



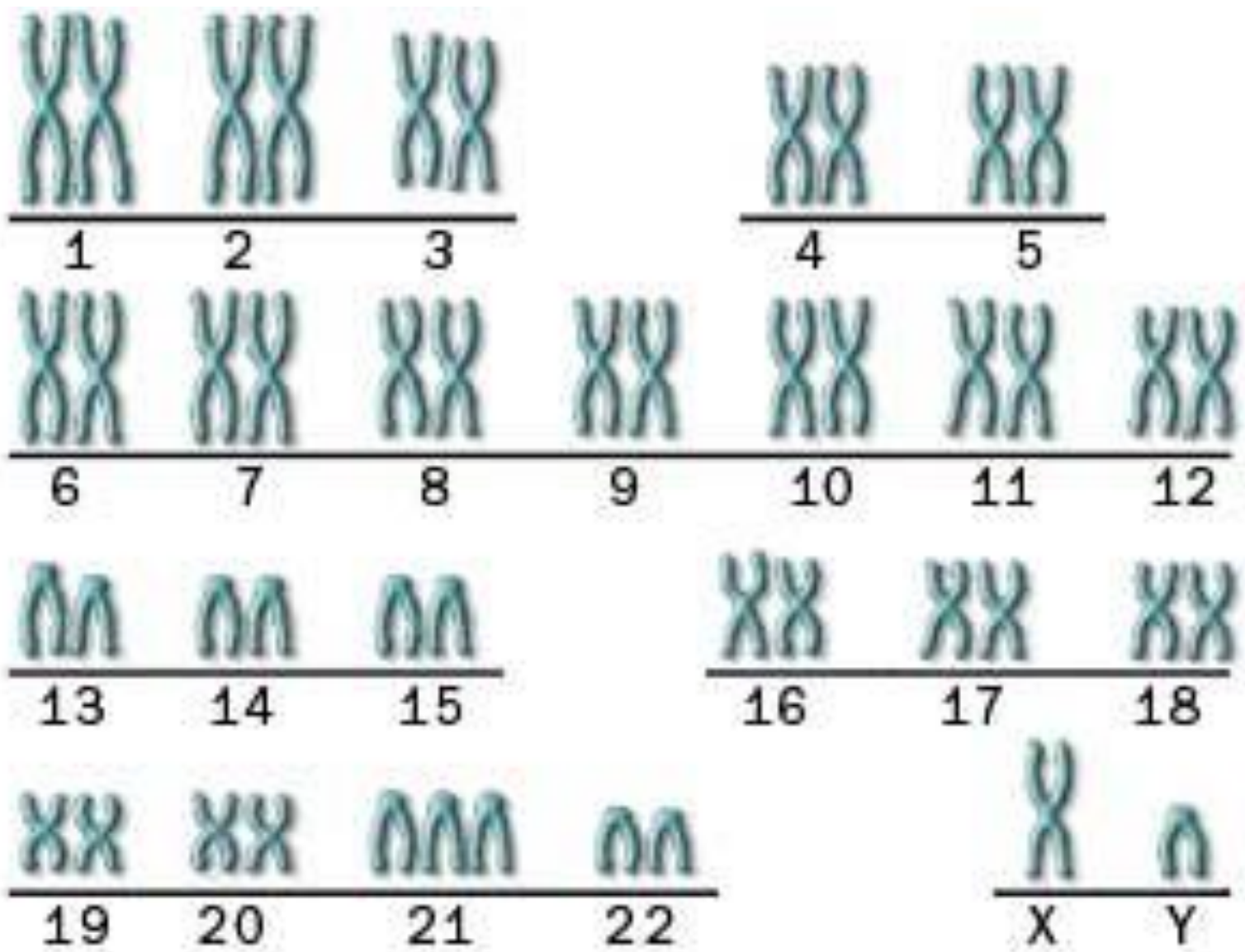
Down syndrome (DS)

- Trisomy 21
- Not inherited
- Cell division error
- No known environmental risks
- Advanced maternal age
 - By age 35, risk 1 in 350.
 - By age 40, risk is 1 in 100.
 - By age 45, risk is 1 in 30.

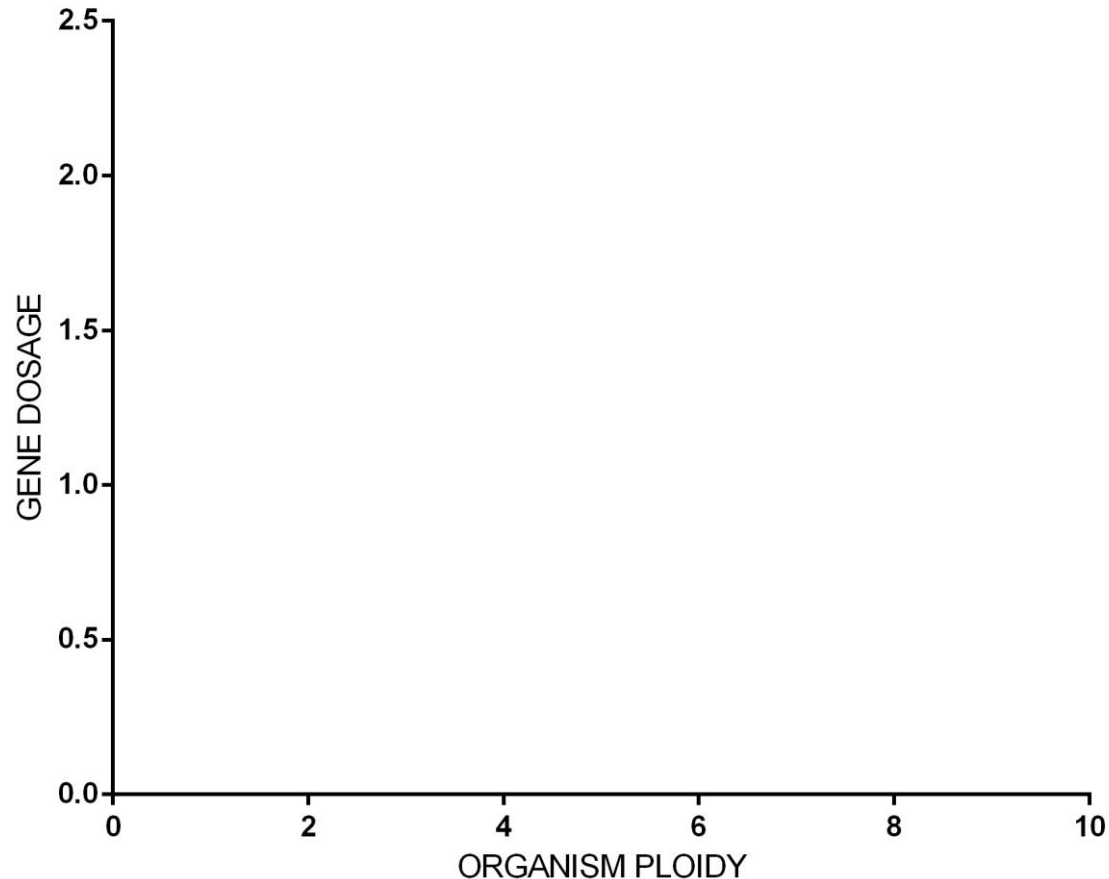


Down syndrome (AS)

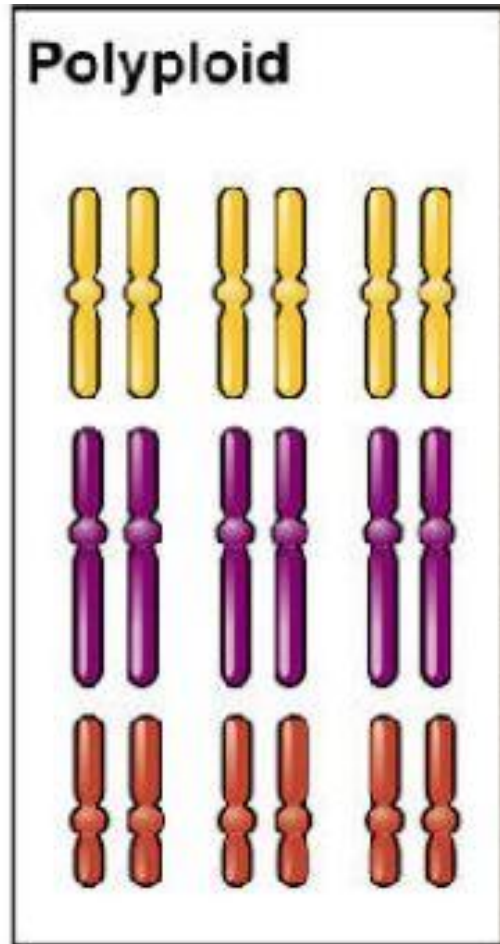
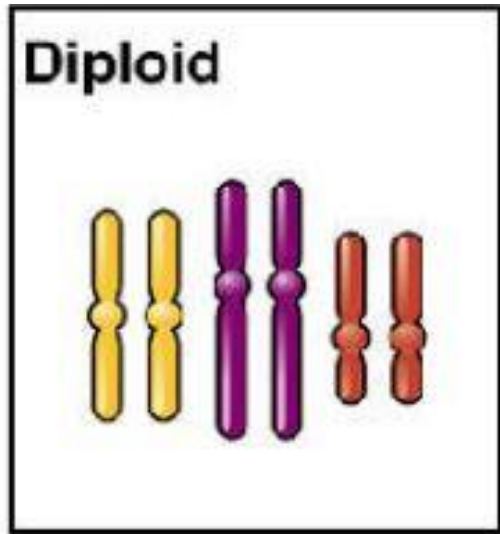
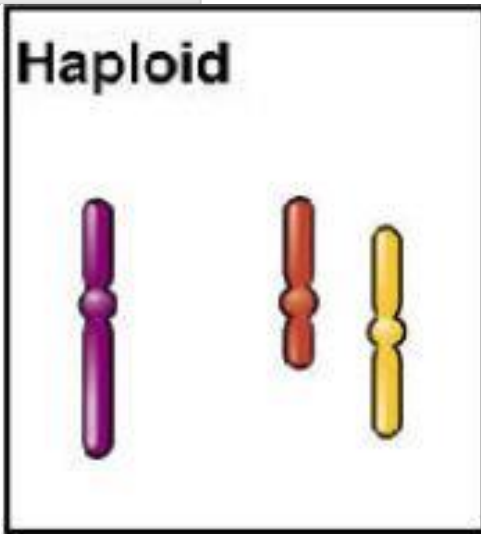
- **Trisomy 21.** About 95 percent of the time, Down syndrome is caused by trisomy 21.
- **Mosaic Down syndrome.** In this rare form of Down syndrome, children have some cells with an extra copy of chromosome 21.
- **Translocation Down syndrome.** Down syndrome can also occur when part of chromosome 21 becomes attached (translocated) onto another chromosome.



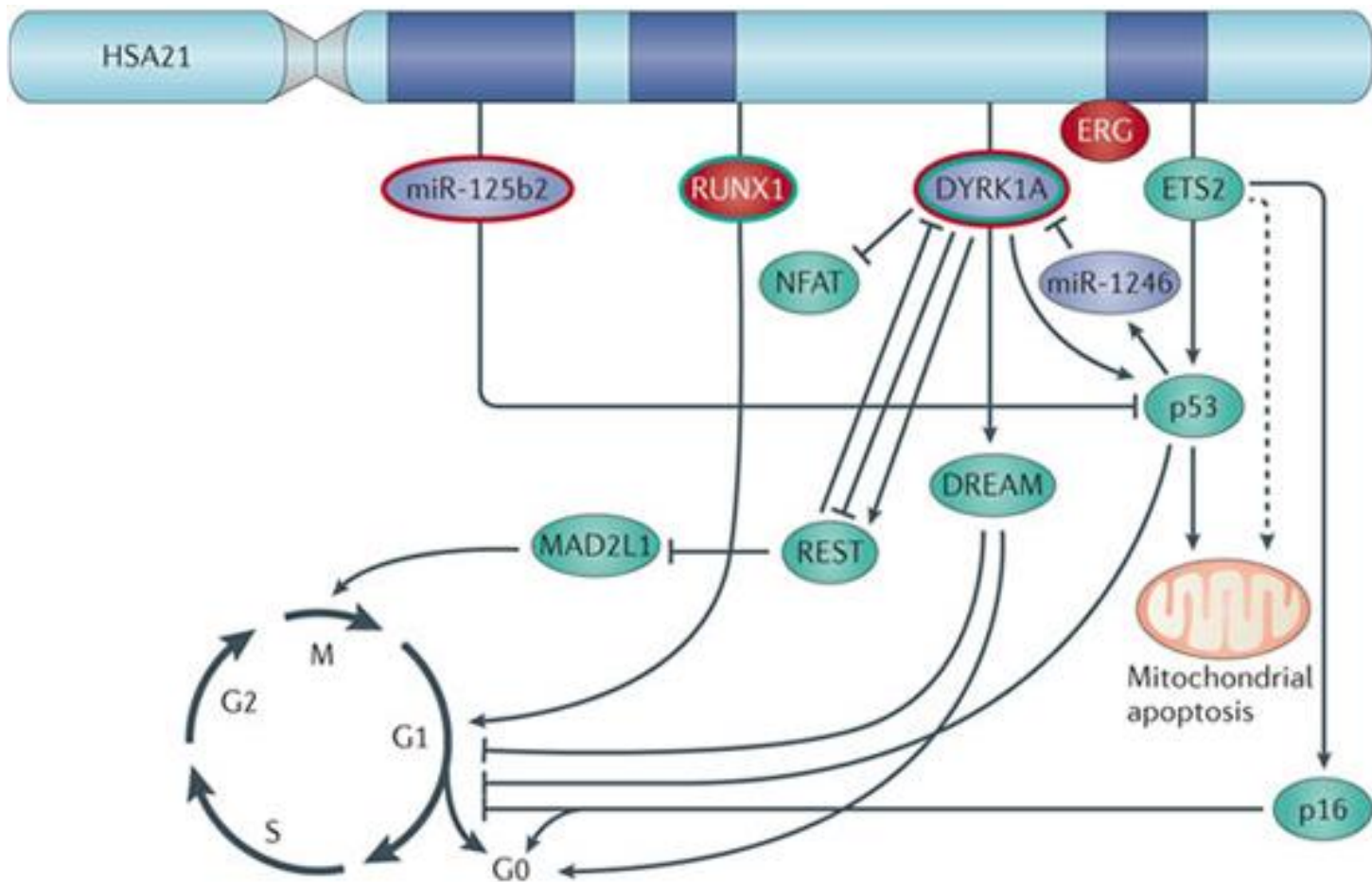
GENE DOSAGE DUE TO SINGLE EXTRA CHROMOSOME



Team Workshop 1: From what you know about simple gene dosage, plot the relationship between the number of chromosomes (ploidy) versus the gene dosage that would occur due to the addition of a single extra chromosome

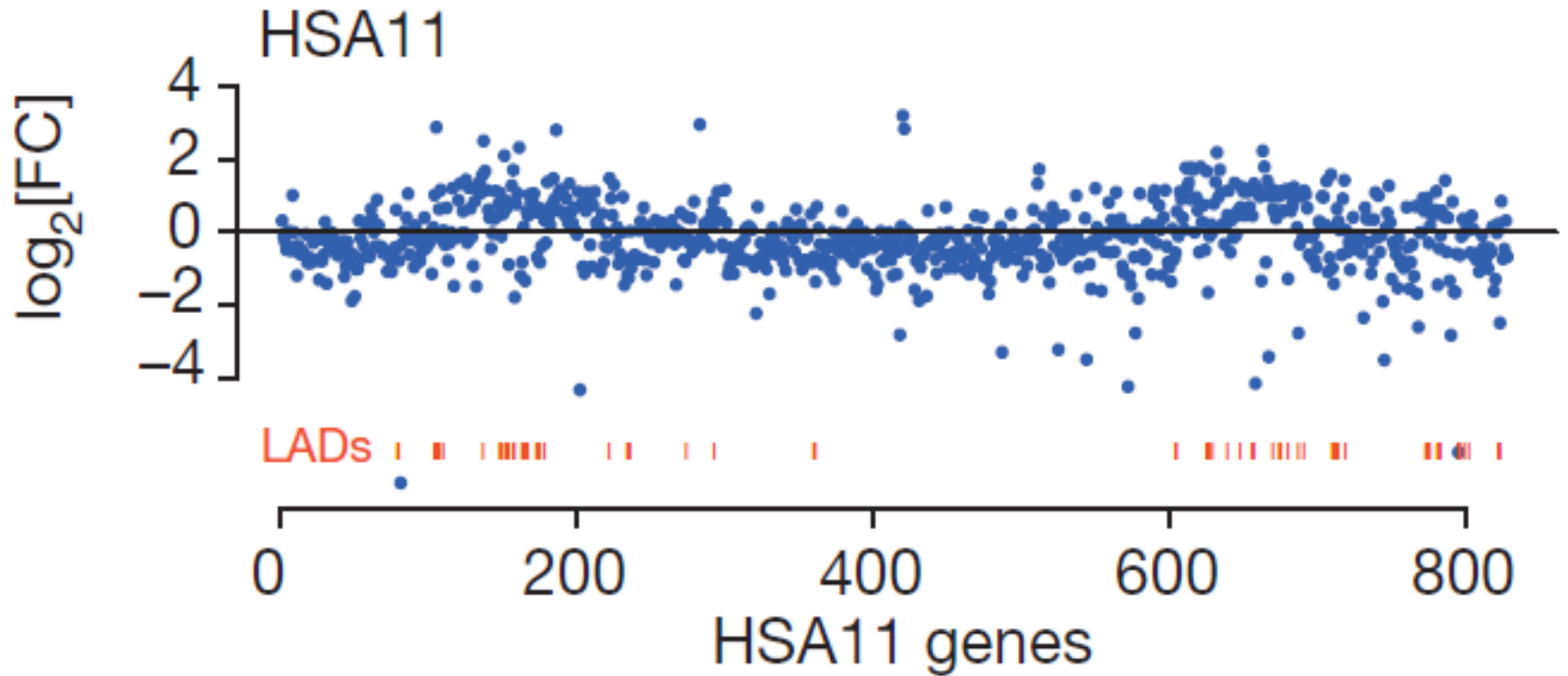


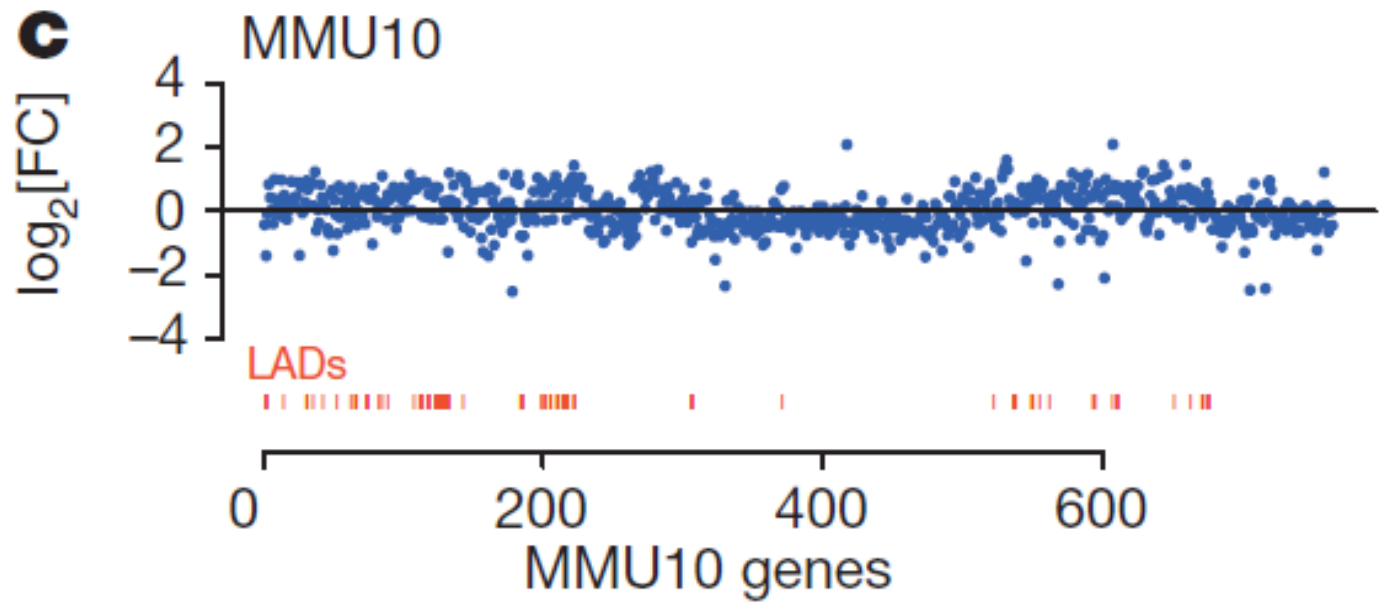
Team Workshop 2: List the potential advantages and disadvantages that an organism with high ploidy might have. Be sure to think about gene dosage as well as gene essentiality.



Team Workshop 3: Determine and list the genes located on human chromosome 21 then list the genes most likely associated with early Alzheimer's disease in Downs patients and explain your reasoning.

Gene Expression Dysregulation Domains (GEDDs)

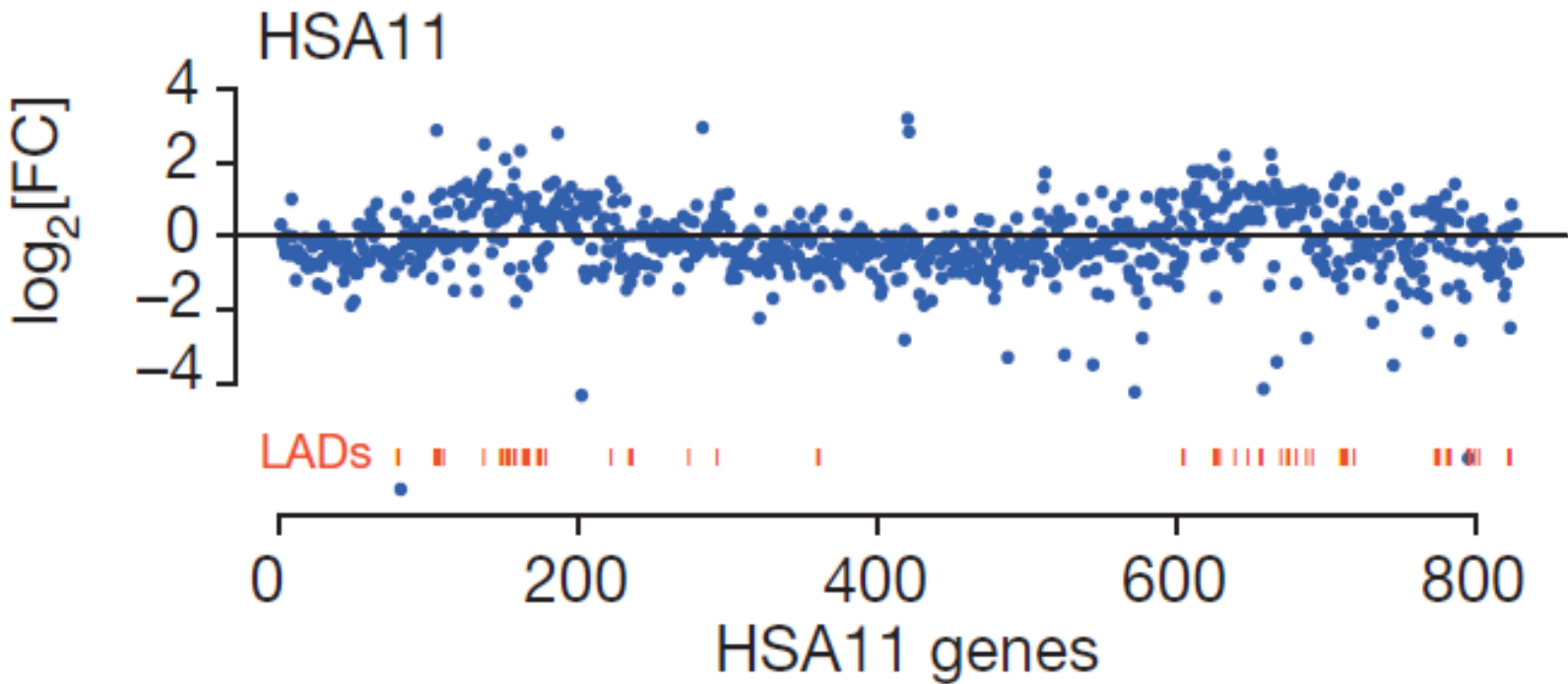




This figure shows

- A. Differential expression changes between human chromosome 21 and mouse chromosome 10
- B. Differential expression changes between mouse chromosome 10 and mouse chromosome 10 of the Ts65Dn mouse
- C. LADs of mouse chromosome 10
- D. B and C

Gene Expression Dysregulation Domains (GEDDs)



Team Workshop 4: Discuss other possible ways how dysregulation can occur.



Remember

- Before 12 PM of the next class day:
 - go to b.socrative.com/student/login and complete the quiz