



DRAGONFLY KITE

HOW IT WORKS

When we set out to design a kite, we had no idea how hard it would be. We tested models using various materials, including wire coat hangers, florist wire, dowels, plastic bags, recycled express shipping envelopes, and paper. Finally, we came up with a design we liked. Our dragonfly is quick to take to the air but tends to dart and swoop—and sometimes crash!

Now, it's your turn. Can you test this version and then adjust the design to create a better flyer? Or come up with an entirely new kite design! Email your ideas to webeditors@girlscouts.org.

FLYING THE KITE

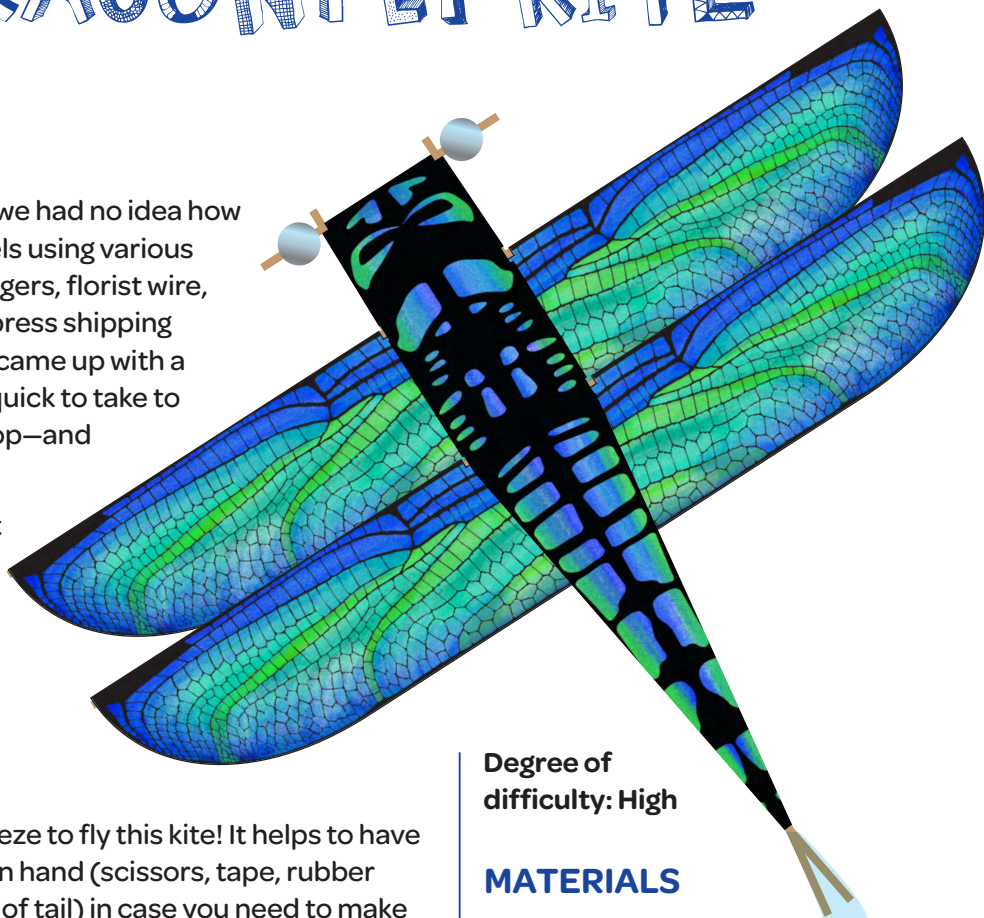
It takes practice and a steady breeze to fly this kite! It helps to have a friend with you. Keep supplies on hand (scissors, tape, rubber bands, string, and an extra length of tail) in case you need to make design alterations or repairs.

Adjust the tow point (where the string attaches to the kite) to find the most stable position for the wind conditions. A high tow point will make the kite circle and dive. A low tow point will make it fly upside down!

Adding to the tail might help steady the kite.

SAFETY TIPS

- Check the weather report. Don't fly the kite if there are storms in the area.
- Fly the kite in a field away from trees, power lines, traffic, and aircraft.
- Wear sunglasses, and gloves to protect your hands from friction caused by the string.



Degree of difficulty: High

MATERIALS

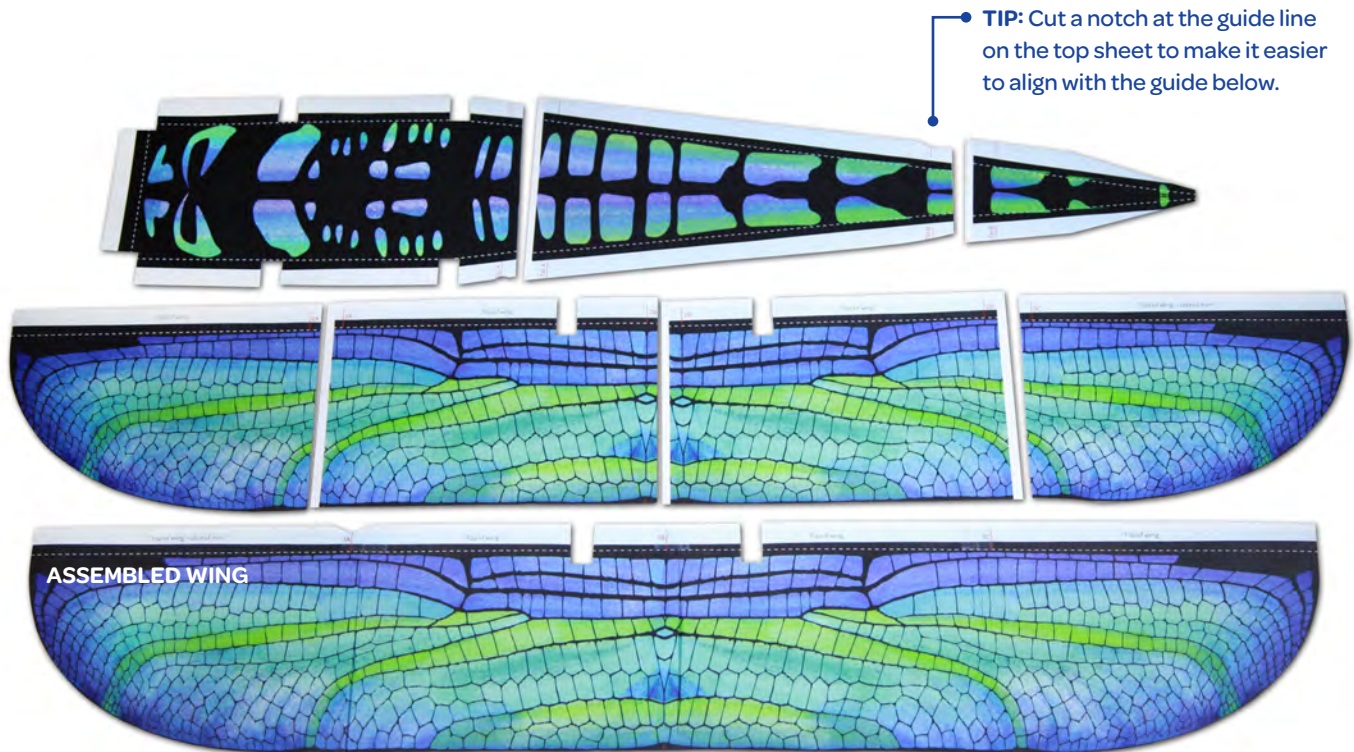
- Scissors
- Marker, pencil, or pen
- Yardstick or measuring tape
- Four 36" wooden dowels, 1/8" diameter
- Nine rubber bands
- Clear tape
- Printed dragonfly pattern
- For eyes: recycled CD, card stock circles decorated with glitter or foil, or googly eyes
- Drinking straw
- Kite string or nylon fishing line (lightweight, strong)
- For tail: plastic grocery bag
- For reel: 7" square of cardboard



Colorful Chinese kites, like the butterfly above, inspired our design. This example has a bamboo frame with a cloth cover. Its plastic eyes spin in the wind!



MAKING THE PAPER COVER

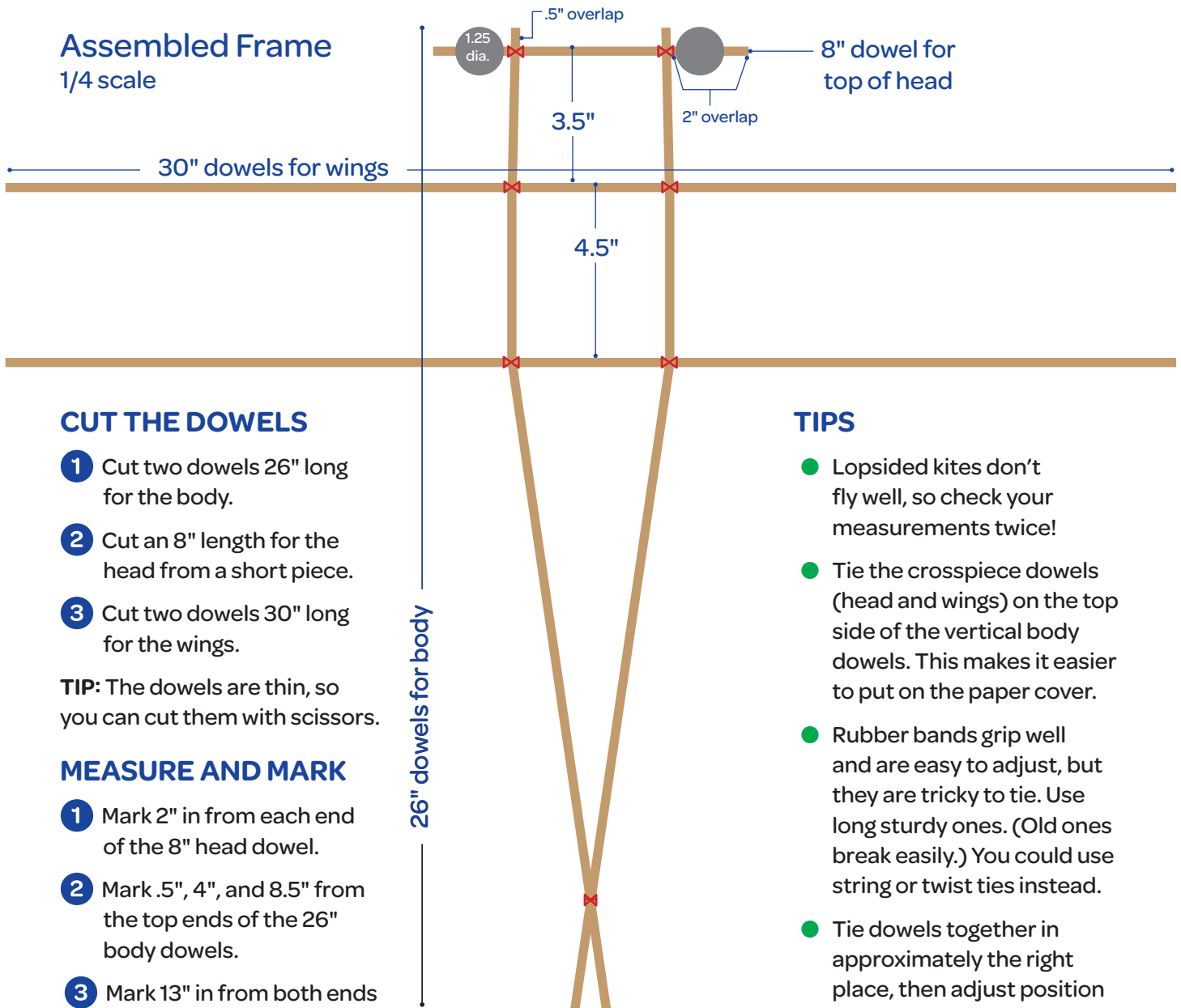


- 1 Print the pattern pieces for the wings and body at 100 percent (page scaling: none) on letter-size paper.
- 2 Cut out the pieces. Most printers can't print to the edge of the paper, so trim visible white edges where the pattern pieces overlap. **Don't** trim the top edge of the wing—you will need that to fold around the dowel.
- 3 Overlap pieces carefully, lining up guide lines and patterns. Secure with a small piece of tape along an outer edge, where it won't show. Then turn over the pieces and tape the whole seam on the back.



- 4 Fold on the dotted lines.

MAKING THE FRAME

**CUT THE DOWELS**

- 1 Cut two dowels 26" long for the body.
- 2 Cut an 8" length for the head from a short piece.
- 3 Cut two dowels 30" long for the wings.

TIP: The dowels are thin, so you can cut them with scissors.

MEASURE AND MARK

- 1 Mark 2" in from each end of the 8" head dowel.
- 2 Mark .5", 4", and 8.5" from the top ends of the 26" body dowels.
- 3 Mark 13" in from both ends of the 30" wing dowels.

TIE FRAME TOGETHER

- 1 Lay the 8" head dowel across the two body dowels, aligning the 2" marks with .5" marks.
- 2 Tie dowels together at intersections.

TIPS

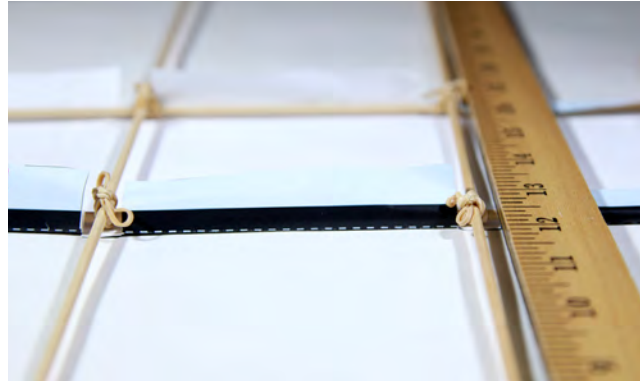
- Lopsided kites don't fly well, so check your measurements twice!
- Tie the crosspiece dowels (head and wings) on the top side of the vertical body dowels. This makes it easier to put on the paper cover.
- Rubber bands grip well and are easy to adjust, but they are tricky to tie. Use long sturdy ones. (Old ones break easily.) You could use string or twist ties instead.
- Tie dowels together in approximately the right place, then adjust position of joints as needed to fit the paper cover.



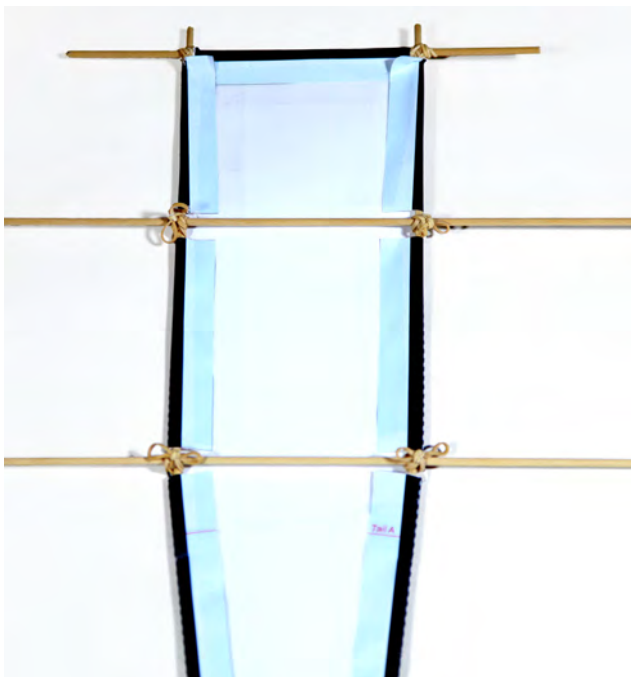
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TIE FRAME TOGETHER (continued)

- 3 Tie the body dowels together at the bottom.
- 4 Lay one wing dowel across the body dowels, lining up the 4" marks on the body and the 13" marks on the wing. Tie the wings to the body at the intersections.
- 5 Lay the second wing dowel on the body, lining up the 8.5" marks and the 13" marks on the wing. Tie at the intersections.
- 6 Make sure wings are parallel and centered.

**COVERING THE FRAME**

- 1 **BODY:** Lay the assembled body cover facedown under the frame. The crossbar dowels (head and wings) should be on top of the body dowels.
- 2 Adjust the frame joints, if necessary, to line up with notches in the paper skin.
- 3 Fold the edges of the paper around the dowels and tape down.



- 4 **WINGS:** Still working from the back of the kite, slip an assembled wing cover (facedown) under the top wing dowel. Fold the edges around the dowel and tape down.



- 5 Do the same for the bottom wing.



This is what your kite should look like from the back.

MAKING THE EYES



We used an old CD to make the eyes, but you could also use googly eyes (available in craft stores) or decorate disks of card stock or stiff paper with glitter or aluminum foil. It's a nice touch to have shiny eyes!

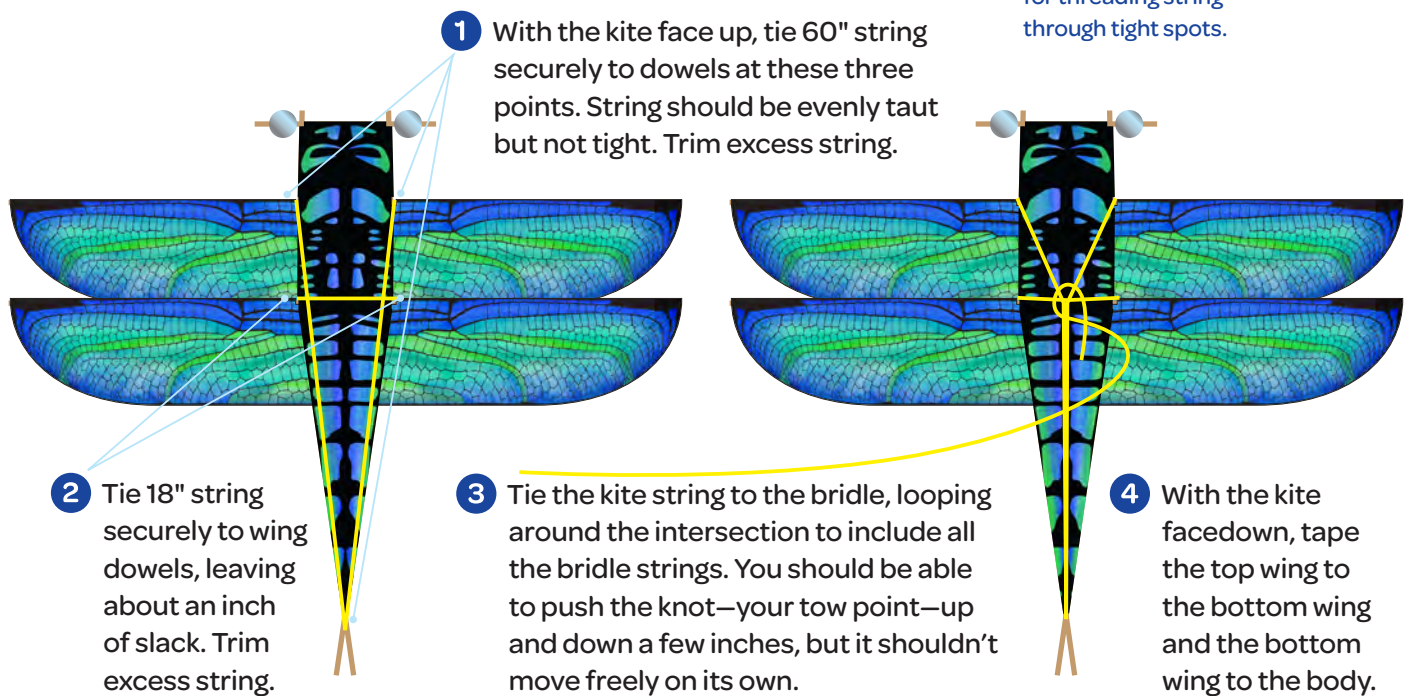


- 1 Trace 1.25" diameter circles on the CD, using the template. Cut out the eyes with scissors.
- 2 Cut two short pieces from a drinking straw and tape to the backs of the eyes.
- 3 Slip eyes over ends of head dowel and hold in place with rubber bands. The eyes should be able to turn freely.

MAKING THE BRIDLE

Instead of attaching the kite string directly to the kite, tie it to a bridle fastened to the dowels.

TIP: Wrap a piece of tape around the end of the string to make a needle for threading string through tight spots.



MAKING THE TAIL AND REEL

TAIL: We made a tail from a recycled plastic grocery bag, but you could also use ribbon or paper tape.

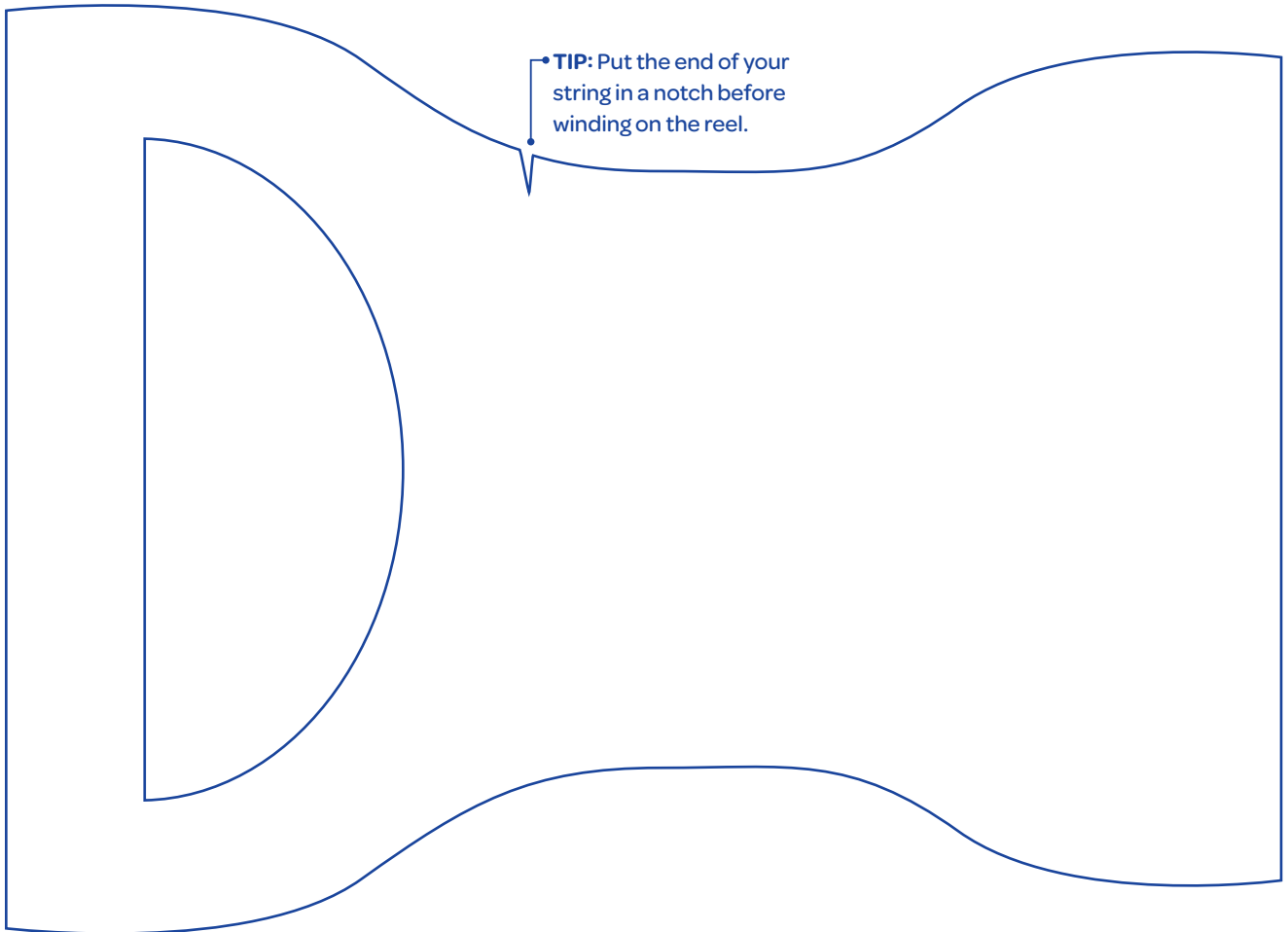
Trim the bottom seam and top handles from a plastic grocery bag. Cut a ribbon about 2" wide, going around and around the bag in a spiral from the bottom up, until you have a tail about 12'–16' long. It doesn't have to be perfect!

Tape tail to the bottom of the frame. Try different lengths when flying the kite to see what works best.

REEL: This simple reel allows you to unwind string quickly when the kite takes off. Our version is made from a piece of a cardboard box. See template below.

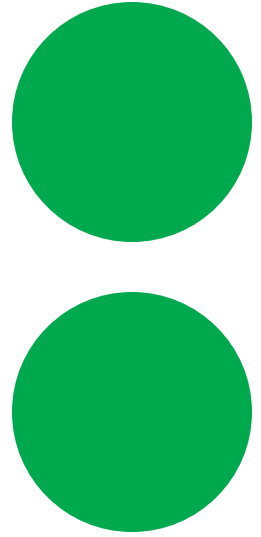


TIP: Put the end of your string in a notch before winding on the reel.



FOLD ON DASHED LINES

CUT 

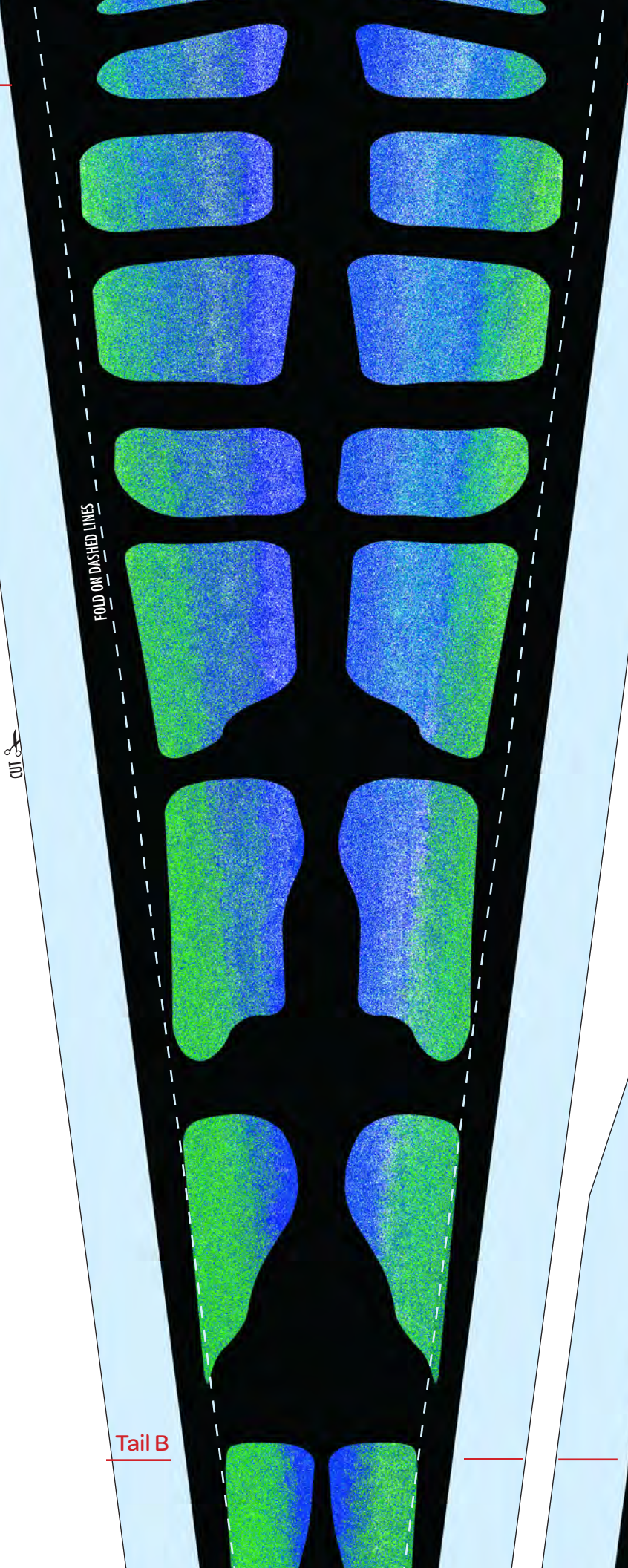


Template for eyes:
Cut 1.5" diameter circles
from card stock or an old
CD—or improvise from
anything shiny!

Tail A

Most printers can't print
right to the edge, so trim
and discard white edges.
Align overlapping sections
on red lines and tape
together on the back.

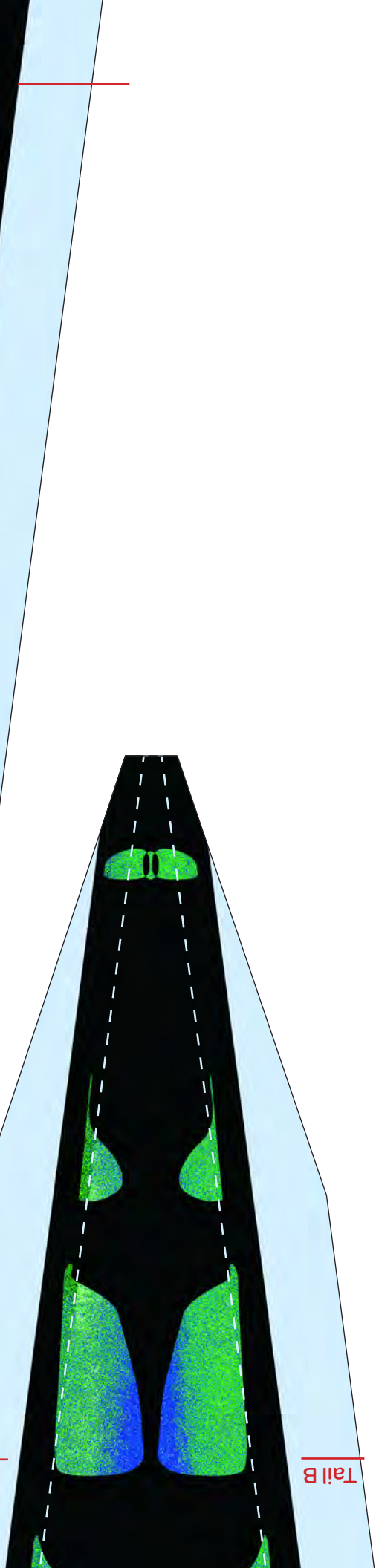
Tail A



FOLD ON DASHED LINES

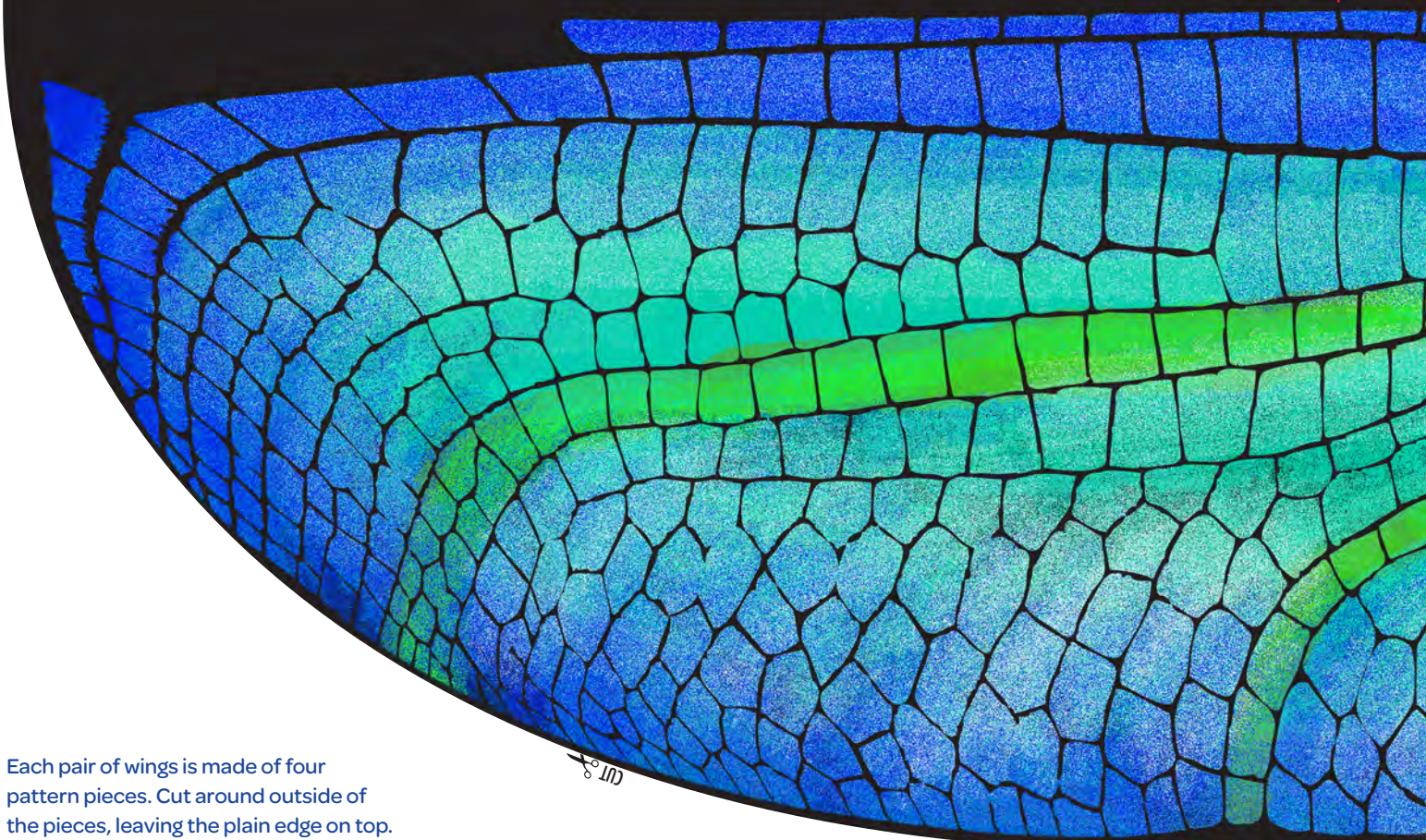
CUT

Tail B



Tail B

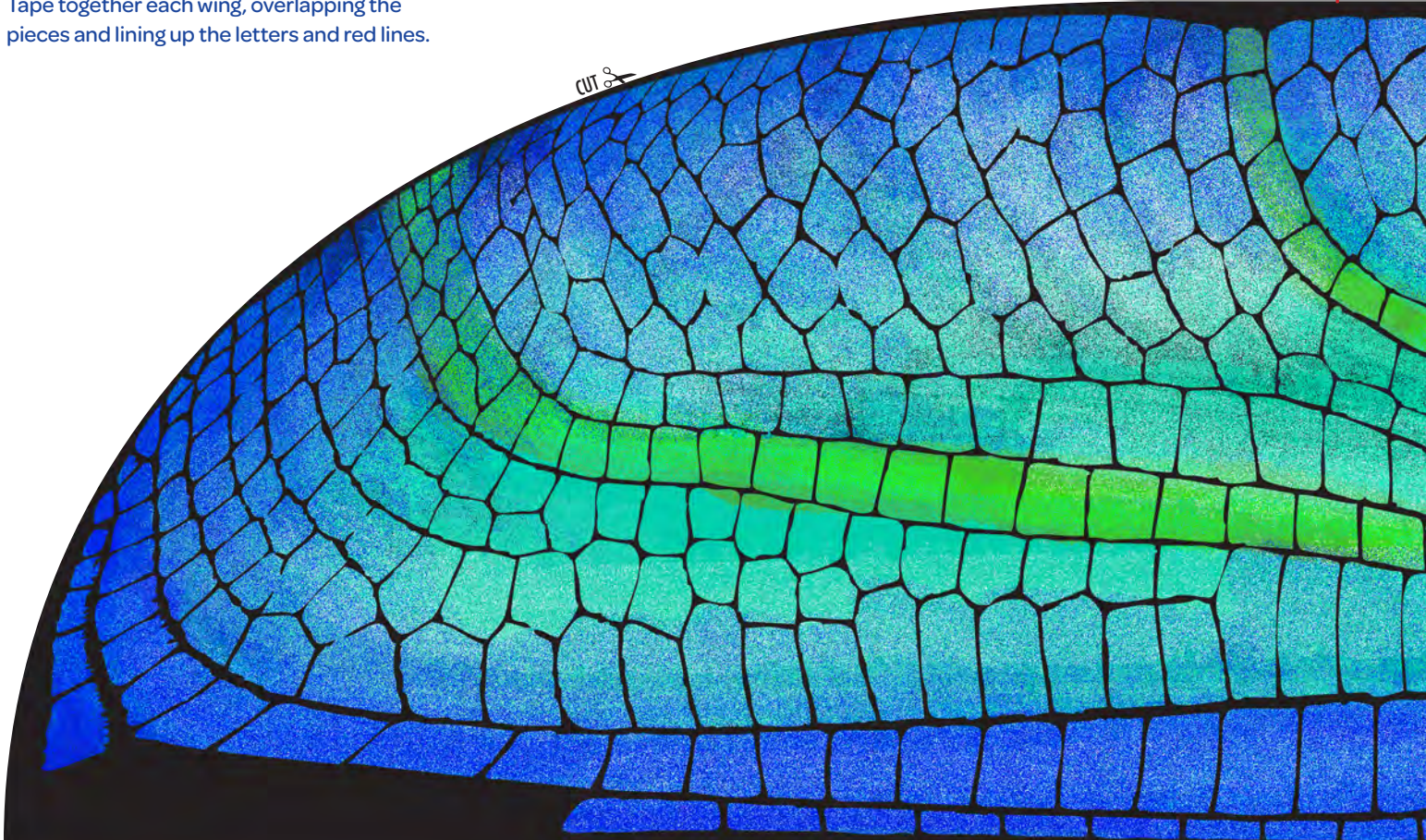
FOLD ON DASHED LINES



Each pair of wings is made of four pattern pieces. Cut around outside of the pieces, leaving the plain edge on top. Tape together each wing, overlapping the pieces and lining up the letters and red lines.

CUT

CUT



FOLD ON DASHED LINES

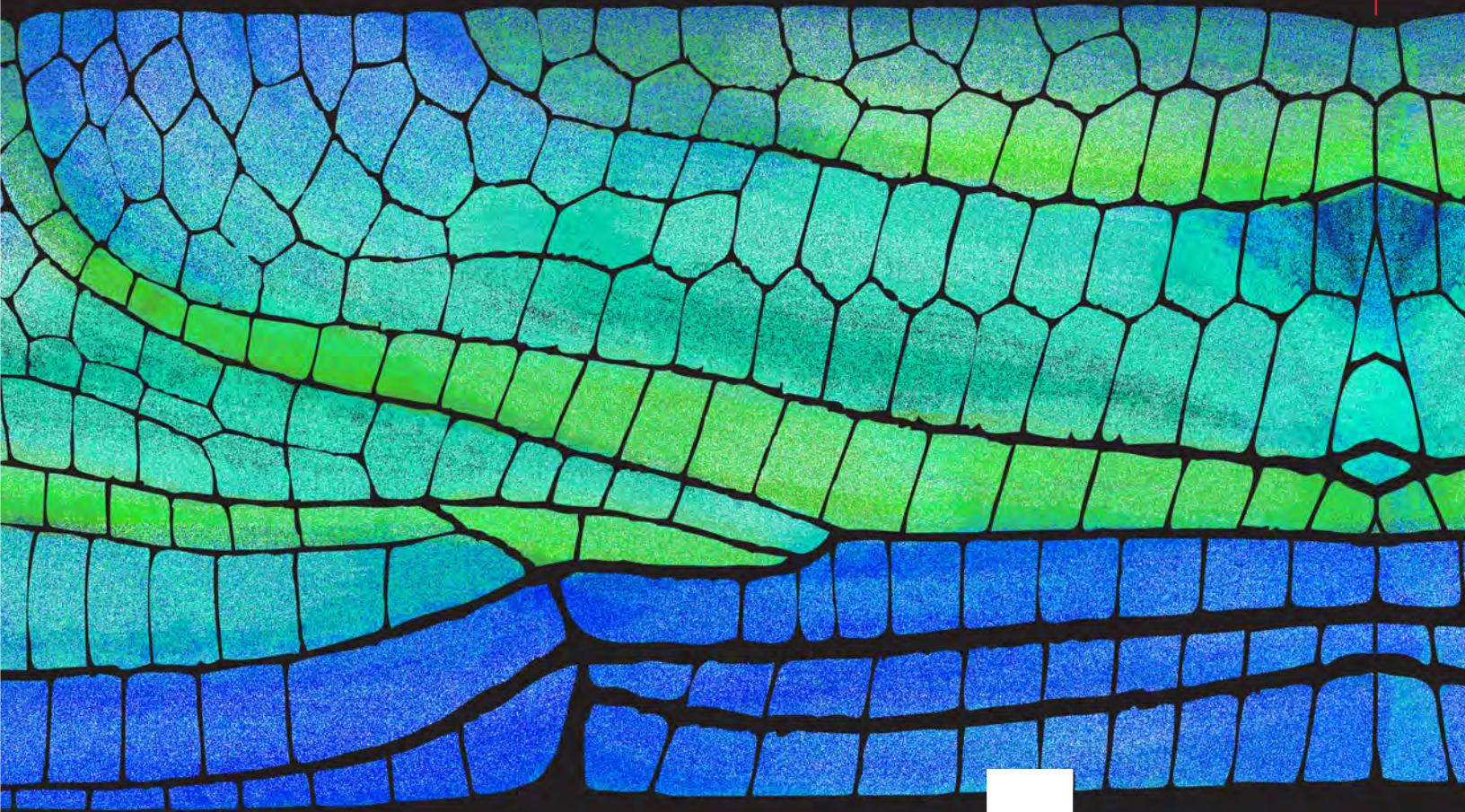
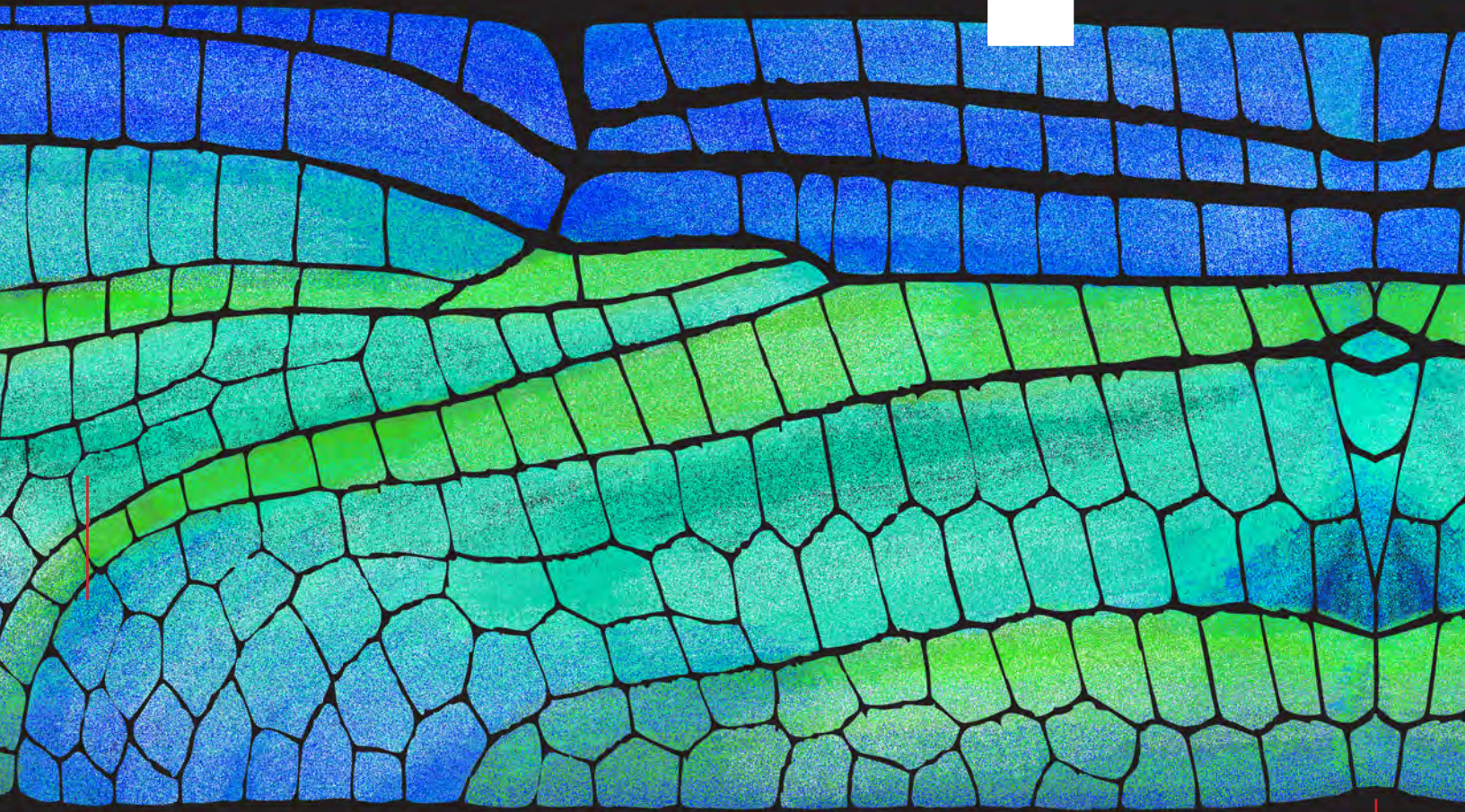
1A

Top of wing

FOLD ON DASHED LINES

cut

1B



FOLD ON DASHED LINES

cut

Top of wing

2C

2B

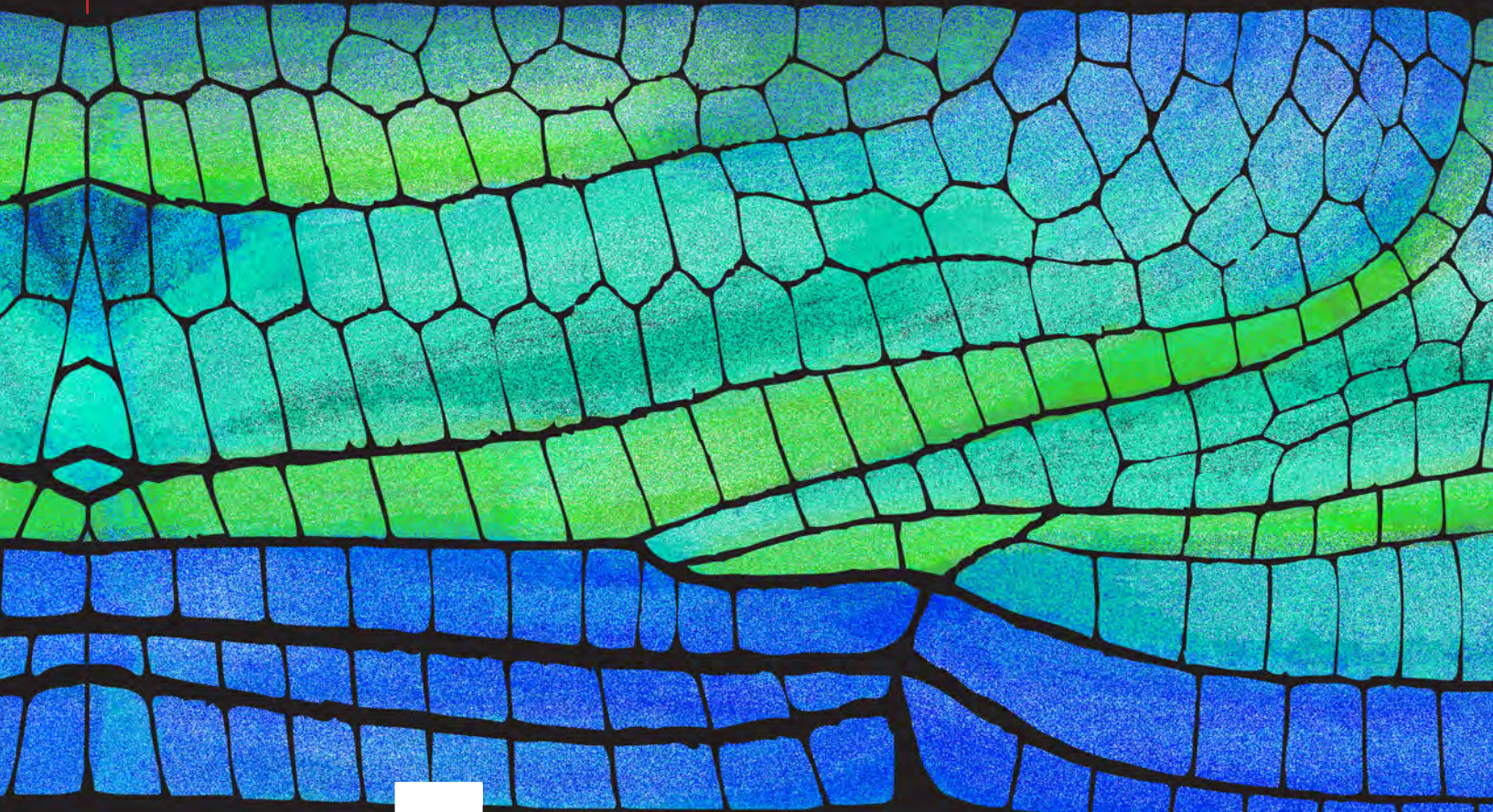
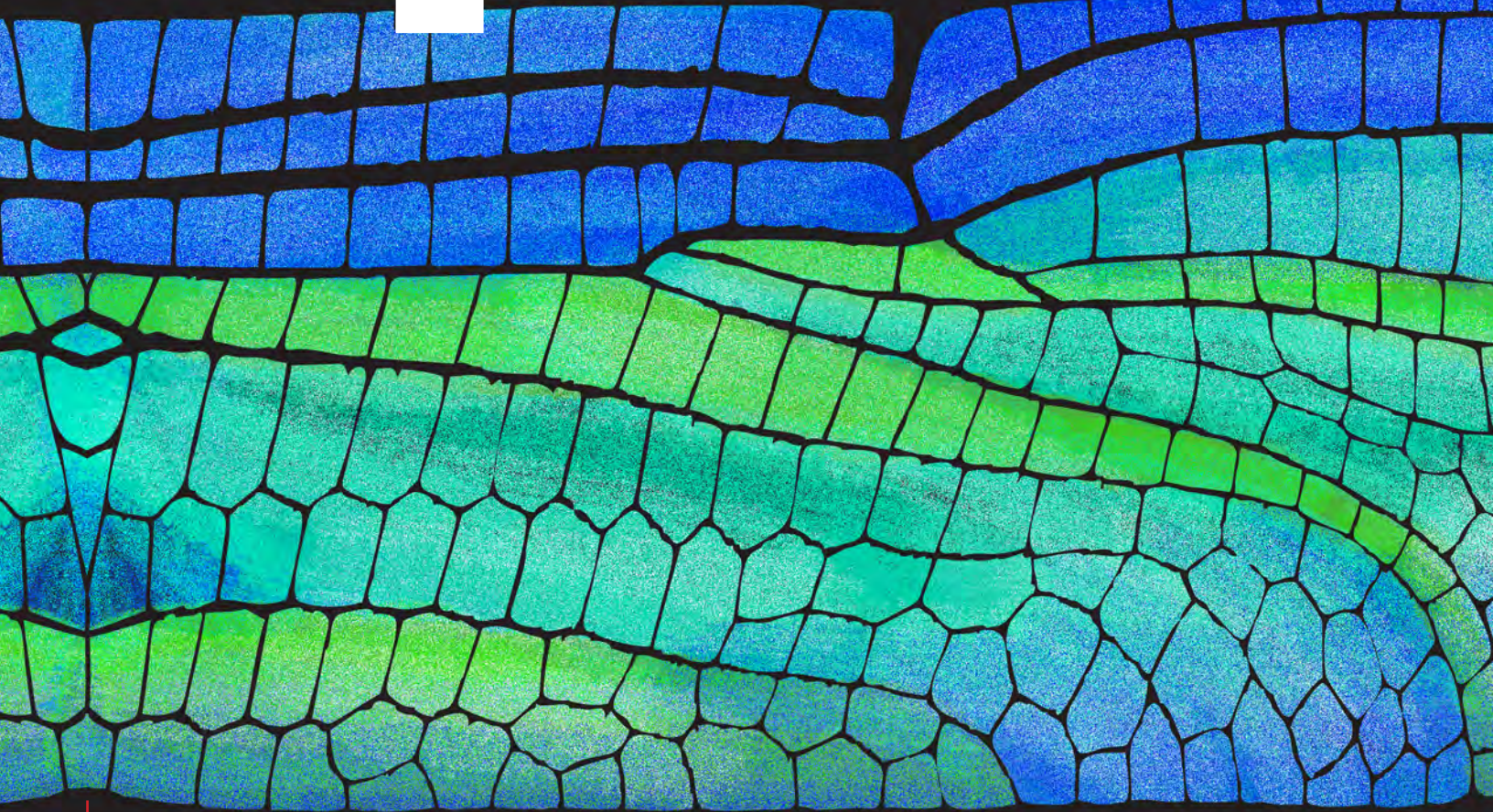
1B



Top of wing

1C

FOLD ON DASHED LINES



FOLD ON DASHED LINES

2B



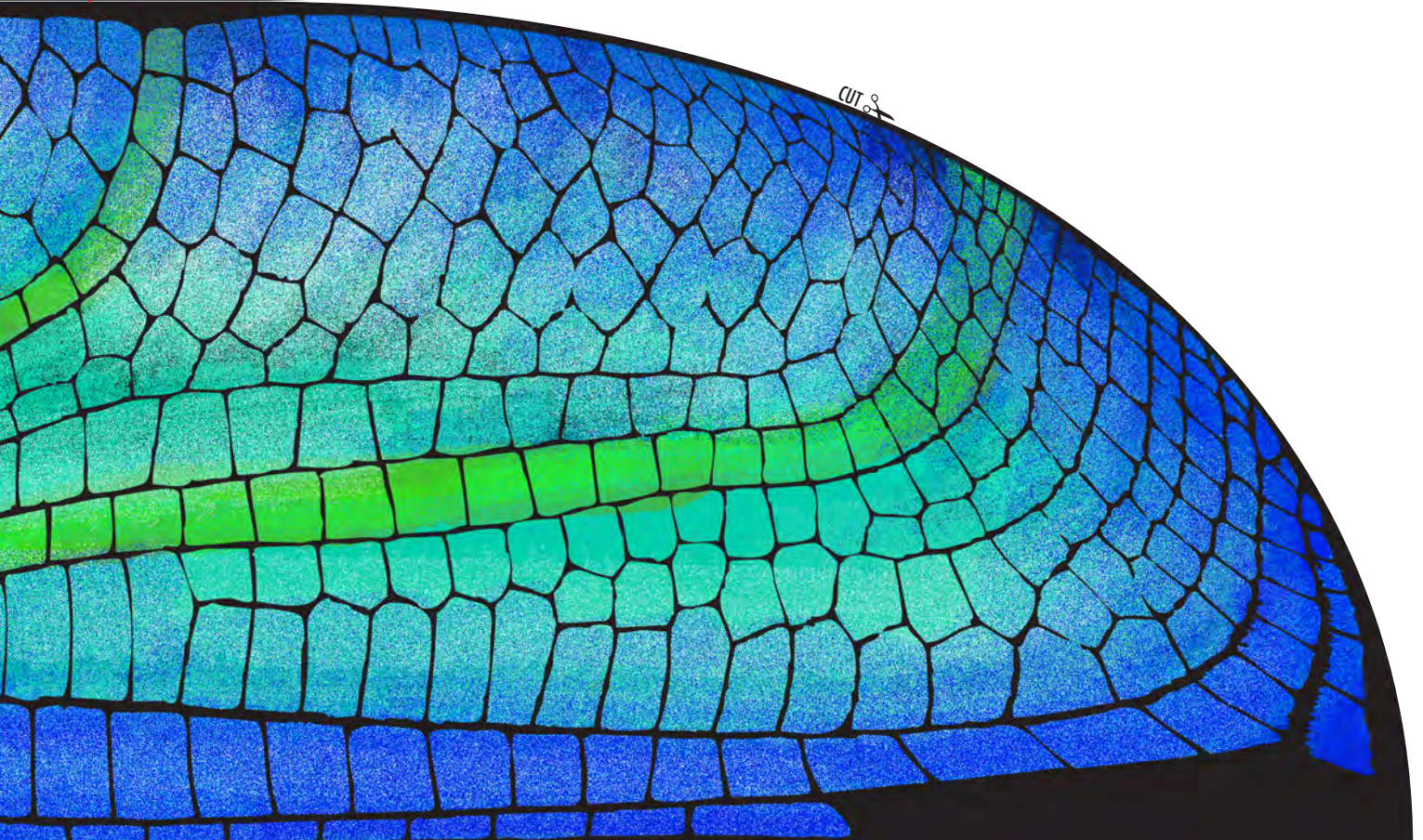
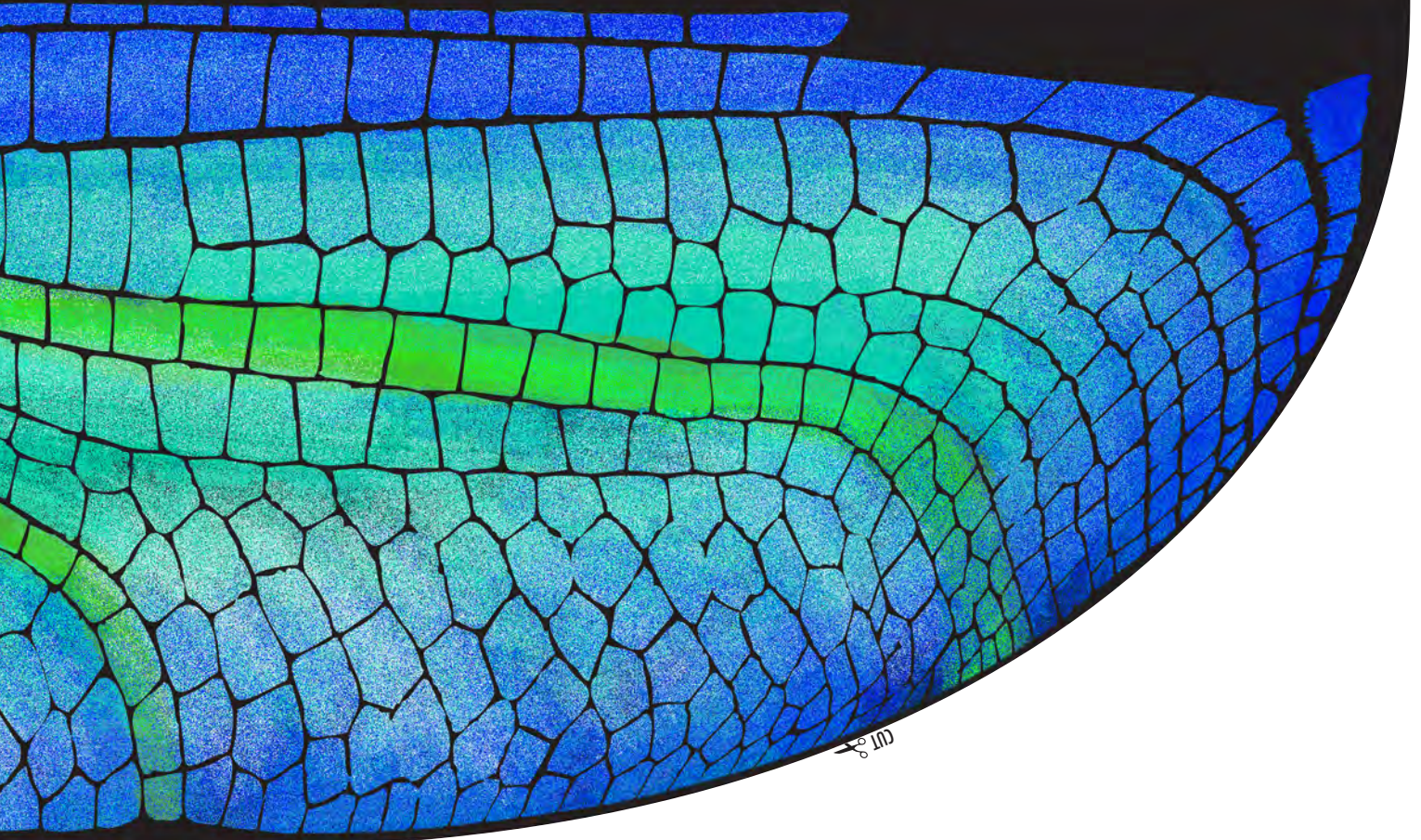
Top of wing

2A

1C

Top of wing

FOLD ON DASHED LINES



FOLD ON DASHED LINES

2A

Top of wing