

Viñoly's 105-member firm, Rafael Viñoly Architects PC, is based in New York City. It was selected in February from a slate of distinguished architects who participated in a charette—a series of collaborative meetings between the architects and HHMI planning groups—held at the Institute last fall. Members of the Institute's Medical Advisory Board, HHMI investigators and other renowned scientists and science administrators had previously shared with the Institute their ideas about the research campus's architectural needs.

Founded in 1982, Rafael Viñoly Architects is an internationally recognized firm with offices in New York, Tokyo and Buenos Aires. The results of its projects are prominent in major cities in the United States, Japan, Korea, Europe and South America. They include the Cairo Financial Center, the Tokyo International Forum, the Lewis-Sigler Institute for Integrative Genomics at Princeton University, the Van Andel Institute (a foundation devoted to medical science and education) in Grand Rapids, Michigan, and the National Neuroscience Research Center, which will be located on the campus of the National Institutes of Health in Bethesda, Maryland.

HHMI's new facility will include research laboratories, a conference center and short-term housing for more than 100 visitors. The scientific staff will eventually number more than 200. Construction of the 750,000-square-foot space is expected to begin in 2003 and be completed early in 2006.

For the collaborative research activities on the new campus, the Institute will invite proposals from its own investigators as well as from the larger scientific community. It will seek to support research efforts with cutting-edge scientific and technological goals and will give preference to projects that bring together individuals with diverse expertise. Successful proposals will demonstrate originality, creativity and a high degree of scientific risk taking. An important feature of Janelia Farm activities will be the dissemination of information and technology to the broad scientific community. **H**



JOHN DOWNER/FPIC INTERNATIONAL

*DNA fingerprinting may help track the origins of ivory poached from African elephants.*

## Teens Track Elephant DNA

**I**n the past, when Tom DeVries showed his students at Vashon Island High School near Seattle how to separate DNA molecules using a sophisticated biological technique, they were interested—up to a point. Then, DeVries reports, they always said, “So what? What difference does this make in the real world?”

Now he has an answer for them, thanks to a University of Washington professor who is working to use the same technique—gel electrophoresis—to track the origins of poached elephant ivory. Here it could make a *major* difference in the real world: Between 1979 and 1987, poachers caused the population of African elephants to drop from 1.3 million to 500,000, notes Samuel

Wasser, director of the university's Center for Conservation Biology.

“Using electrophoresis [the migration of charged molecules in an electrical field], we can tell the species, sex, geographical origin and individual identity of an elephant, using only a small sample of ivory,” says Wasser. “This has the potential to be enormously helpful in understanding the problem of poaching and in enforcing the law.” Although the technique has not yet been used in the field—Wasser and colleagues are still filling a few gaps in the genetic fingerprints of the ivory—it should be available within a few months. In the meantime, he has been working with forensic specialists at Interpol, the international police organization, to ensure that the technique will be useful to them.

It is already useful in the classroom. When Nancy Hutchison heard about Wasser's work with elephant DNA, she thought it could be a boon to science teachers and an

inspiration to their students. “What an incredibly rich topic,” says Hutchison, director of the Science Education Partnership (SEP), a professional development program for secondary school science teachers in Washington state, sponsored by the Fred Hutchinson Cancer Center and supported by a grant from HHMI. “In addition to giving meaningful context to the electrophoresis, elephant poaching raises many related, open-ended questions and shows how scientific tools are used to inform discussions of public policy.”

SEP assembled a team of five teachers, including DeVries, who turned Wasser’s research into a flexible curriculum to accompany electrophoresis kits. DeVries uses the elephant DNA in an environmental science unit, for example, while other teachers use it to teach genetics, population genetics, ecology, bioethics and conservation biology.

DeVries describes the students’ experience with electrophoresis—the heart of the unit—as “an obstacle course made of gelatin. We use an electrical charge that pushes the material through gelatin with microscopic holes. The molecules separate out depending on their sizes, charges and shapes. The small, compact ones race to the end. The big stringy molecules don’t get very far. A stain allows us to see and identify the different sizes.”

Twenty Seattle-area teachers have used the curriculum with almost 2,000 students, and the response has been overwhelmingly enthusiastic. For one thing, it shows them that teenagers can make some serious, grown-up contributions to science. “Who would have thought that a bunch of 15-year-olds would be able to do DNA fingerprinting like the professionals?” says Helen Huizenga, one of DeVries’ biology students. For another, it appeals to their sense of curiosity and adventure. “The mystery of where the confiscated ivory came from was intriguing,” says schoolmate Charlotte Skeffington. “I felt like Sherlock Holmes solving this case.”

“Even my special-needs kids do well in this unit,” says DeVries. “It’s also the kind of activity that will excite two or three percent of students enough that they’ll decide to become biologists or chemists.”

—MAYA MUIR

## Prize on the Eyes

Professional recognition sometimes comes early. It did for Ophelia Venturelli, one of 40 finalists in the Intel Science Talent Search—sometimes called the “junior Nobel Prizes.” The honor is the result of her research at the National Institutes of Health (NIH) as part of an internship in the HHMI-supported Student and Teacher Program, and it reinforces her career plans: to earn an M.D. in oncology and a Ph.D. in molecular biology. It also carries more immediate benefits: The 18-year-old senior at Walt Whitman High School in Bethesda, Maryland, will receive a \$5,000 scholarship and a computer. Plus, she and the Intel grand prizewinner, Ryan Patterson of Grand Junction, Colorado, had a brief run at stardom, appearing March 12 on “Good Morning America” with host Charlie Gibson.

Venturelli’s work at the National Eye Institute (NEI) could prove important to women with cataracts, the leading cause of blindness in the United States. She analyzed ocular lenses of female rats to determine whether the presence of estrogen can help prevent cataracts, an age-related degeneration of the lens of the eye. Preliminary results say yes. Venturelli and colleagues showed that adding estrogen to the lenses of 17-week-old and 9-month-old rats reduced expression of the alpha smooth-muscle



WILLIAM K. GEIGER

*Intel prize finalist Ophelia Venturelli will be a freshman at Stanford University this fall.*

actin gene, a known marker for cataracts.

Venturelli’s NIH mentor, Deborah Carper, chief of the section on molecular therapeutics in NEI’s laboratory of mechanisms of ocular diseases, describes her protégé as dedicated, extremely thorough and a quick study.

Venturelli says she became interested in science as a youngster living in Colorado. “I liked to immerse myself in the natural environment and just observe the wildlife,” she recalls. She plans to continue her research at NEI this summer, testing the findings on lenses from humans, which her mentor, Carper, says is the natural next step in the work. —MELODY SIMMONS

## Reaching Out to Kids and Their Elders

Helping children and the grown-ups around them become conversant with science is a higher priority than ever, and biomedical research institutions have an increasingly important role to play. HHMI has invited more than 300 biomedical research institutions—including, for the first time, schools of veterinary medicine, dentistry and public health—to compete for almost \$12 million in grants to do science education outreach in their communities. Four-year grants of up to \$600,000 each will be awarded in 2003.

The new competition targets not only students from preschool through 12th grade and their teachers but their families and communities as well. To embrace a wider—as well as younger—perspective and broaden the professional training of scientists, the Institute is encouraging applicants to involve graduate students and postdoctoral fellows in their programs.

For the first time, approximately 10 percent of the overall budget will be earmarked for an HHMI-led evaluation project, including professional and peer evaluation. Two previous rounds of grants to biomedical research institutions totaled \$23.3 million. The science education outreach programs they supported have involved more than 350,000 students and nearly 16,000 teachers.

—JENNIFER BOETH DONOVAN