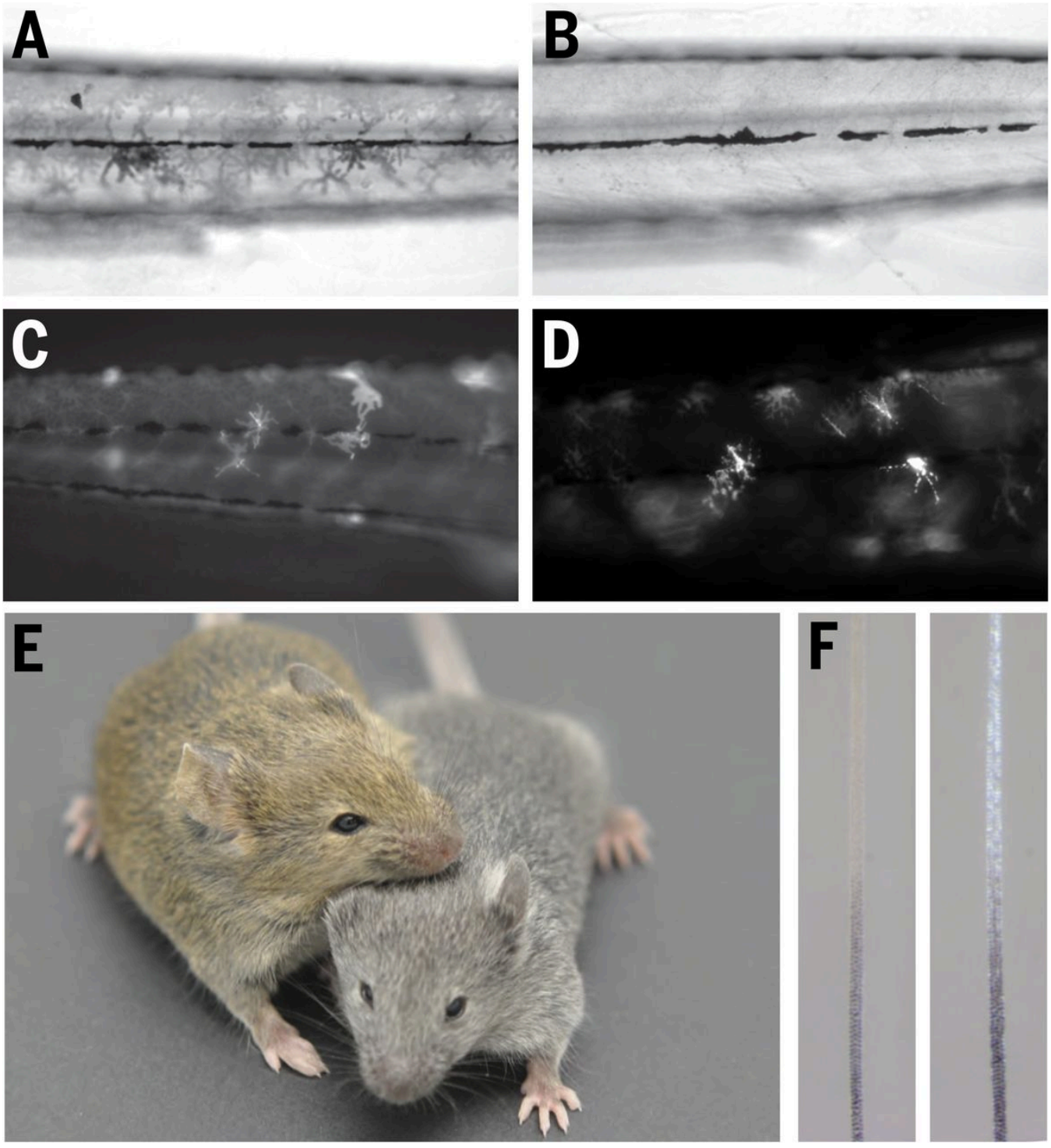
A
B
C
D
E
F

BACKGROUND INFORMATION

Many animals have colors that serve a variety of important functions. These colors may help the animals communicate, blend in with their environments (camouflage), recognize family members, or choose mates. Therefore, an animal's set and arrangement of colors, or coloration, can have important evolutionary effects.

How colorations, including skin color, are formed is not well understood in vertebrates. Researchers use model organisms, including zebrafish and mice, to investigate the genes behind coloration. One gene that scientists are investigating is *MFSD12*, which plays a role in human skin color. Scientists have used a technique called CRISPR-Cas9 to knock out the *MFSD12* gene in zebrafish and mice. "Knocking out" a gene stops the expression of its protein.

Images A through D (Zebrafish)

These four images are close-ups of six-day-old zebrafish embryos. Images A and C show wild-type zebrafish. Images B and D show mutants that had the *MFSD12* gene knocked out.

Most zebrafish have horizontal stripes, which are formed by pigment-containing cells called chromatophores. A xanthophore is a type of chromatophore that typically contains yellow pigments.

For Images A (wild type) and B (mutant), scientists stained the xanthophores' pigments with a dark-colored dye. For Images C (wild type) and D (mutant), scientists used a technique that allowed them to visualize the locations of the xanthophores. The xanthophores appear as light-colored areas.

Images E and F (Mice)

Image E shows two mice from the same litter. The brown mouse on the left is a wild-type mouse, and the gray mouse on the right is a mutant that had the *MFSD12* gene knocked out.

Image F shows close-ups of hairs from each mouse. The hair on the left was taken from the wild-type mouse, and the hair on the right was taken from the mutant.