

蟹足腫與皮膚遺傳團隊工作坊

Workshop of Keloid and Genodermatosis study

scRNA-seq 分析的實際演示和工作流程講解

Practical Demonstration and Workflow Explanation of scRNA-seq Analysis

時間(Date): 2025/8/1(五) 21:00 – 23:00; Aug 1, 2025 (Friday), 21:00–23:00

地點(Venue): 線上會議(Online Meeting)

講者(Speaker): 蘇柏嵐 Po-Lan Su、張嘉容 Chia-Jung Chang (Charlene)

時間 Time	主題 Topic
21:00-21:10	單細胞分析流程總覽及核心概念導讀 Overview of scRNA-seq Workflow with Key Concepts
21:10-21:15	scRNA-seq 資料下載與預處理策略 Strategies for Downloading and Pre-processing scRNA-seq Data
21:15-21:30	R 語言基礎導論 Foundations of R Programming
21:30-21:45	品質控制方法、前處理與跨樣本資料整合 Quality Control, Preprocessing, and Cross-Sample Integration
21:45-22:00	細胞類型註解與分群 Cell Type Annotation and Clustering
22:00-22:15	差異基因表現與功能富集分析 Differential Gene Expression and Functional Enrichment Analysis
22:15-22:25	細胞間通訊分析 Cell-Cell Communication Analysis
22:25-22:35	細胞軌跡與擬時序分析方法 Trajectory Inference and Pseudotime Analysis
22:35-22:50	結果評估與分析驗證方法與 Loupe Browser 視覺化互動 Evaluation of Analytical Results and Validation Techniques and Loupe Browser Interactive Visualization
22:50-23:00	如何根據研究目標選擇並導入合適的資料分析工具與方法 How to Select and Implement Appropriate Data Analysis Tools and Methods Based on Research Objectives

實作事前準備

1. 電腦與軟體

- 請安裝 $R \geq 4.1.3$ (實驗室慣用 4.1.3)、RStudio。

安裝網址: <https://posit.co/download/rstudio-desktop/>

2. 範例資料與程式碼

- 範例資料下載: <https://reurl.cc/NYzGM9>
- GitHub 倉庫 (含各項範例程式與套件安裝腳本):

https://github.com/KGDLab/KGD_Workshop_2025_Summer

*請於課程前完成所需套件安裝 (可選擇最新版或指定版本):

- 安裝最新版本: `source("Install_required_packages.R")`
- 指定套件版本: `source("Install_required_packages_KGD_Lab.R")`

若遇安裝或其他問題請聯絡 Charlene (p88071020@gs.ncku.edu.tw)

3. GitHub

- 建立個人帳號並提供使用者名稱，以加入 **KGD_Lab** 組織。

KGD_Lab GitHub: <https://github.com/KGDLab>

Pre-Workshop Preparation

1. Computer and Software

Please ensure that R (version $\geq 4.1.3$; version 4.1.3 is preferred in our lab) and RStudio are installed in advance.

Download RStudio: <https://posit.co/download/rstudio-desktop/>

2. Example Data and Scripts

- Example data: <https://reurl.cc/NYzGM9>
- GitHub repository (includes all example scripts and package installation scripts):

https://github.com/KGDLab/KGD_Workshop_2025_Summer

* Please install the required packages before the workshop. You may choose:

- Latest versions: `source("Install_required_packages.R")`
- Lab-specific versions: `source("Install_required_packages_KGD_Lab.R")`

• If you encounter installation or technical issues, please contact Charlene at p88071020@gs.ncku.edu.tw.

3. GitHub

Create a personal GitHub account and provide your username to be added to the **KGD_Lab** organization.

KGD_Lab GitHub: <https://github.com/KGDLab>