

# The New York Times

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## The Speed of the Eye

Scientists at the University of California at Berkeley say they are able to trigger, record and accurately time the minute twisting action of a protein in the retina of the eye as it catches colors and begins translating them into chemical messages for optic nerves.

The timing of the transformation, said Dr. Richard Mathies, a chemist who worked on the project, is possible through the development of ultrafast pulses of the blue-green laser beams, which are able to illuminate and capture the changes in the molecule at short intervals, almost like a microscopic movie camera.

Using pulses sliced in quadrillionths of seconds, researchers tracked the progress of rhodopsin, a light-sensitive pigment known as visual purple, by recording how much blue, green, yellow and red it absorbed.

“The unique thing here is that you’re actually looking in real time at the molecules as they go through these reactions,” Dr. Mathies said. Scientists have had few clues as to why rhodopsin processes photons of light so efficiently. Now they know part of the answer: speed. Rhodopsin does its swivel in 200 quadrillionths of a second.

Dr. Mathies said the research, reported recently in the journal *Science*, will eventually help in creating synthetic photochemicals, which could be used for solar energy and minute, light-activated processing switches.

Similar findings are being published by a group of researchers from the City College of New York and A.T.&T. Bell Laboratories in the November issue of *The Proceedings of the National Academy Sciences*.