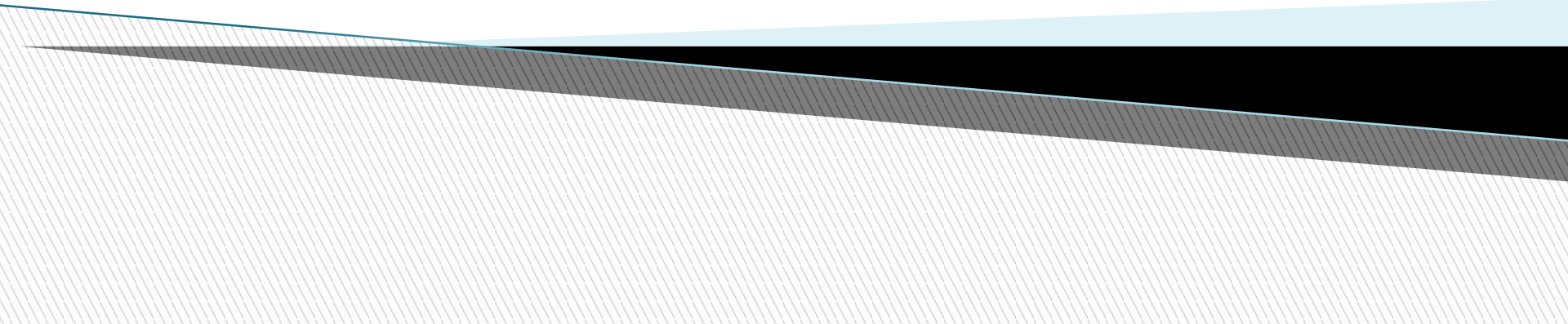
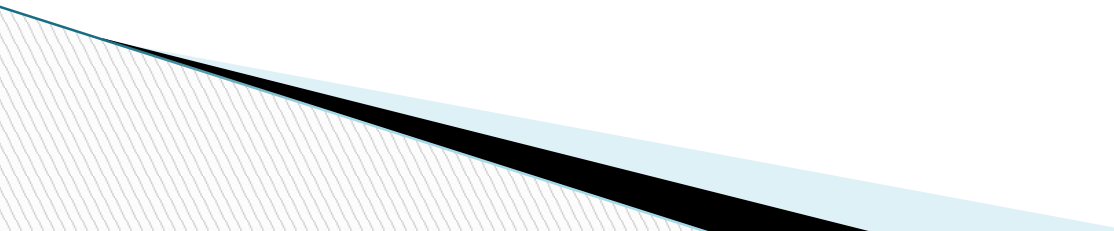


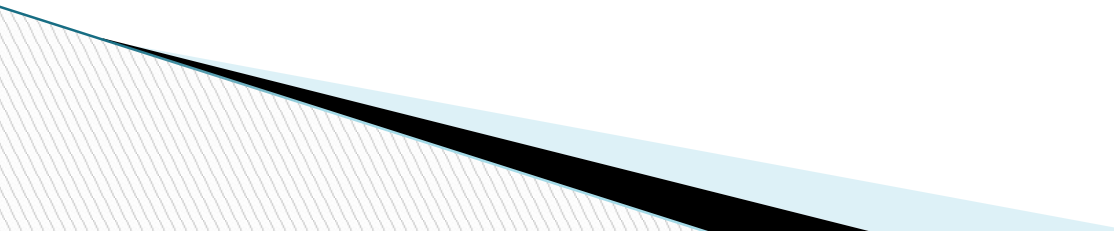
Asexual Versus Sexual Reproduction



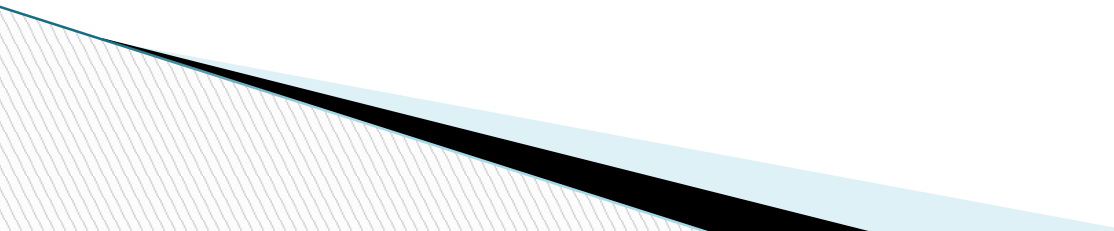
Somatic Cells

- ▶ “body cells”
 - ▶ DNA in body cells is not passed to offspring
 - ▶ Body cells contain pairs of chromosomes
 - ▶ Human body cells have 23 pairs, or 46 individual chromosomes
 - ▶ The Cell Cycle from Chapter 5 applies to Body Cells
- 

Gametes

- ▶ Gametes are sex cells
 - ▶ In the female, gametes are ova (eggs)
 - ▶ In the male, gametes are sperm cells
 - ▶ Gametes do not have pairs of chromosomes
 - ▶ The human gamete has 23 individual chromosomes
 - ▶ The DNA in gametes is passed to offspring
- 

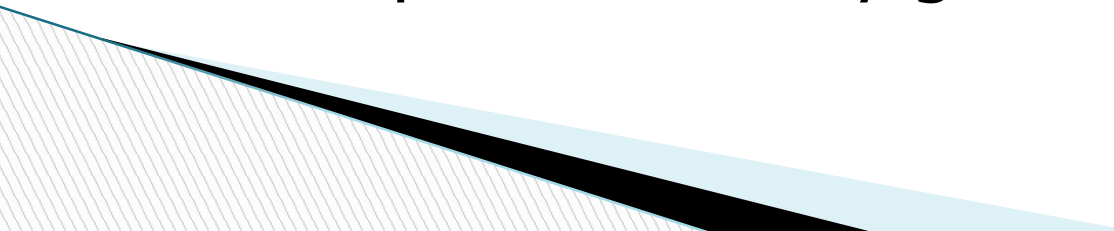
Asexual Reproduction

- ▶ The creation of an offspring from a single parent
 - ▶ Does not involve the fusion of gametes
 - ▶ Offspring are usually genetically identical to each other and to the single parent
- 

Asexual Reproduction

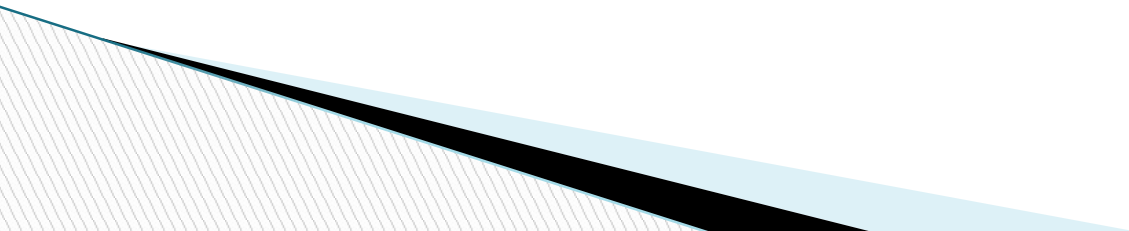
- ▶ See Asexual Reproduction video on Blendspace

Sexual Reproduction

- ▶ Involves the joining of gametes (eggs and sperm cells) – one from each of two parents
 - ▶ Offspring produced are a genetic mixture of both parents
 - ▶ Internal fertilization of eggs by sperm increases chance of gametes meeting – fewer gametes may be produced
 - ▶ If eggs and sperm are released outside the body, gametes may not meet. Organisms must produce many gametes.
- 

Sexual Reproduction

- ▶ See Sexual Reproduction Video on Blendspace



Sexual versus Asexual

▶ RELATIVE COMPLEXITY OF ORGANISMS

- Sexual
 - Complex, larger organisms tend to reproduce sexually
- Asexual
 - Simple, smaller organisms tend to reproduce asexually

Sexual versus Asexual

▶ NUMBER OF PARENTS CONTRIBUTING GENETIC INFORMATION TO OFFSPRING

- Sexual
 - Two parents contribute genetic information
 - Offspring have a combination of genetic information from their parents
 - Offspring are unique from their parents and other offspring
- Asexual
 - One parent contributes genetic information
 - Offspring are exact copies (clones) of the parents

Sexual versus Asexual

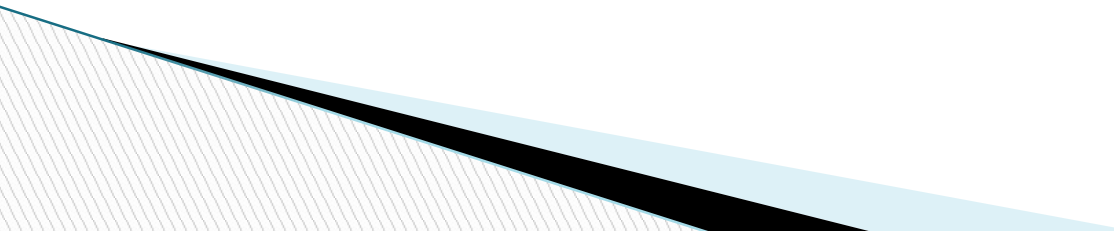
▶ REPRODUCTIVE MECHANISM

- Sexual
 - Involves the fusion of gametes from two parents
- Asexual
 - Does not involve gametes
 - Reproduction is by splitting in half, or forming new individuals that are released from the “parent”

Sexual versus Asexual

▶ RELATIVE AMOUNT OF PARENTAL CARE

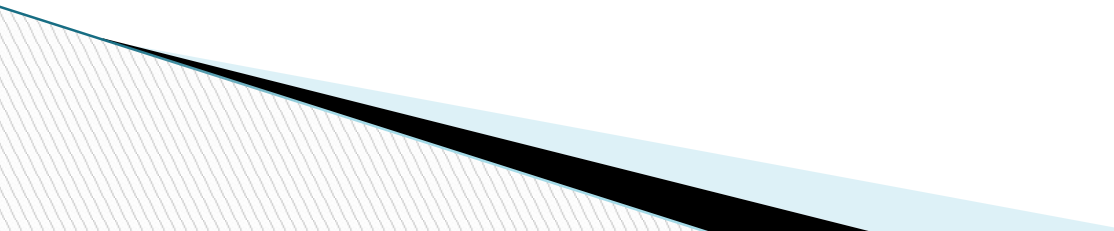
◦ Sexual

- Organisms tend to have longer gestation periods and developing offspring are protected
 - Organisms tend to care for their young, increasing chance of survival
 - Organisms that invest time and energy in caring for their young tend to have fewer offspring
 - Some sexually reproducing organisms do not gestate or care for their young – in these cases, large numbers of gametes or offspring are produced, which helps to offset the death rate of offspring
- 

Sexual versus Asexual

▶ RELATIVE AMOUNT OF PARENTAL CARE, cont.

◦ Asexual

- Organisms tend to have little or no parental care
 - Organisms that do not care for their young tend to produce large numbers of offspring
 - Organisms may have large numbers of offspring when few offspring survive
 - Organisms that split to produce an “adult” offspring often reproduce rapidly
- 

Sexual versus Asexual

▶ GENETIC VARIATION OF OFFSPRING

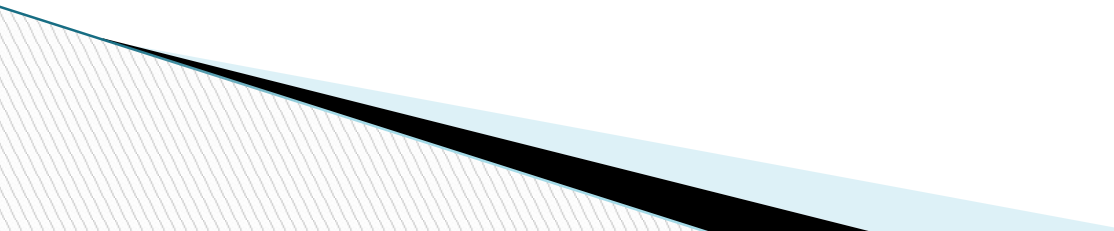
- Sexual

- Genetic variation results from sexual reproduction – genetic information from two parents combine
- Genetic variation helps a species (as a whole) survive. Organisms with slightly different traits due to genetic variation may have survival advantage.

- Asexual

- There is no genetic variation in offspring.

Autosomes vs. Sex Chromosomes

- ▶ In a human body cell, there are 23 pairs of chromosomes
 - ▶ 22 of these pairs are **AUTOSOMES**
 - **Autosomes** are chromosomes that contain genes that aren't directly related to the sex of an organism
 - The 23rd pair are chromosomes known as **SEX CHROMOSOMES**. These genes directly control the development of sexual characteristics.
- 

Sex Chromosomes

- ▶ There are two different sex chromosomes
 - ▶ X
 - ▶ Y
- ▶ An organism with two X chromosomes (XX) is **FEMALE**
- ▶ An organism with one X and one Y chromosomes (XY) is **MALE**

Haploid vs. Diploid

Haploid Cells, such as gametes, have only one set of chromosomes

- In the human, this means there are 23 individual chromosomes.
- 22 are autosomes, 1 is a sex chromosome

Diploid Cells, such as somatic cells (body cells) have two sets (pairs).

