

Supplementary Figures

First principal component of host vaginal immune factors

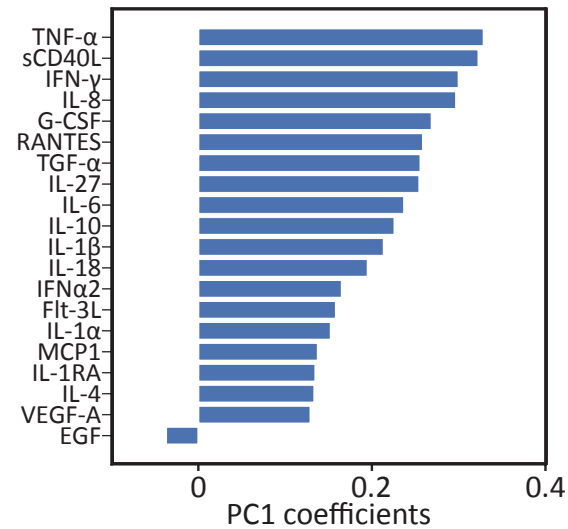


Figure S1 | The association of immune factor PC1 with sPEC is driven by multiple immune factors. Barplot of the coefficients of the immune factors PC1.

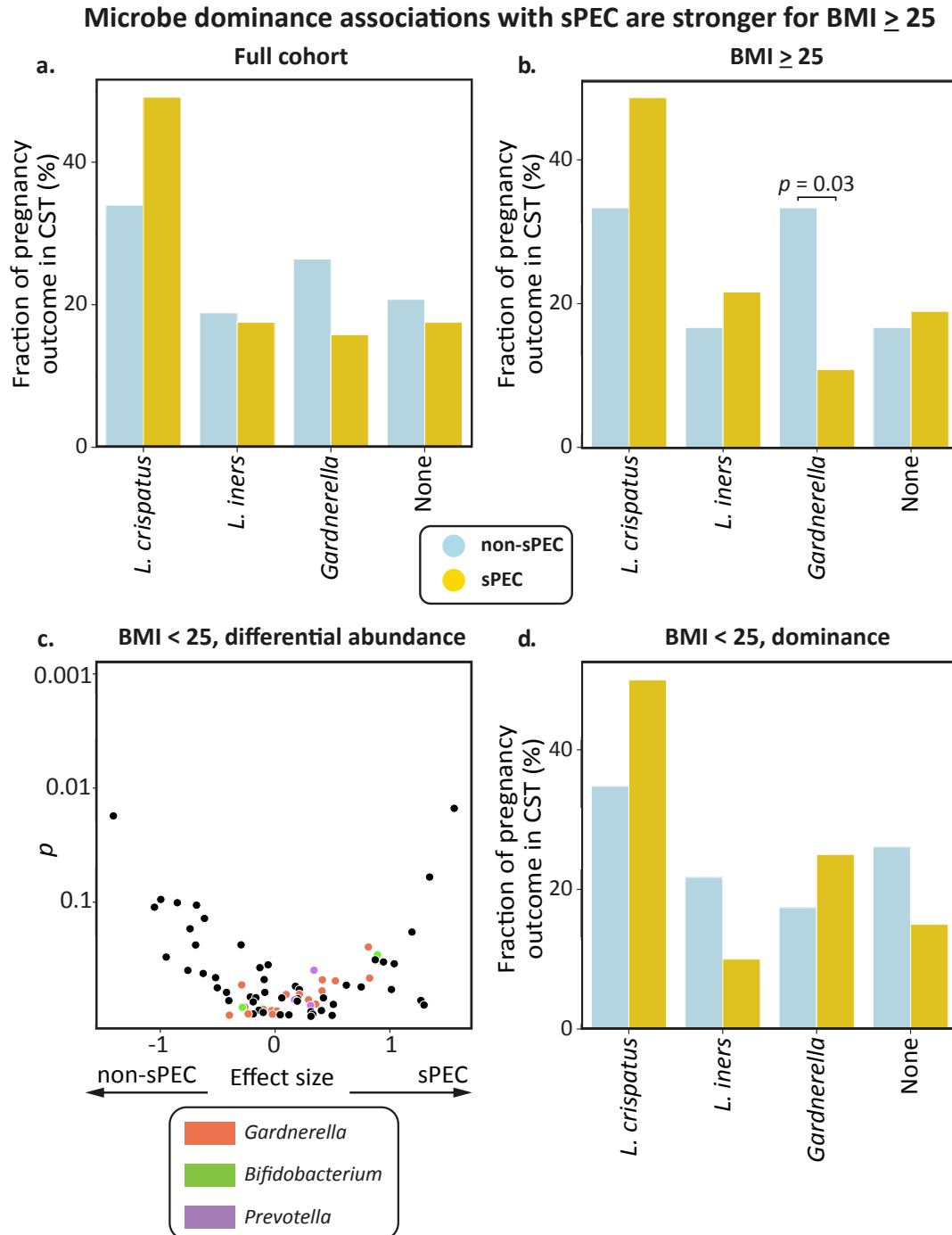


Figure S2 | Weak associations between vaginal microbes and sPEC in dominance analysis and in individuals with BMI<25. a,b, Bar plots showing the fraction of individuals with and without sPEC, separated by vaginal microbiome dominance. Dominance was defined as >30% relative abundance, following previous studies²². None, no microbiome with >30% abundance; *p*, Fisher's exact. **c,** Similar to **Fig. 3c,d**, but for individuals with first trimester BMI<25. **d,** Same as (b) for individuals with first trimester BMI<25.

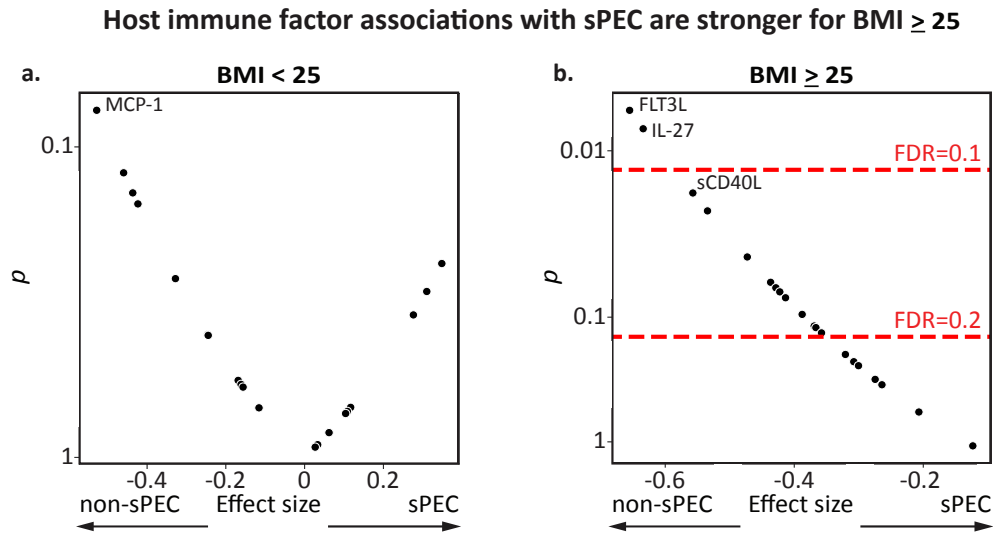


Figure S3 | Vaginal immune factors are more strongly associated with sPEC in individuals with BMI ≥ 25 . a,b, Same as Fig. 2d, stratified by BMI.

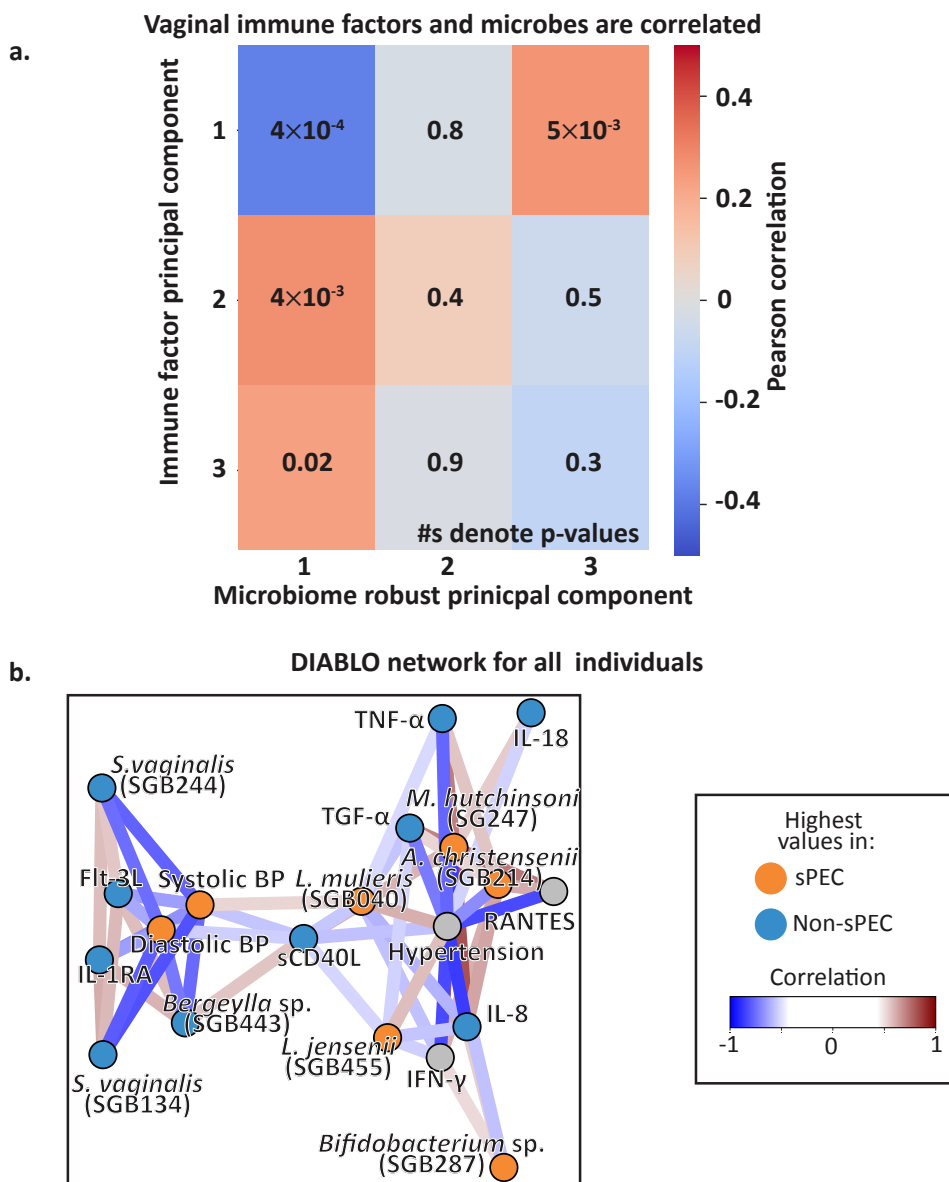


Figure S4 | Associations between vaginal microbiome and immune factors in the context of sPEC. a. Pearson correlations of the first three microbiome RPCs and the first three immune factors PCs. **b.** Similar to Fig. 4d,e, but for a DIABLO analysis which included all individuals regardless of BMI.

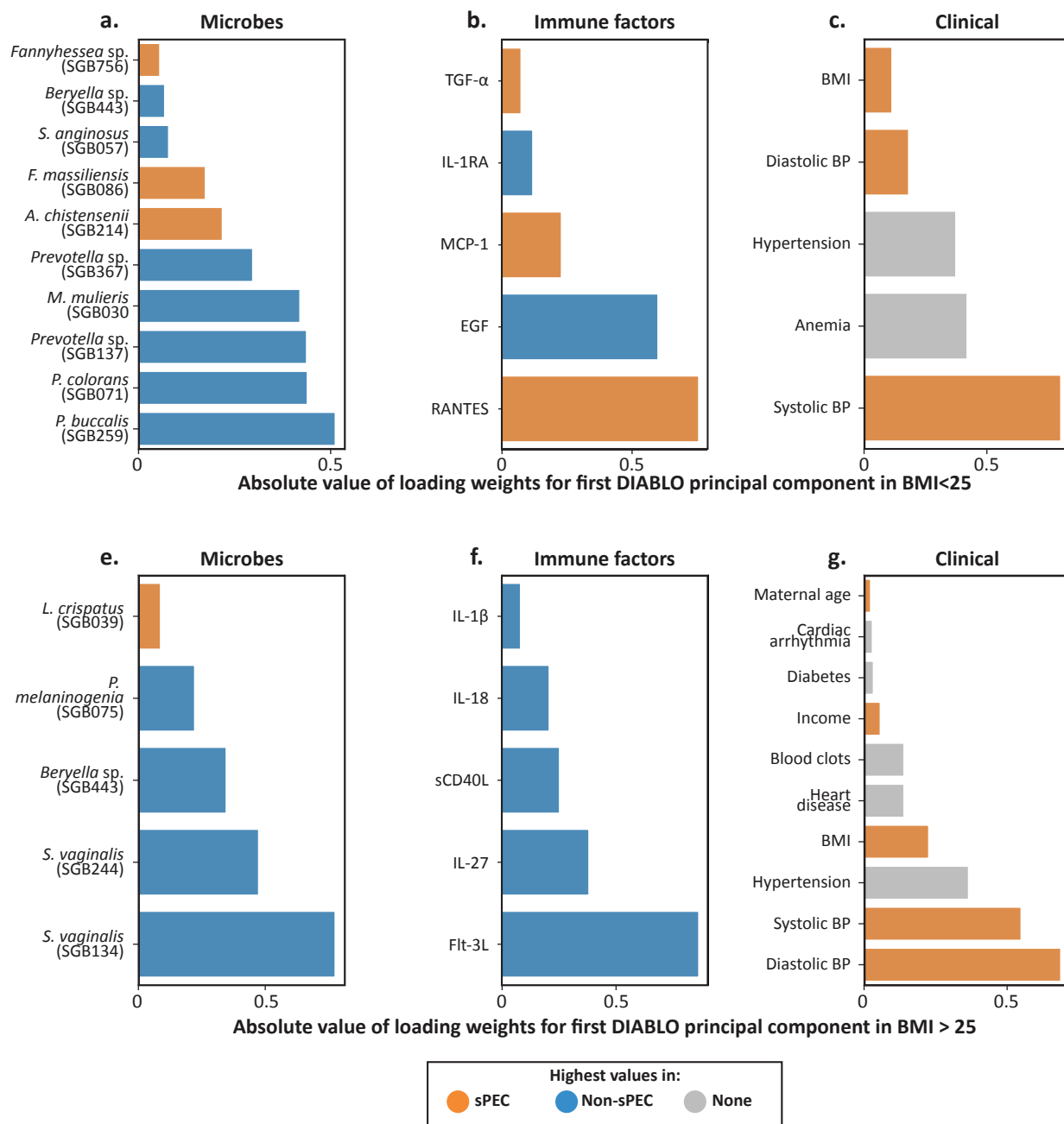


Figure S5 | Associations of microbes, immune factors, and clinical covariates with sPEC in a sparse multivariate model. **a-c**, Coefficients of fitted DIABLO model's associations with the first principal component of each data modality when trained on individuals with BMI<25, for microbes (**a**), immune factors (**b**), and clinical data (**c**). Colors of the bar denote the sPEC status that each variable is associated with. **d-f**, Same as a-c, but for a DIABLO model fitted using data from individuals with BMI \geq 25.

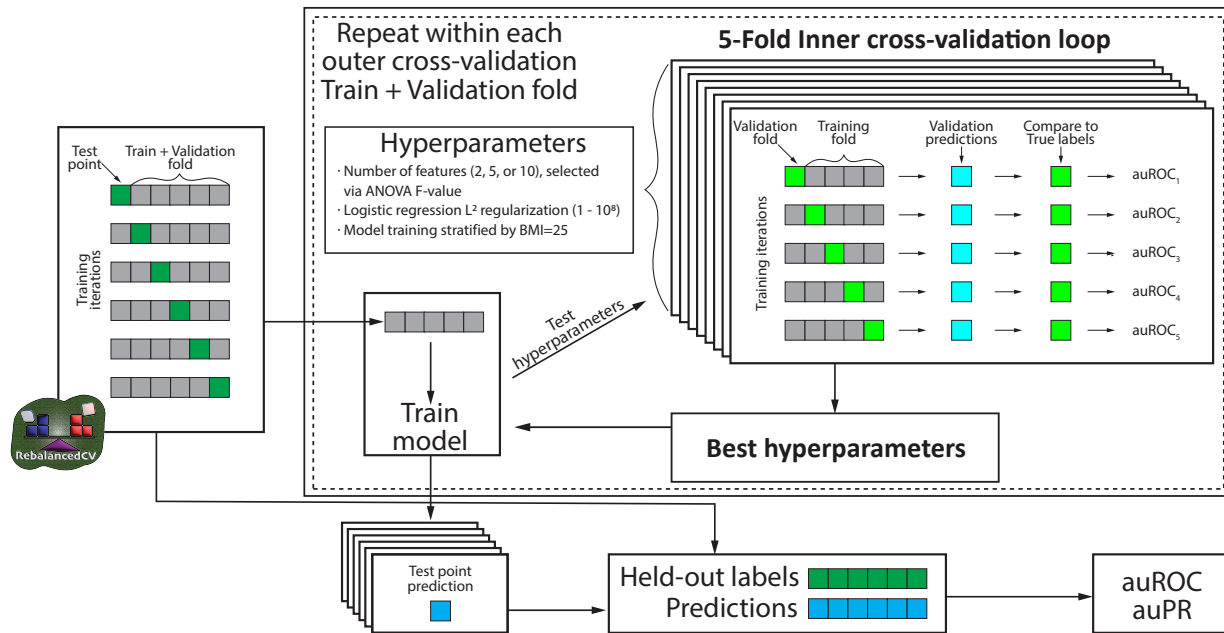


Figure S6 | Description of our nested cross-validation pipeline. The scheme used to evaluate predictive performance within the nuMoM2b dataset, using an inner 5-fold cross-validation structure to identify optimal hyperparameters, as described in **Methods**, with the 'Best hyperparameters' used to train a model which implements a prediction for its corresponding outer fold left-out point.