

Modified monohybrid ratios

Genetics 371B Lecture 3

29 Sept. 1999

◆ Snapdragon flower color

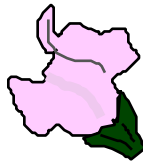


Red flowers

x



White flowers



Pink flowers

Blending of determinants??

How to test?

Prediction?

... a case of **incomplete dominance**

Incompletely dominant or **recessive?**

. . . in the eye of the beholder?

e.g., Tay Sachs disease

Symptoms:

- ◆ extreme sensitivity to noise
- ◆ muscle weakness
- ◆ cherry-red spot on retina

Affected individuals rarely survive past childhood

Defect –

Overt phenotype . . .

At the biochemical level . . .

Co-dominance

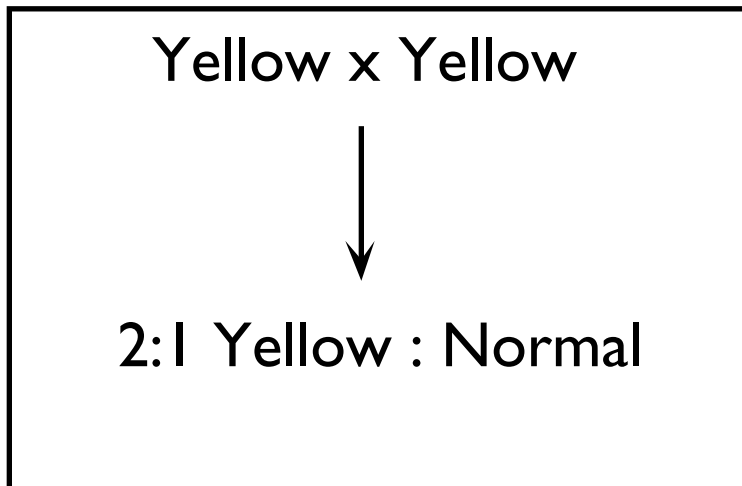
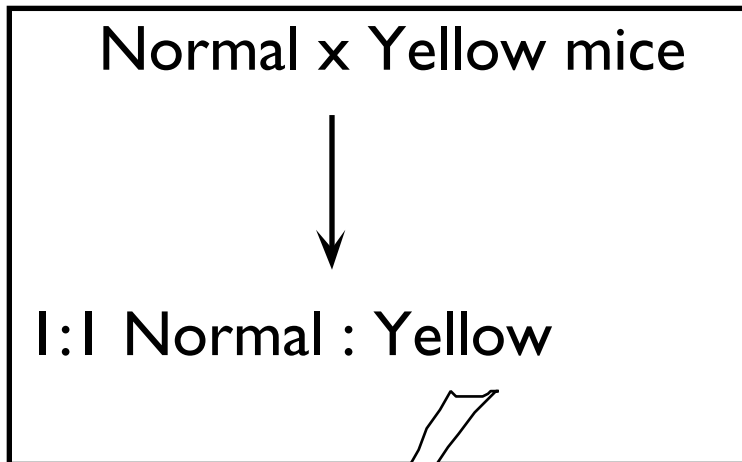
e.g., ABO blood group

Three possible alleles: A, B, or O

Looking at 3 different “crosses”:

AA x BB	AA x OO	BB x OO	↩ Parental genotype
↓	↓	↓	
AB	A	B	↩ Progeny phenotype
			↩ Progeny genotype?

The curious case of the yellow mice



Interpreting:

- ◇ Which allele is dominant?
- ◇ Parental genotypes?

What's missing in F2?

The physical basis of Mendelian genetics

- ◆ 1902: Boveri and Sutton, “Chromosome theory of inheritance”
- ◆ Chromosomes
- ◆ Diploid vs. haploid chromosome number

What’s in a chromosome?

- ◇ Protein

◇ DNA (deoxyribonucleic acid)

Subunit: Ribose + Phosphate + base

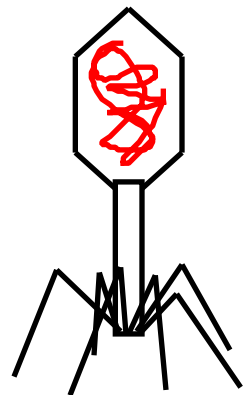
Base: Adenine, Cytosine, Guanine, Thymine

DNA as the molecule of inheritance

The Hershey-Chase experiment

◆ **Question:** What is passed on from one generation to the next, **protein** or **DNA**?

◆ **Model organism:** Bacteriophage T2



◆ **The experiment**

Bacteriophage with
radioactive **DNA**

Bacteriophage with
radioactive **protein**



Infect bacteria (E. coli)



Do progeny virus
have radioactive
DNA?

Do progeny virus
have radioactive
protein?

◆ **Conclusion:**