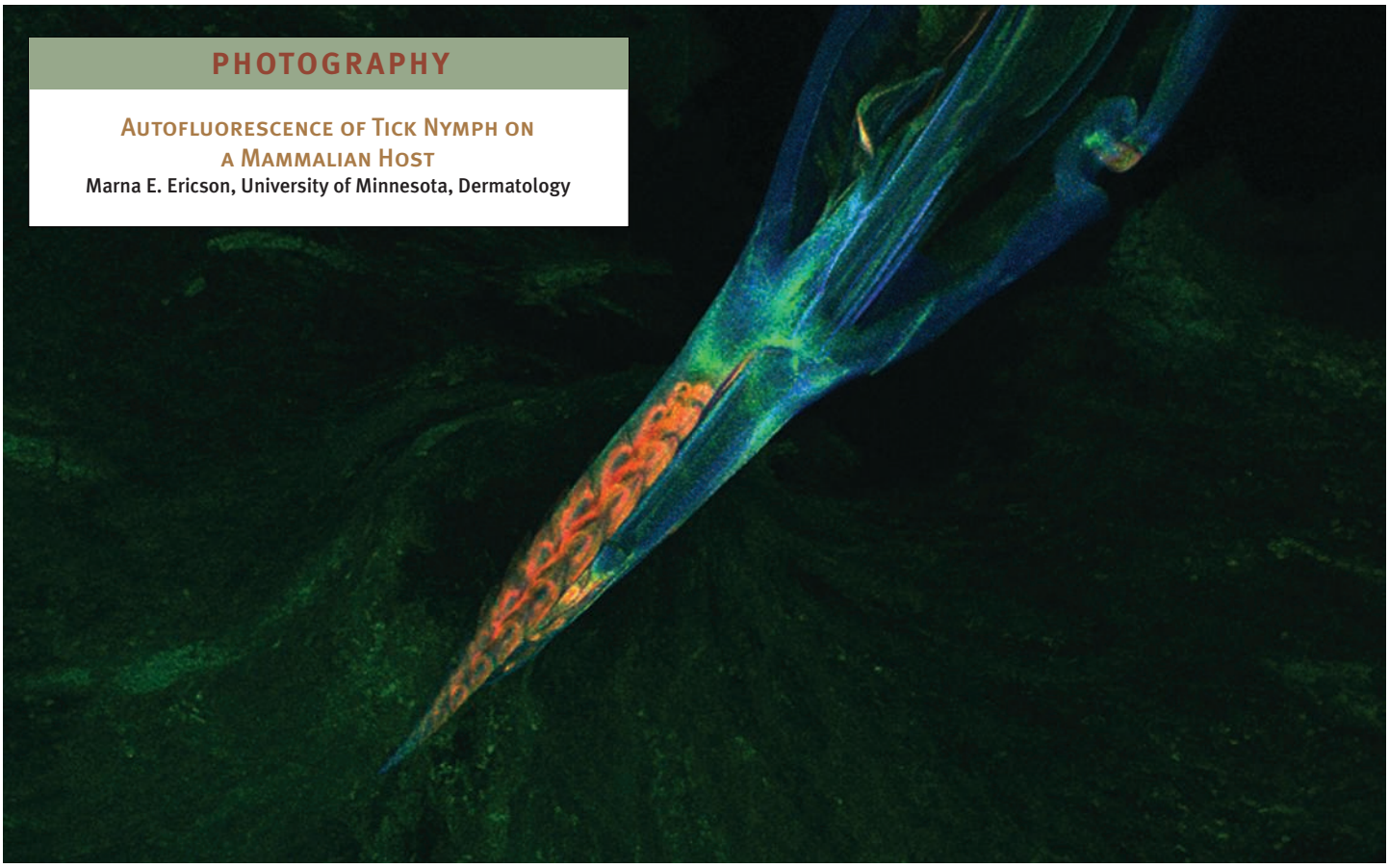
PHOTOGRAPHY

AUTOFLUORESCENCE OF TICK NYMPH ON A MAMMALIAN HOST

Marna E. Ericson, University of Minnesota, Dermatology



A blood-sucking tick has never looked so stunning. The makeover is thanks to Marna Ericson of the University of Minnesota, Minneapolis, who used laser scanning confocal microscopy to capture the autofluorescence of a common deer tick as it feasted on the ear of a golden hamster.

When ticks feed, they transmit bacteria to their hosts that can cause a variety of illnesses in humans, including Lyme disease. Ericson's group wanted to understand how this transmission takes place by engineering fluorescent versions of the tick-associated bacteria. But first the researchers needed to make sure that the color they selected for the bacteria would be distinguishable from the natural autofluorescence of the tick and hamster.

Judging by the rainbow of hues in Ericson's photograph, this could be a challenge. The colors of the tick's mouth range from the emerald green and brilliant violet of its outer shell to the volcanic red and salmon-orange of its flesh-piercing structures. Even the tissue of the hamster's ear fluoresces; that's the faint olive glow of the background. Ericson says the photograph highlights the "importance of good [autoflourescence] controls."

"I found this picture incredibly striking," says panel of judges member Felice Frankel. Frankel believes the picture won because of its "clarity of representation and the way it captures a real-time moment."

HONORABLE MENTION

ANTARCTIC DIATOM CHAIN

Unicellular plants form a conga line, while their antisocial relatives stick to themselves, in Dee Breger's photomicrograph. Breger, of Drexel University in Philadelphia, Pennsylvania, captured the moment by colorizing a scanning electron micrograph of a microplankton sample pulled from the depths of the Antarctic Sea. Oceanographers collected the sample during a 2002 expedition that investigated the role of marine iron in diatom growth and atmospheric levels of carbon dioxide.

PASTURE OF INSTABILITIES

Plastic can produce spectacular imagery under the right circumstances. To create this image, polymer science and engineering graduate student Ting Xu of the University of Massachusetts, Amherst, applied an electric field to a thin film of polystyrene. The field amplifies irregularities on the surface of the film, which appear as colorful patterns under optical microscopy. The image is part of VISUAL, an NSF-supported outreach program designed to educate the public about science.

Published by AAAS