Eaton's team hasn't produced enough of either compound to test their blasting power. But they have made enough to ensure that they're likely to be stable when jostled, a vital trait for any widely used explosive. What's more, Eaton notes that the eight-nitro compound should be able to adopt a more compact crystalline structure than the one they've observed in samples so far. If they manage to coax it into that tighter structure, they should be able to wring out even more explosive power.

For now, the synthesis of octanitrocubane remains too impractical to ramp up for military-scale production. But Eaton says his team is already pursuing the possibility of tacking nitro groups onto cheap and abundant acetylene, or ethyne, gas (C_2H_2) and then assembling four of these dinitroacetylenes to produce single molecules of octanitrocubane. Acetylene's high reactivity means that such an assembly won't be easy, says Eaton. But if it works, it's likely to have a powerful impact on both chemistry and explosives.

–ROBERT F. SERVICE

RESTORATION ECOLOGY

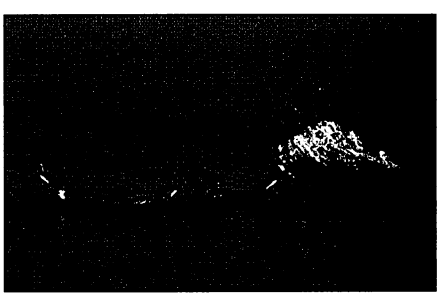
Bringing the Salton Sea Back to Life

The U.S. government has given the nod to what could become one of the most ambitious ecological restoration projects ever attempted: rescuing the Salton Sea, a giant lake in Southern California that has become a deathtrap for wildlife. On 13 January, the Interior Department released a blueprint for healing the lake, now on a fast track to looking as lifeless as the Dead Sea. But Congress must come up with $1 billion or more to pay for a full-scale restoration.

Created 95 years ago when engineers accidentally diverted the Colorado River into a desert trough, the Salton Sea once thrived as a resort. But years of agricultural drainage made the 984-square-kilometer lake ever saltier and loaded it with nutrients that spur oxygen-depleting algal blooms. Nowadays it's the scene of fish kills and bird die-offs. Despite its woes, many biologists say, the Salton provides critical habitat for birds moving along the Pacific Flyway, a major migratory pathway, as well as for endangered species such as the brown pelican. The lake's boosters succeeded in convincing Congress to pass a 1998 law that directs Interior to consider solutions for freshening the water, now 25% saltier than seawater, and improving it as a habitat (*Science*, 2 April 1999, p. 28).

Congress also funded $5 million in studies to reconnoiter the lake's chemistry and biology. The just-released results have "dispelled a lot of perceptions" about the sea's health, says wildlife disease biologist Milton Friend, chair of the multiagency Salton Sea Science Subcommittee. "For the first time, we have some good, solid information" that eases concerns that the lake is too polluted to bother saving. Absolved as suspects in the die-offs are pesticides and the element selenium (concentrations of both are too low), and algal toxins, which so far in lab tests do not appear to harm vertebrates. However, many fish are covered with parasitic worms, reflecting unhealthy conditions that might make them more susceptible to other pathogens. Its penchant for poisoning its inhabitants aside, the lake teems with a remarkable array of life-forms—scientists have counted over 300 organisms not previously reported there, including many microbes new to science. Their studies will appear later this year in *Hydrobiologia*.

Having concluded that the Salton Sea is worth salvaging as a resource for wildlife, recreation, and agriculture, Interior officials endorse building an evaporation plant and ponds to remove salts, and they have suggested schemes for pumping in fresher water or moving salty water out. Their plan also calls for a permanent science office that would fund studies and work with management on solutions. Congress will need to appropriate money for these projects, which Interior officials admit could cost $1 billion or more over the next 30 years.



CREDIT: M. FRIEND

Rest stop, in need of restoration. Interior has released a blueprint for saving California's Salton Sea, a mecca for migrating birds.

In the meantime, Salton managers have $8.5 million in hand to move ahead with a pilot project—an evaporation tower that will spray a fine mist of lake water into a holding pond, where salt will precipitate. They're also seeking to pay a commercial trawler to harvest fish, which by removing the nutrients sequestered in the fish's bodies would lead to a healthier ecosystem, and they've hired a wildlife biologist whose job is to anticipate—and take preemptive measures to alleviate—disease outbreaks.

Some critics say the plan doesn't go far enough to tackle tough issues such as stemming the flow of nutrients into the lake. "Birds and fish are going to continue to die unless they address these other problems," says Michael Cohen of the Pacific Institute, a think tank in Oakland, California. The plan does leave many issues unresolved, says Stuart Hurlbert, a limnologist at San Diego State University and staunch restoration advocate, but undertaking a pilot project first, he says, "seems a reasonable way to go."

–JOCELYN KAISER

CLINICAL RESEARCH

FDA Halts All Gene Therapy Trials at Penn

The death of a volunteer in a gene therapy experiment at the University of Pennsylvania in September triggered a flood of publicity; now, the consequences have landed on researchers and other patients at Penn. On 19 January, the Food and Drug Administration (FDA) stopped all seven clinical trials run by Penn's Institute for Human Gene Therapy—perhaps the most respected and best funded center of its kind—after finding "serious deficiencies" in the way the institute monitors its trials. The FDA had already halted the trial in which 18-year-old Jesse Gelsinger died.

Penn had not calculated at press time how many patients might be affected by the shutdown. But it noted in a statement that five "active trials" are on hold, including experimental therapies for cystic fibrosis, mesothelioma (lung cancer), melanoma and breast cancer, muscular dystrophy, and glioma (brain cancer). University President Judith Rodin has asked the provost, physician Robert Barchi, to oversee two reviews of all of Penn's clinical research. One panel, chaired by Barchi, includes "distinguished members of the Penn faculty," and the other, whose chair has not been named, will use outside scientists. The director of the gene therapy institute, James Wilson, a key investigator on all the trials, had no comment on FDA's decision. In December, during a public review of the case in Bethesda, Maryland, Wilson defended the institute's record and argued that the accident was unforeseeable (*Science*, 17 December, p. 2244).

The FDA did not release conclusive findings. But it did release an eight-page report offering preliminary "observations" that help explain the suspension order. The report lists 18 problems, some well publicized already. For example, FDA inspectors found that physicians had not filled out volunteer eligibility forms in advance, as required, for any of the 18 patients enrolled in the fatal trial, which was testing a new therapy for a genetic disorder that overloads the body with ammonia. The FDA learned that undated forms were filled out for these patients after Gelsinger's death. In addition, the report says that Penn failed to document ade-

quately the consent process for nine patients, failed to inform FDA rapidly that two monkeys in a similarly designed experiment had died, and failed to develop a "standard operating procedure to conduct a clinical study." FDA has asked Penn to respond and explain how it intends to comply with regulations in the future. Until FDA is satisfied, the clinical trials will remain suspended.

Meanwhile, members of Congress and other federal officials have jumped in. Senator William Frist (R–TN) was planning a public hearing in early February on the topic, "Gene Therapy: Is There Oversight for Patient Safety?" And the federal Office for Protection From Research Risks has launched its own broad review, a type that according to the director may take 18 months to complete. **–ELIOT MARSHALL**

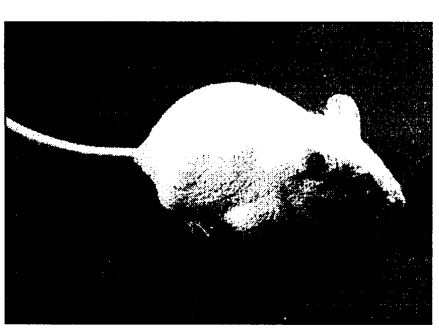
INTELLECTUAL PROPERTY

NIH Cuts Deal on Use Of OncoMouse

A new agreement cuts away some red tape that has been a serious annoyance for cancer researchers. The policy, announced by the National Institutes of Health (NIH) on 19 January, allows NIH-funded scientists doing noncommercial research to use patented transgenic animals without obtaining specific approval of E. I. du Pont de Nemours and Co. of Wilmington, Delaware.

"This is a significant deal," because it removes legal worries for many labs, says David Einhorn, counsel to The Jackson Laboratory of Bar Harbor, Maine, a major supplier of research animals. Equally important, experts say, DuPont agrees not to seek broad commercial rights to discoveries in nonprofit labs just because patented animals were used in the research.

In 1988, Harvard University was granted a patent on the OncoMouse and broad claims on any other mammal (except humans) containing foreign genes implanted to express a tumor. Harvard licensed the technology to DuPont, which didn't start enforcing its legal rights vigorously until the mid-1990s, one expert in the field says. By then, the technology was widespread. Scientists were not only publishing papers on tumor-ridden mice and other animals, but breeding and sharing them with colleagues. When DuPont demanded that they submit papers for review by the company and stop sharing animals, many scientists got upset. "In a sense, we were all violators of the patent" and all at risk of being sued, recalls Harold Varmus, the former NIH director who this month took over as president of the Memorial Sloan-Kettering Cancer Center in New York City.



CREDITS: (TOP TO BOTTOM) INSTITUT PASTEUR; DUPONT

Disentangled. DuPont has agreed to cut red tape surrounding the patented OncoMouse.

Varmus says he personally appealed to DuPont CEO Chad Holliday about the OncoMouse problem. After many months of negotiations, the DuPont and NIH technology licensing staffs reached an agreement that would exempt nonprofit researchers from restrictive licensing provisions. (The text is available at www.nih.gov/od/ott)

"It will be a great relief for many people to know they are not violating the law" by sharing animals with a colleague down the hall, says Varmus. DuPont "deeply appreciates the importance of wide dissemination of tools for basic research and is committed to making [OncoMouse] available to the academic community," corporate intellectual property manager Tom Powell commented in a written statement. However, the company will retain tight control of commercial uses.

–ELIOT MARSHALL

PASTEUR INSTITUTE

New Chief Promises Renewal and Openness

PARIS—Philippe Kourilsky has wasted little time making his mark on the illustrious Pasteur Institute. Just days into his term as its new director-general, Kourilsky spelled out plans for big changes in a meeting here last week with the research center's nearly 1100 scientists. His strategy includes a stronger concentration on public health and applied research as well as a stiffer evaluation process that some Pasteur researchers say could lead to a major reshuffling of lab heads in coming years. Yet despite this potential shake-up, Pasteurians who spoke with *Science* are casting their lot with their new boss. "Kourilsky's speech was positively perceived by most of the people here," says molecular geneticist Fredj Tekaia.

Since it was founded in 1888 by Louis Pasteur, the institute has gained a worldwide reputation in biomedical research, and its scientists racked up eight Nobel Prizes during the past century. But Kourilsky's new orientation may help resolve some longstanding debates at Pasteur, many of which revolve around just how hard basic scientists should be trying to make their research pay off in medical applications (*Science*, 15 October 1999, p. 382). Reminding his colleagues that the statutes of the institute which is run by a private foundation partly supported by the French government—put a clear emphasis on microbiology and public health as top priorities, Kourilsky said that a lack of cooperation between labs at Pasteur has created an "intolerable" gap between basic and applied research. "Is it acceptable, for example, that collectively the immunologists are so little involved in the study of several major pathologies ... [such as] *Helicobacter pylori* and even HIV?" asked Kourilsky, an immunologist himself.

No guillotine. Kourilsky says tougher evaluations will still be fair.

Some Pasteurians say that because most of Kourilsky's talk was short on details, they would wait and see how effectively their new chief implements his priorities before passing judgment. But one important change outlined by Kourilsky is far from abstract: Pasteur's 110 research labs will now be allowed to exist at most 12 years at a stretch unless they pass a rigorous scientific evaluation. Similar policies are already in force at some of France's large public research agencies, such as the CNRS and INSERM. Kourilsky intends to carry out this policy retroactively, meaning that the future of about half of the labs as well as their chiefs—will be up in the air during the next 2 years. Pasteur molecular biologist Moshe Yaniv says the 12-year rule would help address a common problem in French research: "the problem of seniority. Once you establish a lab, you rarely lose it." Adds Pasteur immunologist Antonio Freitas, "This is an excellent idea. Some labs have clearly lost steam. In a more competitive situation, they will have to improve considerably to survive."

Kourilsky tried to reassure his colleagues that the rule "has nothing to do with the guillotine" and that lab chiefs forced to step down would be given other functions. Perhaps most importantly, some Pasteur researchers say, Kourilsky has promised that these scientific evaluations—as well as the other changes he intends to make—will be carried out openly, in contrast to the behind-closed-doors approach that has often plagued the institute in recent years (*Science*, 13 November 1998, p. 1241). Says Tekaia, "This is one of the most important points, for which people have been waiting for some time." **–MICHAEL BALTER**