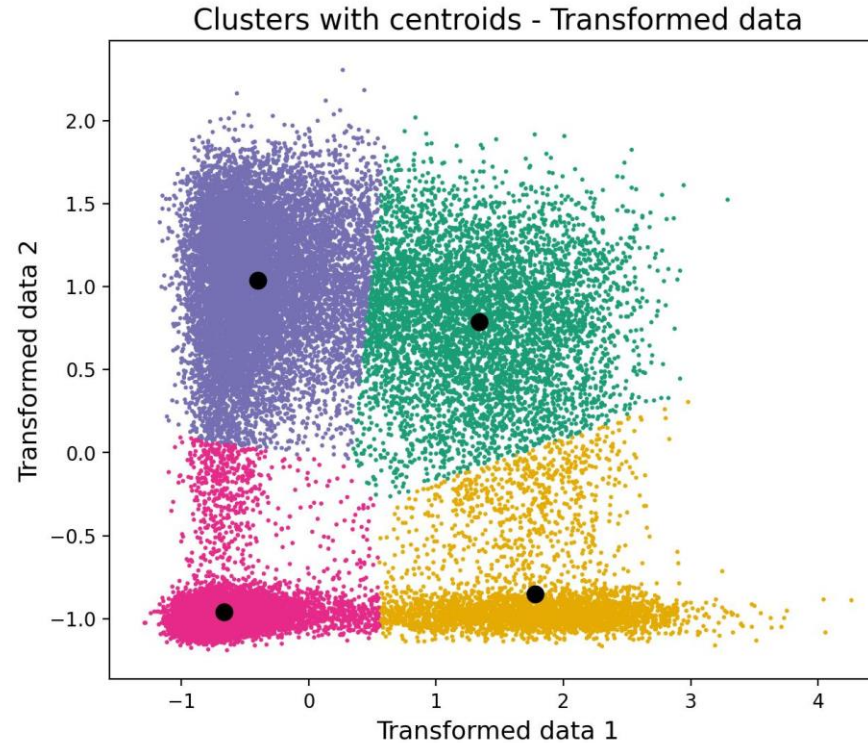
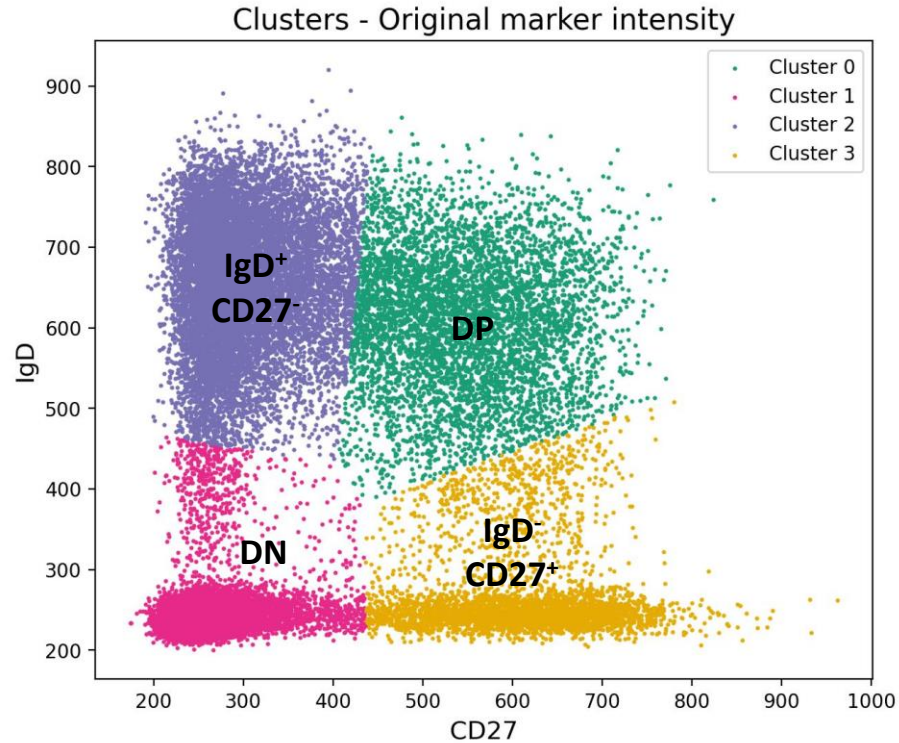
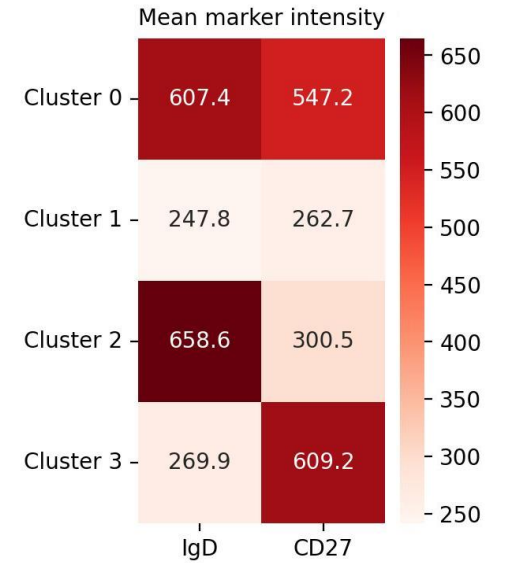


Results of K-Means clustering with four clusters



Identified cell groups:

- Cluster 0 – double positive (DP)
- Cluster 1 – double negative (DN)
- Cluster 2 – IgD⁺CD27⁻
- Cluster 3 – IgD⁻CD27⁺



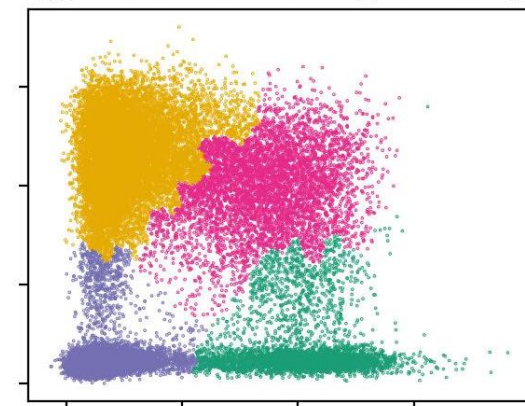
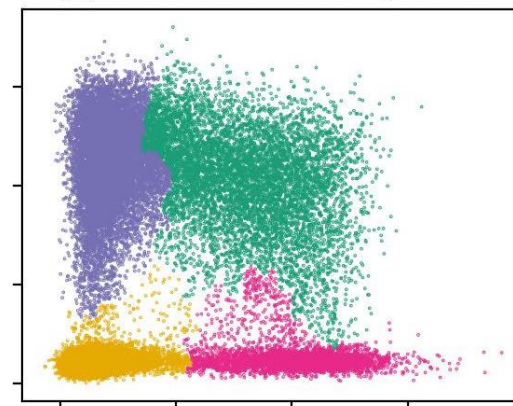
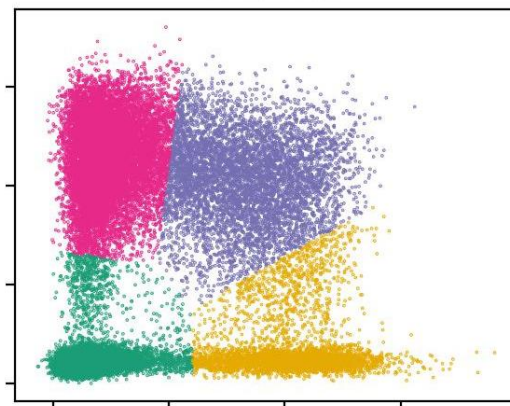
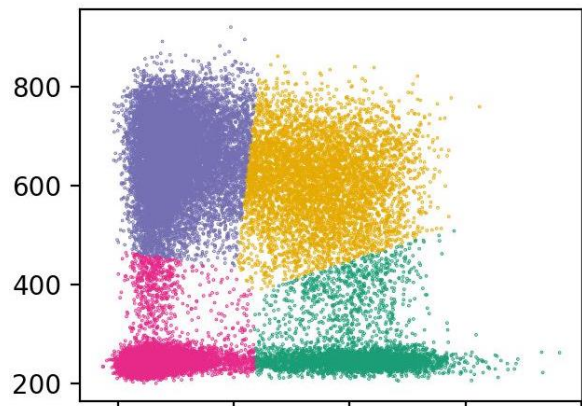
Comparison of different clustering methods

K-Means

Mean Shift

Agglomerative - Linkage: ward

Agglomerative - Linkage: average

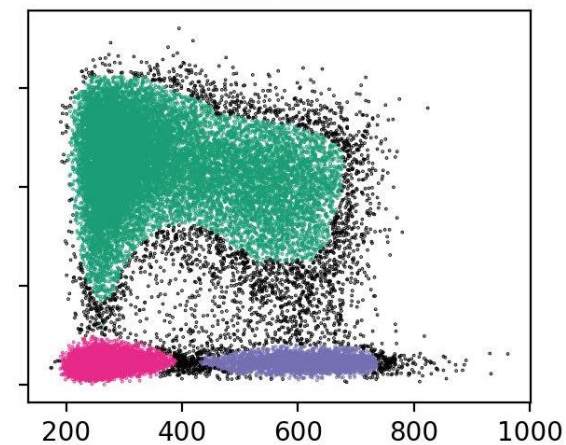
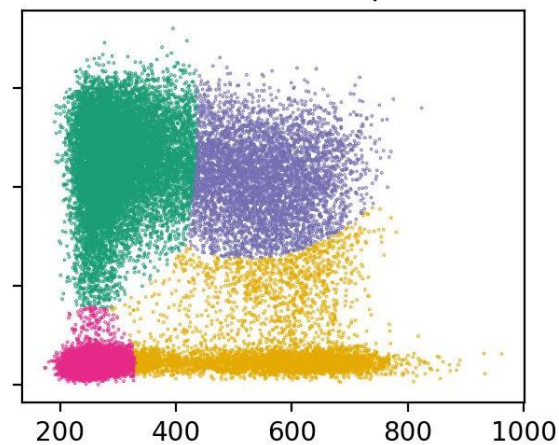
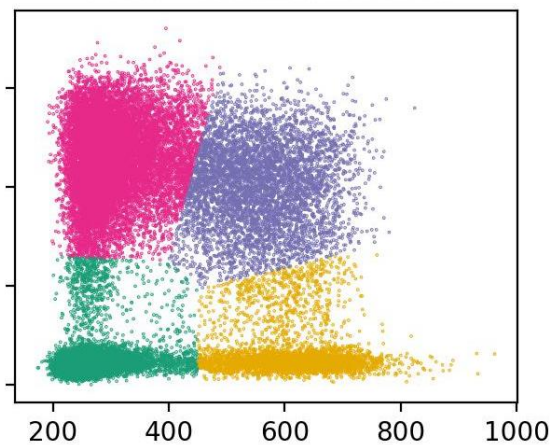
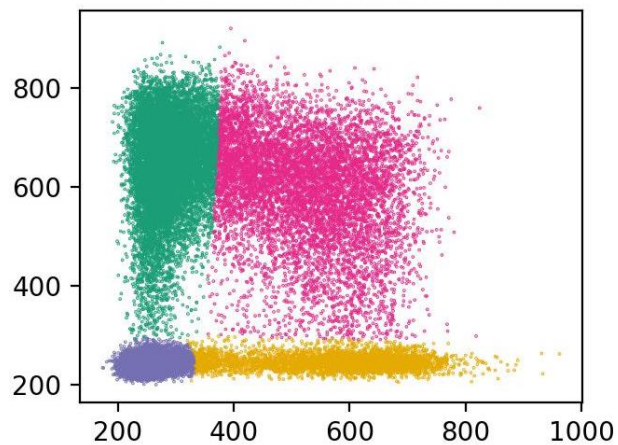


GMM - Covariance: full

GMM - Covariance: tied

GMM - Covariance: spherical

HDBSCAN



GMM = Gaussian Mixture Model

CD27