Li-Hsuan Li

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EDUCATION

University of Florida — **Florida, USA**
MSc, Department of Electrical and Computer Engineering — *Aug. 2025 –*

National Yang Ming Chiao Tung University — **Hsinchu, Taiwan**
Professional Talent Development Program in Semiconductor and Electronic Circuit System Design Application, 3rd Term — *Mar. 2024 – May 2024*
Course Content:

- Electronics
- Principles of Basic Circuit Design
- Implementation of basic circuits by using Verilog
- Exploration of the process of semiconductor fabrication

National Cheng Kung University (NCKU*) — **Tainan, Taiwan**
MSc, Department of Environmental and Occupational Health — *Sep. 2019 – Jun. 2021*
GPA: 3.57/4.3
Master's Thesis: Role of CD44-ICD on hepatic inflammation in endotoxemic mice
Relevant Courses: Applied Molecular Biology (A-), Instrumental Analysis (A)
**NCKU is the top university in Taiwan, ranked 41st in the QS Asian University Rankings 2024.*

Kaohsiung Medical University — **Kaohsiung, Taiwan**
BSc., Department of Biomedical Science and Environmental Biology — *Sep. 2015 – Jun. 2019*
GPA for last year: 4.05/4.3 (**Class Rank:** 3/46 in Semester 1, 4/43 in Semester 2)
Relevant Courses: Physiology (A-), Histology (A), Toxicology (A)

Skills

Computer-related skills

- Verilog, FPGA

Animal Surgery skills

- Cecal ligation and puncture, ischemia and reperfusion, vagotomy, cerebrospinal fluid collection, intramuscular injection, intraperitoneal injection, intravenous injection

Biochemical and chemical analysis

- Microelectrode array fabrication, atomic absorption spectrometer, biochemical analyzer, western blotting, ELISA, flow cytometry, cell culture

Histological analysis

- Hematoxylin and eosin staining, immunohistochemistry staining, immunofluorescence staining, safranin O staining, PAS staining, Masson's trichrome staining

WORK EXPERIENCE

National Yang Ming Chiao Tung University — **Hsinchu, Taiwan**
Research Assistant (FT) — *Apr.2025 –Jun.2025*

- Using a hydrogel microelectrode array to detect the electroencephalographic signals.
- Improved elasticity and biodegradability of hydrogel electrodes by >10% via formulation optimization.
- Co-authored a paper accepted to IEEE BioCAS 2025, with contributions to literature review and writing.

National Cheng Kung University — **Tainan, Taiwan**
Research Assistant (FT) — *Jul. 2021 – Oct. 2022*

- Conducted animal physiology data collection.
- Linked experimental equipment to computers for osteoarthritis pain experiments, positioning mice in a standing-like stance. Utilized sensors on a platform to gather signals indicating uneven weight distribution between left and right feet, converting them into numerical values for further analysis.
- Wrote **five** experimental reports and **two** articles for international journals.
- Developed Standard Operating Procedures (SOP) for laboratory drug management (approximately 600 items).

- Organized the laboratory into distinct zones: animal surgery area, drug storage area, and equipment area. Implemented a system where drugs starting with the same letter were grouped and numbered, reducing the time spent searching for drugs and equipment from at least half an hour to within 5 minutes.

Kaohsiung Medical University - Higher Education SPROUT Project **Kaohsiung, Taiwan**
Teacher (Volunteer) *Feb. 2021 – Jun. 2021*

- Traveled to rural areas in Kaohsiung to teach science experiments to indigenous elementary school students.
- Prepared PowerPoint presentations for teaching.
- Demonstrated the use of microscopes brought from the school.
- Taught students how to make their own filters.
- Facilitated hands-on activities and conducted quiz competitions to motivate students and enhance engagement.

NOTABLE PROJECTS

Role of CD44-ICD on hepatic inflammation in endotoxemic mice (master's thesis) **National Cheng Kung University**
2021

- Investigated the relationship between CD44-ICD and sepsis.
- Induced sepsis in mice using LPS and conducted cellular experiments.
- Analyzed blood biochemistry, tissue sections, immunohistochemistry, and Western blotting to explore related molecular pathways.
- Determined the significant role of CD44-ICD in sepsis.

The Effects of Sleep Deprivation on EAAT1 and EAAT2 Expression in the Hippocampus of Mice *2022*

- Observed significant neuronal edema in the hippocampal CA1/CA2 regions using H&E staining.
- Documented time-dependent increases in oxidative stress markers.
- Demonstrated a correlation between decreased EAAT1/EAAT2 expression and sleep deprivation through immunohistochemistry.

The anti-ulcerogenic potential of Gan-Lu-Yin against alcohol-induced gastric ulcer in rats: Involvement of inflammatory cytokines inhibition and mucin secretion induction *2022*

- Completed over half of the data for a junior to finish his experimental data.
- Investigated the protective effects of Gan-Lu-Yin on gastric ulcers.
- Conducted rat experiments and used tissue sections, immunohistochemistry, and Western blotting to study the effects of Gan-Lu-Yin on gastric ulcers.
- Found that Gan-Lu-Yin reduced inflammation caused by gastric ulcers by influencing related regeneration factors.

Efficacy of bone powder on Anterior Cruciate Ligament Resection-induced Osteoarthritis in Rats *2022*

- Prepared an experimental report commissioned by ACRO Biomedical Co., Ltd.
- Investigated the efficacy of the manufacturer's synthetic bone powder in knee repair for osteoarthritis patients.
- Utilized ACL excision surgery and administered the bone powder to rats; assessed effects using nociceptive measurement instruments, immunohistochemistry, and safranin O staining.
- Results indicated significant cartilage regeneration and reduced pain indices in the rats.

Evaluation of Hyaluronic Acid Derivatives for Vascular Embolization *2022*

- Conducted an experimental report commissioned by ACRO Biomedical Co., Ltd.
- Compared the thrombotic effects between the manufacturer's synthetic hyaluronic acid derivative and current hyaluronic acid products.
- Utilized rabbit ear vein injection models and observed thrombotic conditions through morphological and tissue section analysis.
- Results showed a significant reduction in thrombotic occurrences with the hyaluronic acid derivative compared to conventional hyaluronic acid.

The protective effect of quercetin on sciatic nerve contusion rat *2021*

- Collaborated with the orthopedic department of NCKU Hospital on experimental research.
- Investigated the protective effects of quercetin on rats with sciatic nerve crush injury.
- Performed surgery to expose the rats' sciatic nerves, applied Kelly hemostats to induce

injury, and administered quercetin daily; assessed effects through tissue section analysis.
- Found that quercetin significantly reduced inflammation factors, decreasing the inflammatory response and associated edema.

The effect of Tamarind Xyloglucan on TNBS-induced Ulcerative Colitis in Mice *2021*
- Completed partial data for a senior to finish her experimental data.
- Investigated the protective effects of pomegranate ellagitannin on ulcerative colitis.
- Induced TNBS colitis and assessed the protective effects of pomegranate ellagitannin on intestinal mucosa using complete blood count (CBC), tissue sections, PAS staining, and Western blotting.
- Found that pomegranate ellagitannin reduced colon damage by lowering oxidative stress and inflammation.

Synergistic effects of warming and carbon dioxide induced freshwater acidification on bioaccumulation of tilapia (*Oreochromis niloticus*) exposed to copper nanoparticles *2018*
- Collaborated with a senior to complete his experimental data.
- Evaluated the synergistic effects of warming and CO_2-induced acidification on the bioaccumulation of copper nanoparticles in tilapia.
- Simulated global warming and acidification scenarios using CO_2-exposed acidic water bodies and elevated temperatures.
- Utilized flame atomic absorption spectrometry (AA) to investigate copper nanoparticle absorption.
- Results indicated that acidification primarily increased copper accumulation in the gills of tilapia, with multiple effects synergistically reducing copper elimination from gills and muscles.

Effect of size-dependent copper nanoparticles on grass crop (*Ctenopharyngodon idellus*): metabolic toxicity and histopathology *2017-2019*
- Utilized subcellular analysis to compare the absorption, distribution, accumulation, and elimination capabilities of grass carp in response to copper nanoparticles of different sizes.
- Observed the extent of organ damage caused by copper nanoparticles of different sizes using tissue section H&E staining.

CERTIFICATES, AWARDS, AND PROFESSIONAL TRAINING

- Excellent Performance in Semiconductor and Electronic Circuit System Design Application Professional Talent Development Program, National Yang Ming Chiao Tung University (2024)
- Outstanding Paper Award at Medical School Research Day, National Cheng Kung University (2021)
- Hazardous Chemical Operations Supervisor Safety and Health Education Training, Tainan City Government (2020)
- Organic Solvent Operations Supervisor Safety and Health Education Training, Tainan City Government (2020)
- Outstanding Summer Research Paper Award for Undergraduates, Kaohsiung Medical University (2018)

PUBLICATIONS

Li, L. H. (first author), Hsu, D. Z., Chandrasekaran, V. R. M., & Liu, M. Y. (2024). Inhibiting CD44-ICD Attenuates LPS-Induced Initiation of Hepatic Inflammation in Septic Mice. International Journal of Molecular Sciences, 25(16), 8907. IF: 5.6, Ranking: Q1.

Chandrasekaran, V. R. M., **Li, L. H. (second author)**, Wu, C. W., Hsu, D. Z., & Liu, M. Y. (under review). Gan-Lu-Yin mitigates alcohol-induced gastric ulcers in rats by modulating inflammatory cytokines and enhancing mucin secretion.

Lin, H. C., Tsai, Y. L., Hsiao, B. R., **Li, L. H. (fourth author)**, Hsieh, H. H., Liu, T. H., Lee, C. W., & Chen, W. Y. (under review). Bayesian evaluation of subcellular partitioning kinetic model of size-effect copper nanoparticles in grass carp and its implication for detoxification.

ACTIVITIES IN ACADEMIC SOCIETIES

Li, L. H., & Liu, M. Y. (2021). Role of CD44-ICD on hepatic inflammation in endotoxemic mice. Poster session presented at the Toxicology Society of Taiwan, Taipei, Taiwan, April.

Li, L. H., Kuo, J. L., & Chen, W. Y. (2018). Synergistic effects of warming and carbon dioxide induced freshwater acidification on bioaccumulation of tilapia (*Oreochromis niloticus*) exposed to copper nanoparticles. Poster session presented at The Society of Environmental Toxicology and Chemistry, Rome, Italy, May.