

## Nearly-blind sophomore studies biology with fingers

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Using her fingertips as "eyes," a 19-year-old sophomore, nearly blind since birth, is exploring the wonder-world of biology at the University of California, San Diego.

With the help of her biology professor, Patricia Nagel has learned to construct complicated models of molecules by relying largely on her sense of feel.

"So much of biology learning is visual," explains Dr. Michael Soule, assistant professor of biology at UCSD, "that we had to come up with a unique solution in 'Tricia's case. She can't see the blackboard, and reading is literally a painful process for her. But she was determined to learn biology and biochemistry. So we set up this special tutorial approach where, in every case possible, we call on 'Tricia to use her tactile sense in learning."

Under Dr. Soule's patient tutelage, 'Tricia can now build "tinker-toy" models of such molecules as glucose, and call off their components and their relationships to one another.

A premature baby, 'Tricia suffered impaired vision after too much oxygen was injected into her Incubator. The affliction, known as retrolental fibroplasia, was relatively common among premature infants until the early 1950's, when its cause became generally known. Oxygen is now carefully metered in incubators, and the malady has virtually disappeared.

Her handicap has forced 'Tricia to adopt many inventive approaches to her college studies. In some classes she may tape-record lectures, and in many cases her classmates read to her during study hours. 'Tricia can - and often does - take notes, but says ruefully that "I can't read them too well."

By holding a text within two or three inches of her eyes, she can read large print. But extended reading sessions give her "horrible headaches," she says.

'Tricia, whose home is in Corona del Mar, is enrolled in several courses, including physical education, music, and medieval and renaissance literature. But her current favorite is a course in Hebrew cultural traditions.

"I love to read the Bible," she says, patting a large-print edition she carries to class.

Though she once used Braille, 'Tricia has now abandoned it for other approaches.

As for hobbies, she likes to swim and - of all things - loves to ride a bike!

'Tricia is a graduate of Corona del Mar High School. Her father is a labor lawyer in Santa Ana.

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