



From Wolf to Dog

All dogs descended from the gray wolf. But dogs are so different from wolves that it seems difficult to imagine how one species led to another. How an organism evolves has to do with the selective pressures it is exposed to in its environment. In this activity, see what happens to two different populations of wolves as different selective pressures are applied.

Procedure

- 1 Cut apart the 24 cards from your “Wolf Deck” student handouts.
- 2 Appoint one member of your group to be the scorekeeper. The scorekeeper will record the total value of each student’s hand of six cards before the game begins and after each round. The scorekeeper should also calculate the deck average by summing all 24 cards before the game begins, and after the 5th, 10th, and 20th round.
- 3 Have the scorekeeper calculate the initial value of the deck and record below. This represents the initial temperament of your wolf population.
- 4 Deal six cards. Each hand represents the collection of genes that contribute to the temperament for one wolf. A hand with low value represents an aggressive wolf while a hand with higher value represents a tamer animal.
- 5 Calculate the total of each hand. Follow the instructions in the box below for your group.
- 6 Shuffle all 24 cards together. This represents the mating of the wolves. As in nature, some of the offspring from this mating have random genetic mutations of their temperament genes. To simulate this, draw two random cards, keeping track of where they came from in the deck. Throw a die for each card you have removed and then change the value on the card (write the new number directly on the card) according to the following table:

Die Result	Card Change
1	+1
2	-1
3	+2
4	-2
5	+3
6	-3
- 7 Deal six cards to each player. Repeat steps 5–7.
- 8 Play a total of 20 hands, recording the entire deck average after hands 5, 10, and 20.
- 9 When you have finished the game, answer the questions listed on your “Examining the Game” student handout.

Deck Averages

Initial average _____
 5th-round average _____
 10th-round average _____
 20th-round average _____

Return the cards back to their original place in the deck.

Wolf Group A

Due to selective pressures, the wolves with the most aggressive genes do not survive. To simulate this, the players who have the two lowest hand totals will remark their cards with numbers on the cards of the other two players. Twelve cards will be remarked.

Wolf Group B

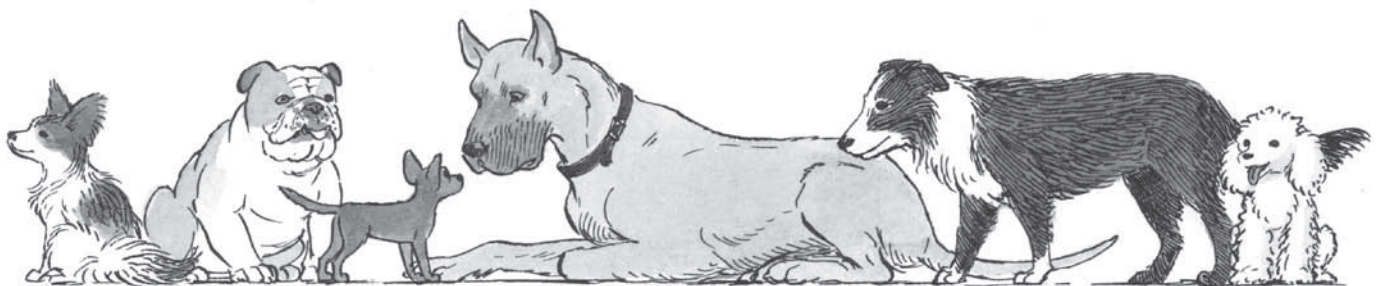
Due to selective pressures, the wolves with the most aggressive and most tame genes do not survive. To simulate this, the players who have the highest and lowest hand totals will remark their cards with numbers on the cards of the other two players. Twelve cards will be remarked.

Examining the Game

Questions

Write your answers on a separate sheet of paper.

- 1 What kind of animal do you think your initial average reflected? What kind of animal did the average of your final round reflect?
- 2 What happened to the temperament of your wolf population over time?
- 3 Do you think your group represents wolves in the wild or dogs that have evolved from wolves? Explain your answer.
- 4 The decks of cards representing wolves and dogs have been genetically isolated from each other for the entire game. Explain what this means in terms of the game and what it means in terms of real life.
- 5 What do you predict would happen to the tameness of dogs if wolves and dogs were allowed to regularly interbreed?
- 6 Why would the genetic isolation of wolves and dogs be important for dogs to become different from wolves?



Wolf Deck

