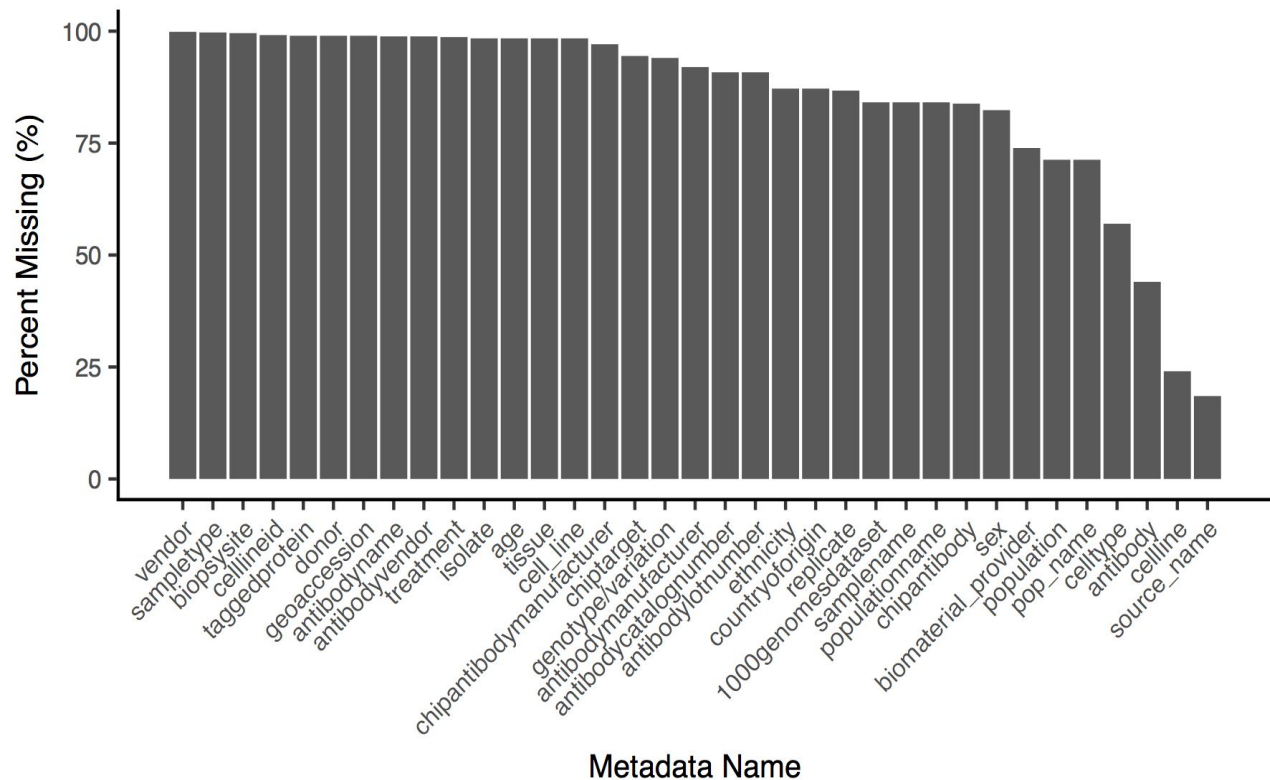
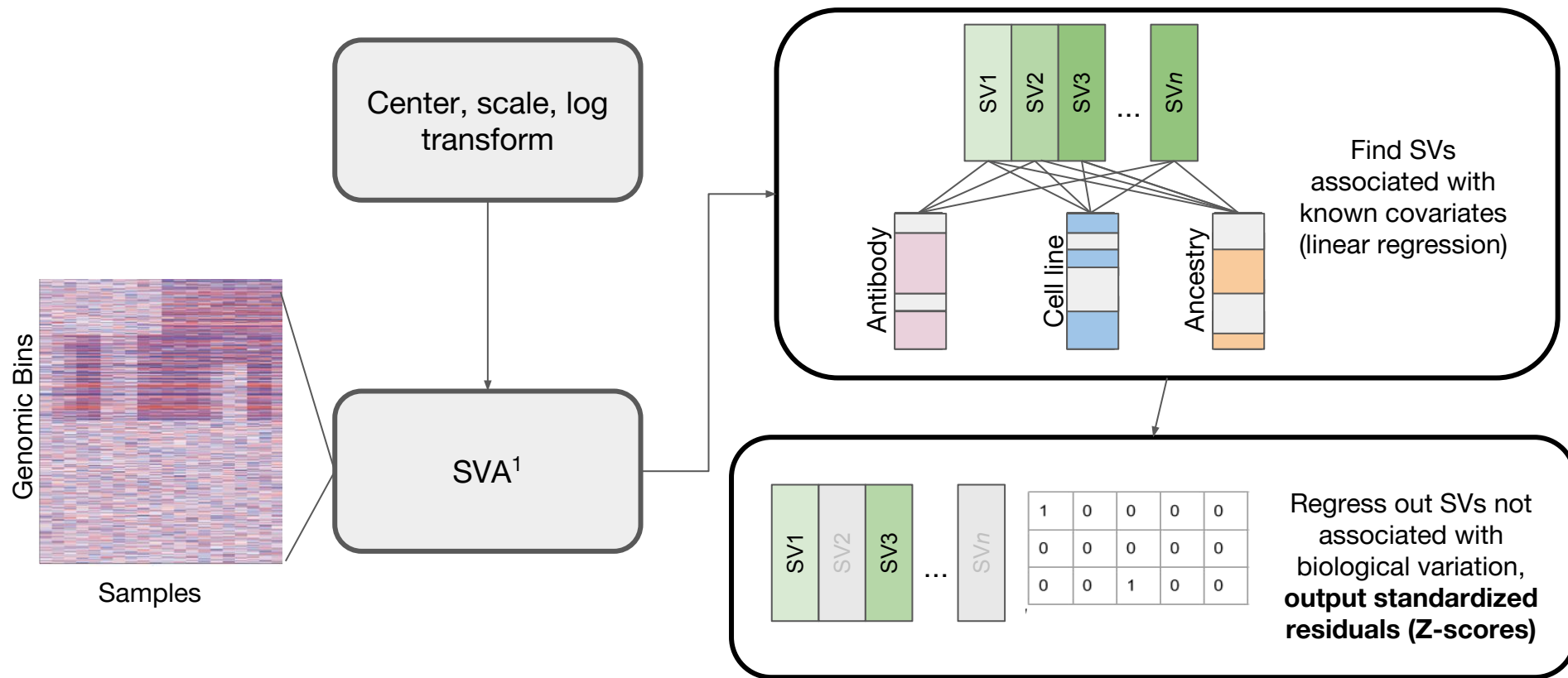


Missing Metadata



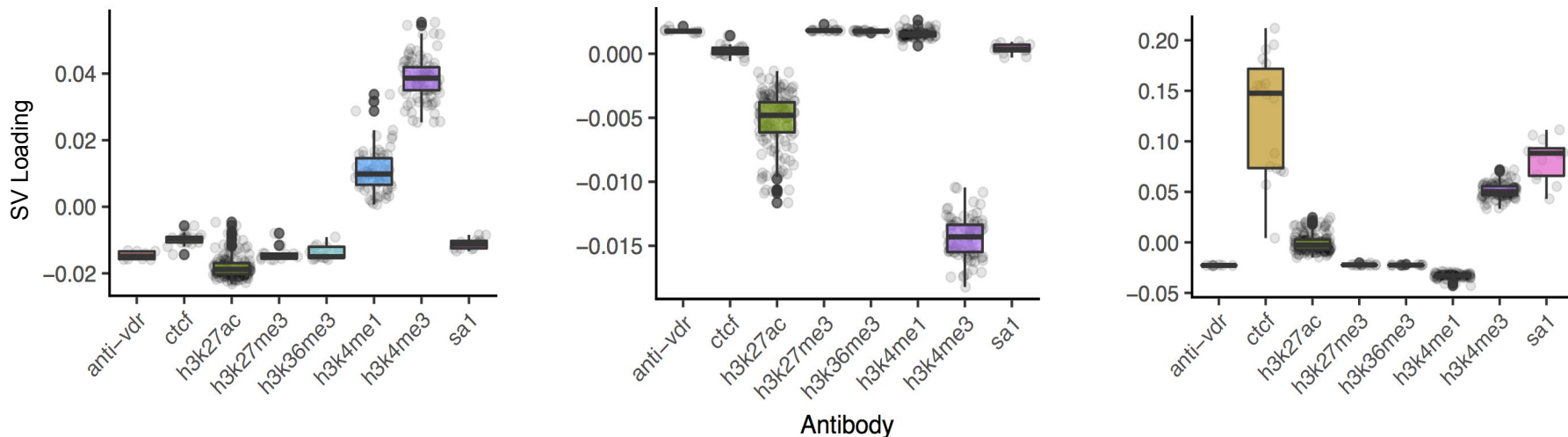
Surrogate Variable Analysis (SVA) Normalization



Identifying Surrogate Variables Associated with Antibody

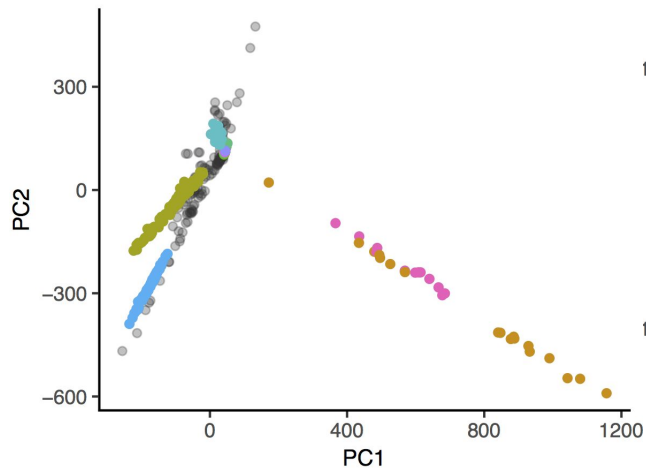
44% of antibody labels missing in metadata

Important to **preserve this biological variation**, e.g. H3K27me3 measures DNA-protein binding

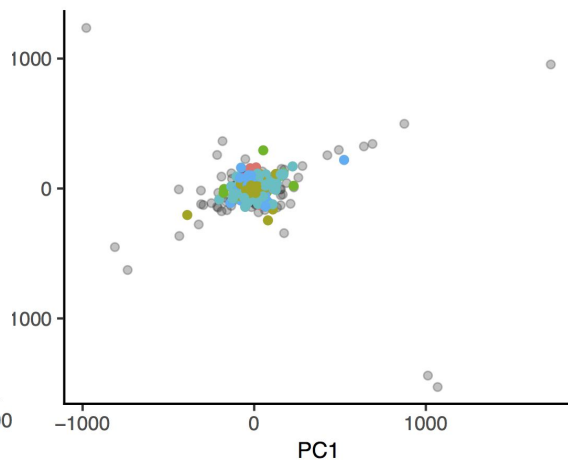


Data Normalization After Protecting Antibody

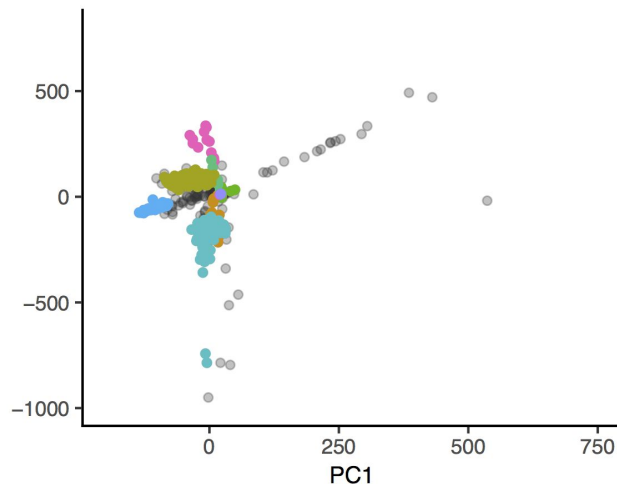
Uncorrected Data



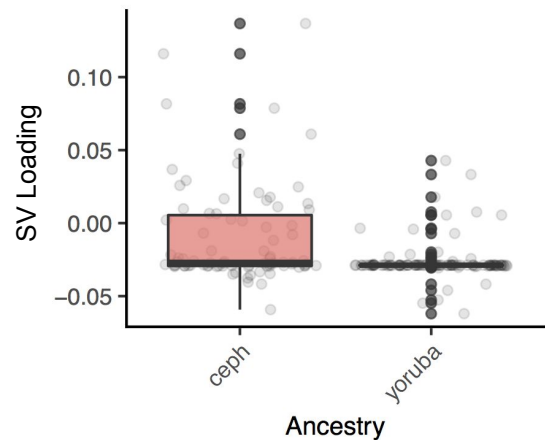
**After Correction
(All SVs)**



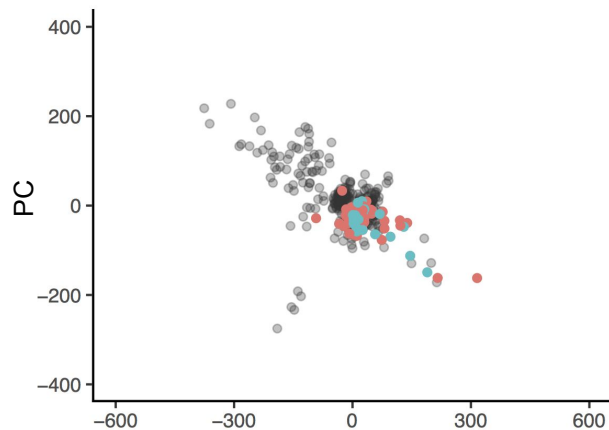
**After Correction
(SVs not associated with Antibody)**



Removal of Non-Biological Variation



**After Correction
(All SVs)**



**After Correction
(SVs not associated with Antibody)**

