#Pt16’’ pre-Tx MLR defined alloreactivity

This part of R script is published previously, and is available in the GitHub repository at <https://github.com/Aleksobrad/Fu-J-et-al.-LGVHR-manuscript>

#Pt16’’ post-Tx MLR defined alloreactivity

|  |  |
| --- | --- |
| Abbreviation | Full name |
| D4U | PreTx\_Donor\_CD4\_unstim |
| D4L | PreTx\_Donor\_CD4\_CFSElow |
| D8U | PreTx\_Donor\_CD8\_unstim |
| D8L | PreTx\_Donor\_CD8\_CFSElow |
| R4U | PreTx\_Recipient\_CD4\_unstim |
| R4L | PreTx\_Recipient\_CD4\_CFSElow |
| R8U | PreTx\_Recipient\_CD8\_unstim |
| R8L | PreTx\_Recipient\_CD8\_CFSElow |
| R'4U | PostTx\_Recipient\_CD4\_unstim |
| R'4L | PostTx\_Recipient\_CD4\_CFSElow |
| R'8U | PostTx\_Recipient\_CD8\_unstim |
| R'8L | PostTx\_Recipient\_CD8\_CFSElow |

#Pt16 07132021 integrate V3 V4b: from individually exported tsv file of each sample with CDR3 NT, v and j information.

x <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b/Pt16\_2nd\_MVTx\_POD494\_LN\_cdr3nt\_v\_j.tsv")

#x

#set the rownames of data

#duplicate 'row.names' are not allowed: resolve duplication first

# Aleks: "In order to do this instead of setting rownames right away first create a new column using the paste() function, and then aggregate() the counts on that new column. At that point you will be able to set rownames() to the column, since non-unique columns will be summed together"

#If you create a new column x$combined=paste(x[,1], x[,2], x[,3]) then you can run y=aggregate(x[,c(4)],by=list(x$combined),sum) and then set rownames(y)=y$combined

x$combined=paste(x[,1], x[,2], x[,3])

y=aggregate(x[,c(4)], by=list(x$combined), sum)

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_2nd\_MVTx\_POD494\_LN\_cdr3ntvj\_post aggregate.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_2nd\_MVTx\_POD565\_PBMC\_TCRBv4b\_TCRB\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_2nd\_MVTx\_POD565\_PBMC\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_LITx\_POD0\_recip\_ileum\_RENAME\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_MVTx\_POD377\_PBMC\_H'vG2\_R'4L\_TCRBv4b\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_MVTx\_POD377\_PBMC\_H'vG2\_R'8L\_TCRBv4b\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_MVTx\_POD377\_PBMC\_R'4U\_TCRBv4b\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_MVTx\_POD377\_PBMC\_R'8U\_TCRBv4b\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_MVTx\_POD662\_ileum\_Bx\_mild\_ACR\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_MVTx\_POD663\_PBMC\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_MVTx\_POD1004\_iIeum\_Bx\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_MVTx\_POD1004\_PBMC\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post1\_PBMC\_day0009\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post1\_PBMC\_day0023\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post1\_PBMC\_day0463\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post1\_PBMC\_day0786\_Post2\_day0000\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post2\_BM\_day0126\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post2\_ileum\_day0014\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post2\_ileum\_day0032\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post2\_ileum\_day0126\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post2\_ileum\_day0494\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post2\_PBMC\_day0008\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post2\_PBMC\_day0033\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post2\_PBMC\_day0126\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post2\_PBMC\_day0285\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post2\_PBMC\_day0494\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre1\_Donor1\_CD4\_CFSElo\_LITx\_G1vH\_1stD4L\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre1\_Donor1\_CD4\_unstim\_LITx\_1stD4U\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre1\_Donor1\_CD8\_CFSElo\_LITx\_G1vH\_1stD8L\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

#correction

x <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b/Pt16\_Pre1\_Donor1\_CD8\_unstim\_LITx\_1stD8U.tsv")

x$combined=paste(x[,1], x[,2], x[,3])

y=aggregate(x[,c(4)], by=list(x$combined), sum)

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre1\_Donor1\_CD8\_unstim\_LITx\_1stD8U\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

#correction

x <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b/Pt16\_Pre1\_Recipient\_CD4\_CFSElo\_vs\_Donor1\_LITx\_HvG1\_R4L.tsv")

x$combined=paste(x[,1], x[,2], x[,3])

y=aggregate(x[,c(4)], by=list(x$combined), sum)

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre1\_Recipient\_CD4\_CFSElo\_vs\_Donor1\_LITx\_HvG1\_R4L\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre1\_Recipient\_CD4\_unstim\_LITx\_R4U\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre1\_Recipient\_CD8\_CFSElo\_vs\_Donor1\_LITx\_HvG1\_R8L\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre1\_Recipient\_CD8\_unstim\_LITx\_R8U\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre2\_Donor2\_CD4\_CFSElo\_MVTx\_G2vH\_2ndD4L\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre2\_Donor2\_CD4\_unstim\_MVTx\_2ndD4U\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre2\_Donor2\_CD8\_CFSElo\_MVTx\_G2vH\_2ndD8L\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre2\_Donor2\_CD8\_unstim\_MVTx\_2ndD8U\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre2\_Recipient\_CD4\_CFSElo\_vs\_Donor2\_MVTx\_HvG2\_R4L\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre2\_Recipient\_CD8\_CFSElo\_vs\_Donor2\_MVTx\_HvG2\_R8L\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_reTx\_MLR-3\_2ndD4L\_vs\_1stD\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_reTx\_MLR-3\_2ndD8L\_vs\_1stD\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_reTx\_MLR-6\_1stD4L\_vs\_2ndD\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_reTx\_MLR-6\_1stD8L\_vs\_2ndD\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_reTx\_POD126\_BM\_1st\_Donor\_CD45\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_reTx\_POD126\_BM\_2nd\_Donor\_CD45\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_reTx\_POD126\_Bx\_duodenum\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_reTx\_POD126\_Bx\_stomach\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

#correction

x <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b/Pt16\_reTx\_POD126\_PBMC\_1st\_Donor\_CD45.tsv")

x$combined=paste(x[,1], x[,2], x[,3])

y=aggregate(x[,c(4)], by=list(x$combined), sum)

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_reTx\_POD126\_PBMC\_1st\_Donor\_CD45\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

write.table(y,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_reTx\_POD126\_PBMC\_2nd\_Donor\_CD45\_cdr3ntvj.tsv",quote=F,row.names=T,col.names=F, sep="\t")

#p15=merge(data,data2,by="nucleotide", all=T) p15[is.na(p15)]=0 write.table(p15,file ="P:/CCTI\_USERS/Jianing Fu/Adaptive samples and analysis/Pt15 combined.tsv",quote=F,row.names=F,col.names=F, sep="\t")

data1 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_2nd\_MVTx\_POD494\_LN\_cdr3ntvj.tsv")

data2 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_2nd\_MVTx\_POD565\_PBMC\_TCRBv4b\_TCRB\_cdr3ntvj.tsv")

data3 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_2nd\_MVTx\_POD565\_PBMC\_cdr3ntvj.tsv")

data4 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_LITx\_POD0\_recip\_ileum\_RENAME\_cdr3ntvj.tsv")

data5 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_MVTx\_POD377\_PBMC\_H'vG2\_R'4L\_TCRBv4b\_cdr3ntvj.tsv")

data6 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_MVTx\_POD377\_PBMC\_H'vG2\_R'8L\_TCRBv4b\_cdr3ntvj.tsv")

data7 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_MVTx\_POD377\_PBMC\_R'4U\_TCRBv4b\_cdr3ntvj.tsv")

data8 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_MVTx\_POD377\_PBMC\_R'8U\_TCRBv4b\_cdr3ntvj.tsv")

data9 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_MVTx\_POD662\_ileum\_Bx\_mild\_ACR\_cdr3ntvj.tsv")

data10 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_MVTx\_POD663\_PBMC\_cdr3ntvj.tsv")

data11 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_MVTx\_POD1004\_iIeum\_Bx\_cdr3ntvj.tsv")

data12 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_MVTx\_POD1004\_PBMC\_cdr3ntvj.tsv")

data13 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post1\_PBMC\_day0009\_cdr3ntvj.tsv")

data14 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post1\_PBMC\_day0023\_cdr3ntvj.tsv")

data15 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post1\_PBMC\_day0463\_cdr3ntvj.tsv")

data16 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post1\_PBMC\_day0786\_Post2\_day0000\_cdr3ntvj.tsv")

data17 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post2\_BM\_day0126\_cdr3ntvj.tsv")

data18 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post2\_ileum\_day0014\_cdr3ntvj.tsv")

data19 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post2\_ileum\_day0032\_cdr3ntvj.tsv")

data20 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post2\_ileum\_day0126\_cdr3ntvj.tsv")

data21 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post2\_ileum\_day0494\_cdr3ntvj.tsv")

data22 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post2\_PBMC\_day0008\_cdr3ntvj.tsv")

data23 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post2\_PBMC\_day0033\_cdr3ntvj.tsv")

data24 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post2\_PBMC\_day0126\_cdr3ntvj.tsv")

data25 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post2\_PBMC\_day0285\_cdr3ntvj.tsv")

data26 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Post2\_PBMC\_day0494\_cdr3ntvj.tsv")

data27 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre1\_Donor1\_CD4\_CFSElo\_LITx\_G1vH\_1stD4L\_cdr3ntvj.tsv")

data28 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre1\_Donor1\_CD4\_unstim\_LITx\_1stD4U\_cdr3ntvj.tsv")

data29 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre1\_Donor1\_CD8\_CFSElo\_LITx\_G1vH\_1stD8L\_cdr3ntvj.tsv")

data30 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre1\_Donor1\_CD8\_unstim\_LITx\_1stD8U\_cdr3ntvj.tsv")

data31 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre1\_Recipient\_CD4\_CFSElo\_vs\_Donor1\_LITx\_HvG1\_R4L\_cdr3ntvj.tsv")

data32 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre1\_Recipient\_CD4\_unstim\_LITx\_R4U\_cdr3ntvj.tsv")

data33 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre1\_Recipient\_CD8\_CFSElo\_vs\_Donor1\_LITx\_HvG1\_R8L\_cdr3ntvj.tsv")

data34 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre1\_Recipient\_CD8\_unstim\_LITx\_R8U\_cdr3ntvj.tsv")

data35 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre2\_Donor2\_CD4\_CFSElo\_MVTx\_G2vH\_2ndD4L\_cdr3ntvj.tsv")

data36 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre2\_Donor2\_CD4\_unstim\_MVTx\_2ndD4U\_cdr3ntvj.tsv")

data37 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre2\_Donor2\_CD8\_CFSElo\_MVTx\_G2vH\_2ndD8L\_cdr3ntvj.tsv")

data38 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre2\_Donor2\_CD8\_unstim\_MVTx\_2ndD8U\_cdr3ntvj.tsv")

data39 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre2\_Recipient\_CD4\_CFSElo\_vs\_Donor2\_MVTx\_HvG2\_R4L\_cdr3ntvj.tsv")

data40 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_Pre2\_Recipient\_CD8\_CFSElo\_vs\_Donor2\_MVTx\_HvG2\_R8L\_cdr3ntvj.tsv")

data41 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_reTx\_MLR-3\_2ndD4L\_vs\_1stD\_cdr3ntvj.tsv")

data42 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_reTx\_MLR-3\_2ndD8L\_vs\_1stD\_cdr3ntvj.tsv")

data43 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_reTx\_MLR-6\_1stD4L\_vs\_2ndD\_cdr3ntvj.tsv")

data44 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_reTx\_MLR-6\_1stD8L\_vs\_2ndD\_cdr3ntvj.tsv")

data45 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_reTx\_POD126\_BM\_1st\_Donor\_CD45\_cdr3ntvj.tsv")

data46 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_reTx\_POD126\_BM\_2nd\_Donor\_CD45\_cdr3ntvj.tsv")

data47 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_reTx\_POD126\_Bx\_duodenum\_cdr3ntvj.tsv")

data48 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_reTx\_POD126\_Bx\_stomach\_cdr3ntvj.tsv")

data49 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_reTx\_POD126\_PBMC\_1st\_Donor\_CD45\_cdr3ntvj.tsv")

data50 <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16\_reTx\_POD126\_PBMC\_2nd\_Donor\_CD45\_cdr3ntvj.tsv")

Pt16=merge(data1,data2,by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data3, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data4, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data5, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data6, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data7, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data8, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data9, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data10, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data11, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data12, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data13, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data14, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data15, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data16, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data17, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data18, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data19, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data20, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data21, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data22, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data23, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data24, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data25, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data26, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data27, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data28, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data29, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data30, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data31, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data32, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data33, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data34, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data35, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data36, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data37, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data38, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data39, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data40, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data41, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data42, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data43, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data44, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data45, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data46, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data47, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data48, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data49, by="cdr3ntvj", all=T)

Pt16=merge(Pt16,data50, by="cdr3ntvj", all=T)

Pt16[is.na(Pt16)]=0

#change column names manually: if over excel limitation, will lost data by change names in excel.

colnames(Pt16) <- c("cdr3ntvj","Pt16\_2nd\_MVTx\_POD494\_LN","Pt16\_2nd\_MVTx\_POD565\_PBMC\_TCRBv4b","Pt16\_2nd\_MVTx\_POD565\_PBMC","Pt16\_LITx\_POD0\_recip\_ileum\_RENAME","Pt16\_MVTx\_POD377\_PBMC\_H.vG2\_R.4L\_TCRBv4b","Pt16\_MVTx\_POD377\_PBMC\_H.vG2\_R.8L\_TCRBv4b","Pt16\_MVTx\_POD377\_PBMC\_R.4U\_TCRBv4b","Pt16\_MVTx\_POD377\_PBMC\_R.8U\_TCRBv4b","Pt16\_MVTx\_POD662\_ileum\_Bx\_mild\_ACR","Pt16\_MVTx\_POD663\_PBMC","Pt16\_MVTx\_POD1004\_iIeum\_Bx","Pt16\_MVTx\_POD1004\_PBMC","Pt16\_Post1\_PBMC\_day0009","Pt16\_Post1\_PBMC\_day0023","Pt16\_Post1\_PBMC\_day0463","Pt16\_Post1\_PBMC\_day0786\_Post2\_day0000","Pt16\_Post2\_BM\_day0126","Pt16\_Post2\_ileum\_day0014","Pt16\_Post2\_ileum\_day0032","Pt16\_Post2\_ileum\_day0126","Pt16\_Post2\_ileum\_day0494","Pt16\_Post2\_PBMC\_day0008","Pt16\_Post2\_PBMC\_day0033","Pt16\_Post2\_PBMC\_day0126","Pt16\_Post2\_PBMC\_day0285","Pt16\_Post2\_PBMC\_day0494","Pt16\_Pre1\_Donor1\_CD4\_CFSElo\_LITx\_G1vH\_1stD4L","Pt16\_Pre1\_Donor1\_CD4\_unstim\_LITx\_1stD4U","Pt16\_Pre1\_Donor1\_CD8\_CFSElo\_LITx\_G1vH\_1stD8L","Pt16\_Pre1\_Donor1\_CD8\_unstim\_LITx\_1stD8U","Pt16\_Pre1\_Recipient\_CD4\_CFSElo\_vs\_Donor1\_LITx\_HvG1\_R4L","Pt16\_Pre1\_Recipient\_CD4\_unstim\_LITx\_R4U","Pt16\_Pre1\_Recipient\_CD8\_CFSElo\_vs\_Donor1\_LITx\_HvG1\_R8L","Pt16\_Pre1\_Recipient\_CD8\_unstim\_LITx\_R8U","Pt16\_Pre2\_Donor2\_CD4\_CFSElo\_MVTx\_G2vH\_2ndD4L","Pt16\_Pre2\_Donor2\_CD4\_unstim\_MVTx\_2ndD4U","Pt16\_Pre2\_Donor2\_CD8\_CFSElo\_MVTx\_G2vH\_2ndD8L","Pt16\_Pre2\_Donor2\_CD8\_unstim\_MVTx\_2ndD8U","Pt16\_Pre2\_Recipient\_CD4\_CFSElo\_vs\_Donor2\_MVTx\_HvG2\_R4L","Pt16\_Pre2\_Recipient\_CD8\_CFSElo\_vs\_Donor2\_MVTx\_HvG2\_R8L","Pt16\_reTx\_MLR.3\_2ndD4L\_vs\_1stD", "Pt16\_reTx\_MLR.3\_2ndD8L\_vs\_1stD","Pt16\_reTx\_MLR.6\_1stD4L\_vs\_2ndD","Pt16\_reTx\_MLR.6\_1stD8L\_vs\_2ndD","Pt16\_reTx\_POD126\_BM\_1st\_Donor\_CD45","Pt16\_reTx\_POD126\_BM\_2nd\_Donor\_CD45","Pt16\_reTx\_POD126\_Bx\_duodenum","Pt16\_reTx\_POD126\_Bx\_stomach","Pt16\_reTx\_POD126\_PBMC\_1st\_Donor\_CD45","Pt16\_reTx\_POD126\_PBMC\_2nd\_Donor\_CD45")

write.table(Pt16,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16 combined 08242021.tsv",quote=F,row.names=F,col.names=T, sep="\t")

#08242021

source('~/Desktop/10x TRM 2021/alloreactivity\_printtofile 01232020.R')

data <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CDR3 NT + v + j to integrate V3 and V4b\_cdr3ntvj\_aggregate/Pt16 combined 08242021.tsv")

names(data)

[1] "cdr3ntvj"

[2] "Pt16\_2nd\_MVTx\_POD494\_LN"

[3] "Pt16\_2nd\_MVTx\_POD565\_PBMC\_TCRBv4b"

[4] "Pt16\_2nd\_MVTx\_POD565\_PBMC"

[5] "Pt16\_LITx\_POD0\_recip\_ileum\_RENAME"

[6] "Pt16\_MVTx\_POD377\_PBMC\_H.vG2\_R.4L\_TCRBv4b"

[7] "Pt16\_MVTx\_POD377\_PBMC\_H.vG2\_R.8L\_TCRBv4b"

[8] "Pt16\_MVTx\_POD377\_PBMC\_R.4U\_TCRBv4b"

[9] "Pt16\_MVTx\_POD377\_PBMC\_R.8U\_TCRBv4b"

[10] "Pt16\_MVTx\_POD662\_ileum\_Bx\_mild\_ACR"

[11] "Pt16\_MVTx\_POD663\_PBMC"

[12] "Pt16\_MVTx\_POD1004\_iIeum\_Bx"

[13] "Pt16\_MVTx\_POD1004\_PBMC"

[14] "Pt16\_Post1\_PBMC\_day0009"

[15] "Pt16\_Post1\_PBMC\_day0023"

[16] "Pt16\_Post1\_PBMC\_day0463"

[17] "Pt16\_Post1\_PBMC\_day0786\_Post2\_day0000"

[18] "Pt16\_Post2\_BM\_day0126"

[19] "Pt16\_Post2\_ileum\_day0014"

[20] "Pt16\_Post2\_ileum\_day0032"

[21] "Pt16\_Post2\_ileum\_day0126"

[22] "Pt16\_Post2\_ileum\_day0494"

[23] "Pt16\_Post2\_PBMC\_day0008"

[24] "Pt16\_Post2\_PBMC\_day0033"

[25] "Pt16\_Post2\_PBMC\_day0126"

[26] "Pt16\_Post2\_PBMC\_day0285"

[27] "Pt16\_Post2\_PBMC\_day0494"

[28] "Pt16\_Pre1\_Donor1\_CD4\_CFSElo\_LITx\_G1vH\_1stD4L"

[29] "Pt16\_Pre1\_Donor1\_CD4\_unstim\_LITx\_1stD4U"

[30] "Pt16\_Pre1\_Donor1\_CD8\_CFSElo\_LITx\_G1vH\_1stD8L"

[31] "Pt16\_Pre1\_Donor1\_CD8\_unstim\_LITx\_1stD8U"

[32] "Pt16\_Pre1\_Recipient\_CD4\_CFSElo\_vs\_Donor1\_LITx\_HvG1\_R4L"

[33] "Pt16\_Pre1\_Recipient\_CD4\_unstim\_LITx\_R4U"

[34] "Pt16\_Pre1\_Recipient\_CD8\_CFSElo\_vs\_Donor1\_LITx\_HvG1\_R8L"

[35] "Pt16\_Pre1\_Recipient\_CD8\_unstim\_LITx\_R8U"

[36] "Pt16\_Pre2\_Donor2\_CD4\_CFSElo\_MVTx\_G2vH\_2ndD4L"

[37] "Pt16\_Pre2\_Donor2\_CD4\_unstim\_MVTx\_2ndD4U"

[38] "Pt16\_Pre2\_Donor2\_CD8\_CFSElo\_MVTx\_G2vH\_2ndD8L"

[39] "Pt16\_Pre2\_Donor2\_CD8\_unstim\_MVTx\_2ndD8U"

[40] "Pt16\_Pre2\_Recipient\_CD4\_CFSElo\_vs\_Donor2\_MVTx\_HvG2\_R4L"

[41] "Pt16\_Pre2\_Recipient\_CD8\_CFSElo\_vs\_Donor2\_MVTx\_HvG2\_R8L"

[42] "Pt16\_reTx\_MLR.3\_2ndD4L\_vs\_1stD"

[43] "Pt16\_reTx\_MLR.3\_2ndD8L\_vs\_1stD"

[44] "Pt16\_reTx\_MLR.6\_1stD4L\_vs\_2ndD"

[45] "Pt16\_reTx\_MLR.6\_1stD8L\_vs\_2ndD"

[46] "Pt16\_reTx\_POD126\_BM\_1st\_Donor\_CD45"

[47] "Pt16\_reTx\_POD126\_BM\_2nd\_Donor\_CD45"

[48] "Pt16\_reTx\_POD126\_Bx\_duodenum"

[49] "Pt16\_reTx\_POD126\_Bx\_stomach"

[50] "Pt16\_reTx\_POD126\_PBMC\_1st\_Donor\_CD45"

[51] "Pt16\_reTx\_POD126\_PBMC\_2nd\_Donor\_CD45"

apply(data[,2:51],2, sum)

#2nd Tx, Pt16'' MVTx, G2 vs H

# resolve CD4 and CD8 ambiguous clones first (ratio=5), then followed by resolve donor and recipient ambiguous clones.

#D2\_4U vs D2\_8U

normalize(data[,c(37,39)])

ratio=5

c1indices=which(data[,37]>0 & data[,39]>0 & data[,37]>ratio\*data[,39])

c2indices=which(data[,37]>0 & data[,39]>0 & data[,39]>ratio\*data[,37])

ambiindices=which(data[,37]>0 & data[,39]>0)

ambiindices=setdiff(setdiff(ambiindices,c1indices),c2indices)

data[c1indices,39]=0

data[c2indices,37]=0

data[ambiindices,c(37,39)]=0

#D2\_4L vs D2\_8L

normalize(data[,c(36,38)])

ratio=5

c1indices=which(data[,36]>0 & data[,38]>0 & data[,36]>ratio\*data[,38])

c2indices=which(data[,36]>0 & data[,38]>0 & data[,38]>ratio\*data[,36])

ambiindices=which(data[,36]>0 & data[,38]>0)

ambiindices=setdiff(setdiff(ambiindices,c1indices),c2indices)

data[c1indices,38]=0

data[c2indices,36]=0

data[ambiindices,c(36,38)]=0

#R4U vs R8U

normalize(data[,c(33,35)])

ratio=5

c1indices=which(data[,33]>0 & data[,35]>0 & data[,33]>ratio\*data[,35])

c2indices=which(data[,33]>0 & data[,35]>0 & data[,35]>ratio\*data[,33])

ambiindices=which(data[,33]>0 & data[,35]>0)

ambiindices=setdiff(setdiff(ambiindices,c1indices),c2indices)

data[c1indices,35]=0

data[c2indices,33]=0

data[ambiindices,c(33,35)]=0

#R4L(D2) vs R8L (D2)

normalize(data[,c(40,41)])

ratio=5

c1indices=which(data[,40]>0 & data[,41]>0 & data[,40]>ratio\*data[,41])

c2indices=which(data[,40]>0 & data[,41]>0 & data[,41]>ratio\*data[,40])

ambiindices=which(data[,40]>0 & data[,41]>0)

ambiindices=setdiff(setdiff(ambiindices,c1indices),c2indices)

data[c1indices,41]=0

data[c2indices,40]=0

data[ambiindices,c(40,41)]=0

rownames(data)=data[,1]

x=data

#remove donor/recipient ambiguous clones, either real shared clones, or ambiguous raised by CFSE-MLR sorting error

ambiguous=which((x[,37]>0 | x[,39]>0)&(x[,33]>0 | x[35]>0))

ambiguous=union(ambiguous,which((x[,37]>0 | x[,39]>0)&(x[,40]>0 | x[,41]>0)))

ambiguous=union(ambiguous,which((x[,33]>0 | x[,35]>0)&(x[,36]>0 | x[,38]>0)))

x=x[setdiff(1:nrow(x),ambiguous),]

#additionally remove stim vs unstim ambiguous within recipient preTx (R4L, R4U, R8L, R8U) or donor preTx (D4L, D4U, D8L, D8U) samples; which can be considered as additional step of optimization for CD4 and CD8 sorting error.

#R4L(D2) vs R8U

normalize(x[,c(40,35)])

ratio=2

c1indices=which(x[,40]>0 & x[,35]>0 & x[,40]>ratio\*x[,35])

c2indices=which(x[,40]>0 & x[,35]>0 & x[,35]>ratio\*x[,40])

ambiindices=which(x[,40]>0 & x[,35]>0)

ambiindices=setdiff(setdiff(ambiindices,c1indices),c2indices)

x[c1indices,35]=0

x[c2indices,40]=0

x[ambiindices,c(40,35)]=0

#R8L(D2) vs R4U

normalize(x[,c(41,33)])

ratio=2

c1indices=which(x[,41]>0 & x[,33]>0 & x[,41]>ratio\*x[,33])

c2indices=which(x[,41]>0 & x[,33]>0 & x[,33]>ratio\*x[,41])

ambiindices=which(x[,41]>0 & x[,33]>0)

ambiindices=setdiff(setdiff(ambiindices,c1indices),c2indices)

x[c1indices,33]=0

x[c2indices,41]=0

x[ambiindices,c(41,33)]=0

#D2\_4L vs D2\_8U

normalize(x[,c(36,39)])

ratio=2

c1indices=which(x[,36]>0 & x[,39]>0 & x[,36]>ratio\*x[,39])

c2indices=which(x[,36]>0 & x[,39]>0 & x[,39]>ratio\*x[,36])

ambiindices=which(x[,36]>0 & x[,39]>0)

ambiindices=setdiff(setdiff(ambiindices,c1indices),c2indices)

x[c1indices,39]=0

x[c2indices,36]=0

x[ambiindices,c(36,39)]=0

#D2\_8L vs D2\_4U

normalize(x[,c(38,37)])

ratio=2

c1indices=which(x[,38]>0 & x[,37]>0 & x[,38]>ratio\*x[,37])

c2indices=which(x[,38]>0 & x[,37]>0 & x[,37]>ratio\*x[,38])

ambiindices=which(x[,38]>0 & x[,37]>0)

ambiindices=setdiff(setdiff(ambiindices,c1indices),c2indices)

x[c1indices,37]=0

x[c2indices,38]=0

x[ambiindices,c(38,37)]=0

write.table(x,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 MVTx 07162021 resolve ambiguous for preTx MLR.tsv",quote=F,row.names=F,col.names=T, sep="\t")

apply(x[,2:51],2, sum)

#resolve ambiguous raised by post-Tx unstim and CFSE-MLR (Pt16'' MVTx POD377 PBMC)

#post-Tx R'4U vs R'8U

normalize(x[,c(8,9)])

ratio=5

c1indices=which(x[,8]>0 & x[,9]>0 & x[,8]>ratio\*x[,9])

c2indices=which(x[,8]>0 & x[,9]>0 & x[,9]>ratio\*x[,8])

ambiindices=which(x[,8]>0 & x[,9]>0)

ambiindices=setdiff(setdiff(ambiindices,c1indices),c2indices)

x[c1indices,9]=0

x[c2indices,8]=0

x[ambiindices,c(8,9)]=0

#post-Tx R'4L vs R'8L

normalize(x[,c(6,7)])

ratio=5

c1indices=which(x[,6]>0 & x[,7]>0 & x[,6]>ratio\*x[,7])

c2indices=which(x[,6]>0 & x[,7]>0 & x[,7]>ratio\*x[,6])

ambiindices=which(x[,6]>0 & x[,7]>0)

ambiindices=setdiff(setdiff(ambiindices,c1indices),c2indices)

x[c1indices,7]=0

x[c2indices,6]=0

x[ambiindices,c(6,7)]=0

#remove donor/recipient ambiguous clones, either real shared clones, or ambiguous raised by CFSE-MLR sorting error

ambiguous=which((x[,8]>0 | x[,9]>0)&(x[,37]>0 | x[,39]>0))

ambiguous=union(ambiguous,which((x[,8]>0 | x[,9]>0)&(x[,36]>0 | x[,38]>0)))

ambiguous=union(ambiguous,which((x[,37]>0 | x[,39]>0)&(x[,6]>0 | x[,7]>0)))

x=x[setdiff(1:nrow(x),ambiguous),]

#additionally remove stim vs unstim ambiguous within recipient postTx (R'4L, R'4U, R'8L, R'8U); which can be considered as additional step of optimization for CD4 and CD8 sorting error.

#R'4L vs R'8U

normalize(x[,c(6,9)])

ratio=2

c1indices=which(x[,6]>0 & x[,9]>0 & x[,6]>ratio\*x[,9])

c2indices=which(x[,6]>0 & x[,9]>0 & x[,9]>ratio\*x[,6])

ambiindices=which(x[,6]>0 & x[,9]>0)

ambiindices=setdiff(setdiff(ambiindices,c1indices),c2indices)

x[c1indices,9]=0

x[c2indices,6]=0

x[ambiindices,c(6,9)]=0

#R'8L vs R'4U

normalize(x[,c(7,8)])

ratio=2

c1indices=which(x[,7]>0 & x[,8]>0 & x[,7]>ratio\*x[,8])

c2indices=which(x[,7]>0 & x[,8]>0 & x[,8]>ratio\*x[,7])

ambiindices=which(x[,7]>0 & x[,8]>0)

ambiindices=setdiff(setdiff(ambiindices,c1indices),c2indices)

x[c1indices,8]=0

x[c2indices,7]=0

x[ambiindices,c(7,8)]=0

write.table(x,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 MVTx 08242021 resolve ambiguous for postTx MLR.tsv",quote=F,row.names=F,col.names=T, sep="\t")

apply(x[,2:51],2, sum)

# add "fold=2" below, use 2 fold expansion (default 5 fold)

# add "freq=0.00002" below, use freq=0.00002 for template counts; use default freq=0.00001 for read counts

#before running, must do rownames(data)=data[,1]

rownames(x)=x[,1]

#HVG2 direction

# For CD4 HvG2, cd4.HVG2=x[,c(unstim(R4U),stim(R4L))]

# For CD8 HvG2, cd8.HVG2=x[,c(unstim(R8U),stim(R8L))]

cd4.HVG2= x[,c(33,40)]

cd8.HVG2= x[,c(35,41)]

allo.HVG2=listAlloreactive(cd4.HVG2,cd8.HVG2, fold=2, freq=0.00002)

length(allo.HVG2[[1]])

[1] 6504

length(allo.HVG2[[2]])

[1] 5702

write.table(allo.HVG2[[1]],file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CD4 HVG2list 07222021.txt",quote=F,row.names=F,col.names=F, sep="\t")

write.table(allo.HVG2[[2]],file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CD8 HVG2list 07222021.txt",quote=F,row.names=F,col.names=F, sep="\t")

rCD4mappable=rownames(x[(x[,33]+x[,40])>0,])

rCD8mappable=rownames(x[(x[,35]+x[,41])>0,])

CD4nonHVG2=setdiff(rCD4mappable,allo.HVG2[[1]])

CD8nonHVG2=setdiff(rCD8mappable,allo.HVG2[[2]])

write.table(CD4nonHVG2,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CD4nonHVG2 rmappable list 07222021.txt",quote=F,row.names=F,col.names=F, sep="\t")

write.table(CD8nonHVG2,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CD8nonHVG2 rmappable list 07222021.txt",quote=F,row.names=F,col.names=F, sep="\t")

length(rCD4mappable)

[1] 162227

length(rCD8mappable)

[1] 138547

length(CD4nonHVG2)

[1] 155723

length(CD8nonHVG2)

[1] 132845

rmappable=rownames(x[(x[,33]+x[,40]+x[,35]+x[,41])>0,])

length(rmappable)

[1] 300774

write.table(rmappable,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 recipient mappable list 07222021.txt",quote=F,row.names=F,col.names=F, sep="\t")

length(rCD4mappable)+length(rCD8mappable)

[1] 300774

length(intersect(rCD4mappable,rCD8mappable))

[1] 0

#before running, must do rownames(data)=data[,1]

rownames(x)=x[,1]

#G2VH direction

# For CD4 G2VH, cd4.G2VH=x[,c(unstim(D4U),stim(D4L))]

# For CD8 G2VH, cd8.G2VH=x[,c(unstim(D8U),stim(D8L))]

cd4.G2VH= x[,c(37,36)]

cd8.G2VH= x[,c(39,38)]

allo.G2VH=listAlloreactive(cd4.G2VH,cd8.G2VH, fold=2, freq=0.00002)

length(allo.G2VH[[1]])

[1] 589

length(allo.G2VH[[2]])

[1] 1147

write.table(allo.G2VH[[1]],file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CD4 G2VHlist 07222021.txt",quote=F,row.names=F,col.names=F, sep="\t")

write.table(allo.G2VH[[2]],file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CD8 G2VHlist 07222021.txt",quote=F,row.names=F,col.names=F, sep="\t")

d2CD4mappable=rownames(x[(x[,37]+x[,36])>0,])

d2CD8mappable=rownames(x[(x[,39]+x[,38])>0,])

#previously used d1CD4mappable and d1CD8mappable to setdiff allo.G2VH with nonG2vH, should change to d2CD4mappable and d2CD8mappable

#CD4nonG2VH=setdiff(d1CD4mappable,allo.G2VH[[1]])

#CD8nonG2VH=setdiff(d1CD8mappable,allo.G2VH[[2]])

CD4nonG2VH=setdiff(d2CD4mappable,allo.G2VH[[1]])

CD8nonG2VH=setdiff(d2CD8mappable,allo.G2VH[[2]])

write.table(CD4nonG2VH,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CD4nonG2VH dmappable list.txt",quote=F,row.names=F,col.names=F, sep="\t")

write.table(CD8nonG2VH,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CD8nonG2VH dmappable list.txt",quote=F,row.names=F,col.names=F, sep="\t")

length(d2CD4mappable)

[1] 140056

length(d2CD8mappable)

[1] 102842

length(CD4nonG2VH)

[1] 139467

length(CD8nonG2VH)

[1] 101695

d2mappable=rownames(x[(x[,37]+x[,36]+x[,39]+x[,38])>0,])

length(d2mappable)

[1] 242898

write.table(d2mappable,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 donor2 mappable list.txt",quote=F,row.names=F,col.names=F, sep="\t")

length(d2CD4mappable)+length(d2CD8mappable)

[1] 242898

length(intersect(d2CD4mappable,d2CD8mappable))

[1] 0

#post-Tx POD377 HVG direction

# For CD4 H'vG2, cd4.H'VG2=x[,c(unstim(R'4U),stim(R'4L))]

# For CD8 H'vG2, cd8.H'VG2=x[,c(unstim(R'8U),stim(R'8L))]

cd4.HpostVG2= x[,c(8,6)]

cd8.HpostVG2= x[,c(9,7)]

allo.HpostVG2=listAlloreactive(cd4.HpostVG2,cd8.HpostVG2, fold=2, freq=0.00002)

length(allo.HpostVG2[[1]])

[1] 1408

length(allo.HpostVG2[[2]])

[1] 202

write.table(allo.HpostVG2[[1]],file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CD4 post-Tx POD377 HVG2list.txt",quote=F,row.names=F,col.names=F, sep="\t")

write.table(allo.HpostVG2[[2]],file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CD8 post-Tx POD377 HVG2list.txt",quote=F,row.names=F,col.names=F, sep="\t")

rpostCD4mappable=rownames(x[(x[,8]+x[,6])>0,])

rpostCD8mappable=rownames(x[(x[,9]+x[,7])>0,])

CD4nonHpostVG2=setdiff(rpostCD4mappable,allo.HpostVG2[[1]])

CD8nonHpostVG2=setdiff(rpostCD8mappable,allo.HpostVG2[[2]])

write.table(CD4nonHpostVG2,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CD4nonHpostVG2 rpostmappable list post-Tx POD377.txt",quote=F,row.names=F,col.names=F, sep="\t")

write.table(CD8nonHpostVG2,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CD8nonHpostVG2 rpostmappable list post-Tx POD377.txt",quote=F,row.names=F,col.names=F, sep="\t")

length(rpostCD4mappable)

[1] 3589

length(rpostCD8mappable)

[1] 2400

length(CD4nonHpostVG2)

[1] 2181

length(CD8nonHpostVG2)

[1] 2198

rpostmappable=rownames(x[(x[,8]+x[,6]+x[,9]+x[,7])>0,])

length(rpostmappable)

[1] 5989

write.table(rpostmappable,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 recipient post mappable list post-Tx POD377.txt",quote=F,row.names=F,col.names=F, sep="\t")

length(rpostCD4mappable)+length(rpostCD8mappable)

[1] 5989

length(intersect(rpostCD4mappable,rpostCD8mappable))

[1] 0

#Pt16\_MVTx\_POD1004\_iIeum\_Bx post-Tx H'VG2

cd4= x[,c(8,6,12)]

cd8= x[,c(9,7,12)]

run(cd4,cd8, fold=2,freq=0.00002, filename="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 07222021 2x.out" )

rownames(x)=x[,1]

cd4= x[,c(8,6)]

cd8= x[,c(9,7)]

allo=listAlloreactive(cd4, cd8, fold=2,freq=0.00002)

intersect(allo[[1]], rownames(x[x[,12]>0,]))

intersect(allo[[2]], rownames(x[x[,12]>0,]))

#Pt16'' POD14 Bx G2VH

cd4= x[,c(37,36,19)]

cd8= x[,c(39,38,19)]

run(cd4,cd8, fold=2,freq=0.00002, filename="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 07222021 2x.out" )

rownames(x)=x[,1]

cd4= x[,c(37,36)]

cd8= x[,c(39,38)]

allo=listAlloreactive(cd4, cd8, fold=2,freq=0.00002)

intersect(allo[[1]], rownames(x[x[,19]>0,]))

intersect(allo[[2]], rownames(x[x[,19]>0,]))

#Pt16'' POD14 Bx HVG2

cd4= x[,c(33,40,19)]

cd8= x[,c(35,41,19)]

run(cd4,cd8, fold=2,freq=0.00002, filename="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 07222021 2x.out")

rownames(x)=x[,1]

cd4= x[,c(33,40)]

cd8= x[,c(35,41)]

allo=listAlloreactive(cd4, cd8, fold=2,freq=0.00002)

intersect(allo[[1]], rownames(x[x[,19]>0,]))

intersect(allo[[2]], rownames(x[x[,19]>0,]))

#Pt16'' POD32 Bx G2VH

cd4= x[,c(37,36,20)]

cd8= x[,c(39,38,20)]

run(cd4,cd8, fold=2,freq=0.00002, filename="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 07222021 2x.out" )

rownames(x)=x[,1]

cd4= x[,c(37,36)]

cd8= x[,c(39,38)]

allo=listAlloreactive(cd4, cd8, fold=2,freq=0.00002)

intersect(allo[[1]], rownames(x[x[,20]>0,]))

intersect(allo[[2]], rownames(x[x[,20]>0,]))

#Pt16'' POD32 Bx HVG2

cd4= x[,c(33,40,20)]

cd8= x[,c(35,41,20)]

run(cd4,cd8, fold=2,freq=0.00002, filename="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 07222021 2x.out")

rownames(x)=x[,1]

cd4= x[,c(33,40)]

cd8= x[,c(35,41)]

allo=listAlloreactive(cd4, cd8, fold=2,freq=0.00002)

intersect(allo[[1]], rownames(x[x[,20]>0,]))

intersect(allo[[2]], rownames(x[x[,20]>0,]))

#Pt16'' POD126 ileum Bx G2VH

cd4= x[,c(37,36,21)]

cd8= x[,c(39,38,21)]

run(cd4,cd8, fold=2,freq=0.00002, filename="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 07222021 2x.out" )

rownames(x)=x[,1]

cd4= x[,c(37,36)]

cd8= x[,c(39,38)]

allo=listAlloreactive(cd4, cd8, fold=2,freq=0.00002)

intersect(allo[[1]], rownames(x[x[,21]>0,]))

intersect(allo[[2]], rownames(x[x[,21]>0,]))

#Pt16'' POD126 ileum Bx HVG2

cd4= x[,c(33,40,21)]

cd8= x[,c(35,41,21)]

run(cd4,cd8, fold=2,freq=0.00002, filename="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 07222021 2x.out")

rownames(x)=x[,1]

cd4= x[,c(33,40)]

cd8= x[,c(35,41)]

allo=listAlloreactive(cd4, cd8, fold=2,freq=0.00002)

intersect(allo[[1]], rownames(x[x[,21]>0,]))

intersect(allo[[2]], rownames(x[x[,21]>0,]))

#2nd Tx, Pt16'' MVTx, G2 vs G1

# resolve CD4 and CD8 ambiguous clones first (ratio=5), then followed by resolve donor2 and donor1 ambiguous clones.

#D2\_4U vs D2\_8U

normalize(x[,c(37,39)])

ratio=5

c1indices=which(x[,37]>0 & x[,39]>0 & x[,37]>ratio\*x[,39])

c2indices=which(x[,37]>0 & x[,39]>0 & x[,39]>ratio\*x[,37])

ambiindices=which(x[,37]>0 & x[,39]>0)

ambiindices=setdiff(setdiff(ambiindices,c1indices),c2indices)

x[c1indices,39]=0

x[c2indices,37]=0

x[ambiindices,c(37,39)]=0

#D2\_4L(D1) vs D2\_8L(D1)

normalize(x[,c(42,43)])

ratio=5

c1indices=which(x[,42]>0 & x[,43]>0 & x[,42]>ratio\*x[,43])

c2indices=which(x[,42]>0 & x[,43]>0 & x[,43]>ratio\*x[,42])

ambiindices=which(x[,42]>0 & x[,43]>0)

ambiindices=setdiff(setdiff(ambiindices,c1indices),c2indices)

x[c1indices,43]=0

x[c2indices,42]=0

x[ambiindices,c(42,43)]=0

#D1\_4U vs D1\_8U

normalize(x[,c(29,31)])

ratio=5

c1indices=which(x[,29]>0 & x[,31]>0 & x[,29]>ratio\*x[,31])

c2indices=which(x[,29]>0 & x[,31]>0 & x[,31]>ratio\*x[,29])

ambiindices=which(x[,29]>0 & x[,31]>0)

ambiindices=setdiff(setdiff(ambiindices,c1indices),c2indices)

x[c1indices,31]=0

x[c2indices,29]=0

x[ambiindices,c(29,31)]=0

#D1\_4L(D2) vs D18L (D2)

normalize(x[,c(44,45)])

ratio=5

c1indices=which(x[,44]>0 & x[,45]>0 & x[,44]>ratio\*x[,45])

c2indices=which(x[,44]>0 & x[,45]>0 & x[,45]>ratio\*x[,44])

ambiindices=which(x[,44]>0 & x[,45]>0)

ambiindices=setdiff(setdiff(ambiindices,c1indices),c2indices)

x[c1indices,45]=0

x[c2indices,44]=0

x[ambiindices,c(44,45)]=0

rownames(x)=x[,1]

#remove donor2/donor1 ambiguous clones, either real shared clones, or ambiguous raised by CFSE-MLR sorting error

ambiguous=which((x[,37]>0 | x[,39]>0)&(x[,29]>0 | x[31]>0))

ambiguous=union(ambiguous,which((x[,37]>0 | x[,39]>0)&(x[,44]>0 | x[,45]>0)))

ambiguous=union(ambiguous,which((x[,29]>0 | x[,31]>0)&(x[,42]>0 | x[,43]>0)))

x=x[setdiff(1:nrow(x),ambiguous),]

#additionally remove stim vs unstim ambiguous within donor1 preTx (D1\_4L, D1\_4U, D1\_8L, D1\_8U) or donor2 preTx (D2\_4L, D2\_4U, D2\_8L, D2\_8U) samples; which can be considered as additional step of optimization for CD4 and CD8 sorting error.

#D1\_4L(D2) vs D1\_8U

normalize(x[,c(44,31)])

ratio=2

c1indices=which(x[,44]>0 & x[,31]>0 & x[,44]>ratio\*x[,31])

c2indices=which(x[,44]>0 & x[,31]>0 & x[,31]>ratio\*x[,44])

ambiindices=which(x[,44]>0 & x[,31]>0)

ambiindices=setdiff(setdiff(ambiindices,c1indices),c2indices)

x[c1indices,31]=0

x[c2indices,44]=0

x[ambiindices,c(44,31)]=0

#D1\_8L(D2) vs D1\_4U

normalize(x[,c(45,29)])

ratio=2

c1indices=which(x[,45]>0 & x[,29]>0 & x[,45]>ratio\*x[,29])

c2indices=which(x[,45]>0 & x[,29]>0 & x[,29]>ratio\*x[,45])

ambiindices=which(x[,45]>0 & x[,29]>0)

ambiindices=setdiff(setdiff(ambiindices,c1indices),c2indices)

x[c1indices,29]=0

x[c2indices,45]=0

x[ambiindices,c(45,29)]=0

#D2\_4L (D1) vs D2\_8U

normalize(x[,c(42,39)])

ratio=2

c1indices=which(x[,42]>0 & x[,39]>0 & x[,42]>ratio\*x[,39])

c2indices=which(x[,42]>0 & x[,39]>0 & x[,39]>ratio\*x[,42])

ambiindices=which(x[,42]>0 & x[,39]>0)

ambiindices=setdiff(setdiff(ambiindices,c1indices),c2indices)

x[c1indices,39]=0

x[c2indices,42]=0

x[ambiindices,c(42,39)]=0

#D2\_8L(D1) vs D2\_4U

normalize(x[,c(43,37)])

ratio=2

c1indices=which(x[,43]>0 & x[,37]>0 & x[,43]>ratio\*x[,37])

c2indices=which(x[,43]>0 & x[,37]>0 & x[,37]>ratio\*x[,43])

ambiindices=which(x[,43]>0 & x[,37]>0)

ambiindices=setdiff(setdiff(ambiindices,c1indices),c2indices)

x[c1indices,37]=0

x[c2indices,43]=0

x[ambiindices,c(43,37)]=0

write.table(x,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 MVTx 08242021 resolve ambiguous for G2vG1 in addition to pre- and post-Tx MLR.tsv",quote=F,row.names=F,col.names=T, sep="\t")

apply(x[,2:51],2, sum)

#G2VG1 direction

# For CD4 G2VG1, cd4.G2VG1=x[,c(unstim(D2\_4U),stim(D2\_4L\_D1))]

# For CD8 G2VG1, cd8.G2VG1=x[,c(unstim(D2\_8U),stim(D2\_8L\_D1))]

cd4.G2VG1= x[,c(37,42)]

cd8.G2VG1= x[,c(39,43)]

allo.G2VG1=listAlloreactive(cd4.G2VG1,cd8.G2VG1, fold=2, freq=0.00002)

length(allo.G2VG1[[1]])

[1] 7883

length(allo.G2VG1[[2]])

[1] 7186

write.table(allo.G2VG1[[1]],file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CD4 G2VG1list 08242021.txt",quote=F,row.names=F,col.names=F, sep="\t")

write.table(allo.G2VG1[[2]],file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CD8 G2VG1list 08242021.txt",quote=F,row.names=F,col.names=F, sep="\t")

d2CD4mappable\_vsG1=rownames(x[(x[,37]+x[,42])>0,])

d2CD8mappable\_vsG1=rownames(x[(x[,39]+x[,43])>0,])

CD4nonG2VG1=setdiff(d2CD4mappable\_vsG1,allo.G2VG1[[1]])

CD8nonG2VG1=setdiff(d2CD8mappable\_vsG1,allo.G2VG1[[2]])

write.table(CD4nonG2VG1,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CD4nonG2VG1 dmappable list 08242021.txt",quote=F,row.names=F,col.names=F, sep="\t")

write.table(CD8nonG2VG1,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CD8nonG2VG1 dmappable list 08242021.txt",quote=F,row.names=F,col.names=F, sep="\t")

length(d2CD4mappable\_vsG1)

[1] 146834

length(d2CD8mappable\_vsG1)

[1] 115401

length(CD4nonG2VG1)

[1] 138951

length(CD8nonG2VG1)

[1] 108215

d2mappable\_vsG1=rownames(x[(x[,37]+x[,42]+x[,39]+x[,43])>0,])

length(d2mappable\_vsG1)

[1] 262235

write.table(d2mappable\_vsG1,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 donor2 mappable\_vsG1 list 08242021.txt",quote=F,row.names=F,col.names=F, sep="\t")

length(d2CD4mappable\_vsG1)+length(d2CD8mappable\_vsG1)

[1] 262235

length(intersect(d2CD4mappable\_vsG1,d2CD8mappable\_vsG1))

[1] 0

#G1VG2 direction

# For CD4 G1VG2, cd4.G1VG2=x[,c(unstim(D1\_4U),stim(D1\_4L\_D2))]

# For CD8 G1VG2, cd8.G1VG2=x[,c(unstim(D1\_8U),stim(D1\_8L\_D2))]

cd4.G1VG2= x[,c(29,44)]

cd8.G1VG2= x[,c(31,45)]

allo.G1VG2=listAlloreactive(cd4.G1VG2,cd8.G1VG2, fold=2, freq=0.00002)

#When you define allo=listAlloreactive(cd4,cd8),then you should get cd4 alloreactives stored in allo[[1]] and cd8 alloreactives stored in allo[[2]]. If you do allo=union(allo[[1]],allo[[2]]), then allo contains all the alloreactives, and you can define nonallo=setdiff(rownames(x),allo)

length(allo.G1VG2[[1]])

[1] 5220

length(allo.G1VG2[[2]])

[1] 5644

write.table(allo.G1VG2[[1]],file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CD4 G1VG2list 08242021.txt",quote=F,row.names=F,col.names=F, sep="\t")

write.table(allo.G1VG2[[2]],file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CD8 G1VG2list 08242021.txt",quote=F,row.names=F,col.names=F, sep="\t")

d1CD4mappable\_vsG2=rownames(x[(x[,29]+x[,44])>0,])

d1CD8mappable\_vsG2=rownames(x[(x[,31]+x[,45])>0,])

CD4nonG1VG2=setdiff(d1CD4mappable\_vsG2,allo.G1VG2[[1]])

CD8nonG1VG2=setdiff(d1CD8mappable\_vsG2,allo.G1VG2[[2]])

write.table(CD4nonG1VG2,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CD4nonG1VG2 dmappable list 08242021.txt",quote=F,row.names=F,col.names=F, sep="\t")

write.table(CD8nonG1VG2,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 CD8nonG1VG2 dmappable list 08242021.txt",quote=F,row.names=F,col.names=F, sep="\t")

length(d1CD4mappable\_vsG2)

[1] 54302

length(d1CD8mappable\_vsG2)

[1] 54867

length(CD4nonG1VG2)

[1] 49082

length(CD8nonG1VG2)

[1] 49223

d1mappable\_vsG2=rownames(x[(x[,29]+x[,44]+x[,31]+x[,45])>0,])

length(d1mappable\_vsG2)

[1] 109169

write.table(d1mappable\_vsG2,file ="~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 donor1 mappable\_vsG2 list 08242021.txt",quote=F,row.names=F,col.names=F, sep="\t")

length(d1CD4mappable\_vsG2)+length(d1CD8mappable\_vsG2)

[1] 109169

length(intersect(d1CD4mappable\_vsG2,d1CD8mappable\_vsG2))

[1] 0

#Pt16’’ integrate pre- and post-Tx MLRs

#load resolve ambiguous tsv

Pt16\_new <- read.delim("~/Desktop/10x TRM 2021/Pt16'' POD377 PBMC postTx MLR/Pt16 MVTx 08242021 resolve ambiguous for postTx MLR.tsv")

colnames(Pt16\_new)

[1] "cdr3ntvj" "Pt16\_2nd\_MVTx\_POD494\_LN"

[3] "Pt16\_2nd\_MVTx\_POD565\_PBMC\_TCRBv4b" "Pt16\_2nd\_MVTx\_POD565\_PBMC"

[5] "Pt16\_LITx\_POD0\_recip\_ileum\_RENAME" "Pt16\_MVTx\_POD377\_PBMC\_H.vG2\_R.4L\_TCRBv4b"

[7] "Pt16\_MVTx\_POD377\_PBMC\_H.vG2\_R.8L\_TCRBv4b" "Pt16\_MVTx\_POD377\_PBMC\_R.4U\_TCRBv4b"

[9] "Pt16\_MVTx\_POD377\_PBMC\_R.8U\_TCRBv4b" "Pt16\_MVTx\_POD662\_ileum\_Bx\_mild\_ACR"

[11] "Pt16\_MVTx\_POD663\_PBMC" "Pt16\_MVTx\_POD1004\_iIeum\_Bx"

[13] "Pt16\_MVTx\_POD1004\_PBMC" "Pt16\_Post1\_PBMC\_day0009"

[15] "Pt16\_Post1\_PBMC\_day0023" "Pt16\_Post1\_PBMC\_day0463"

[17] "Pt16\_Post1\_PBMC\_day0786\_Post2\_day0000" "Pt16\_Post2\_BM\_day0126"

[19] "Pt16\_Post2\_ileum\_day0014" "Pt16\_Post2\_ileum\_day0032"

[21] "Pt16\_Post2\_ileum\_day0126" "Pt16\_Post2\_ileum\_day0494"

[23] "Pt16\_Post2\_PBMC\_day0008" "Pt16\_Post2\_PBMC\_day0033"

[25] "Pt16\_Post2\_PBMC\_day0126" "Pt16\_Post2\_PBMC\_day0285"

[27] "Pt16\_Post2\_PBMC\_day0494" "Pt16\_Pre1\_Donor1\_CD4\_CFSElo\_LITx\_G1vH\_1stD4L"

[29] "Pt16\_Pre1\_Donor1\_CD4\_unstim\_LITx\_1stD4U" "Pt16\_Pre1\_Donor1\_CD8\_CFSElo\_LITx\_G1vH\_1stD8L"

[31] "Pt16\_Pre1\_Donor1\_CD8\_unstim\_LITx\_1stD8U" "Pt16\_Pre1\_Recipient\_CD4\_CFSElo\_vs\_Donor1\_LITx\_HvG1\_R4L"

[33] "Pt16\_Pre1\_Recipient\_CD4\_unstim\_LITx\_R4U" "Pt16\_Pre1\_Recipient\_CD8\_CFSElo\_vs\_Donor1\_LITx\_HvG1\_R8L"

[35] "Pt16\_Pre1\_Recipient\_CD8\_unstim\_LITx\_R8U" "Pt16\_Pre2\_Donor2\_CD4\_CFSElo\_MVTx\_G2vH\_2ndD4L"

[37] "Pt16\_Pre2\_Donor2\_CD4\_unstim\_MVTx\_2ndD4U" "Pt16\_Pre2\_Donor2\_CD8\_CFSElo\_MVTx\_G2vH\_2ndD8L"

[39] "Pt16\_Pre2\_Donor2\_CD8\_unstim\_MVTx\_2ndD8U" "Pt16\_Pre2\_Recipient\_CD4\_CFSElo\_vs\_Donor2\_MVTx\_HvG2\_R4L"

[41] "Pt16\_Pre2\_Recipient\_CD8\_CFSElo\_vs\_Donor2\_MVTx\_HvG2\_R8L" "Pt16\_reTx\_MLR.3\_2ndD4L\_vs\_1stD"

[43] "Pt16\_reTx\_MLR.3\_2ndD8L\_vs\_1stD" "Pt16\_reTx\_MLR.6\_1stD4L\_vs\_2ndD"

[45] "Pt16\_reTx\_MLR.6\_1stD8L\_vs\_2ndD" "Pt16\_reTx\_POD126\_BM\_1st\_Donor\_CD45"

[47] "Pt16\_reTx\_POD126\_BM\_2nd\_Donor\_CD45" "Pt16\_reTx\_POD126\_Bx\_duodenum"

[49] "Pt16\_reTx\_POD126\_Bx\_stomach" "Pt16\_reTx\_POD126\_PBMC\_1st\_Donor\_CD45"

[51] "Pt16\_reTx\_POD126\_PBMC\_2nd\_Donor\_CD45"

#unstim, stim

#Pt16'', HvG2

rcd4 <- Pt16\_new[,c(33,40)]

rcd4 <- normalize(rcd4)

rCD4HVG <- rownames(rcd4[rcd4[,2]>0.00002 & rcd4[,2] > rcd4[,1]\*2,])

rCD4NonHVG <- setdiff(rownames(Pt16\_new[Pt16\_new[,33]>0|Pt16\_new[,40]>0,]), rCD4HVG)

rcd8 <- Pt16\_new[,c(35,41)]

rcd8 <- normalize(rcd8)

rCD8HVG <- rownames(rcd8[rcd8[,2]>0.00002 & rcd8[,2] > rcd8[,1]\*2,])

rCD8NonHVG <- setdiff(rownames(Pt16\_new[Pt16\_new[,35]>0|Pt16\_new[,41]>0,]), rCD8HVG)

dcd4 <- Pt16\_new[,c(37,36)]

dcd4 <- normalize(dcd4)

rCD4GVH <- rownames(dcd4[dcd4[,2]>0.00002 & dcd4[,2] > dcd4[,1]\*2,])

rCD4NonGVH <- setdiff(rownames(Pt16\_new[Pt16\_new[,37]>0|Pt16\_new[,36]>0,]), rCD4GVH)

dcd8 <- Pt16\_new[,c(39,38)]

dcd8 <- normalize(dcd8)

rCD8GVH <- rownames(dcd8[dcd8[,2]>0.00002 & dcd8[,2] > dcd8[,1]\*2,])

rCD8NonGVH <- setdiff(rownames(Pt16\_new[Pt16\_new[,39]>0|Pt16\_new[,38]>0,]), rCD8GVH)

r2cd4 <- Pt16\_new[,c(8,6)]

r2cd4 <- normalize(r2cd4)

r2CD4HVG <- rownames(r2cd4[r2cd4[,2]>0.00002 & r2cd4[,2] > r2cd4[,1]\*2,])

r2CD4NonHVG <- setdiff(rownames(Pt16\_new[Pt16\_new[,8]>0|Pt16\_new[,6]>0,]), r2CD4HVG)

r2cd8 <- Pt16\_new[,c(9,7)]

r2cd8 <- normalize(r2cd8)

r2CD8HVG <- rownames(r2cd8[r2cd8[,2]>0.00002 & r2cd8[,2] > r2cd8[,1]\*2,])

r2CD8NonHVG <- setdiff(rownames(Pt16\_new[Pt16\_new[,9]>0|Pt16\_new[,7]>0,]), r2CD8HVG)

CD4HVG <- setdiff(rCD4HVG,c(rCD4NonHVG,rCD4GVH,rCD4NonGVH,rCD8HVG,rCD8NonHVG,rCD8GVH,rCD8NonGVH,r2CD8HVG,r2CD8NonHVG))

CD4NonHVG <- setdiff(rCD4NonHVG,c(rCD4HVG,rCD4GVH,rCD4NonGVH,rCD8HVG,rCD8NonHVG,rCD8GVH,rCD8NonGVH,r2CD8HVG,r2CD8NonHVG))

CD8HVG <- setdiff(rCD8HVG,c(rCD4NonHVG,rCD4GVH,rCD4NonGVH,rCD4HVG,rCD8NonHVG,rCD8GVH,rCD8NonGVH,r2CD4HVG,r2CD4NonHVG))

CD8NonHVG <- setdiff(rCD8NonHVG,c(rCD4HVG,rCD4GVH,rCD4NonGVH,rCD8HVG,rCD4NonHVG,rCD8GVH,rCD8NonGVH,r2CD4HVG,r2CD4NonHVG))

unmappable <- setdiff(rownames(Pt16\_new), c(rCD4HVG,rCD4NonHVG,rCD4GVH,rCD4NonGVH,rCD8HVG,rCD8NonHVG,rCD8GVH,rCD8NonGVH))

CD4H2VG <- setdiff(r2CD4HVG,c(r2CD4NonHVG,r2CD8HVG,r2CD8NonHVG, rCD8HVG,rCD8NonHVG))

CD4NonH2VG <- setdiff(r2CD4NonHVG,c(r2CD4HVG,r2CD8HVG,r2CD8NonHVG, rCD8HVG,rCD8NonHVG))

CD8H2VG <- setdiff(r2CD8HVG,c(r2CD4NonHVG,r2CD4HVG,r2CD8NonHVG, rCD4HVG,rCD4NonHVG))

CD8NonH2VG <- setdiff(r2CD8NonHVG,c(r2CD4HVG,r2CD8HVG,r2CD4NonHVG, rCD4HVG,rCD4NonHVG))

unmappable2 <- setdiff(rownames(Pt16\_new), c(r2CD4HVG,r2CD4NonHVG,r2CD8HVG,r2CD8NonHVG))

CD4presistentHVG <- intersect(CD4HVG, CD4H2VG)

CD4acquiredHVG <- intersect(CD4NonHVG, CD4H2VG)

CD4denovoHVG <- intersect(unmappable, CD4H2VG)

CD4tolerantHVG <- intersect(CD4HVG, CD4NonH2VG)

CD4persistentNonHVG <- intersect(CD4NonHVG, CD4NonH2VG)

CD4denovoNonHVG <- intersect(unmappable, CD4NonH2VG)

CD4missingHVG <- intersect(CD4HVG, unmappable2)

CD4missingNonHVG <- intersect(CD4NonHVG, unmappable2)

Unmappable <- intersect(unmappable, unmappable2)

CD8presistentHVG <- intersect(CD8HVG, CD8H2VG)

CD8acquiredHVG <- intersect(CD8NonHVG, CD8H2VG)

CD8denovoHVG <- intersect(unmappable, CD8H2VG)

CD8tolerantHVG <- intersect(CD8HVG, CD8NonH2VG)

CD8persistentNonHVG <- intersect(CD8NonHVG, CD8NonH2VG)

CD8denovoNonHVG <- intersect(unmappable, CD8NonH2VG)

CD8missingHVG <- intersect(CD8HVG, unmappable2)

CD8missingNonHVG <- intersect(CD8NonHVG, unmappable2)

matrix1 <- as.data.frame(matrix(nrow=17,ncol=17))

rownames(matrix1) <- c("CD4presistentHVG","CD4acquiredHVG","CD4denovoHVG",

"CD4tolerantHVG","CD4persistentNonHVG","CD4denovoNonHVG",

"CD4missingHVG","CD4missingNonHVG","Unmappable",

"CD8presistentHVG","CD8acquiredHVG","CD8denovoHVG",

"CD8tolerantHVG","CD8persistentNonHVG","CD8denovoNonHVG",

"CD8missingHVG","CD8missingNonHVG") -> colnames(matrix1)

subsets <- list(CD4presistentHVG,CD4acquiredHVG,CD4denovoHVG,

CD4tolerantHVG,CD4persistentNonHVG,CD4denovoNonHVG,

CD4missingHVG,CD4missingNonHVG,Unmappable,

CD8presistentHVG,CD8acquiredHVG,CD8denovoHVG,

CD8tolerantHVG,CD8persistentNonHVG,CD8denovoNonHVG,

CD8missingHVG,CD8missingNonHVG)

for (m in 1:17){

for (n in 1:17) {

matrix1[m,n] <- length(intersect(subsets[[m]], subsets[[n]]))

}

}

write.table(matrix1, file ="~/Desktop/10x TRM 2021/pre post MLR analysis/Pt16'' 17 subsets uniqueclonenubmer\_JF.tsv",row.names=T,col.names=T, sep="\t")

matrix2 <- as.data.frame(matrix(nrow=17\*4,ncol=(ncol(Pt16\_new)-2)))

rownames(matrix2) <- paste0(rep(c("CD4presistentHVG","CD4acquiredHVG","CD4denovoHVG",

"CD4tolerantHVG","CD4persistentNonHVG","CD4denovoNonHVG",

"CD4missingHVG","CD4missingNonHVG","Unmappable",

"CD8presistentHVG","CD8acquiredHVG","CD8denovoHVG",

"CD8tolerantHVG","CD8persistentNonHVG","CD8denovoNonHVG",

"CD8missingHVG","CD8missingNonHVG"),4), c(rep("template#", 17), rep("template%", 17), rep("uniqueclone#", 17), rep("uniqueclone%", 17)))

colnames(matrix2) <- colnames(Pt16\_new[,4:ncol(Pt16\_new)])

length1 <- function(x){

return(length(which(x>0)))

}

#Pt16\_new\_v2 only choose defined 17 subsets in the demoninator when calculating %, which is not what we want, use total template counts instead.

Pt16\_new\_v2 <- Pt16\_new

Pt16\_new\_v2 <- Pt16\_new\_v2[rownames(Pt16\_new\_v2) %in% c(CD4presistentHVG,CD4acquiredHVG,CD4denovoHVG,

CD4tolerantHVG,CD4persistentNonHVG,CD4denovoNonHVG,

CD4missingHVG,CD4missingNonHVG,Unmappable,

CD8presistentHVG,CD8acquiredHVG,CD8denovoHVG,

CD8tolerantHVG,CD8persistentNonHVG,CD8denovoNonHVG,

CD8missingHVG,CD8missingNonHVG), ]

for (m in 1:17) {

for (n in 4:ncol(Pt16\_new\_v2)) {

matrix2[m,n-2] <- sum(Pt16\_new\_v2[subsets[[m]], n])

matrix2[m+17,n-2] <- sum(Pt16\_new\_v2[subsets[[m]], n])/sum(Pt16\_new\_v2[,n])\*100

matrix2[m+17\*2,n-2] <- length1(Pt16\_new\_v2[subsets[[m]], n])

matrix2[m+17\*3,n-2] <- length1(Pt16\_new\_v2[subsets[[m]], n])/length1(Pt16\_new\_v2[, n])\*100

}

}

write.table(matrix2, file ="~/Desktop/10x TRM 2021/pre post MLR analysis/Pt16'' 17 subsets number% in uniqueclone and template\_JF.tsv",row.names=T,col.names=T, sep="\t")

### matrix first row: column names need slightly adjust. calculation takes about ~10-15mins

#total template counts

apply(Pt16\_new[,c(2:51)],2,sum)

#generate data matrix

matrix<-apply(Pt16\_new[,c(2:51)],2, sum)

write.table(matrix,file ="~/Desktop/10x TRM 2021/pre post MLR analysis/Pt16'' total template counts.tsv",quote=F,row.names=T,col.names=T, sep="\t")