**Station 3: Dog Breeding**

On the computer in Darwin 4, access the Dog Breeding activity at <http://pbskids.org/dragonflytv/games/game_dogbreeding.html>.

Begin with Level 1, and work your way through all the levels, until you successfully breed a dog with the three requested traits. Fill in the table below as you progress through the exercises\*, keeping track of the successful set of parents for the desired puppy. For all characters, CIRCLE the trait that is listed in the activity as being DOMINANT. (If co-dominant, circle BOTH).

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Trait:* | *Fur Color*  *(black or brown)* | | | | *Fur Length*  *(long or short)* | | | | *Ear Length*  *(straight, medium, floppy)* | | | | *Number of Tries for Success* |
| *Sex:* | *Male* | | *Female* | | *Male* | | *Female* | | *Male* | | *Female* | |
| *Alleles:* | Bl or Br | Bl or Br | Bl or Br | Bl or  Br | L or S | L or S | L or S | L or S | S M F | S M F | S M F | S M F |  |
| Level 1: **Black fur** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Level 2: **Long fur** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Level 3: **Medium ears** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Level 4: **Brown, long fur** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Level 5: **Black, long fur & straight ears** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Level 6: **Brown, long fur & floppy ears** |  |  |  |  |  |  |  |  |  |  |  |  |  |

\*Note: no data should be entered into grayed-out squares

1. How many of your successful parents were homozygotes? How many were heterozygotes?
2. Which characters exhibited complete dominance? In each case, which was the dominant trait, and which was recessive?
3. Which character exhibited codominance? What traits were expressed by the two homozygotes? What about the heterozygotes?
4. For the co-dominant trait, what was the easiest pair of dogs to breed to ensure that the puppies would be heterozygotes?
5. It is not possible to, by chance, breed the desired puppy for Level 6 on the first try. What puppy would you need to breed first in order to be successful? (Think about sex and character/trait). Hint: click on the level again, and look at the starting parents to answer this question.
6. Did you notice a difference in the number of tries it took to successfully breed the right puppy, based on the number of desired characters? Which of the scenarios listed in the table was the most difficult to breed?