**S1 Table. Summary of principal component analysis (PCA) work- low in Qlucore Omics Explorer.**

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|---|---|
| 1 | Search NCBI GEO Datasets for a specific disease; obtain the GEO accession number. |
| 2 | Open QOE |
| 3 | (click) File |
| 4 | (click) Download |
| 5 | (click) GEO Dataset |
| 6 | Enter GSE  number |
| 7 | [OK] |
| 8 | Download annotations if they exist → [OK] |
| 9 | Data loads and is displayed as a PCA plot |
| 10 | (click) Data tab |
| 11 | Log 2 transform |
| 12 | (click) Statistics box |
| 13 | (click) Perform variance filtering |
| 14 | Perform statistics filtering (e.g., two-group comparison or multigroup comparison) |
| 15 | Adjust p value and q value to desired significance |
| 16 | Visualize PCA plot and heatmap |
| 17 | Export data and images |

Note: Steps 15 and 16 are interactive and simultaneous. PCA and heat-maps change according to p-value adjustments.