Venn Diagrams of genes up in E(z), down with age

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Look for overlap of Genes among different contrasts:

Upload the Data

```
Ez_dat <- read.csv("~/Desktop/brain/calledDE/EzCalledDE.csv",
                   stringsAsFactors = F)
age_dat <- read.csv("~/Desktop/brain/calledDE/AgeCalledDE.csv",
                    stringsAsFactors = F)
setwd("~/Desktop/brain/_7A_S5C_S5D_gene_venn")
```

Select significant genes

```
Ez_called_up <- Ez_dat[Ez_dat$log2FoldChange > 0.5,]
dim(Ez_called_up)
```

```
## [1] 343  12
```

```
Ez_called_dn <- Ez_dat[Ez_dat$log2FoldChange < -0.5,]
dim(Ez_called_dn)
```

```
## [1] 290  12
```

```
age_called_up <- age_dat[age_dat$log2FoldChange > 0.5,]
dim(age_called_up)
```

```
## [1] 959  12
```

```
age_called_dn <- age_dat[age_dat$log2FoldChange < -0.5,]
dim(age_called_dn)
```

```
## [1] 672  12
```

Print out size of the intersection:

```
up_in_Ez_dn_with_age <- intersect(Ez_called_up$X, age_called_dn$X)
up_in_Ez_dn_with_age
```

```
##  [1] "FBgn0001224" "FBgn0001225" "FBgn0001226" "FBgn0004512" "FBgn0022774"
##  [6] "FBgn0033268" "FBgn0035397" "FBgn0035797" "FBgn0035998" "FBgn0038337"
## [11] "FBgn0084049" "FBgn0085638" "FBgn0260995" "FBgn0261705" "FBgn0263780"
## [16] "FBgn0264438" "FBgn0264835" "FBgn0265814" "FBgn0267027" "FBgn0284435"
```

```
length(up_in_Ez_dn_with_age)
```

```
## [1] 20
```

```
up_in_Ez_up_with_age <- intersect(Ez_called_up$X, age_called_up$X)
length(up_in_Ez_up_with_age)
```

```
## [1] 107
```

```
dn_in_Ez_up_with_age <- intersect(Ez_called_dn$X, age_called_up$X)
length(dn_in_Ez_up_with_age)
```

```
## [1] 105
```

```
dn_in_Ez_dn_with_age <- intersect(Ez_called_dn$X, age_called_dn$X)
length(dn_in_Ez_dn_with_age)
```

```
## [1] 23
```

```
# save intersection genes:
write.csv(up_in_Ez_dn_with_age, "up_in_Ez_dn_with_age.csv", quote=F)
```

Prepare a Venn Diagram

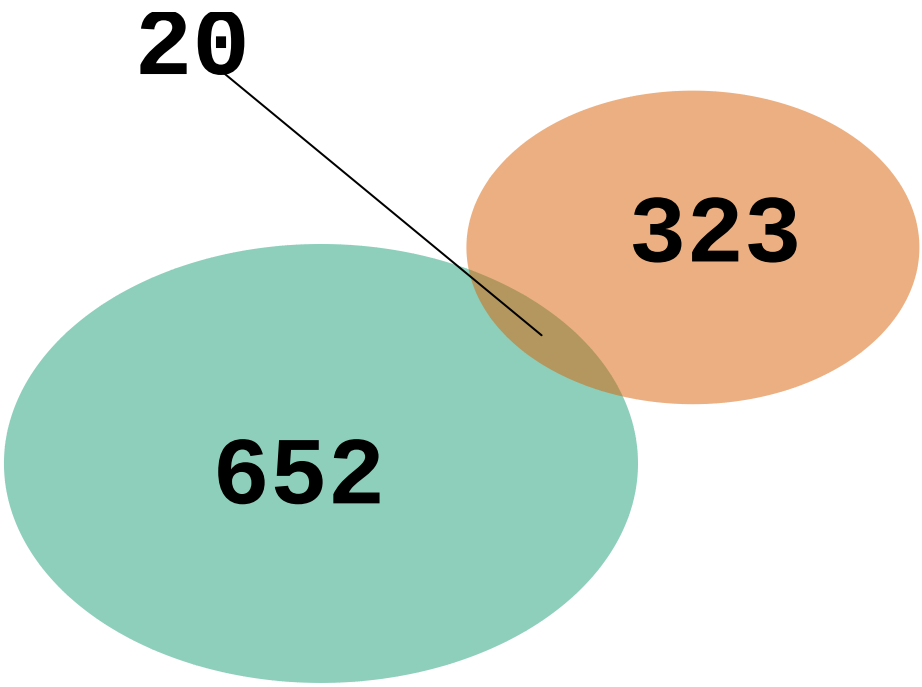
```
library(VennDiagram)
library(RColorBrewer)
my_pal <- brewer.pal(4, "Dark2")
cairo_pdf("Fig7a_gene_venn.pdf")
draw.pairwise.venn(dim(age_called_dn)[1], dim(Ez_called_up)[1],
                   length(up_in_Ez_dn_with_age),
                 alpha = 0.50, rotation.degree = 40,
                 cat.cex=2, cat.pos=c(345, 148), # 45 -> 25
                 col = "transparent", fill = my_pal[1:2],
                 cex = 3, fontfamily = "mono", margin=0.1,
                 fontface = "bold", cat.fontfamily = "sans"
                 )
```

```
## (polygon[GRID.polygon.1], polygon[GRID.polygon.2], polygon[GRID.polygon.3], polygon[GRID.polygon.4],
```

```
dev.off()
```

```
## pdf
##   2
```

```
draw.pairwise.venn(dim(age_called_dn)[1], dim(Ez_called_up)[1],
                   length(up_in_Ez_dn_with_age),
                 alpha = 0.50, rotation.degree = 40,
                 cat.cex=2, cat.pos=c(345, 148), # 45 -> 25
                 col = "transparent", fill = my_pal[1:2],
                 cex = 3, fontfamily = "mono", margin=0.1,
                 fontface = "bold", cat.fontfamily = "sans"
                 )
```




```
## (polygon[GRID.polygon.11], polygon[GRID.polygon.12], polygon[GRID.polygon.13], polygon[GRID.polygon.
```

```
## Draw complete venn diagrams
jpeg("complete_venn_S6D.jpg", width=960, height=960)
draw.quad.venn(dim(age_called_dn)[1], dim(Ez_called_up)[1],
               dim(age_called_up)[1], dim(Ez_called_dn)[1],
               n12=length(up_in_Ez_dn_with_age),
               n34=length(dn_in_Ez_up_with_age),
               n23=length(up_in_Ez_up_with_age),
               n14=length(dn_in_Ez_dn_with_age),
               n13=0,
               n24=0,
               n123=0,
               n124=0,
               n234=0,
               n134=0,
               n1234=0,
               #fill=c("cornflowerblue", "green", "yellow", "pink"),
               fill=my_pal, #brewer.pal(4, "Dark2"),
               cex = 3, fontfamily = "mono",
                 fontface = "bold", cat.fontfamily = "sans",
               rotation.degree = 90, alpha= 0.5
               )
```

```
## (polygon[GRID.polygon.21], polygon[GRID.polygon.22], polygon[GRID.polygon.23], polygon[GRID.polygon.
```

```
dev.off()
```

```
## pdf
##   2
```

```
## Draw venn diagrams for genes downregulated in E(z) and upregulated with age
jpeg("gene_venn_S6C.jpg", width=540, height=540)
draw.pairwise.venn(dim(age_called_up)[1], dim(Ez_called_dn)[1],
```

```
                  length(dn_in_Ez_up_with_age),
                alpha = 0.50, rotation.degree = 40,
                cat.cex=2, cat.pos=c(345, 148), # 45 -> 25
                col = "transparent", fill = my_pal[3:4],
                cex = 3, fontfamily = "mono",
                fontface = "bold", cat.fontfamily = "sans")
```

```
## (polygon[GRID.polygon.48], polygon[GRID.polygon.49], polygon[GRID.polygon.50], polygon[GRID.polygon.5
```

```
dev.off()
```

```
## pdf
##   2
```