**Randomization Website**: <https://rdrr.io/snippets/>

**Randomization Code**: For 2 groups of 10 concentrations

result <- matrix("", 2, 10)

okay <- F

while( ! okay ){

result[1,] <- sample(c("A","B","C","D", "E", "F", "G", "H", "I", "J"), 10, replace=F)

result[2,] <- sample(c("1","2","3","4", "5", "6", "7", "8", "9", "10"), 10, replace=F)

if((all(table(result[,1]) == 1)) &

(all(table(result[,2]) == 1 )) &

(all(table(result[,3]) == 1 )) &

(all(table(result[,4])==1)) &

(all(table(result[,5])==1)) &

(all(table(result[,6])==1)) &

(all(table(result[,7])==1)) &

(all(table(result[,8])==1)) &

(all(table(result[,9])==1)) & (all(table(result[,10])==1)))

okay<-T}

result

**Output Example**:

[,1] [,2] [,3] [,4] [,5] [,6] [,7] [,8] [,9] [,10]

[1,] "G" "I" "C" "E" "F" "D" "A" "H" "B" "J"

[2,] "10" "4" "7" "1" "8" "3" "9" "2" "5" "6"