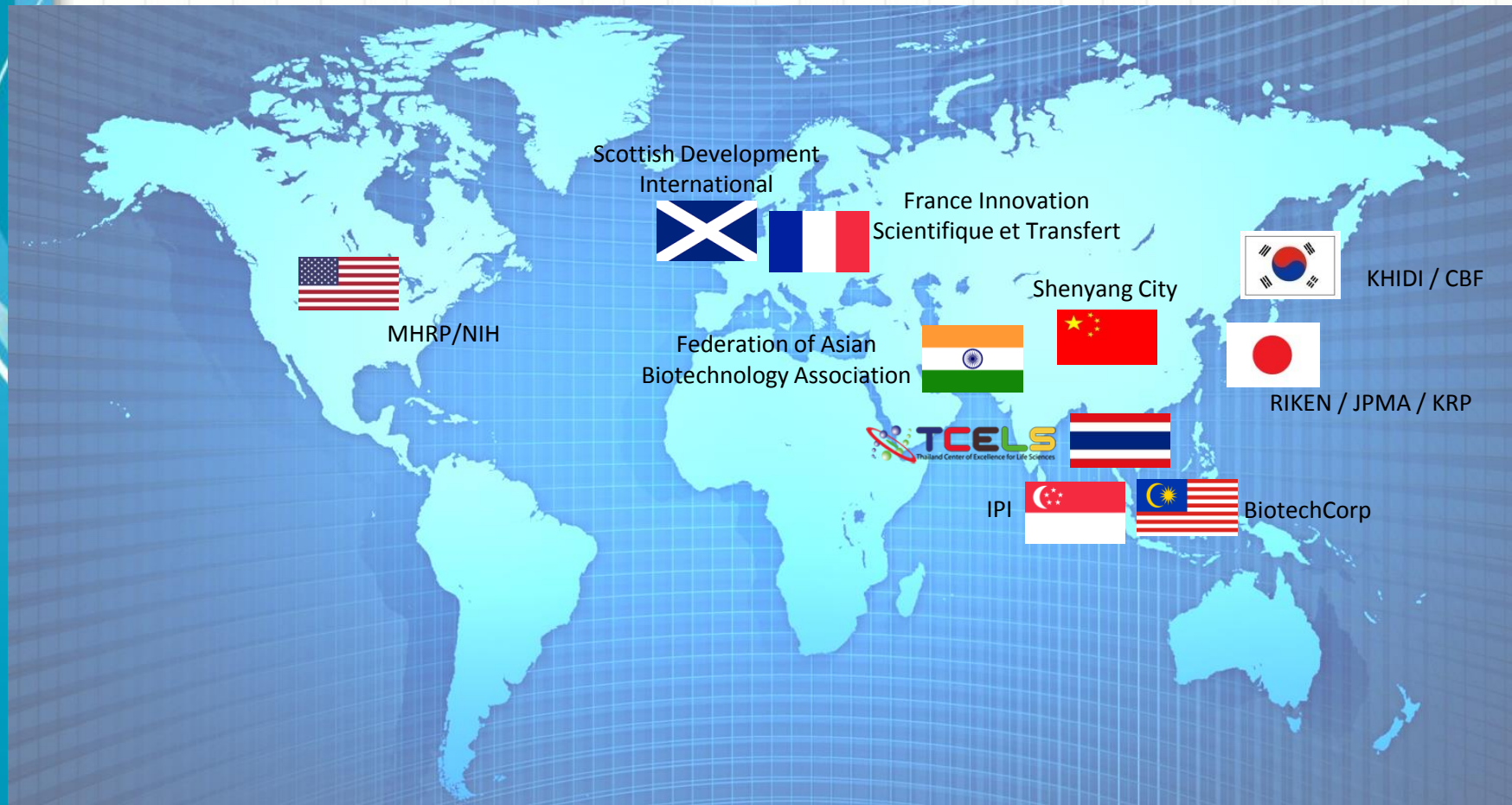
- Scholarships
- Training
- Investment in infrastructures

- Grants
- Business facilitation / forum
- Technology acquisition
- APEC and ASEAN

Our Services



Some overseas collaborations



The *Hb* Extract for Skin Health Care

PRODUCT SPECIFICATION

Product name: Hb Extract Powder (100% pure)
Botanical name: *Hevea brasiliensis*
Plant part: fresh latex serum
Physical appearance: medium brown powder
Product authentication: ¹H-NMR spectrum
Solid content: 80%
Ash content: 18.71%
pH value (1% solution): 6
Solubility: soluble in 60°C water > 50 mg/ml
Storage: refrigerated (5°C) or frozen (-20°C) for longer storage
Microbial load: acceptable levels
Typical values: total plate count (< 10³ -10⁴ cfu/g)
 mold and yeast (< 100 cfu/g)
Heavy metal: acceptable levels
Typical values: lead (Pb) <1.5 mg/kg
 arsenic (As) <0.2 mg/kg
 cadmium (Cd) <0.1 mg/kg
 mercury (Hg) not detected (ND)

Marker compound:
 20 trypsin inhibitory units (TIU)
 of Hevea protease inhibitor (HPI) per 100 g Hb Extract
 (One TIU will decrease the activity of 2 trypsin units by
 50% where one trypsin unit will hydrolyze 1.0 μmole of
 N-α-benzoyl-DL-arginine p-nitroanilide (BAPNA)
 per min at pH 7.8 at 25 °C)
Recommended use: overall skin health improvement
Recommended dosage: 4 to 5 % (w/w)

โดย ศ. ดร. สิริพชร วัชรธรรมาภรณ์
 คณะวิทยาศาสตร์ มหาวิทยาลัยเทคโนโลยีพระจอมเกล้าธนบุรี

การคุ้มครองทรัพย์สินทางปัญญา

เลขที่สิทธิบัตร/อนุสิทธิบัตร

เลขที่คำขอ:
 อนุสิทธิบัตร (patent pending)

	ไทย	4907		อินเดีย	3053/CHE/2007
	สิงคโปร์	144020		มาเลเซีย	PI 20071331
	จีน	1264037		เวียดนาม	2-2007-00175
	อินโดนีเซีย	IDP000036628		กัมพูชา	KHP/P/07/00010



Thailand Center of Excellence for Life Sciences (TCELS)

ศูนย์ความเป็นเลิศด้านชีววิทยาศาสตร์ (องค์การมหาชน)

อาคารวิจัยอโยธยาจุฬาลงกรณ์มหาวิทยาลัย ถนนวิภาวดีรังสิต ชั้น 22

เลขที่ 99 ถนนวิภาวดีรังสิต แขวงสามเสนใน

เขตปทุมธานี กรุงเทพมหานคร 10400

โทรศัพท์ (0) 644 5499 กด 1

E-mail: hotline@tcels.or.th



สุขภาพดีอย่างพาราไทย
 ด้วยนวัตกรรมใหม่เพื่อความงาม

Hb Extract

The *Hb* Extract for Improving Skin Health

- (Principle Investigator: Prof. Dr. Rapepun Wititsuwannakul)
- Rubber trees (*Hevea brasiliensis*)
- : very rich in various phytochemicals such as
- protease inhibitors;
- organic acids: AHA, BHA and AA;
- sugars: sucrose, fructose, quebrachitol;
- super antioxidant: ergothioneine;
- vitamin B2 and B5; minerals: Cr, Cu, Mn, Se, Zn and tannins)
- most of which have from time to time been included in expensive skin health care products from reputable “beauty care” companies.

The *Hb* Extract for Improving Skin Health

- An *Hb* extract,
- : prepared from fresh latex serum.
- Upon applying this *Hb* extract onto skin, according to the OECD Test Guidelines
 - no adverse effects were observed in irritation and skin sensitization tests
 - using animal models. The microbial load of the *Hb* extract was within the standard limits allowed by the Thai FDA.

The *Hb* Extract for Improving Skin Health

- :*Hb* cream
- containing 5 gm % of the *Hb* dried powder extract,
- was shown to improve the skin health of several volunteers.
-
- After nine weeks of topical application on their faces, the self-assessment data collected from those with facial melasma (n=64) indicated positive effects on skin whitening (98.4%), melasma fading (96.8%), skin smoothening (92.2%) and reduction of sebum level (53.1%).
- For those with facial acne (n=36), 100% of sufferers reported reduction of skin inflammation, 100% reduction of acne, 88.9% reduction of sebum level and 86.1% reduction of the intensity of acne scarring.

Dinsow Solution for Patient

Medical Doctor



Ambulance



1

Doctor can VDO call with patient who stay at home and can control the camera on the robot

The robot will tell the address position automatically

The Patient



Emergency Button

Camera

Doctor also can VDO call to patient in an ambulance, some as relatives

Nurse co-ordinate for doctor facilitate and scheduling

2

Patient can call for emergency help just by touching the robot

3

Patient can enjoy many pleasure contents

4

Patient can get reminding routine activities by the robot

5

Dinsow Application allows :

- VDO call
- Get health alert
- Send pleasure content

Nurse Contact Center

Relatives

Nurse and relatives can communicate effectively

6

Hospital can recommend any medical services at the right time



SensibleTAB, an arm rehabilitation robot for stroke patient sensory re-education and interactive simulated virtual object palpation exercises. **SensibleTAB** rehabilitation treatment increased shoulder and arm function recovery in most hemiplegic stroke patients who had not previously obtained any improvement of motor functions, despite months of therapy using only conventional therapies.

Sensible Table
Sensible Display
Sensible Arm
By TMGI Co., Ltd., Thailand.

SENSIBLETAB





Interface program
for sensibilities arm
movement rehab

SENSIBLETAB

Science Park Network

Thailand Science Park

- ▣ Pathumthani

Northern Science Park

- ▣ Chiang Mai

North Eastern Science Park

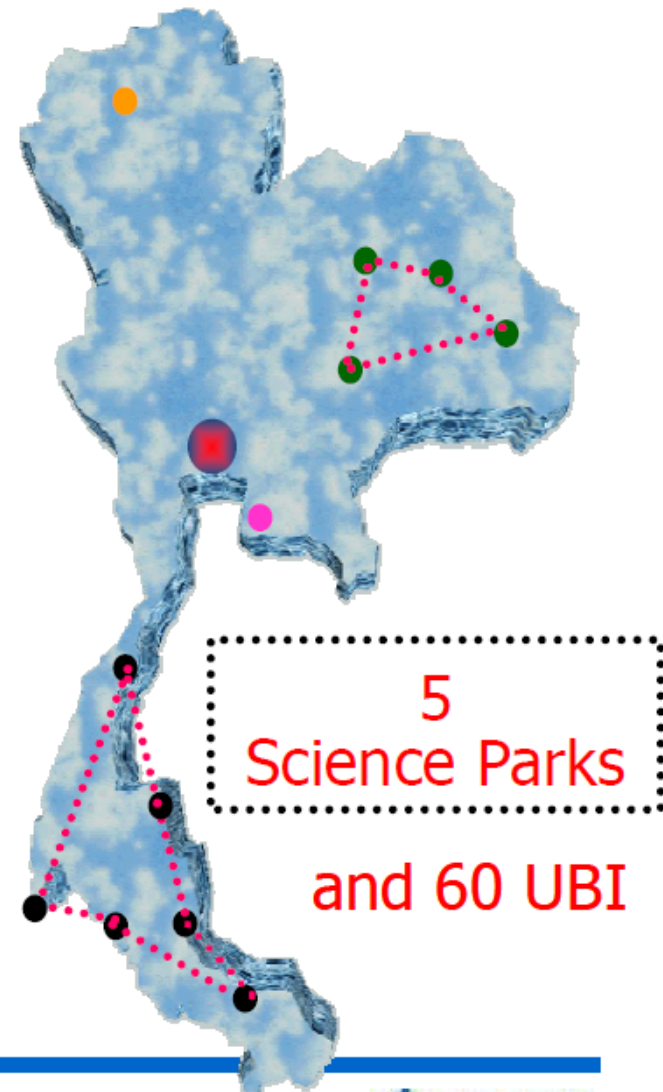
- ▣ Khon Kaen, Nakhon Ratchasima
- ▣ Maha Sarakham, Ubon Ratchathani

Southern Science Park

- ▣ Songkhla
- ▣ Phuket, Pattani, Phatthalung,
Surat Thani, Nakhon Si Thammarat

Eastern Science Park

- ▣ Chon Buri



Facilities Available at TSP

Rental Space for R&D:
Wet Lab/Dry Lab



Pilot Plants



Convention Center

National Biopharmaceutical Facility

- GMP compliant pilot scale facility
- 500 L batch size (Cell culture, BSL2)
- 600 L batch size (Microbial Fermentation, BSL2)
- Vial Filling (6,000 objects/h)
- GMP production from April 2015



In-house scale-up facility

Photobioreactor



Submerged Fermentation Pilot Plant



Ethanol Pilot Plant



Solid state Fermentation Pilot Plant



Strain selection/
Strain engineering

Scale-up

Pilot scale and Precommercial

NBF

Physiological study

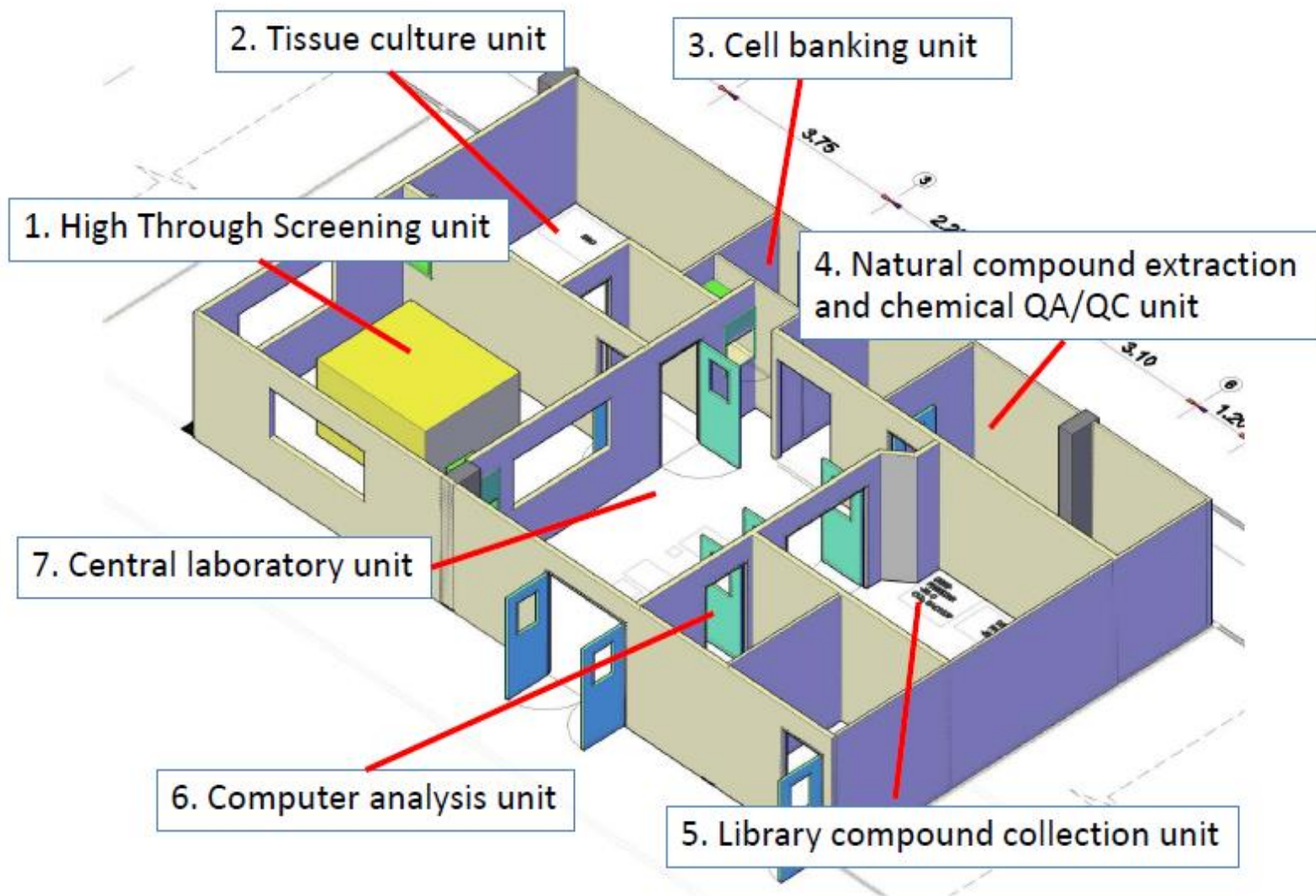
Computurized
monitoring

Downstream
processing

Process optimization via
Systems biology
/Modeling/Simulation



Drug Discovery Facility Platform by Mahidol University – TCELS



Perkin Elmer Cell::Explorer robotic system



APEC Bio-Medical Technology Commercialization Training Center



APEC LSIF

Provide Strategic Direction
for Center Operation



Coordinating
Center



Provide Up-to-date
contents for Training



Regional
Implementation Center

**APEC Bio-Medical
Technology
Commercialization
Training Center**

APEC TCTC Activities

- **Opening Ceremony and Technology Transfer Training Pilot Program**

8-10 December 2014 Seoul, Korea

130 Participants from 10 countries: Chile, China, Indonesia, Korea, Lao, Malaysia, Mexico, Myanmar, Peru, Philippines, Russia, Thailand and Vietnam

- **Basic Overview Training Program**

8-10 April 2015, Seoul, Korea

40 Participants from 10 countries: Chile, China, Indonesia, Korea, Malaysia, Peru, Philippines, Russia, Thailand and Vietnam

- **Special Topic Program on Bio-Medical Technology Valuation:**

8-10 July 2015, Seoul, Korea

- **Regional Training Program (intermediate level)**

9-11 September 2015, Bangkok, Thailand

- Evaluating Invention Disclosures
- Advanced Topic in IP Agreement
- ASEAN Experiences – Bimedical Technology Transfer



◆ Expectation for the e-ASIA JRP?

-> Collaborative project in the area of life sciences.

◆ Interested research topics to collaborate under the e-ASIA JRP?

-> Medical robotics, medical genomics, cell and gene therapy.