

How to Assemble a chromLocation Object

In order to use the various *geneplotter* functions you will need to assemble an object of class `chromLocation`. This is relatively straightforward if you have access to a Bioconductor data package. In this example we will consider using the *hu6800.db* data package to construct our object. This vignette was built with version 3.1.2 of the package.

```
> library("annotate")
> library("hu6800.db")
> lens <- unlist(eapply(hu6800CHR, length))
> table(lens)

lens
  1    2
7122  7

> wh2 = mget(names(lens)[lens==2], env = hu6800CHR)
> wh2[1]

$D49410_at
[1] "X" "Y"
```

So somehow 7 of the genes are mapped to two different chromosomes. Based on OMIM these genes are localized to the so called *pseudoautosomal region* where the X and Y chromosomes are similar and there is actual recombination going on between them. So, we will take the expedient measure of assigning each of them to just one chromosome.

```
> chrs2 <- unlist(eapply(hu6800CHR, function(x) x[1]))
> chrs2 <- factor(chrs2)
> length(chrs2)

[1] 7129

> table(unlist(chrs2))

  1  10  11  12  13  14  15  16  17  18  19   2  20  21  22   3   4   5   6   7
609 222 360 376  97 202 163 241 382  91 356 404 137  86 148 331 243 263 353 268
  8   9   X   Y
218 233 276  14
```

Now we are ready to obtain the chromosome location data and orientation. The chromosome location data tells us the (approximate) location of the gene on the chromosome. The positions for both the sense and antisense strand are number of base pairs measured from the p (5' end of the sense strand) to q (3' end of the sense strand) arms. Chromosomes are double stranded and the gene is encoded on only one of those two strands. The strands are labeled plus and minus (sense and antisense). We use both the location and the orientation when making plots.

```
> strand <- as.list(hu6800CHRLoc)
> splits <- split(strand, chrs2)
> length(splits)
```

```
[1] 24
```

```
> names(splits)
```

```
[1] "1" "10" "11" "12" "13" "14" "15" "16" "17" "18" "19" "2" "20" "21" "22"
[16] "3" "4" "5" "6" "7" "8" "9" "X" "Y"
```

```
>
```

Now we have processed the data and are ready to construct a new `chromLocation` object.

```
> newChrClass <- buildChromLocation("hu6800")
>
```

And finally we can test it by calling `cPlot`.

```
> library(geneplotter)
> cPlot(newChrClass)
>
```

A phylogenetic tree of *Homo sapiens* is shown, with a blue bar chart indicating values for each tip. The tree is rooted on the left and branches out to the right. The bar chart shows a general trend of increasing values from the root towards the tips, with some variation in the later branches. The values are represented by the height of the blue bars.