Poker Chip Monohybrid Crosses

Objective: Describe how the letters on Punnett Squares are determined, as well as the possible gametes that a parent organism will produce.

Background: **The laws of probability:**

1. The result of one event DOES NOT affect the probability of a later occurrence of the same event.
2. The chance of two independent events happening at the SAME TIME is equal to the product of the probability of those two events.

Pre-Lab:

1. Answer the **Pre-Lab** questions on your answer sheet.

Part I Become familiar with the "organism":

1. At your lab table locate the "female" beaker and a "male" beaker.
2. Ensure that the female has 8 recessive white chips (**c**) and 8 dominant colored chips (**C**).
3. Check the male as well.
4. Mix the chips in each beaker thoroughly.
5. Answer the **Part I** questions on your answer sheet.

Part II Crosses:

1. Select one partner to control the female beaker, and another to control the male beaker.
2. Hold the beakers so that neither partner can see them.
3. On the count of three, each partner should place one chip on the lab bench.
4. Place the two chips next to each other as a pair.
5. Make a tally on your data table to indicate the combination of the pair of chips.
6. Place the poker chips back into the correct beakers.
7. Shake the beakers.
8. Repeat steps 2-7 15 times.
9. Answer the **Part II** questions on your answer sheet.

Part III Calculations:

1. Calculate the average percent for each possible chip combination on the answer sheet under **Part III**.
2. Write these averages in the class results chart on the white board.
3. When the class averages are available write them in the averages chart on the answer sheet under **Part III**.
4. Answer the **Part III** questions on your answer sheet.

Part IV Using Punnett Squares:

1. An alternate way to show probabilities of the offspring two parents will produce is a Punnett Square.
2. Answer the **Part IV** questions on your answer sheet.

Application:

1. Answer the **Application** questions on your answer sheet.