

**Use this sheet to record your work and findings from Case #2.**

**Playground**

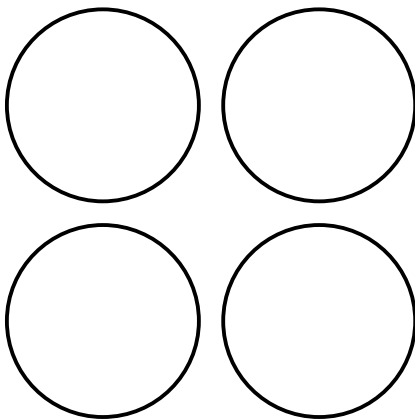
Bird, Bees, and Drakelings?

In order to breed drakes, you need to know where babies come from. Every baby drake starts when a sperm cell from its father fertilizes an egg cell from its mother. Each sperm or egg has one allele for every drake gene. These two cells, also called gametes, combine to give the baby a full set of chromosomes.

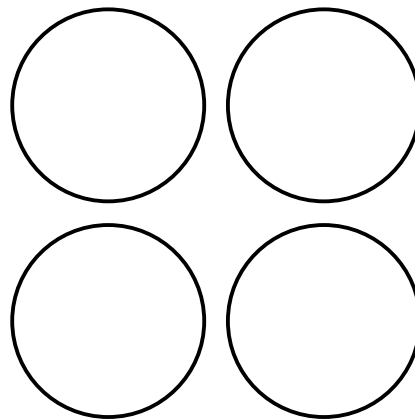
Making gametes with meiosis.

The Lab has a special tool you can use to watch meiosis in action. Drag a drake into the parent drake spot (yellow circle) to see its chromosomes. Place your mouse over each chromosome to see the alleles. Click the play button. One cell from a parent forms four egg cells or four sperm cells. To get a different mix of alleles in the gametes, click the <retry> button. When you are ready for a challenge, click <Bring it on!>.

1. In the parent pool, find a drake that has all four legs and wings.
  - a. Drag it to the parent drake yellow circle.
  - b. Run meiosis.
  - c. In the first set of gametes below, list the alleles for each gene that each gamete has. You do not have to draw the chromosomes.
  - d. Select <retry> and run meiosis again.
  - e. List the alleles for each gene in each gamete in the second set of pictures.



First meiosis run



Second meiosis run

## Case 2: Student Organizer

2. Do the gametes from the first meiosis run have the same combination of alleles as the gametes from your retry of meiosis on the same drake? Explain why or why not.

3. Check to see if the same thing happens with the other three drakes. Use this space to record your results.

4. Circle one of the three underlined words to best complete this sentence.

When meiosis happens in the same drake multiple times, the gametes always/  
never/ sometimes have the same combination of alleles.

### Challenge 1: Making Babies

When gametes meet...

Drake breeders must learn how to pick the right sperm and egg to produce a target drakeling. You have been given one female and one male parent drake. Can you make the target drakes?

Make the target drakes

- Drag the mother and father drakes to the parent spots (yellow circles).
- Click play to run meiosis and make gametes for both parents.
- Mouse over the chromosomes to see the alleles.
- Choose an egg and sperm cell that will produce one of the target drakes.
- Drag the offspring to a target drake to see if it is a perfect match.
- Select another egg and sperm to match the other target drake. Drag to see if it matches.

1. Use this space to describe how well you did, what worked and what didn't work.

