



# IDEA GATHERINGS



# DEPARTMENT OF Biomedical Sciences and Engineering



<https://ncu.edu.tw/dbse/tw/index.php>



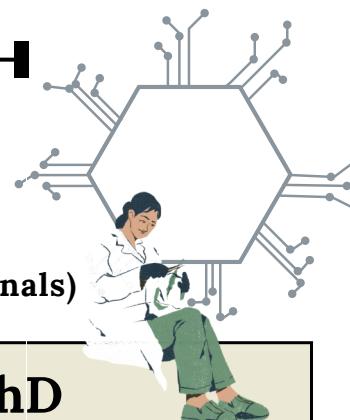
886-3-4227151 #27735

# Special Features

Established in 2015, our goal is to nurture interdisciplinary talents in biomedicine, aligning with societal needs and industry trends. Embracing disruptive innovation, we create a dynamic teaching and research environment, promoting collaboration between basic research, technology development, and industry. We seek students with diverse backgrounds, a passion for basic science, technology, life, and humanitarian concerns.

## Institutes

- System Biology and Bioinformatics (MS/Ph. D.)
- Biomedical Engineering (MS/Ph. D.)
- Interdisciplinary Medicine (Ph. D. for medical doctors)
- Artificial Intelligence Precision Medicine (MS for working professionals)



2024	BS	MS			PhD		
		System Biology and Bioinformatics	Biomedical Engineering	Artificial Intelligence Precision Medicine	System Biology and Bioinformatics	Biomedical Engineering	Interdisciplinary Medicine
Taiwan Students	108	23	35	35	16	7	26
International Students	0	4	-	-	3	3	-
Asia Students	5	-	-	-	-	-	-

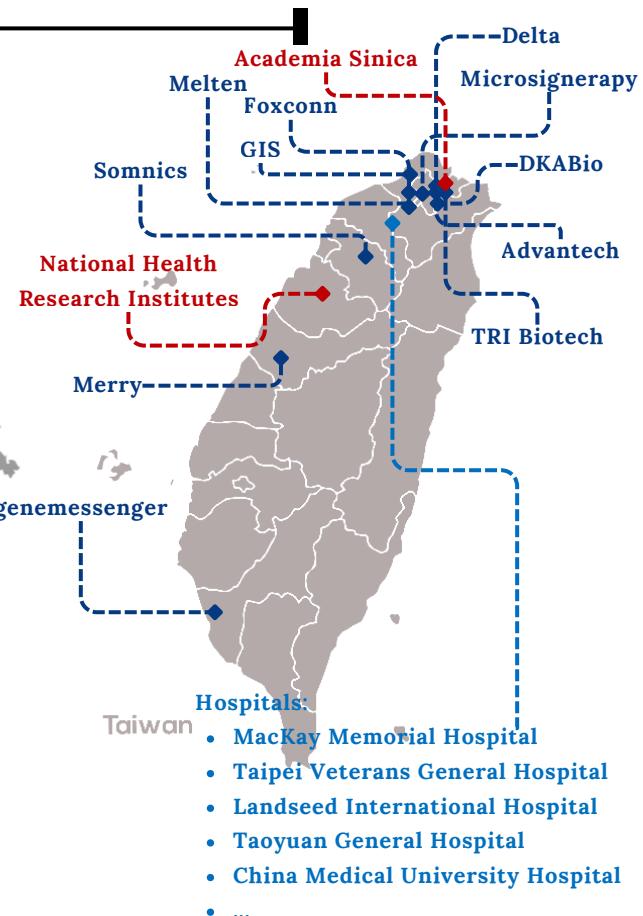
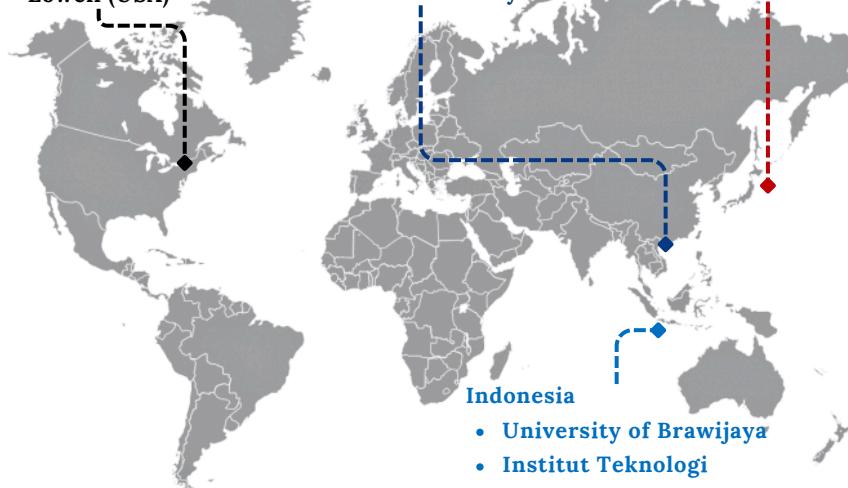
## Collaborators

- 10 universities
- >5 hospitals
- 2 research centers
- 11 companies

University of Massachusetts Lowell (USA)  
Vietnam  
• University of Science  
• International University  
• Can Tho University

Japan  
• University of Hyogo  
• Kansai University  
• Kumamoto University  
• Kumamoto University

University of Massachusetts Lowell (USA)



## FACULTIES IN SYSTEMS BIOLOGY AND BIOINFORMATICS

**Prof. Sun-Chong, Wang**  
**AI Biomedicine Laboratory**  
E-mail: scwang@ncu.edu.tw



- High-throughput biomedical data analysis
- Biomedical document modeling
- Electronic medical record analysis (reinforcement Learning)

**A.P. Li-Jen, Su**  
**Holistic health medicine Laboratory**  
E-mail: sulijen@gmail.com



- Infertility
- Genetic Testing
- Precision Medicine

**A.P. Li-Ching, Wu**  
E-mail: nculcwu@gmail.com  
**Biological and Biomedical Informatic**



- Bioinformatics
- Biological Databases
- Medical Informatics
- Deep learning

**Prof. Nian-Han, Ma**  
**Systems Molecular Medicine Laboratory**  
E-mail: nianhan.ma@g.ncu.edu.tw



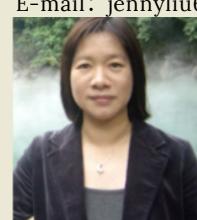
- MicroRNAs (miRNAs)
- Melanoma
- Radiation therapy
- Chronic Disease Biomarker
- Drug Discovery

**A.P. Yi-Chiung, Hsu**  
**Cancer Genomics Research Laboratory**  
E-mail: syic@ncu.edu.tw



- Cancer genomics
- Space biology
- Medical AI
- Biostatistics

**A.P. Shu-Chen, Liu**  
**Tumor Microenvironment Laboratory**  
E-mail: jennyliu66@gmail.com

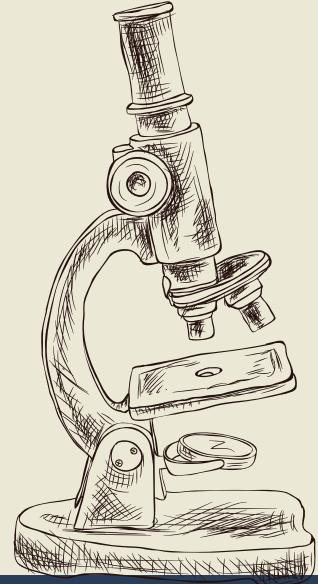


- HNSCC Tumor microenvironment
- Tumor single-cell Omics
- Immuno-Oncology
- Radiotherapy basic research
- EBV & NPC

**A.P. Hui-Yin, Chang**  
E-mail: dr.chuiyin@gmail.com  
**Intelligent and computational**



- Proteomics
- Metabolomics
- Bioinformatics
- Machine Learning



## FACULTIES IN BIOMEDICAL ENGINEERING

**Prof. Men-Tzung, Lo**  
E-mail: mzlo@ncu.edu.tw  
**Integrated Biomedical Signal**



**Applications Laboratory**

- Medical Electronics
- Biomedical Signal Analysis and Image Processing
- Smart/Intelligent Medicine

**Prof. Chun-Chuan, Chen**  
E-mail: cchen@cc.ncu.edu.tw  
**Computational Neuroscience Laboratory**



- Neural Engineering
- Virtual Reality Applications
- Digital precision therapy
- Computational Neuroscience

**A.P. Chien-Chang, Chen**  
E-mail: gettgod@ncu.edu.tw  
**Geometric Data Vision Laboratory**



- Geometric Deep Learning
- Image Adversary and Concealment
- Artificial General Intelligence

**Prof. Yu-Hsiang, Lee**  
E-mail: yuhsianl@ncu.edu.tw  
**Nanobiotechnology Laboratory**



- Nanomedicine
- Drug Delivery
- Biomaterials

**A.P. Chen-Han, Huang**  
E-mail: chhaung@ncu.edu.tw  
**Biomedical Systems Engineering Laboratory**



- Nano sensors
- Functional Biochemical Materials
- Biophotonics Imaging Systems

**Prof. Chen, Lin**  
E-mail: dreamtheater.lin@gmail.com  
**Integrated Biomedical Signal**



**Applications Laboratory**

- Sleep Medicine
- Cardiovascular Physiology
- Portable Medical Devices Development and Applications

**A.P. Hui-Yang, Huang**  
E-mail: adamhuan@gmail.com  
**Computer-Aided Diagnosis Laboratory**



- Computer-Aided Diagnosis
- Natural Language Processing
- Machine Learning

**A.P. Prof. Po-Kang, Yang**  
E-mail: pkyang@g.ncu.edu.tw  
**Nanoscience and Bioelectronics Laboratory**



- Nanomaterials
- Smart Sensing
- Energy Technology
- Soft electronics

**Asst. Prof. Ching-Yun, Chen**  
E-mail: chingyun523@gmail.com  
**Biomimetic Materials and Tissue**



**Engineering Laboratory**

- Tissue engineering
- Regenerative medicine
- Bioreactor system
- Non-animal alternative model
- Drug screening assay

# Graduation Prospects & Further Studies

## Overseas Short-term Internships and Postgraduate Pathways:

- **Educational goal:** cultivating correct research thinking, essential for a harmonious integration of learning and application.
- **International research projects with short-term studies:** experiencing the foreign university life, and preparing for future academic or professional development in University of California, San Diego, the School of Medicine at Boston University, and Harvard Medical School.

## Graduation Prospects:

- Over 80% of students continue their education and pursue advanced studies.
- Opportunities in prestigious domestic universities: National Taiwan University, Tsing Hua University, Chiao Tung University, and Yang Ming University; study in various fields such as biomedical, electrical engineering, information systems, and other interdisciplinary areas.
- Renowned overseas institutions: University of California, UMass, and Imperial College London international's recognition and success of our department's alumni.

## PROGRAMME REGULATIONS

	Master		PhD	
Program	Biomedical Engineering	System Biology and Bioinformatic	Biomedical Engineering	System Biology and Bioinformatic
Study period	2 – 4 years	2 – 4 years	2 – 7 years	2 – 7 years
Credits for graduation	24		18	
Required and Elective courses	<ul style="list-style-type: none"><li>Required course: 12 credits</li><li>Elective courses: 12 credits</li><li>Seminar (0 credit): Require 3 semester</li></ul>	<ul style="list-style-type: none"><li>Required courses: 11-14 credits</li><li>Elective courses: 10-13 credits</li></ul>	<ul style="list-style-type: none"><li>Seminar (0 credit): Require 4 semester</li></ul>	<ul style="list-style-type: none"><li>Compulsory courses: 8 credits</li><li>Selective courses: 10 credits</li></ul>
Qualifying Examination	Not required		Passing in the first 3 years	Passing 1 year prior thesis defense
Oral defense	<ul style="list-style-type: none"><li>Require Pre-oral examination - need to pass in the third semester before the thesis examination.</li><li>Oral defense is mandatory.</li></ul>	Oral defense is mandatory.	<ul style="list-style-type: none"><li>Require Pre-oral examination</li><li>Oral defense is mandatory.</li></ul>	
Publish paper	Not required		Publish at least two scientific full articles in SCI-ranked journals before apply for oral defense	