Notes

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GBS data Summary

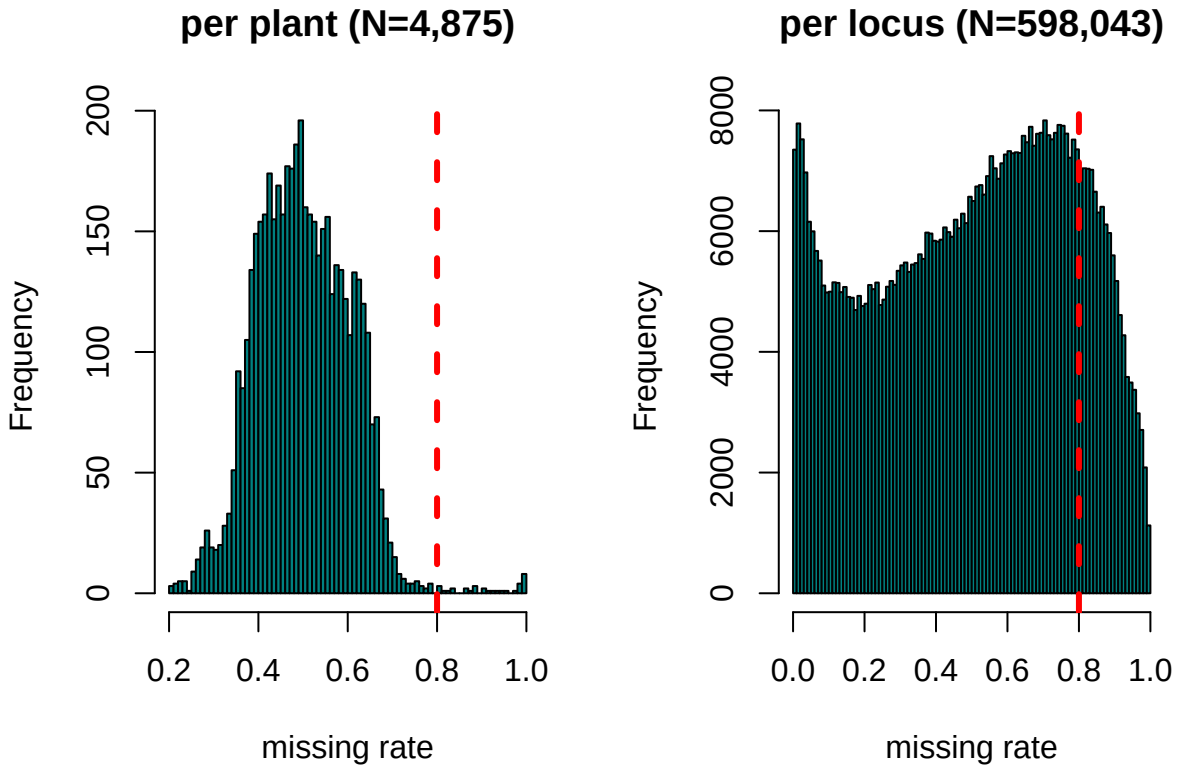
Loading HDF5 format GBS raw data

- loading in genotypes from HDF5 file `largedata/teo.h5`
- filtering biallelic loci: Removed `357,647` non-biallelic loci.
- data matrix dimension: [1:598043, 1:4875]

The missing rates were plotted as below for 598,043 SNPs of 4,875 plants (70/4,875 (1%) are founder lines). Note several plants have very high SNP missing rate, i.e. > 80%. Some of them even have a 100% missing rate. In addition, ~20% of them have very high (>80%) per locus missing rate.

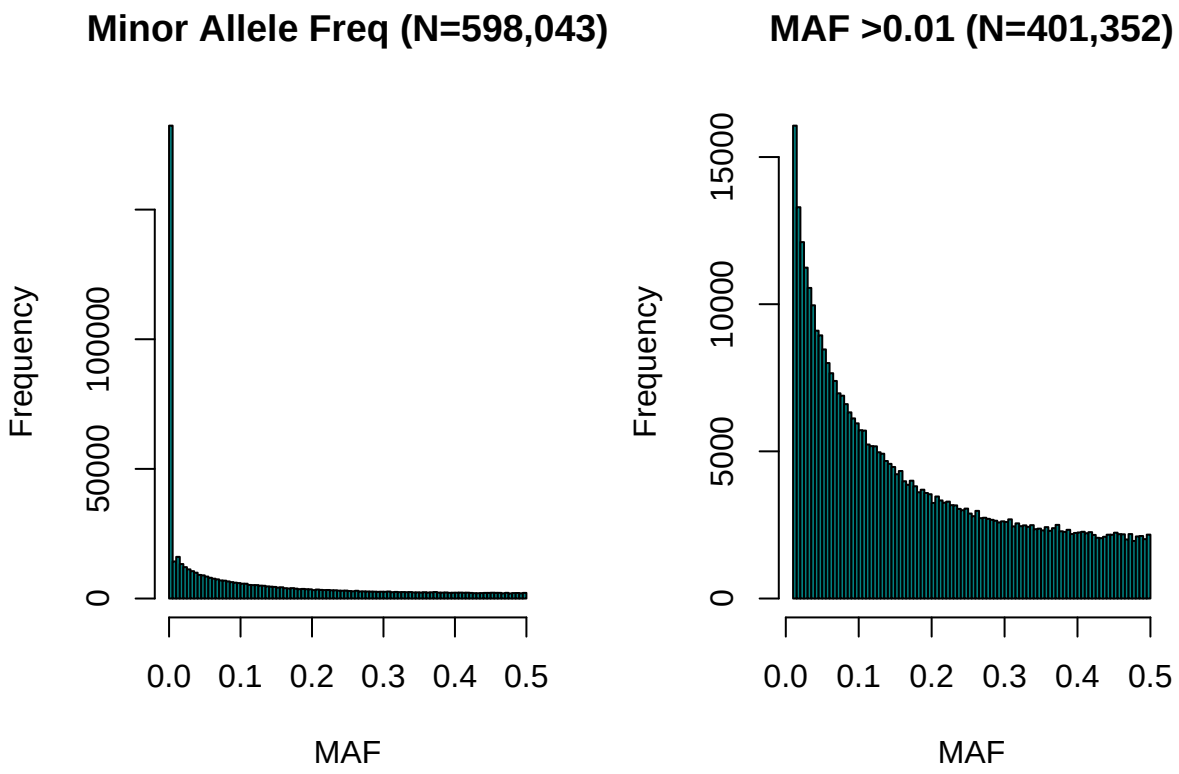
```
info <- read.csv("../data/teo_info.csv")
imiss <- read.csv("../data/teo_imiss.csv")

par(mfrow=c(1,2))
hist(imiss$imiss, main="per plant (N=4,875)", col="#008080", breaks=100, xlab="missing rate")
abline(v=0.8, col="red", lty=2, lwd=3)
hist(info$lmiss, main="per locus (N=598,043)", col="#008080", breaks=100, xlab="missing rate")
abline(v=0.8, col="red", lty=2, lwd=3)
```



```
par(mfrow=c(1,2))
hist(info$maf, main="Minor Allele Freq (N=598,043)", col="#008080", breaks=100, xlab="MAF")
abline(v=0.8, col="red", lty=2, lwd=3)

hist(subset(info, maf>0.01)$maf, main="MAF >0.01 (N=401,352)", col="#008080", breaks=100, xlab="MAF")
abline(v=0.8, col="red", lty=2, lwd=3)
```



Parentage Infomation

```
pinfo <- read.table("../data/parentage_sum.txt", header=TRUE)
dim(pinfo)
```

```
## [1] 68  5
```

```
subset(pinfo, !is.na(WGS))
```

```
##           sid                   founder nselfer nox WGS
## 5  PC_I11_ID2 PC_I11_ID2_mrg:250276264      43 126 yes
## 7  PC_I50_ID2 PC_I50_ID2_mrg:250276265      55 101 yes
## 10 PC_I55_ID2 PC_I55_ID2_mrg:250276267      81  94 yes
## 12 PC_I58_ID2 PC_I58_ID2_mrg:250276268      30 105 yes
## 16 PC_J07_ID2 PC_J07_ID2_mrg:250276269      40  92 yes
## 22 PC_J14_ID2 PC_J14_ID2_mrg:250276270      60  63 yes
## 23 PC_J48_ID2 PC_J48_ID2_mrg:250276262      46 101 yes
## 29 PC_K55_ID2 PC_K55_ID2_mrg:250276291      47 135 yes
```

```
## 31 PC_L06_ID2 PC_L06_ID2_mrg:250276271      24  98 yes
## 35 PC_L12_ID2 PC_L12_ID2_mrg:250276272      61  57 yes
## 38 PC_L48_ID2 PC_L48_ID2_mrg:250276273      48  78 yes
## 44 PC_N03_ID2 PC_N03_ID2_mrg:250276274      14 107 yes
## 47 PC_N07_ID2 PC_N07_ID2_mrg:250276276      38  95 yes
## 50 PC_N10_ID2 PC_N10_ID2_mrg:250276277      45  47 yes
## 54 PC_N14_ID2 PC_N14_ID2_mrg:250276278      58  85 yes
## 58 PC_N57_ID2 PC_N57_ID2_mrg:250276279      45 116 yes
## 60 PC_N58_ID2 PC_N58_ID2_mrg:250276280      46 141 yes
## 63 PC_O08_ID2 PC_O08_ID2_mrg:250276281      62  97 yes
## 66 PC_O51_ID2 PC_O51_ID2_mrg:250276282      97  13 yes
```

```
subset(pinfo, nox < 30)
```

```
##           sid                  founder nselfer nox  WGS
## 4  PC_I11_ID1   PC_I11_ID1_1:250276201      NA   7 <NA>
## 9  PC_I53_ID1   PC_I53_ID1_1:250276206      NA   4 <NA>
## 13 PC_J01_ID1   PC_J01_ID1_1:250276209      NA   1 <NA>
## 15 PC_J07_ID1   PC_J07_ID1_1:250276211      NA  28 <NA>
## 21 PC_J14_ID1   PC_J14_ID1_1:250276217      NA  16 <NA>
## 28 PC_K55_ID1   PC_K55_ID1_1:250276224      NA   4 <NA>
## 33 PC_L10_ID1   PC_L10_ID1_1:250276228      NA   6 <NA>
## 37 PC_L48_ID1   PC_L48_ID1_1:250276231      NA  19 <NA>
## 49 PC_N10_ID1   PC_N10_ID1_1:250276243      NA   2 <NA>
## 53 PC_N14_ID1   PC_N14_ID1_1:250276247      NA   1 <NA>
## 56 PC_N56_ID1   PC_N56_ID1_1:250276250      NA  15 <NA>
## 57 PC_N57_ID1   PC_N57_ID1_1:250276251      NA   5 <NA>
## 61 PC_N60_ID1   PC_N60_ID1_1:250276255      NA   3 <NA>
## 62 PC_O08_ID1   PC_O08_ID1_1:250276256      NA  12 <NA>
## 64 PC_O10_ID1   PC_O10_ID1_1:250276258      NA  15 <NA>
## 65 PC_O51_ID1   PC_O51_ID1_1:250276259      NA   5 <NA>
## 66 PC_O51_ID2 PC_O51_ID2_mrg:250276282      97  13  yes
## 67 PC_O59_ID1   PC_O59_ID1_1:250276261      NA  29 <NA>
```

Comparing GBS vs. WGS

```
par(mfrow=c(1,2))
hist(lmiss1, main="WGS (N=301,249)", ylim=c(0, 70000), col="#008080", breaks=50, xlab="missing rate")
#abline(v=0.8, col="red", lty=2, lwd=3)
hist(lmiss2, main="GBS (N=301,249)", ylim=c(0, 70000), col="#008080", breaks=50, xlab="missing rate")
#abline(v=0.8, col="red", lty=2, lwd=3)

par(mfrow=c(1,2))
hist(imiss1, main="WGS (N=19)",  col="#008080",  xlab="missing rate")
#abline(v=0.8, col="red", lty=2, lwd=3)
hist(imiss2, main="GBS (N=19)",  col="#008080",  xlab="missing rate")
#abline(v=0.8, col="red", lty=2, lwd=3)

par(mfrow=c(1,2))
```

```r
hist(maf1, main="WGS (N=301,249)",  col="#008080",  xlab="MAF")
#abline(v=0.8, col="red", lty=2, lwd=3)
hist(maf2, main="GBS (N=301,249)",  col="#008080",  xlab="MAF")
#abline(v=0.8, col="red", lty=2, lwd=3)
```