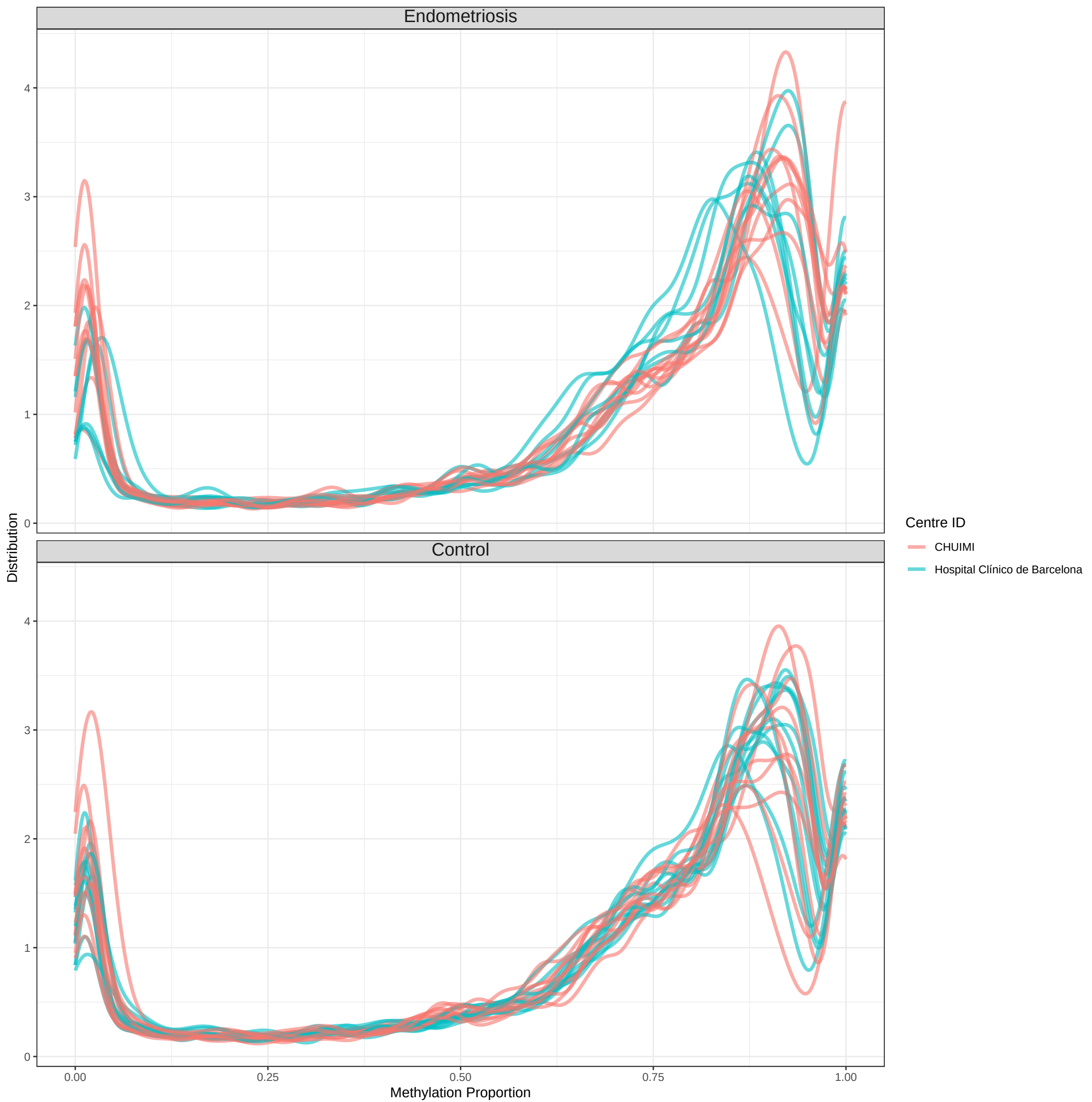


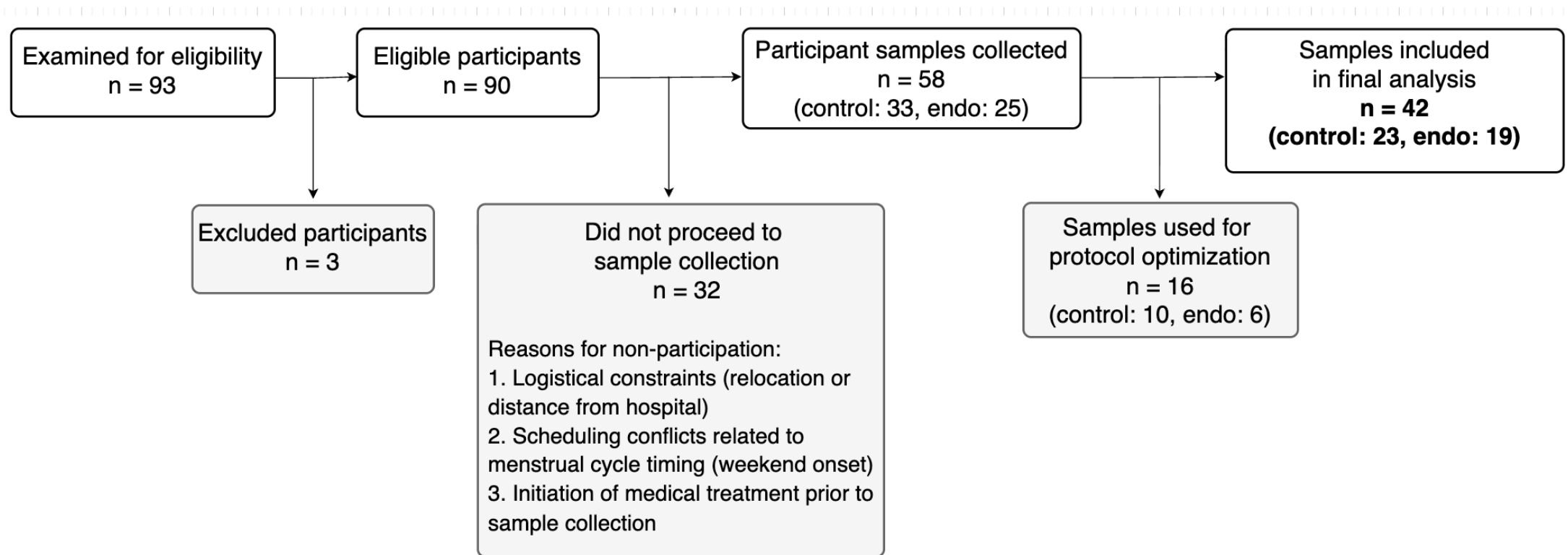
Supplementary Table 1. Antibodies for MenSC panel used in flow cytometry.

Antibody	Fluorochrome	Clone	Manufacturer	Catalogue #	Dilution	Lot # used
CD105	Vio Bright V423	REA794	Miltenyi Biotec	130-129-182	1:50	5230600276; 5231108290; 5240304877; 5240402096; 5240600231; 5240508003; 5240603769
CD73	PE	REA804	Miltenyi Biotec	130-111-908	1:50	5230303730; 5231108318; 5240304920; 5240402142; 5240603825; 5240501960
CD90	APC	REA897	Miltenyi Biotec	130-114-861	1:50	5230600267; 5231108281; 5240304884; 5240402051; 5240505939; 5240600289; 5240603824
CD44	Vio Bright B515	REA690	Miltenyi Biotec	130-126-903	1:100	5230809267; 5231108282; 5240304874; 5240508000; 5240603762
CD34	PE-Vio 770	REA1164	Miltenyi Biotec	130-124-456	1:100	5230309788; 5231108321; 5240202148; 5240508091; 5240304927; 5240603827
CD14	PE-Vio 770	REA599	Miltenyi Biotec	130-110-521	1:50	5230504573; 5231101466; 5240302844; 5240500576; 5240505603
CD19	PE-Vio 770	REA675	Miltenyi Biotec	130-113-647	1:50	5230504271; 5231008763; 5240208620; 5240506138; 5240409106
CD45	PE-Vio 770	REA747	Miltenyi Biotec	130-110-634	1:200	5231108323; 5240202141
HLA-DR	PE-Vio 770	REA805	Miltenyi Biotec	130-111-791	1:50	5230604049; 5231108463; 5240304919; 5240402143; 5240600279; 5240407883; 5240607009

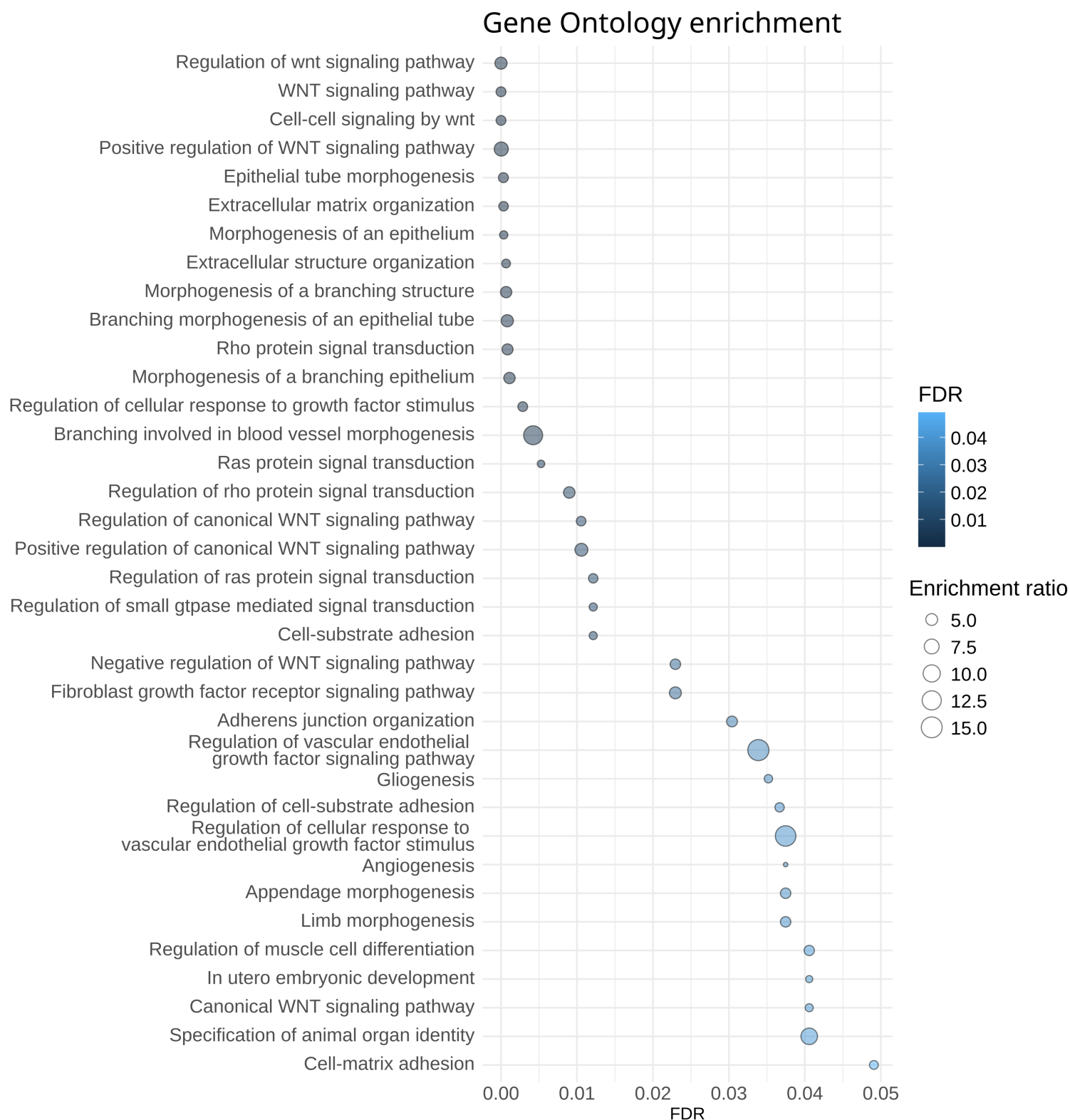
All antibodies are monoclonal, anti-human.



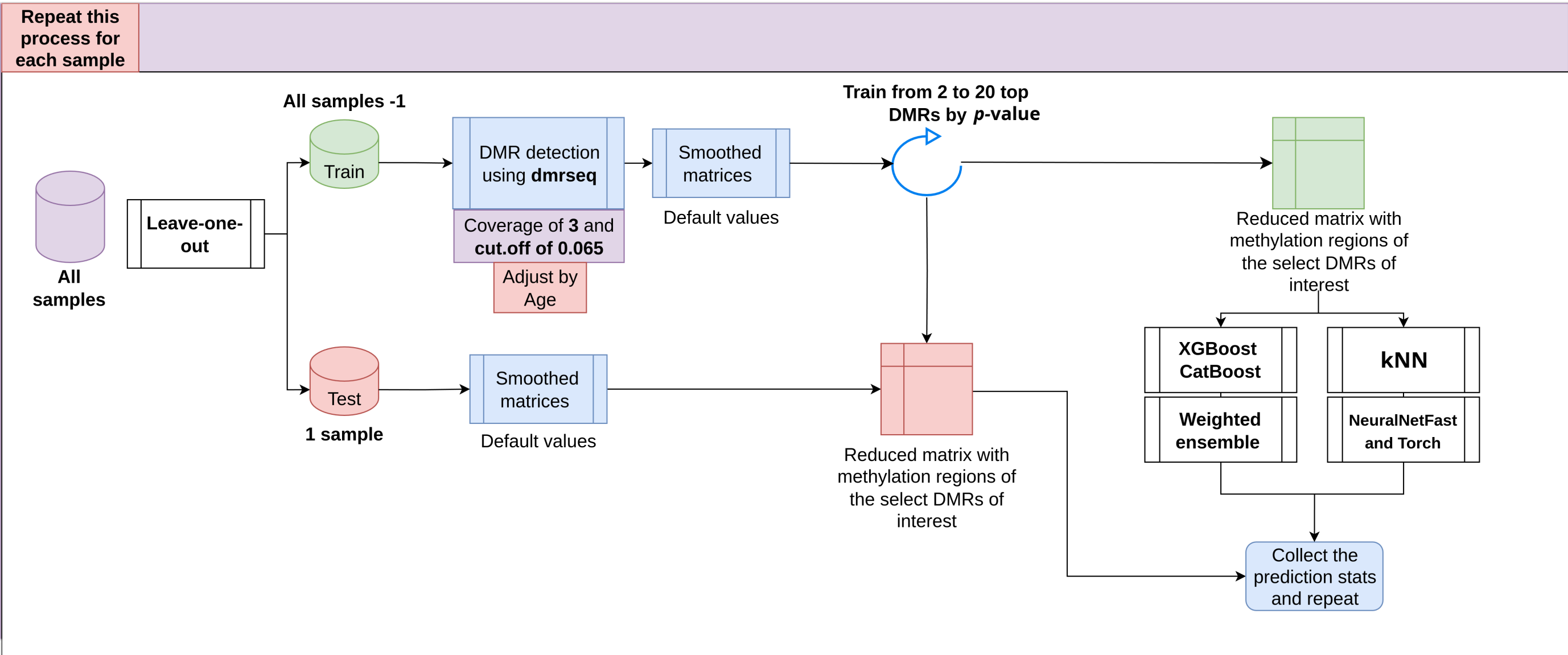
Supplementary Figure 1: Methylation distribution across CpG sites (coverage ≥ 3) across experimental groups and centres.



Supplementary Figure 2: Flow diagram of participant recruitment and sample inclusion in the study. Participants were not incentivized or compensated for study participation or sample donation.



Supplementary Figure 3: Dot plot summarizing the results of the ORA analysis for GO biological processes using genes associated with hypermethylated DMRs. Dot size represents the enrichment ratio, and colour intensity reflects the FDR values.

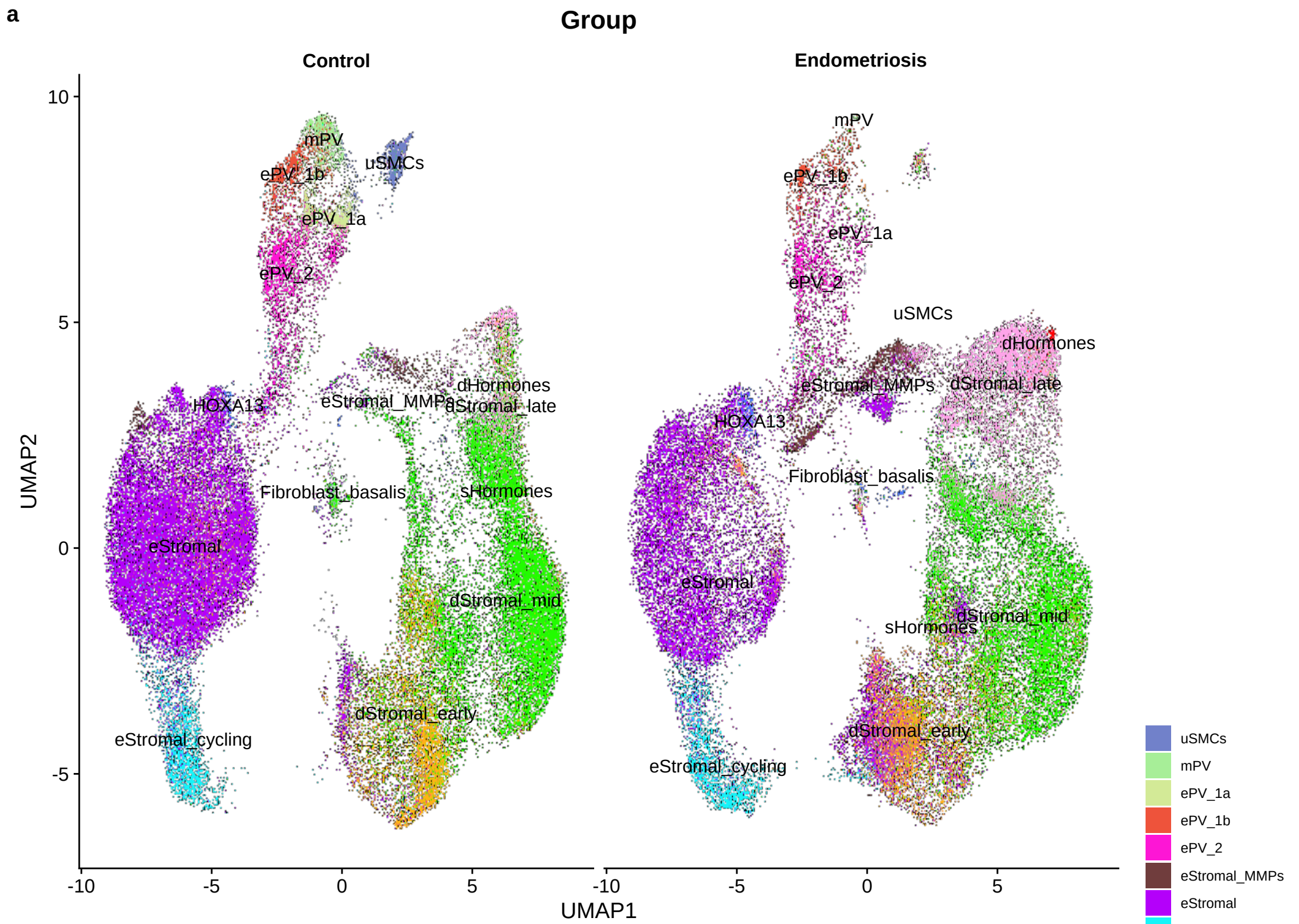
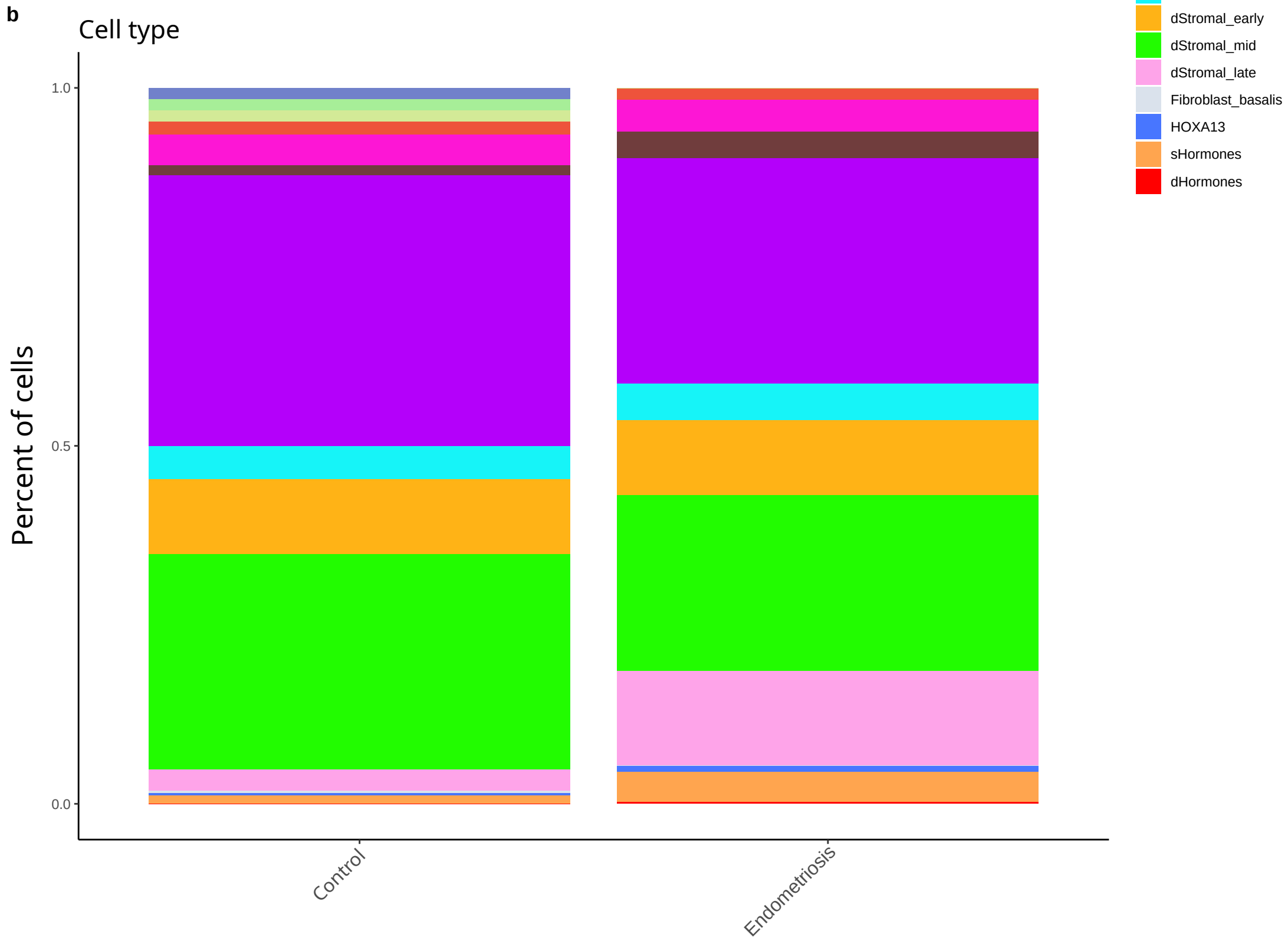


Supplementary Figure 4: Diagram of the ML strategy and leave-one-out implementation.

Model performance in Testing (LOOV)



Supplementary Figure 5: Performance of the ML models in testing across different numbers of DMRs used.

a**b**

Supplementary Figure 6: (A) UMAP showing the different cell types within the mesenchymal lineage in control and endometriosis groups. (B) Bar plot illustrating the distribution of the detected cell types.