









- 1  **Chapter 4**
Sex Determination & Sex-linked Characteristics
- 2  **4.1 Sex determination**
 - ▶ Sex
 - ▶ Sex determination
 - ▶ Monoecious
 - ▶ Hermaphroditism
 - ▶ Dioecious
 - ▶ Sex chromosomes
 - ▶ Autosomes
- 3  **Sex determination systems**
 - ▶ Heterogametic
 - ▶ Homogametic
 - ▶ XX-XO
 - ▶ XX-XY
 - ▶ ZW-ZZ
 - ▶ Haplodiploidy
 - ▶ Genic
 - ▶ Environmental
 - ▶ Sequential hermaphroditism
 - ▶
- 4  **Humans**
 - ▶ Nondisjunction
 - ▶ Turner syndrome XO
 - ▶ Klinefelter syndrome XXY
 - ▶ Poly-x XXX or more
 - ▶
- 5 
 - ▶ XX males?
 - ▶ Sex determining region Y (SRY)
 - ▶
 - ▶
 - ▶ XY females?
 - ▶ Androgen-insensitivity syndrome
 - ▶
 - ▶
 - ▶
- 6  **Sex linked characteristics**
 - ▶ Thomas Hunt Morgan
 - ▶ Drosophila eye color x-linked
- 7  **Model Organism**
 - ▶ Short generation time
 - ▶ Mate in 8 hours
 - ▶ Eggs in 2 days
 - ▶ 400-500 eggs
 - ▶ Easy to culture
 - ▶ Easy to determine gender & virgin females
- 8 
 - ▶ Hemizygous
 - ▶ Males at X-linked loci
 - ▶

- ▶ First Cross
 - ▶ $X^R X^R \times X^r Y$
- ▶ Reciprocal cross
 - ▶ Male & female parents reversed
 - ▶ $X^r X^r \times X^R Y$
 - ▶
- ▶ Quiz: work out reciprocal cross on back of today's participation slip (5pts)
- 9
- ▶ Human color blind trait
- 10 **Dosage compensation**
 - ▶ Drosophila
 - ▶ Double X in males
 - ▶ C. elegans
 - ▶ 1/2 both X's
 - ▶ Mammals
 - ▶ Lyon hypothesis
 - ▶ Barr body
 - ▶ random mosaics
 - Tortoiseshell cats
- 11
- ▶ Suggested problems from book
 - ▶ Page 94-97
 - ▶ 3, 4, 6, 9, 22-25, 33, 38
 - ▶