Class 16 Zebrafish TSV

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TSV file

class16/mm-second.x.zebrafish.tsv

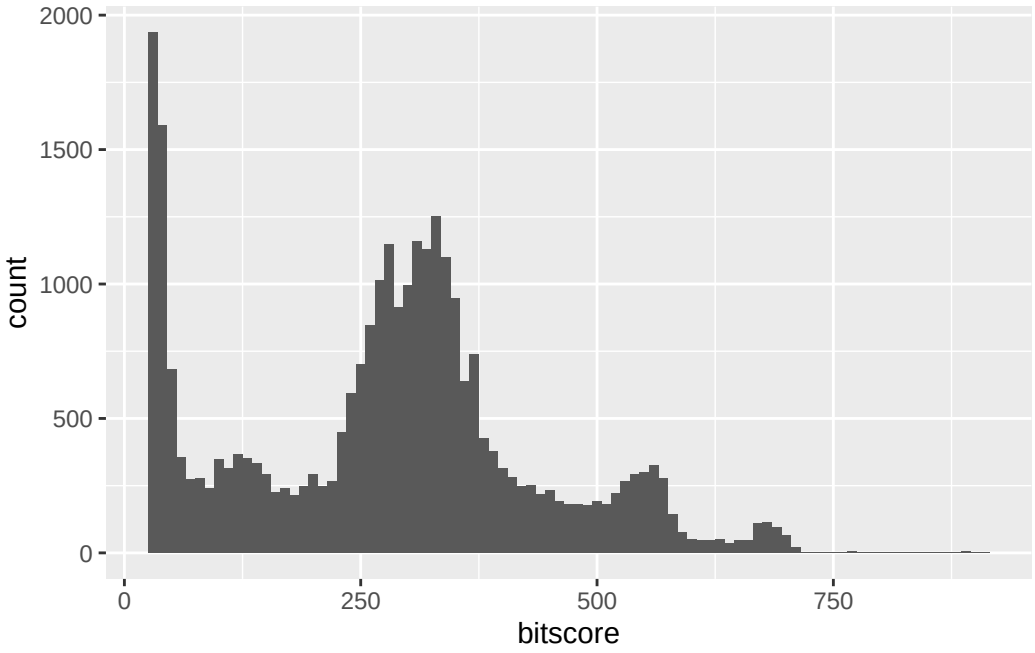
```
library(ggplot2)
library(bio3d)


df <- read.table(file = 'mm-second.x.zebrafish.tsv', sep = '\t', header = F)
colnames(df) <- c("qseqid", "sseqid", "pident", "length", "mismatch", "gapopen", "qstart",
head(df)
```

```
      qseqid         sseqid pident length mismatch gapopen qstart qend sstart
1 NP_598866.1 XP_009294521.1 46.154    273      130       6      4  267    420
2 NP_598866.1 NP_001313634.1 46.154    273      130       6      4  267    476
3 NP_598866.1 XP_009294513.1 46.154    273      130       6      4  267    475
4 NP_598866.1 NP_001186666.1 33.071    127       76       5      4  126    338
5 NP_598866.1 NP_001003517.1 30.400    125       82       4      4  126    344
6 NP_598866.1 NP_001003517.1 30.645     62       41       2     53  113     43
  send   evalue bitscore
1  684 1.70e-63    214.0
2  740 4.51e-63    214.0
3  739 4.69e-63    214.0
4  459 5.19e-12     67.8
5  465 2.67e-11     65.5
6  103 4.40e-01     33.9
```

Histogram

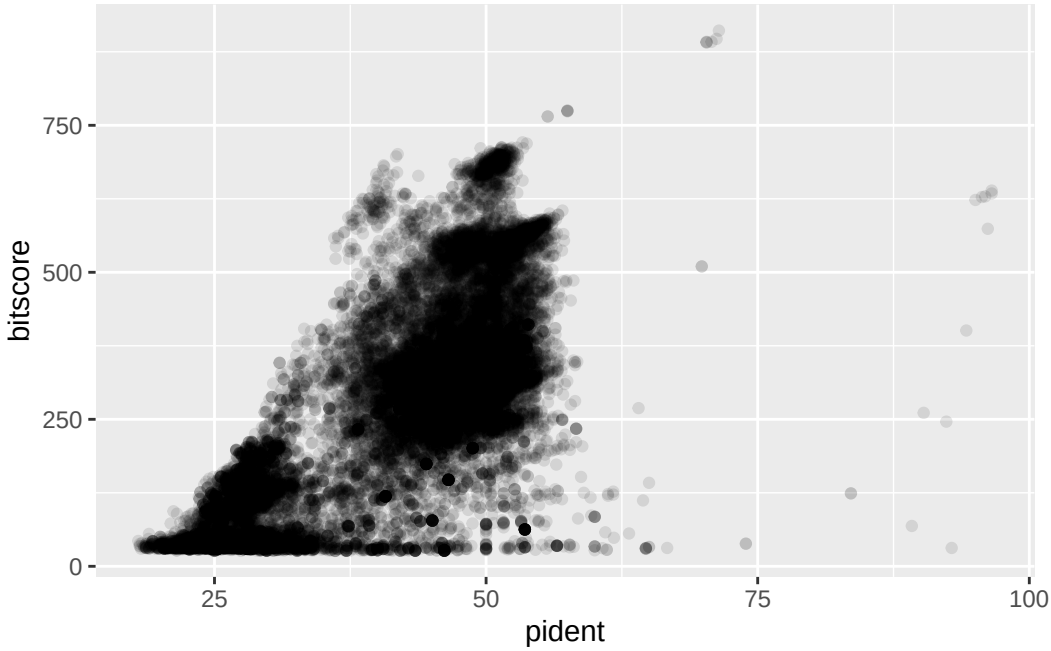
```
ggplot(df, aes(x=bitscore), breaks = 30) +
  geom_histogram(binwidth=10)
```



What do you notice here? Note that larger bitscores are better.

I notice that the distribution looks more or less bimodal, with peaks near 30 and then around 275. There is also a skewness with a few very high bitscores above 750.

```
ggplot(df, aes(pident, bitscore)) + geom_point(alpha=0.1)
```



Is there a straightforward relationship between percent identity $(pident) and bitscore$(bitscore) for the alignments we generated?

There appears to be a positively correlated relationship between pident and bitscore. We notice, in general, that larger pidents tend to be associated with larger bitscores.

```
ggplot(df, aes((df$pident * (df$qend - df$qstart)), bitscore)) + geom_point(alpha=0.1) + g
```

```
Warning: Use of `df$pident` is discouraged.
i Use `pident` instead.

Warning: Use of `df$qend` is discouraged.
i Use `qend` instead.

Warning: Use of `df$qstart` is discouraged.
i Use `qstart` instead.

Warning: Use of `df$pident` is discouraged.
i Use `pident` instead.

Warning: Use of `df$qend` is discouraged.
i Use `qend` instead.
```

```
Warning: Use of `df$qstart` is discouraged.
i Use `qstart` instead.
```

```
`geom_smooth()` using method = 'gam' and formula = 'y ~ s(x, bs = "cs")'
```