

BIOLOGICAL INVADERS

1834
What makes an invader?



1838
How England fought back



1841
Using invaders to fight invaders



"I am not concerned" about the safety of continuous cell lines. "But the data we have are not sufficient to satisfy me as a scientist." To learn more, says Egan, the FDA plans to join European regulatory agencies in supporting experiments, such as testing the cancer-causing potential of DNA fragments, that will help quantify the risks. It is all right to "make mistakes in calculations," the FDA's Andrew Lewis said at the meeting. "But if we make mistakes in terms of delivering products that are unsafe, the costs will be incalculable."

—GRETCHEN VOGEL

CLIMATE CHANGE

New Center Gives Japan an Arctic Toehold

FAIRBANKS, ALASKA—Japan and the United States have launched a \$32 million research center to plumb the consequences of climate change in the Far North. Late last month, researchers from the two countries gathered here on the campus of the University of Alaska, Fairbanks (UAF), to dedicate the International Arctic Research Center (IARC). Guided by representatives from several Japanese and U.S. organizations, the center plans to do "big picture, big science," says Gunter Weller, director of the Cooperative Institute for Arctic Research, an IARC partner based at UAF.

By compiling satellite data on everything from sea ice to vegetation patterns in the Arctic, where the effects of global warming are being felt first, IARC hopes to do some informed crystal-ball gazing. Most of the center's funding is expected to come from Japanese and U.S. agencies and universities. Besides supporting outside scientists, the center hopes to expand its 50-person research staff to 150 by 2005. The upshot, says Syun-Ichi Akasofu, IARC's U.S. director, will be clearer forecasts of global climate and of the ways perturbations in the Arctic might influence northern countries. "The ultimate purpose of IARC is to make it possible to predict global change," adds Taro Matsuno, director-general of Japan's Frontier Research Program, a key player at IARC.



Cold eye on climate. Arctic data can sharpen models, IARC's Akasofu says.

Climate models suggest that the Arctic is a good place for predicting climate changes, because global warming, stoked by rising levels of carbon dioxide and other greenhouse gases, should be amplified there. Higher temperatures melt permafrost—possibly liberating trapped CO₂ and methane, two greenhouse gases—and drive the boundary of permanent snow cover northward, eating away at a layer of white that reflects sunshine back into space. Both effects could feed back to spur global warming. Indeed, temperatures in many parts of the Arctic are already climbing faster than in regions to the south. Average annual temperatures in Alaska have increased 1 degree Celsius in each of the last 2 decades, whereas Earth's average annual temperature has increased less than 1 degree over the last century.

"People are seeing earlier breakup and later freeze-up of sea ice and warming of permafrost, and native people are talking about changes in wildlife," says John Calder, director of Arctic research at the National Oceanic and Atmospheric Administration, an IARC funder.

Changes in the Arctic may also be having effects at lower latitudes, a link that IARC researchers will probe. For instance, 6 years ago a quarter of Japan's summer crop of rice was wiped out during a frigid year that resulted from shifts in the Arctic atmosphere. Japanese researchers also worry that changes in Arctic Ocean circulation will further affect fisheries in the North Pacific and the Bering Sea, where disturbing shifts are already taking place.

Although both U.S. and Japanese officials say their governments are committed to the Arctic endeavor, which is an outgrowth of the "U.S.-Japan Common Agenda" signed by President Bill Clinton and former Japanese Prime Minister Ryu-

toro Hashimoto in May 1997, neither side has fully clarified how that commitment translates into cold cash. But the center's



Land of opportunity. New center hopes to woo scientists to study the tundra and other global warming hotbeds.

backers don't expect to have a tough time attracting funding or researchers: After all, IARC is a sleek new facility where the climate action is. "If you build it," Calder says, "they will come."

—BERNICE WUETHRICH

Bernice Wuethrich is an exhibit writer at the Smithsonian's National Museum of Natural History.

NSF AND NASA BUDGETS

Rhetoric Meets Reality On the House Floor

A full-court press by Administration officials and scientific groups to fend off attacks on science funding was no match for congressional budget realities last week. The House of Representatives passed a spending bill that imposes deep cuts in NASA's budget and erases a proposed increase for the National Science Foundation (NSF). The Senate has yet to act on the bill—a \$92 billion measure that funds housing, veterans' care, and dozens of independent agencies—and its fate is uncertain as Congress and the White House remain deadlocked over whether to lift tight caps on domestic spending or break their



pledge not to spend the surplus from Social Security. But a series of floor votes last week suggests that researchers face an uphill battle in the stiff competition for federal funds.

The scientific community has organized an effort to offset the July actions of the appropriations committee, which took a \$1 billion bite out of NASA's overall budget and stripped all but \$8 million from a proposed \$235 million increase for NSF research (*Science*, 6 August, p. 813). On 1 September White House Chief of Staff John Podesta gave a speech extolling the value of research, warning that this and other spending bills are "playing politics with science and technology funding." Last week NSF director Rita Colwell called the budget process "disturbing," saying that it "turns our backs on the country's capability" to do great things in science.

But even as she spoke to a roomful of reporters at NSF headquarters in Arlington, Virginia, House members were voting 212 to 207 to shrink NSF's \$2.7 billion research account by an additional \$10 million, putting the money into a \$225 million program to house indigent people with AIDS. "This is a Sophie's Choice, [putting us between] a rock and a hard place," lamented Representative Sheila Jackson-Lee (D-TX), an advocate for research on the Science Committee who the next day unsuccessfully proposed adding \$924 million to NASA's budget. "I have always supported NSF, but today I am making a choice."

Representative Jerrold Nadler (D-NY), the author of the amendment that put Jackson-Lee and others in a tight spot, explained that the funds were needed to restore an earlier cut in the AIDS program. He said he singled out NSF's \$245 million polar research program to absorb the blow because "there are 12 other agencies that support Antarctic research, so we would not be greatly hindering this research ... while significantly improving the lives of individuals who need our help now." Social science lobbyist Howard Silver, chair of the Coalition for NSF Funding, confessed that his group did not try to defeat the amendment: "It's hard to ask members to vote against homeless AIDS patients."

To keep within the spending caps, members were prohibited from proposing any funding increase without an offsetting cut. That rule left research advocates with little room to maneuver. Representative Vernon Ehlers (R-MI) proposed—and then quickly withdrew—an amendment to boost NSF research by \$230 million by cutting every other discretionary program in the bill by 0.35%. The pattern was repeated twice for portions of NASA's budget in hopes of recovering some of the \$566 million sliced from the agency's

\$3.7 billion space and earth science accounts. The ploy was intended to put pressure on House legislative leaders to fight for these programs when they meet with their Senate counterparts later this fall to negotiate the final version of the bill. Science supporters were leery of putting the amendments to a vote, however, because "it is more difficult to bring something up in conference if you've already lost on the House floor," notes the American Astronomical Society's Kevin Marvel, who called the final House vote "disappointing for the space sciences community."

NASA and NSF supporters remain hopeful that the appropriations process will ultimately go their way, however. They note that Science Committee chair Representative James Sensenbrenner (R-WI) voted against the bill and pledged to fight for a bigger budget for both agencies. The Senate was expected to begin work on its version of the bill this week, with spending panel chair Senator Christopher Bond (R-MO) and ranking member Barbara Mikulski (D-MD) hinting that they may be more generous to the two agencies. How generous, however, will depend on whether the spending caps remain in place.

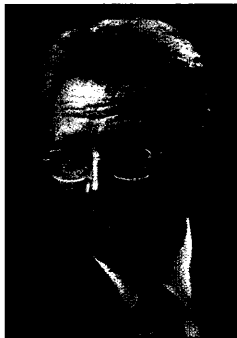
—JEFFREY MERVIS AND DAVID MALAKOFF

EUROPEAN UNION

Tough Questions Greet New Research Chief

The European Parliament was set to vote this week on the entire slate of new commissioners—the European Union's (EU's) equivalent of a cabinet—put forward by incoming European Commission President Romano Prodi. If, as widely expected, the Parliament approves Prodi's team, Belgian Socialist Philippe Busquin will move into his new Brussels office as the head of the EU's \$4-billion-a-year research program.

Busquin is something of an unknown quantity, but he outlined his plans earlier this month at a hearing during which he was grilled by conservative members of the European Parliament (MEPs). He said he wants to make greater use of the EU's Joint Research Centre (JRC), review the extent of Europe's participation in the planned International Thermonuclear Ex-



Unknown quantity.
Philippe Busquin.

ScienceScope

The Compleat Fly It's a bit early to break out the champagne for scientists sequencing the DNA of the fruit fly, whose 143-million-base genome is the largest ever attempted. But optimistic press notices are already fizzing away. Celera Genomics Inc. of Rockville, Maryland, announced on 9 September that it had "finished the sequencing phase," after producing 1.8 billion units of DNA data.

With the jigsaw pieces strewn randomly on the table, the "challenging process" of assembling the *Drosophila melanogaster* genome into a comprehensive picture has just begun. J. Craig Venter, Celera's president, claims the finished product "will validate the effectiveness" of his company's controversial whole-genome shotgun approach (*Science*, 18 June, p. 1906).

Most gene jockeys won't be able to judge that claim until finished sequence data are released to the public. That process will begin in late October and continue through December. Until then, Celera will share its data only with corporate clients.

Finer-Toothed Comb Security at the Los Alamos National Laboratory in New Mexico, already the subject of scathing probes by Congress and the Department of Energy (DOE) in the wake of Chinese spying allegations, is about to be put under the microscope yet again. University of California (UC) President Richard C. Atkinson last week said that his 20-member advisory council will "review the management situation surrounding" the flawed investigation of former Los Alamos physicist—and alleged spy—Wen Ho Lee and report back later this year. The UC manages Los Alamos and two other labs under contract to DOE.

The move accompanied Atkinson's 10 September announcement that he was disciplining two former lab security officials for lapses—but would not punish the lab's former director, metallurgist Sigfried Hecker, as requested by Energy Secretary Bill Richardson last month (*Science*, 20 August, p. 1193).

The sentences—which include pay freezes and an employment ban—were not to Richardson's liking. DOE press secretary Brooke Anderson says, "Secretary Richardson would have preferred that the disciplinary actions be stronger." But, she adds, "it's time to move on."

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