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) https://meet.google.com/fre-vxzi-bae

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 ≥ 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 ≥ 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