

A Recipe for Traits

Participants make and decode a “DNA recipe” for a dog. They see how variations in DNA lead to differences in inherited traits. Participants choose random strips of paper (representing DNA) and join them together to make a DNA molecule. Then they read the DNA recipe and make a drawing of their pet. Group members then compare similarities and differences.

What you'll need

- Copies of participant pages
- Drawing paper
- Crayons or colored pencils
- Tape
- Envelopes (1 per participant or pair)
- 4 colors of copy paper for making DNA strips

Preparation

For 14 “Dog DNA” envelopes:

1. Make four copies each of DNA Strips A, B, C, and D (pages 4-7) on colored paper. Choose one color for each type of DNA Strip. For example:

DNA Strips A (page 5)	4 copies on Blue
DNA Strips B (page 6)	4 copies on Green
DNA Strips C (page 7)	4 copies on Yellow
DNA Strips D (page 8)	4 copies on Red

2. Cut the pages to make DNA strips (a paper-cutter works well)
3. Put two DNA strips of each color in an envelope. The envelope should have eight DNA strips total (four different colors).
4. Repeat step three until you have assembled 14 “Dog DNA” envelopes.

Note: This is the minimum number of DNA strips per envelope that you need for the activity. Adding more DNA strips of each color increases the variety of possibilities for each trait.

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A Recipe for Traits

For all living things, a set of instructions written in the language of DNA makes a “recipe” for traits. Information in a DNA strand is grouped into small segments. Each segment is made of individual DNA “letters” (like recipes are made of words, and words are made of letters). Differences in the order of DNA letters make differences in traits (just like a different sets of letters make different words, and a different recipe).

Instructions

- 1.** Make sure you have an envelope of “Dog DNA.”
- 2.** Randomly choose a strip of dog DNA from the envelope.
- 3.** On the Dog Traits Key for body shape, find the pattern that matches your DNA strip. Circle the body shape picture.
- 4.** Set the DNA strip aside. Repeat steps 2-3 for the next trait on the key: head shape.
- 5.** Tape the second DNA strip to the first to make one long strand. This will become the DNA recipe for your entire dog.
- 6.** Repeat for the other traits on the Dog Traits Key, in order.
- 7.** On a separate piece of paper, draw your dog. Make sure it has all the traits you circled on the Dog Traits Key.
- 8.** Hang up the drawing of your dog, along with its DNA recipe (the DNA strips, taped together in a long strand).

Is your dog different from or the same as others in the group?

Dog Traits Key

Body Shape

Small, Thin,
Long, Straight



Large, Thin,
Long, Tapered



Medium, Very
Muscular, Short

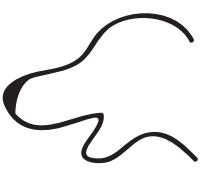


Large Semi-Mus-
cular, Straight

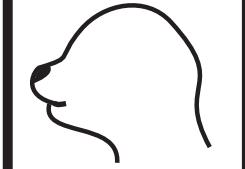


Head Shape

Long, Thin



Flat



Short



Droopy



Ears

Small, Pointy



Big Droopy



Medium Square

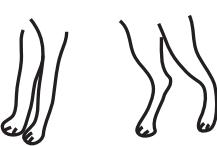


Medium Droopy

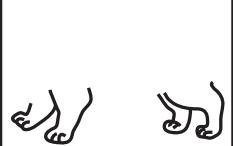


Legs

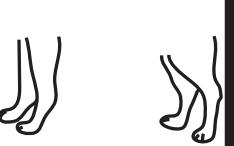
Long, Thin



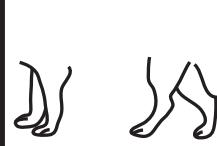
Short, Stubby



Medium

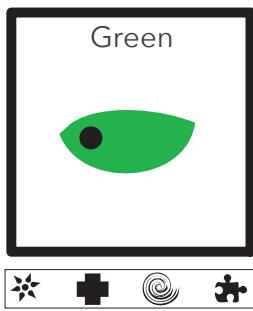
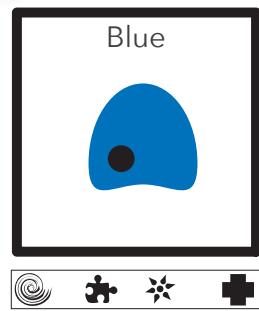
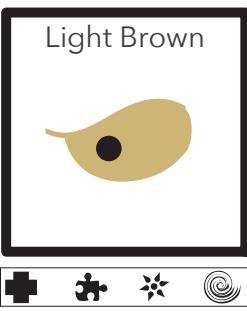
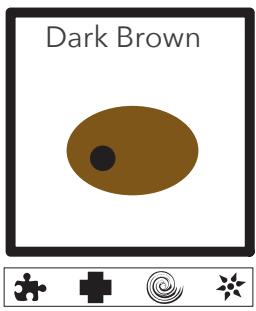


Stocky, Muscular

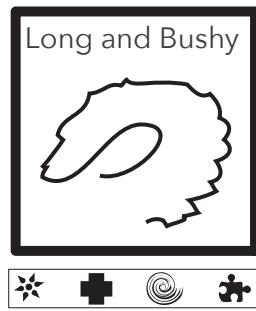
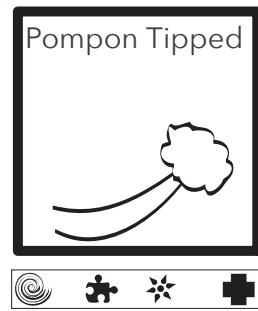
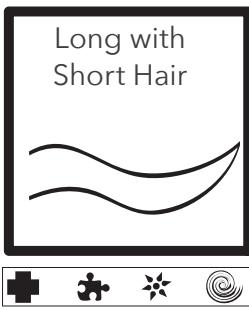
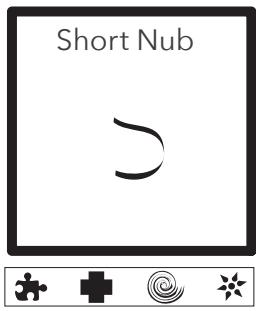


Dog Traits Key

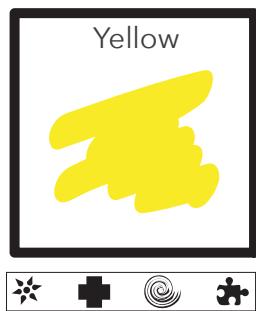
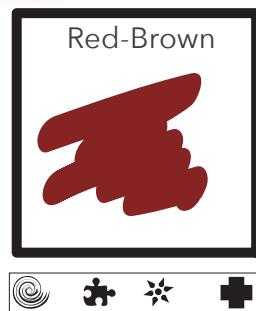
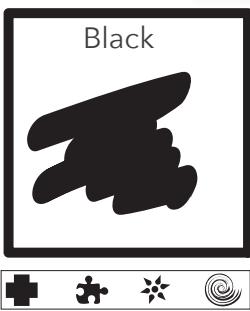
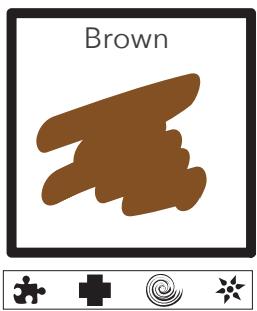
Eyes



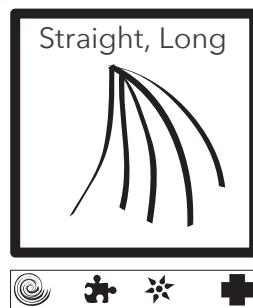
Tail



Coat Color



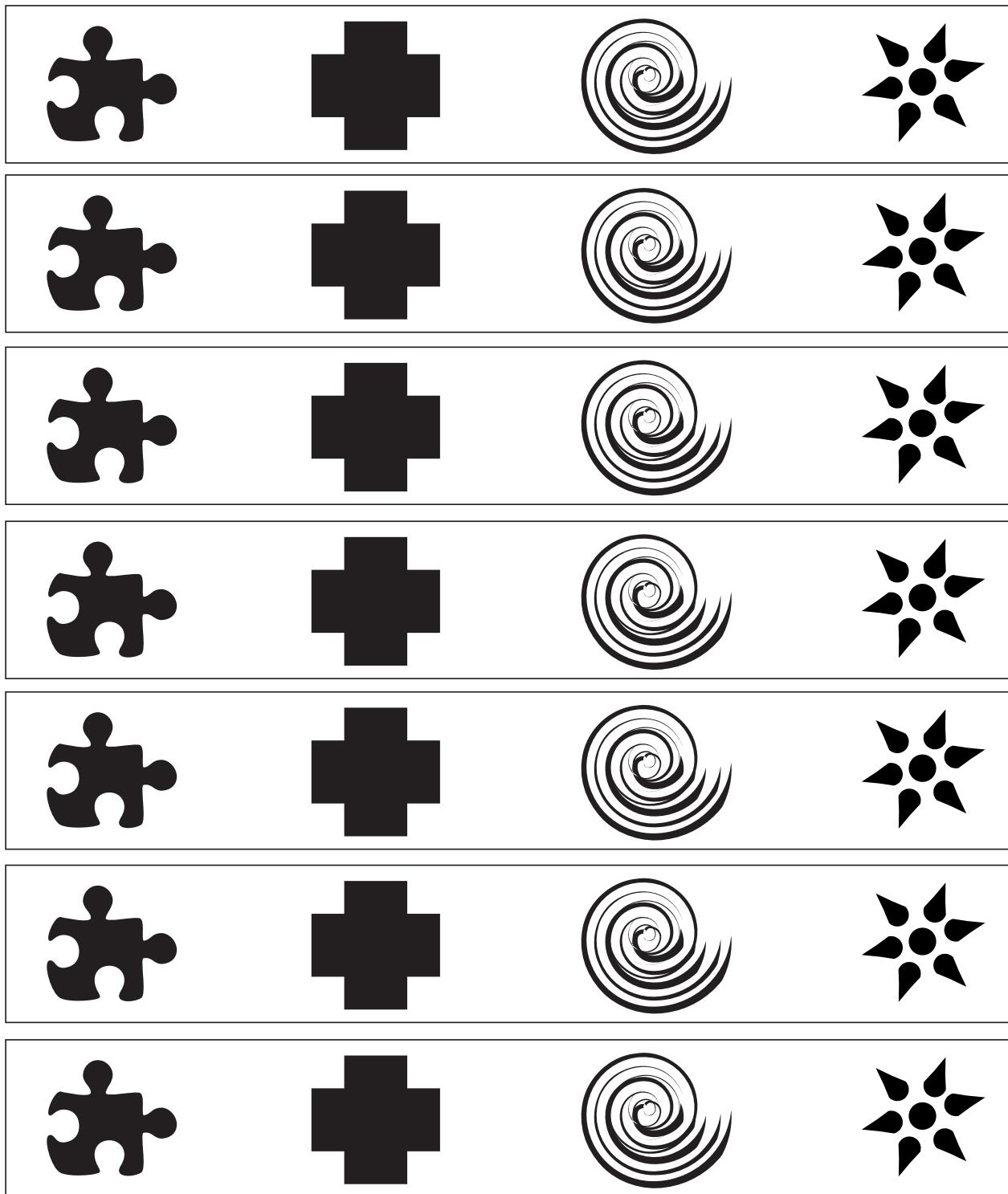
Hair



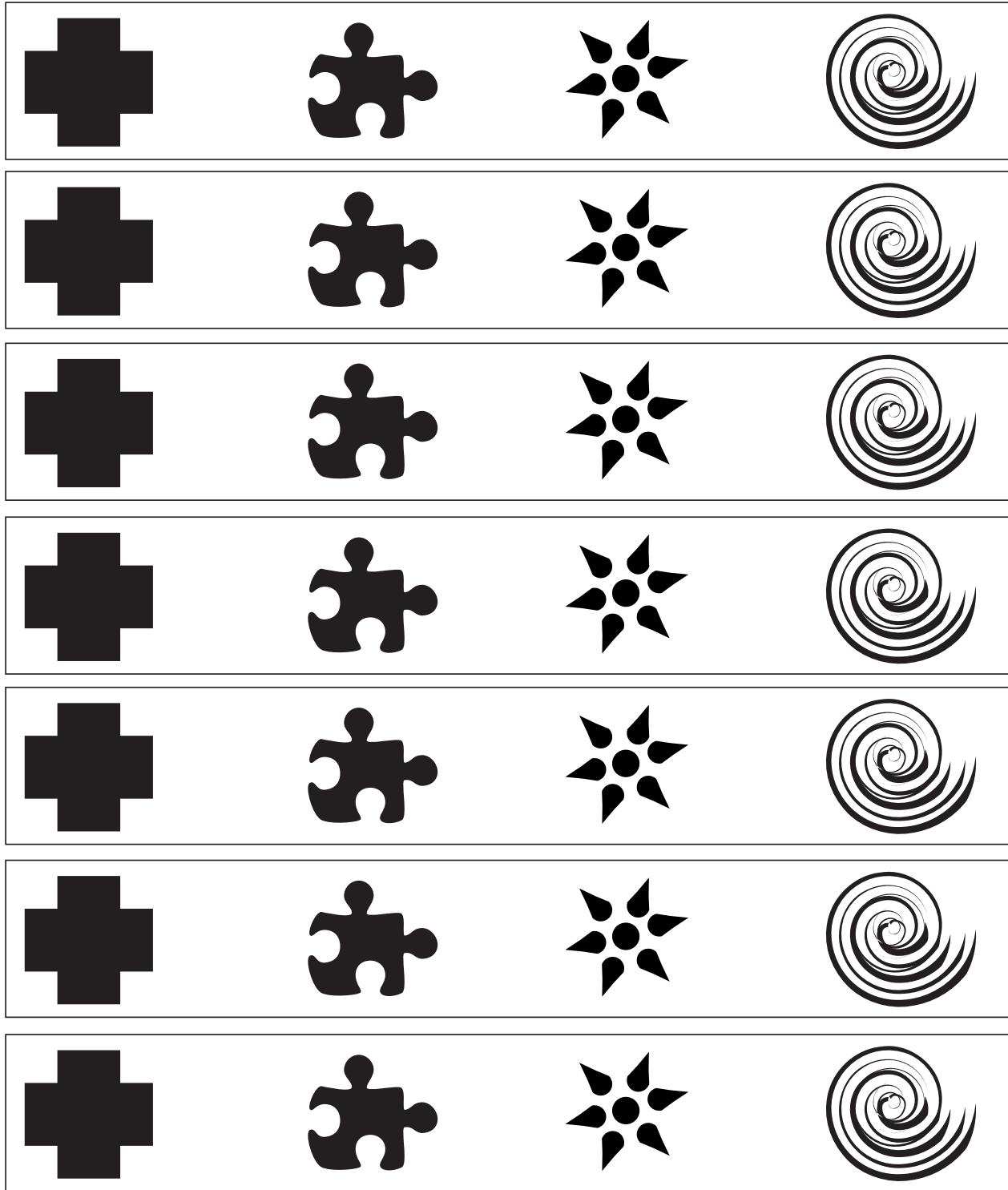
A Recipe for Traits

Cut-outs

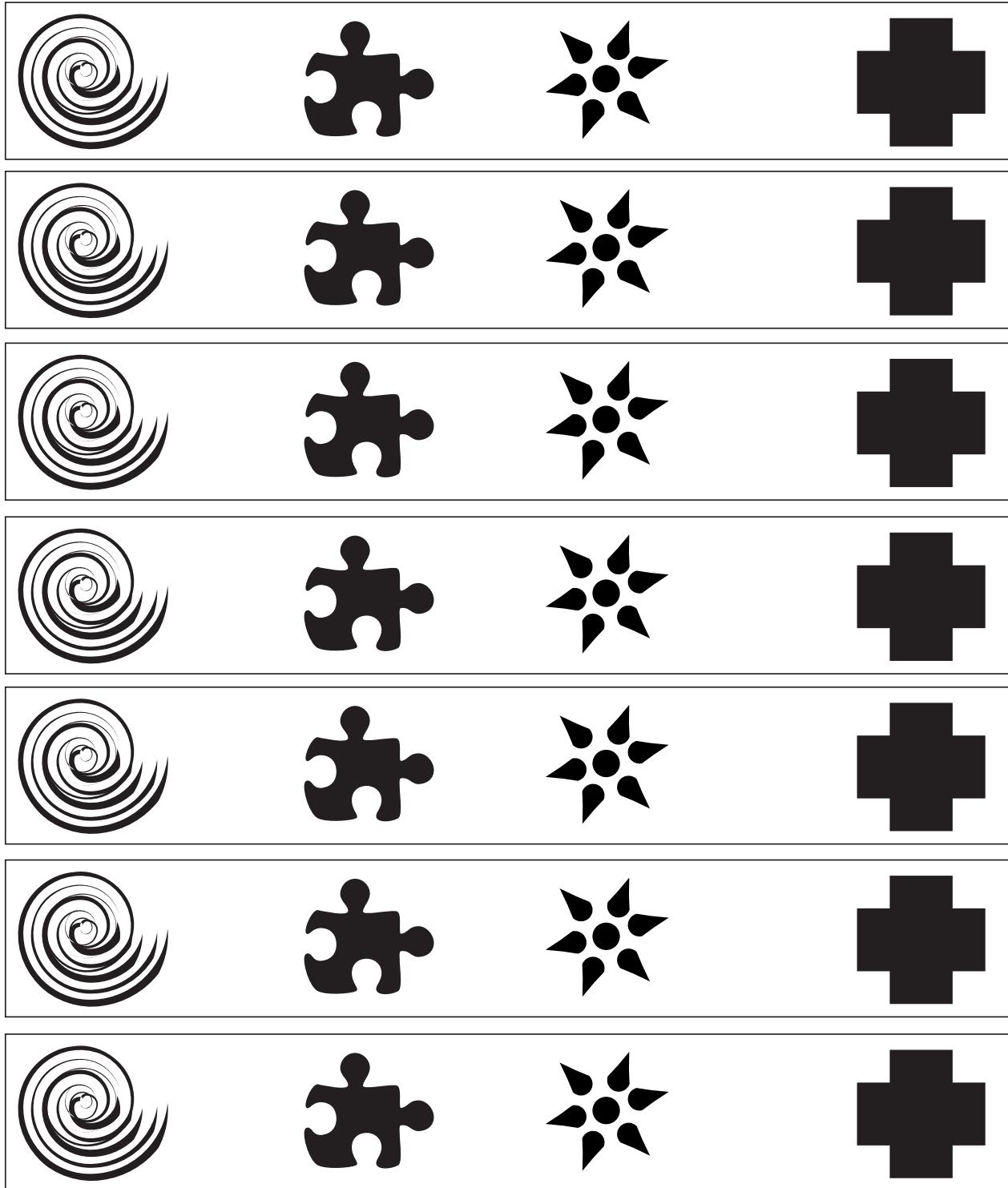
DNA Strips A



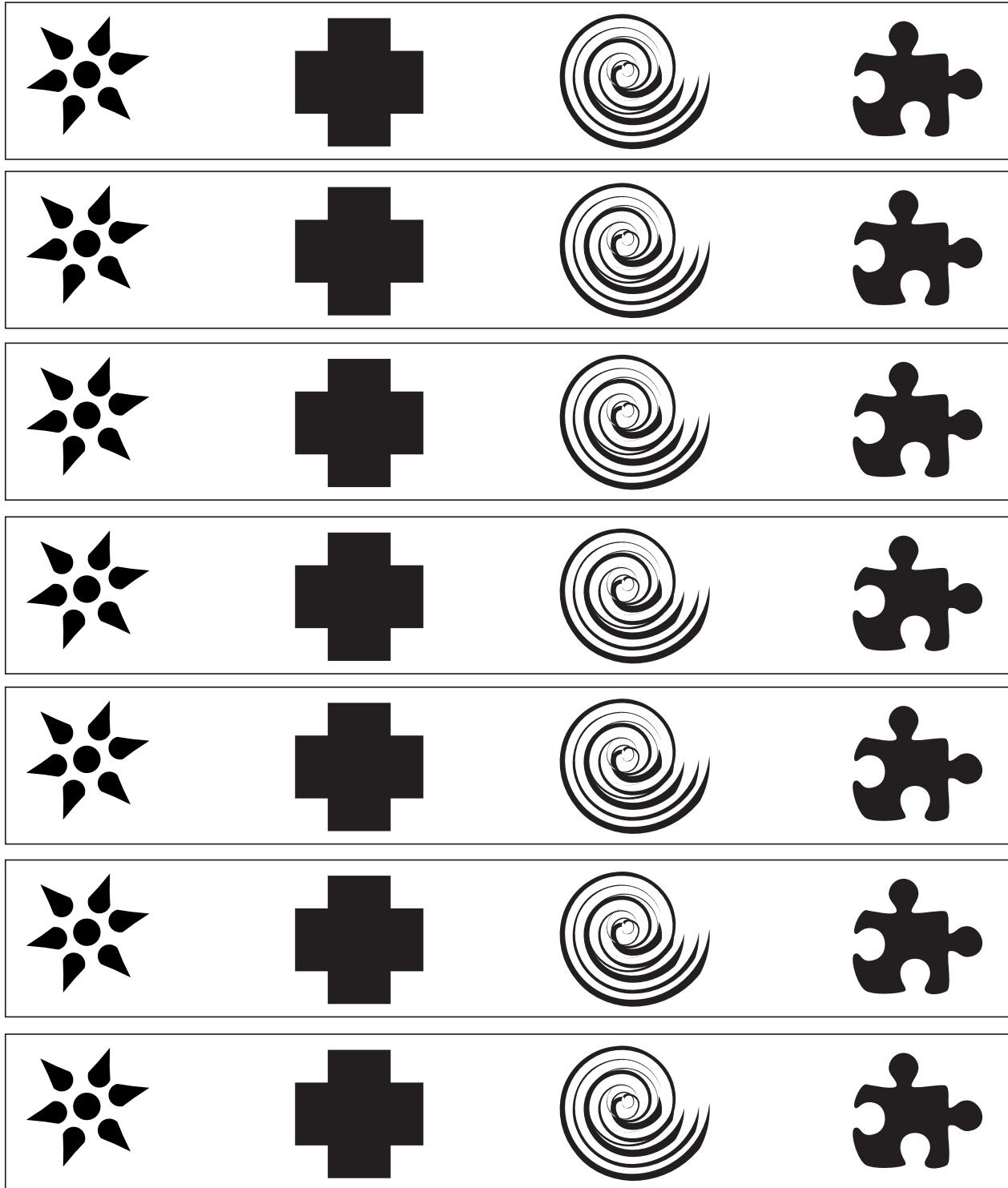
DNA Strips B



DNA Strips C



DNA Strips D



Una Receta de Rasgos

Un sistema de instrucciones llamado ADN provee una “receta de rasgos” para todos los organismos. La información se agrupa en segmentos pequeños en el filamento del ADN. Cada segmento incluso está hecho de unidades más pequeñas (como las recetas que están hechas de palabras y las palabras de letras). Las diferencias en el “alfabeto” del ADN son lo qué hace diferente a los rasgos (justo como la diferente secuencia de las letras hace que las palabras sean diferentes y por ende, una diferente receta).

Instrucciones

- 1.** Asegúrese de tener un sobre que contenga el “ADN del Perro”.
- 2.** Determine el primer rasgo de su perro (forma del cuerpo) escogiendo al azar un pedazo del ADN del perro fuera del sobre.
- 3.** Mire los símbolos en el filamento del ADN que escogió. Iguale el patrón con uno que vea en la clave de rasgos del perro para la forma del cuerpo.
- 4.** Haga un círculo en la forma del cuerpo de la figura que igualó al pedazo de ADN que escogió.
- 5.** Ponga el pedazo del ADN a un lado y repita los pasos del 1 al 4 para los rasgos que siguen.
- 6.** Después de circular las figuras emparejadas, usando cinta engomada pegue el segundo pedazo de ADN al primero para hacer una tira larga. Esta se convertirá en la receta del ADN para su perro entero.
- 7.** Repita los pasos para cada rasgo enumerado en la lista de la clave de rasgos del perro.
- 8.** Cuando acabe, dibuje su perro en una nueva hoja de papel con todos los rasgos (los rasgos que ha circulado en la clave de rasgos del perro).
- 9.** Siga las instrucciones del facilitador. Cuelgue la figura de su perro junto con su receta del ADN (los pedazos de ADN que escogió unirlos en un largo filamento).

¿Es su perro igual o diferente a los demás en su grupo?

Clave de Rasgos en un Perro

La Forma del Cuerpo

Pequeño, Fino,
Largo, Lacio



Grande, Fino,
Largo, Estrecho



Mediano,
Musculoso, Bajo

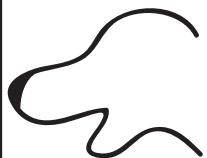


Grande, Semi-
Muscular, Recto



La Forma de la Cabeza

Larga y Fina



Plana



Corta



Gacha



Las Orejas

Pequeñas y
Puntiagudas



Grandes y Caídas



Medianas y
Cuadradas

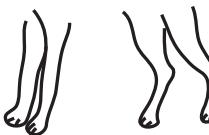


Mediano y Caída



Las Piernas

Largas y
Delgadas



Cortas y
Rechonchas



Medianas

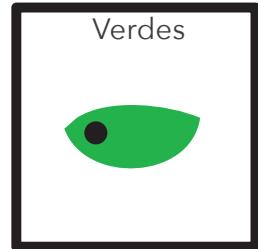
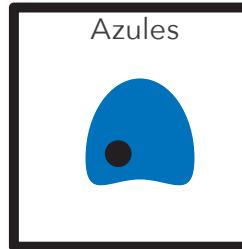


Cortas, Fornidas
y Musculares

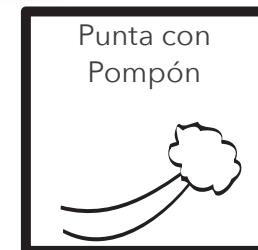
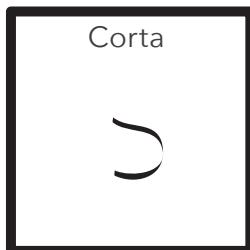


Clave de Rasgos en un Perro

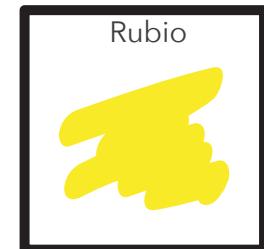
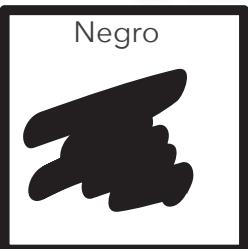
Los Ojos



La Cola



El Color del Pelaje



El Pelo

