

## 邱繼輝老師實驗室

### Part 1 研究主題與核心科學 (Research Focus)

**Q1-1 What are the core scientific questions addressed by this laboratory's research topics?**

Ans: Development and applications of mass spectrometry-based analytical approaches in glycomics, glycoproteomics and protein modification (including glycosylation) analysis to all kinds of biological systems, with an emphasis on what structural information gained may advance our glycobiology understanding of that system. This would then allow the formulation of validation and functional studies. Current lab focus is on the central nervous system, particularly the glycomics of the brain and its glial cells and neurons.

**Q1-2 What is the current significance or potential application value of this research field?**

Ans: The mass spectrometry analytical platform is widely applicable to all systems and is highly in demand in biopharmaceuticals where glycoprotein therapeutics are developed and QA/QC of the products to ensure reproducibility and compliance with FDA regulations.

**Q1-3 What types of research projects do summer students usually participate in? Do they work on independent small projects or assist with ongoing projects?**

Ans: Two months or so is too short to carry a full project as there are many basic techniques and domain knowledge to learn and master. Therefore, students usually participate in ongoing projects and often involve taking standard cell extracts or glycoproteins through the pipeline with an aim to get familiarized with the workflow and are also tasked with optimizing certain steps.

**Q1-4 What expertise or skills can summer students learn?**

Ans: Sample preparation and mass spectrometry-based analysis

## **Part 2 實驗室運作與指導方式 (Mentorship)**

**Q2-1 Who directly supervises summer students?**

Ans: Postdocs and research assistant.

**Q2-2 What is the PI's approach to teaching research? How will the mentor guide summer students?**

Ans: PI will be engaged in teaching the principles, engaged in discussion, and ask thought-provoking questions.

**Q2-3 Approximately how many summer students are accepted each year?**

Ans: 1-2

**Q2-4 What expectations does the laboratory have for summer students (e.g., initiative, attention to detail)?**

Ans: Summer internship is voluntary. You sign up because you are genuinely keen. No one forces you. Therefore, a mature student should behave exactly as a responsible and enthusiastic student is expected to.

**Q2-5 During the two-month period, what research concepts or experiences does the laboratory hope to provide to summer students?**

Ans: General experimental approach to glyco-analysis and basic glycobiology. General attitude and outlook for life sciences.

## **Part 3 能力需求與錄取評核 (Requirements & Selection)**

**Q3-1 What foundational courses or academic background are recommended for applying to this project?**

Ans: None specifically although relevant domain knowledge will be advantageous. Most importantly a keen and receptive mind.

**Q3-2 Is prior research or laboratory experience required? If not, can students without experience still apply?**

Ans: Prior experience not required but advantageous.