

## 114-2 Emerging Viral Infectious Diseases (新興病毒性傳染病)

Class Time: 10:10 ~ 12:00 AM, Tuesday (週二)

Classroom: 醫學院 301D

Course Credit: 2 學分()選修

Course Number: T154700

Instructors: Dr. Hsiang-Chi Huang 黃湘琦老師 (Ext. 5268、E-mail: z11402031@email.ncku.edu.tw)

### Course Descriptions /Objective :

This course provides an in-depth exploration of the challenges posed by emerging and re-emerging viral infections, bridging epidemiological, clinical, and molecular perspectives. Topics cover major respiratory viruses (e.g., SARS-CoV-2, influenza, RSV), enteroviruses and hemorrhagic viruses (EV71, Ebola), and zoonotic threats (Nipah virus), as well as advanced themes such as viral aging, oncogenic viruses, glycobiology and immune evasion, RNA-binding proteins, viral reactivation, and structural biology. In addition, the course highlights cutting-edge detection technologies, diagnostic innovations, and bioinformatics-driven approaches for viral research. Through case-based and interdisciplinary learning, students will gain a comprehensive understanding of how viruses impact human health and disease, and acquire skills in applying molecular, computational, and translational strategies to investigate viral pathogenesis. The course is designed for graduate students interested in molecular medicine, immunology, virology, and translational research, aiming to cultivate critical thinking and cross-disciplinary integration

### Course Materials:

講義與指定閱讀資料 (授課教師整理最新研究文獻、綜述與案例分析)。科學期刊文章 (如 Nature Reviews Microbiology, The Lancet Infectious Diseases, Journal of Virology, Emerging Infectious Diseases)。參考書目 References: Emerging Infectious Diseases (Institute of Medicine reports), Viral Pathogenesis (Nathanson & Ahmed), WHO、CDC 與各國疾病管制機構之公開報告與技術文件。生物資訊與病毒資料庫資源 (NCBI Virus、GISAID、Nextstrain)。

### Grading Criteria:

Participation(20%)、Midterm Exam(25%)、Final Exam(25%)、PBL assignments(20%)、Discussion(10%)

### Course Progress Outline

| Week | 進度 Progress Description                                                            |
|------|------------------------------------------------------------------------------------|
| 1    | Introduction to Emerging and Re-emerging Viral Infections 新興與再興病毒感染概述              |
| 2    | Respiratory Viral Infections: SARS-CoV-2 呼吸道病毒感染：新冠病毒                              |
| 3    | Respiratory Viral Infections: Influenza & RSV 呼吸道病毒感染：流感與呼吸道合胞病毒 (RSV)             |
| 4    | Enteroviruses & Hemorrhagic Fevers: EV71 & Ebola 腸病毒與出血性病毒：EV71、伊波拉                |
| 5    | Emerging Zoonotic Viruses: Nipah virus 人畜共通新興病毒：尼帕病毒                               |
| 6    | Detection Technologies for Emerging Viruses & Diagnostic Innovations 新興病毒檢測技術與診斷創新 |
| 7    | Viral Bioinformatics and Data-driven Approaches 病毒生物資訊學與資料科學應用                     |
| 8    | Midterm Exam / 期中考                                                                 |
| 9    | Emerging Viruses and Aging 新興病毒與老化                                                 |
| 10   | Viral Infections and Oncology: Oncogenic Viruses 病毒感染與癌症：致癌病毒                      |
| 11   | Viral Glycobiology and Immune Evasion Strategies 病毒糖科學與免疫逃逸                        |
| 12   | Viral RNA-Binding Proteins: Roles in Replication & Pathogenicity 病毒 RNA 結合蛋白：角色與機制 |
| 13   | Long COVID and Chronic Viral Diseases 長新冠與慢性病毒感染                                   |
| 14   | Viral Reactivation, Latency, and Persistence 病毒再活化、潛伏與持久感染                         |
| 15   | Viral Structural Biology 病毒結構生物學                                                   |
| 16   | Final Exam / 期末考                                                                   |