Project log – week 49

Analysis of new Olink proteomics data from S3WP: toward multi-omics integration

Overview

QC and platform comparison completed. The main analysis of Olink HT is ongoing.

Summary of activities and deliverables reached

- Active discussion with my supervisor, both online and in person.
 - Interpret results and suggest suitable analysis methods
 - o Outline the report
- Project activities: mostly R programming

Summary of results

QC plots, assessment of the longitudinal stability of the plasma proteome across visits. ANOVA analysis to assess the variance explained by known metadata.

Reflection task

Recent analysis results reflect both the quality control and the central analysis of the new Olink HT data. For example, the UMAP of the plasma proteome across visits, for QC purposes, reveals potential outliers and dominant trends of the data set as a whole, and for longitudinal analysis, suggests the stability of subjects' profiles across different visits. The QC process has provided initial insights and assessment of the data set to ensure normal, high-quality data for good downstream analysis. Besides, based on the data structure, suitable analysis methods will be considered to best extract meaningful information. Each analysis results in informative messages printed to the console or a detailed plot with annotation. Additionally, statistical tests and significant levels are calculated if possible to control the reliability of the results.

Updated project plan

		Week										
Tasks	Deliverables	44	45	46	47	48	49	50	51	52	01	02
Literature	Understand the research topic via											
search	prior publications											
Method	Discover and test essential R											
exploration	packages for the analysis											
QC & pre-	QC and normalization for											
processing	batch/technical bias											
Platform	Compare data from Olink											
comparison	Explorer (3) and (new) Olink HT											
New	Multivariate analyses, protein											
proteomics	correlation across longitudinal											
analyses	samples, pathway enrichment											
Result	Visualization of the analysis											
interpretation	result											
Presentation	Half-time and final presentation											
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Report	Project report											