

Fostering Biotechnology at National Tsing Hua University - Current Approach and Perspective

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General information of NTHU



650 faculty members
12,000 students

7 colleges

Science (1974) Engineering (1974) Nuclear Science (1974)

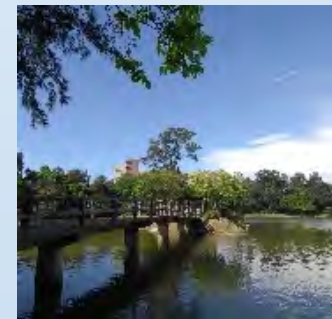
Humanities and Social Science (1984) Life Science (1992)

General Education (1995) Electric Engineering and Computer Science (1998)

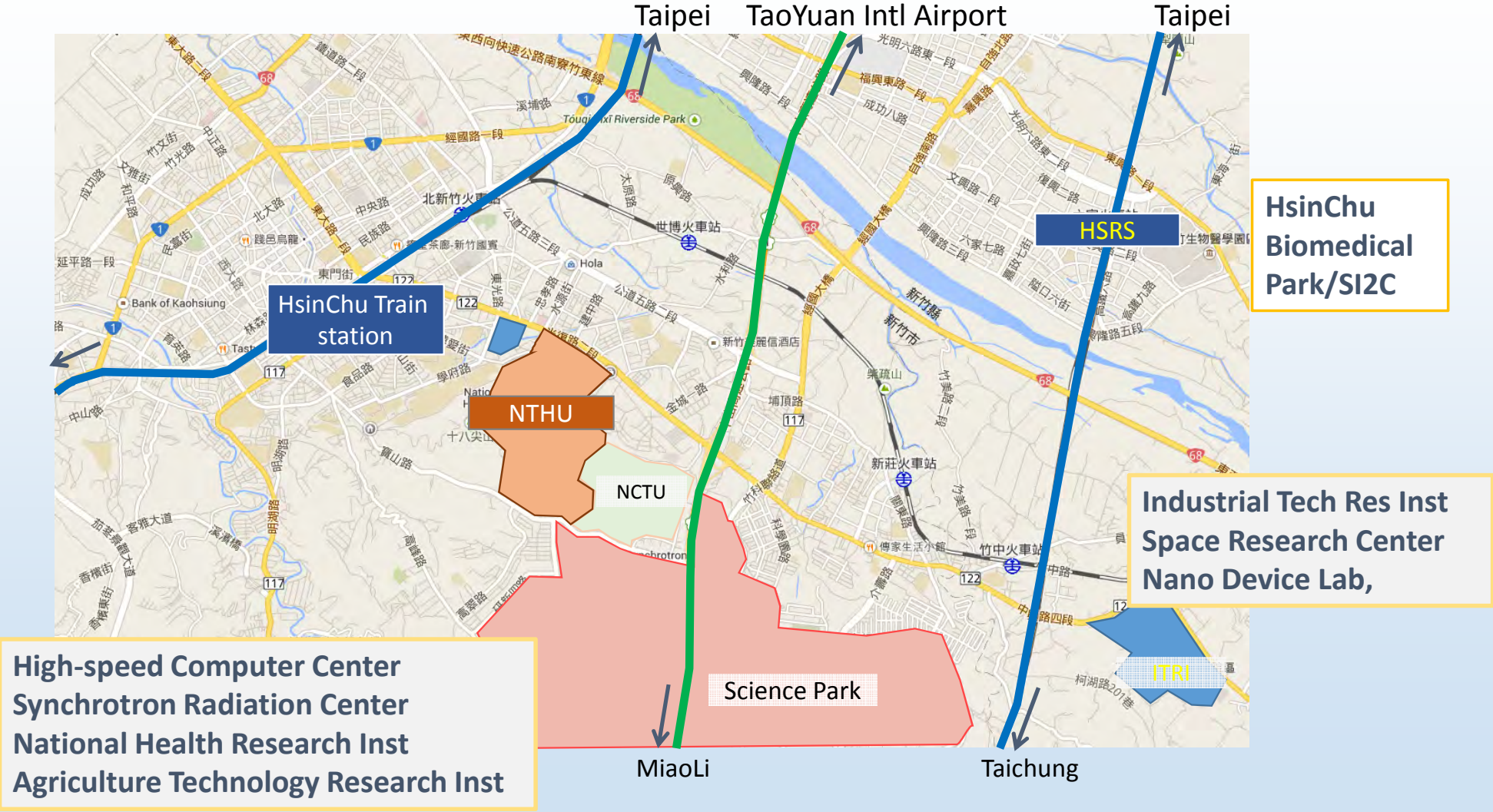
Technology Management (2000)

15 Interdisciplinary research centers

~150 Labs on Bio-related projects

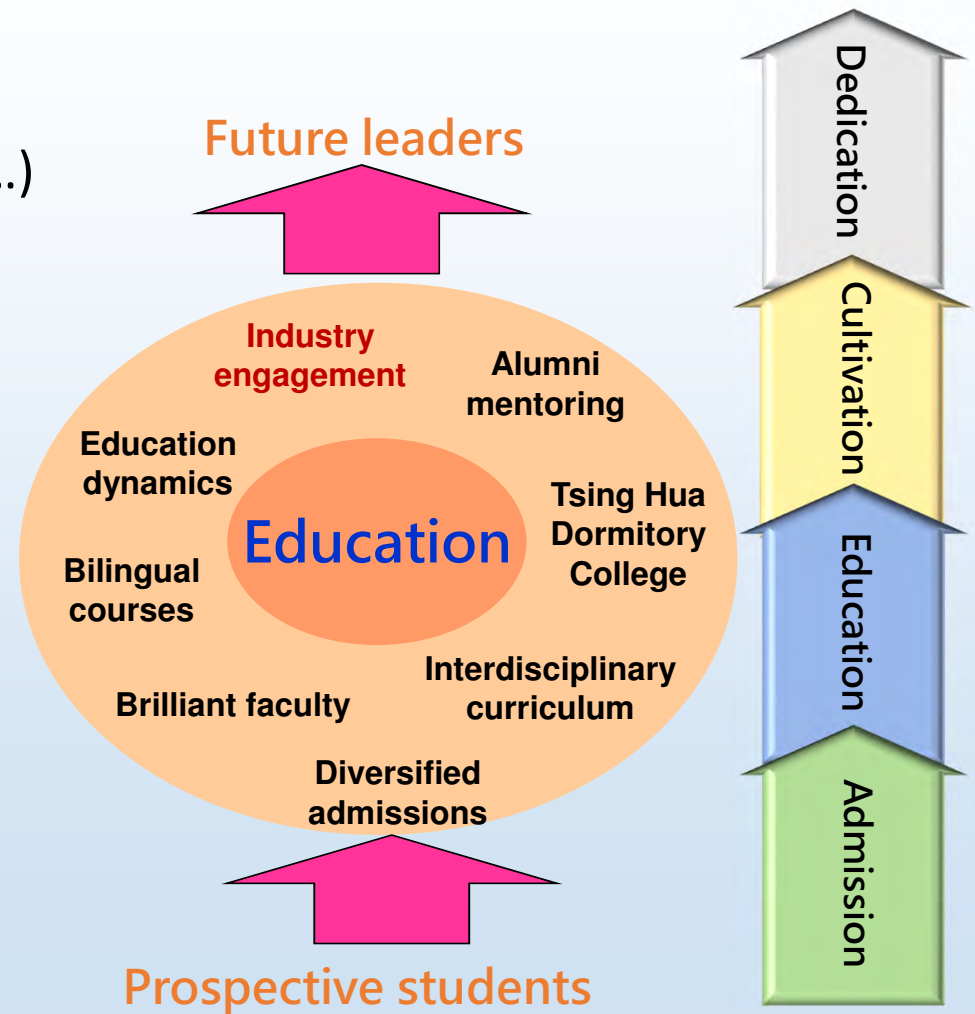


Hsin-Chu High Tech Zone



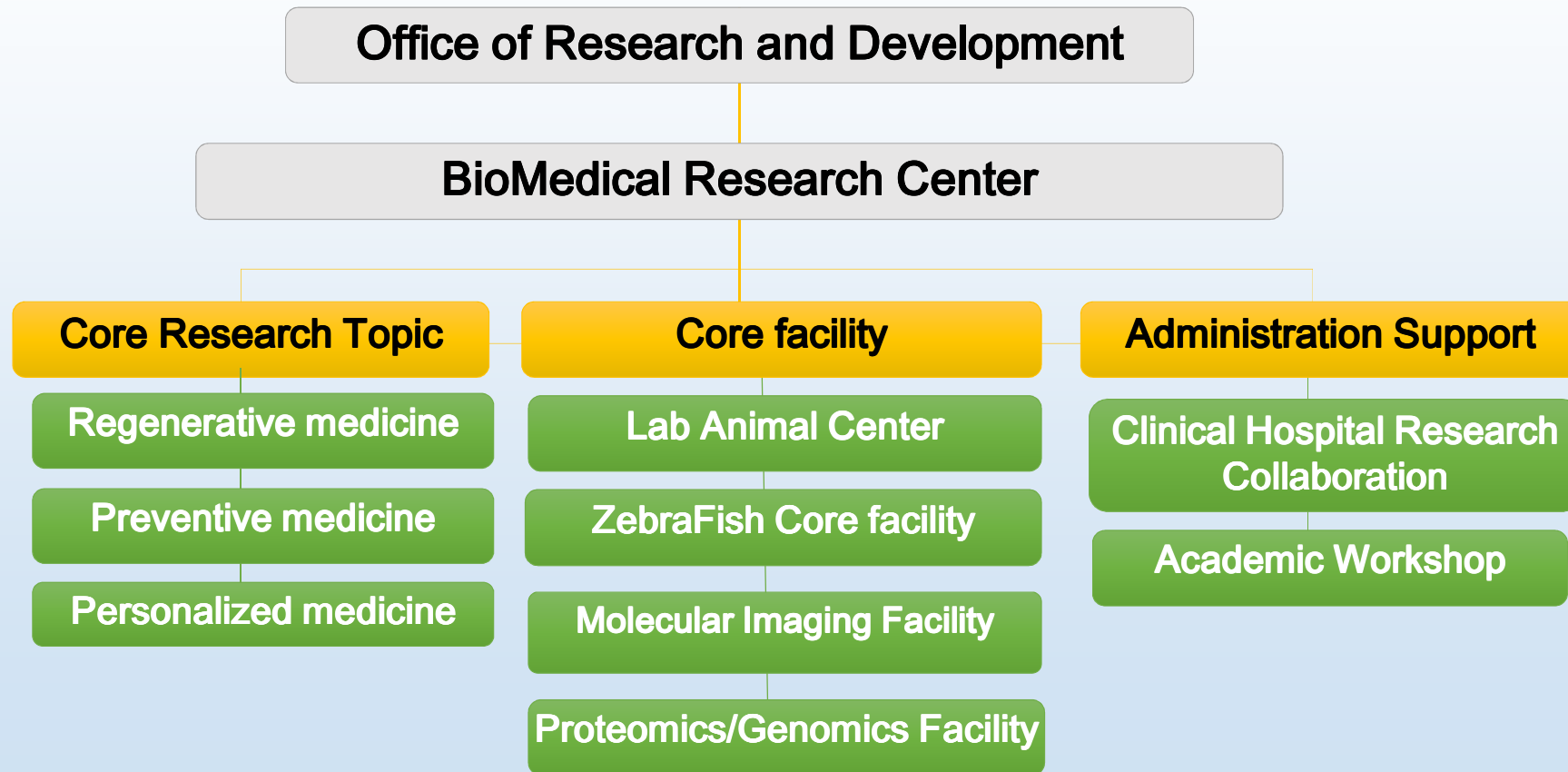
Education of Entrepreneurship at NTHU

- Courses (e.g., Biotech product realization practice, Patent law, Business plan writing, etc...)
- Industry-campus events
 - Student entrepreneur day & entrepreneurship award
 - Scholarship and summer internship
 - Industry-NTHU joint research programs
 - Industry mentors
 - Campus recruitment
- Tsing Hua Dormitory College – Innovation ideas

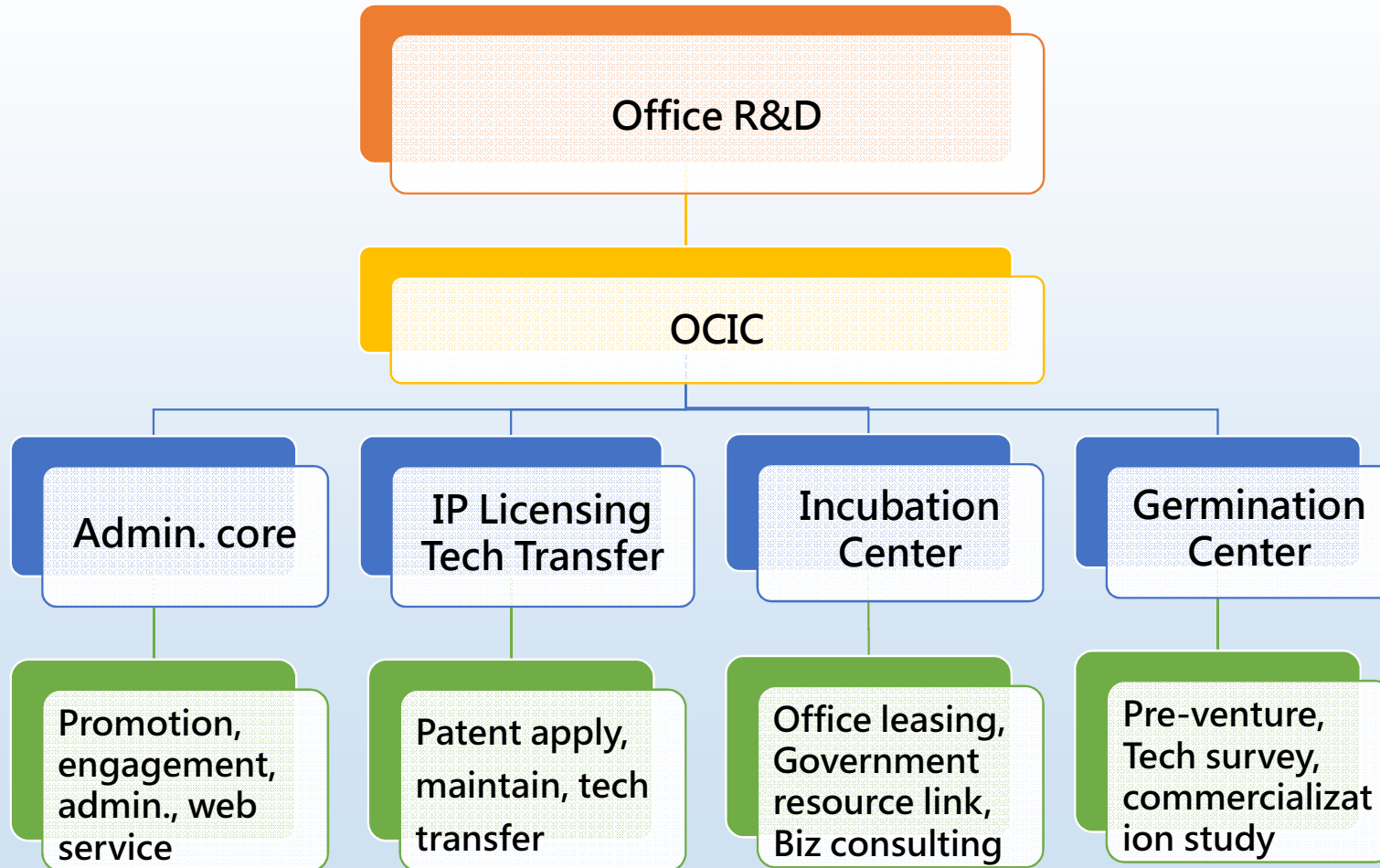





Biomedical Research Center



The Operation Center for Industry Collaboration (OCIC)

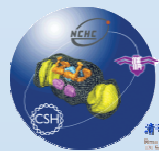


Joint research partners

    	      	     	      	      
Optical OE	Energy	Electronics	Bio medical	IT

International collaborations

- ~ 200 sister universities
- Commercial Institutes
 - Microsoft
 - INTEL
 - GE
 - Boeing
- Government institutions
 - US Cold Spring Harbor Lab
 - Air Force Office of Scientific Research (AFOSR)
 - Association of Research Libraries (ARL)
 - Argonne National Laboratory (ANL)



Key Performance of OCIC

- IP management
 - Ranked 15th university in the world on US patent granted (2013, US National Academy of Inventors' survey)
 - Taiwan Innovation Award (2012, Thomson Reuters)
- Germination Center (from 2011)
 - Support 18 teams (>100 students) venture to form startups
- Incubation Center
 - 2010-3 best incubator award (Ministry of Economic Affairs)
 - Foster > 100 companies (1.2 billion USD)

New NTHU Innovation Incubator Building



A 9-story building, ~ 20,000 m²

Linked to the Tsing Hua Laboratory Building.

Includes coworking space, multi-function exhibition hall, meeting rooms, etc.

Future Directions of Academic-Industry Collaboration at NTHU

Meeting the needs of startups

- Globalization
- Vertical integration
- Rapid prototyping service

Focus on

- Internet-of-Things
- Biomedical Technology

Globalization for startups

Domestic and international; Both ways

Connecting to sister universities/institutions abroad

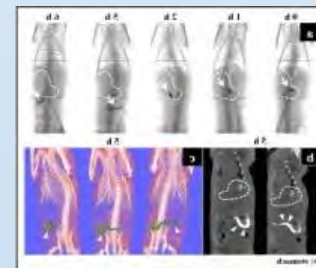
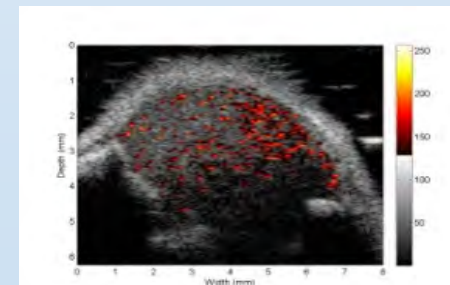
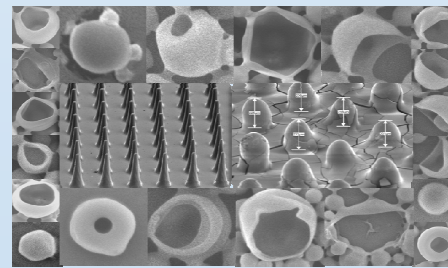
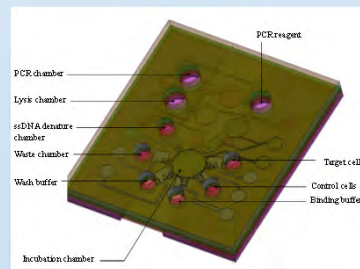
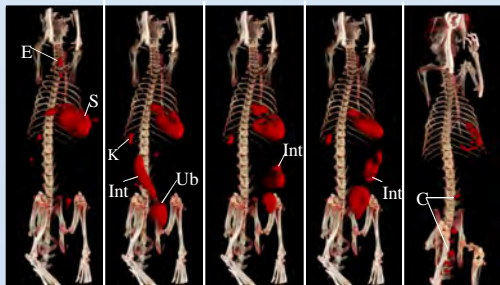
- Assist local patent application and licensing
- Provide operation space
- Local law and government administration consultations
- Local sale channels
- Connect manufacturing capability of Taiwan

Meeting the needs

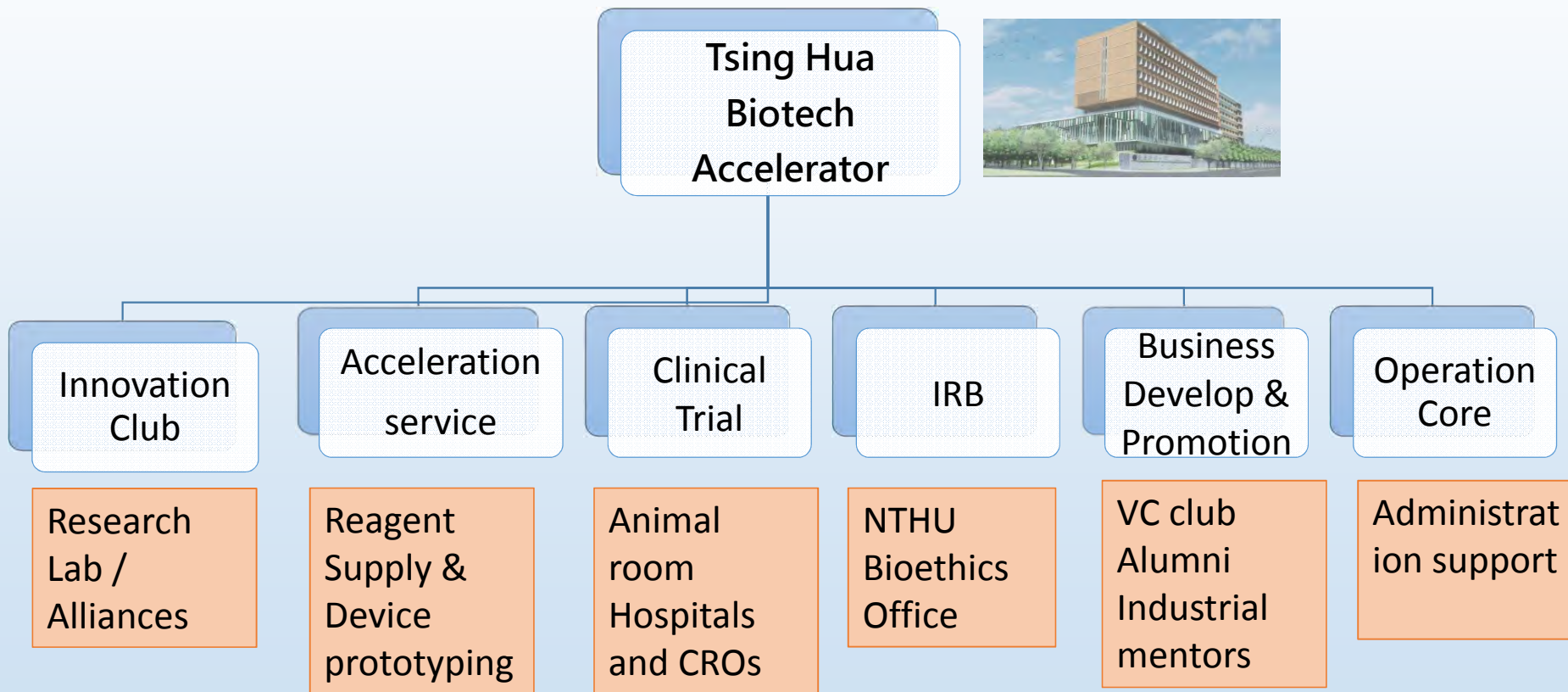
- Identification of and providing the missing elements
 - A. Uncertain technology applications and market needs
 - Experienced mentors; industrial alliance (e.g., microfluidics)
 - B. Slow and expensive prototyping process
 - Connect to the strong manufacturing capability of Taiwan
 - Establish a New Product Introduction (NPI) mechanism
 - Project Management

Medical devices and diagnostics as the beginning

- Based on:
 - NTHU R&D strength
 - Local environment
 - Investment atmosphere
- Some topics:
 - Biomedical imaging, Molecular diagnostics, Biosensors, Medical devices
 - Both reagents and systems are considered



Vertical Integration of Biotech Development Chain

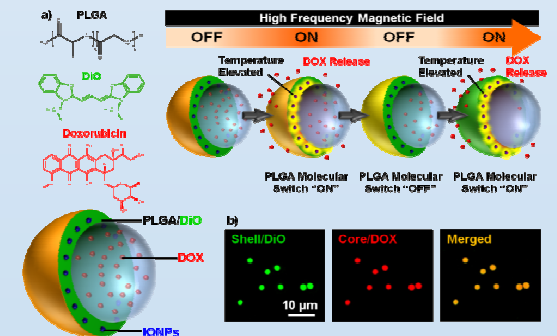
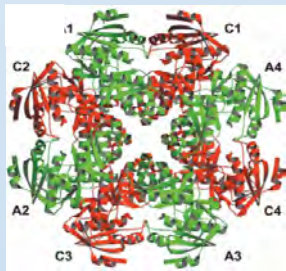


Acceleration Service for Biotech Startups

I. Establish facility and connection to

- Education and training- Technology, Business, Law, etc.
- Screening systems (mAb, aptamer, phage display)
- Small-scale production and purification of reagents (recombinant proteins; Ag/Ab; nanoparticles; etc.)
- Device, softwares and system prototyping and testing

II. Seed fund raising and sustainable development



Acceleration mechanism





Offer solutions for improving last mile availability for biotech startups

