EMERGING DISEASES

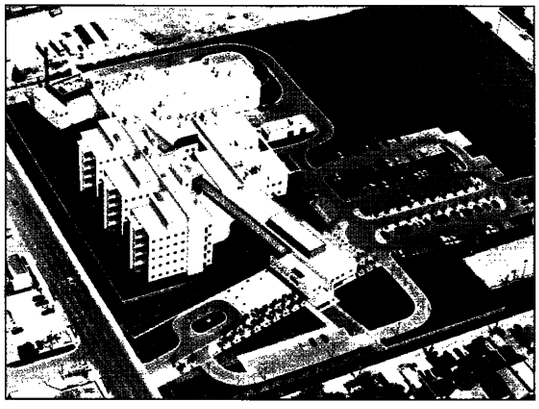
Canada Dedicates New Human, Animal Labs

The world health community has a new weapon in the fight against emerging infectious diseases. Last week the Canadian government dedicated a $100 million facility in Winnipeg, Manitoba, that features side-by-side maximum containment laboratories for the study of viruses that kill animals and humans. The labs are Canada's first biosafety level 4 facilities and represent the only site in the world where scientists will be able to work with livestock to study both the medical and veterinary aspects of zoonotic diseases—diseases that hop from animals to people, including such recent pathogens as the Ebola, Nipah, and Hendra viruses.

"It's an outstanding facility, well designed and constructed," says Jonathan Richmond, who oversees the level 4 lab at the U.S. Centers for Disease Control and Prevention (CDC) in Atlanta and has served as a technical adviser for the Canadian lab. Typically, level 4 labs specialize in either human or animal diseases; as a result, the animal labs lack medical expertise, whereas the medical labs lack the capacity to work with large animals such as pigs and cattle. "What's exciting is that [the Winnipeg lab] will bring together a critical mass of people to understand the pathogenicity and progression of diseases that affect both animals and humans," says Richmond.

The lab complex, called the Canadian Science Center for Human and Animal Health, grows out of a political promise made in the 1980s by then–Prime Minister Brian Mulroney to spur economic development in the western provinces. The center, which also contains several level 2 and 3 labs for less hazardous organisms, is operated jointly by two federal agencies, Health Canada and the Canadian Food Inspection Agency. Both agencies have transferred personnel from Ottawa to the new facility in the past year.

The human level 4 lab is headed by Heinz Feldmann, a 40-year-old German physician and virologist trained at CDC and the University of Marburg in Germany who has spent the past decade studying viral hemorrhagic fevers such as Ebola and Marburg. Feldmann hopes to continue his research on those and other pathogens, collaborating with partners in the United States, Germany, and elsewhere. But first he must assemble a six-person staff to set up the lab and win approval to open shop, a process he hopes will be completed before the end of the year. Then the lab must demonstrate its ability to work with other research labs in diagnosing infectious agents from around the world. "It will take some years to get the research program up and running," says Feldmann, who adds that the government so far has given him "sufficient support ... even though I don't yet have a budget."



Virus fighter. Heinz Feldmann will head level 4 lab at Canada's new center for human and animal health.

His colleagues wish him well, but some say it won't be easy. "It's a wonderful facility, and an engineering marvel, but it could be tough for him to get people to come out there because of where it's located," says Susan Fisher-Hoch, director of the level 4 lab under development at Fondation Marcel Mérieux in Lyon, France. "Then he has to draw up his protocols and get ready for business. It'll be a real challenge."

At the same time, Fisher-Hoch and others say that the Canadian center offers scientists a unique opportunity to work with such zoonotic diseases as Nipah virus, a newly identified pathogen that is transmitted from pigs to humans and recently caused a spate of deaths in Malaysia (*Science*, 16 April, p. 407). And Brian Mahy, director of viral and rickettsial diseases at the CDC, says the location is an advantage for U.S. scientists. "If the CDC wants to study Nipah in pigs, we have to work with [the Australian Animal Health Laboratory at] Geelong. It would be a lot more convenient to work with Winnipeg."

Tony Della-Porta, head of technical services for the Geelong lab, says there's more than enough business to go around. "There's a real need for all of us to work together against these newly emerging diseases," he says. "We really don't know what will pop up next. And we have to be ready to fight it with everything we've got." —JEFFREY MERVIS

KOREA

Spending Boost Aims To Reform Academia

SEOUL—Undergraduates taking a biology course at Seoul National University (SNU), Korea's top university, may choose from among offerings by five departments. Such duplication adds to the teaching load of faculty members and leaves less time for research. The large number of departments offering courses also lowers research productivity by imposing additional barriers to joint projects that require a pooling of resources. This month the Korean government unveiled an ambitious plan that addresses those and other problems facing academic researchers as part of a $1.17 billion, 7-year program to reform higher education.

The new effort, called Brain Korea 21 (BK21), is intended to raise the country's ranking among global scientific powers by shaking up an overly centralized and hidebound system. It aims to improve graduate training by giving money in selected areas to new research consortia that cross institutional boundaries. It also promises to ease the teaching load for those researchers by lowering the number of undergraduates in their departments. At the same time, the government hopes to strengthen the country's capacity to do research by funneling undergraduate students and more resources into promising provincial universities.

Announced on 4 June, the project is the country's latest attempt to make more efficient use of its rising investment in science and technology (*Science*, 2 January 1998, p. 24). Government officials hope that BK21 will begin to remove the barriers between departments, end inbreeding and cronyism among faculty, and reduce the intellectual gap between a handful of elite universities and dozens of provincial institutions. "BK21 is aimed at changing the basic structure of universities in Korea," says policy analyst Chung Sung Chul of the government's Science and Technology Policy Institute in Seoul.

Brain 21 will pour money into such burgeoning fields as medical and agricultural biotechnology, information technology, chemical engineering, and materials science

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along with the traditional disciplines of physics, chemistry, and biology. At the same time, undergraduate enrollments in departments that receive government funding as part of newly formed consortia will be cut by 30% to lighten the teaching load on faculty members who will be carrying out the research. Funding will also go to beef up provincial universities and to lessen the frantic competition for entry into SNU.

Scientists working in the targeted fields see the plan as a way out of an inefficient and stale departmental system. "There is no collaboration or communication," says Lim Jeong Bin, a microbiology professor at SNU, who wants to see "real restructuring." He adds that "If [the government] doesn't do anything, the universities won't change on their own." The targeted money is intended to help Korea become a master in certain areas rather than remaining a jack of all trades, says Kim Sun Ho, assistant director of BK21 at the Ministry of Education, which is overseeing the program. "Universities have many subjects and faculties," he says, "but they lack specialization."

AIMING HIGH IN SCIENCE

Goal	1998	2005
Boost annual production of science Ph.D.s	2500	4500
Boost publication rate and international ranking*	10,000/17th	20,000/10th
Boost annual number of patent applications	7000	40,000
Reduce annual amount spent on overseas education	$700 million	$100 million savings

* As calculated by the Institute for Scientific Information.

Targeted research. Brain Korea 21 initiative hopes to raise scientific productivity in several sectors.

Success will require a break from tradition for Korean faculty, however. To qualify for a biotechnology grant, for example, 30 of SNU's 50 biology professors must join with 15 professors from another university to create a new biotechnology graduate research program. The remaining 20 SNU professors will be left to teach undergraduate courses to a smaller student body. Although Lim says that departmental barriers to such collaborations are high and that organizing such a cross-departmental group is somewhat "unpractical," he agrees that "the overall direction is right." The new rules also mandate that half of the graduate students admitted to a new program come from other universities and that universities develop a more independent system for evaluating professors.

Faculty members in fields not singled out for special attention—in particular, mathematics—are worried that students will shun their departments for other majors and that research funding will dry up. Their fears are stoked by the government's decision to increase from 270 to 2000 the number of students who are exempt from military service if they pursue Ph.D.s in strategic areas. But education ministry officials say that any discipline may compete for funding and that the money comes on top of existing funding.

Critics also say the program is skewed toward applied science, and they fear that emphasis will starve basic research. Chung laments that only 20% of the project's funding is actually flowing directly into research, with the bulk divided among undergraduate and graduate training, equipment and materials, and scientific exchanges. "Education is getting too much, and research is receiving too little," he says.

But ministry officials argue that fostering strong local research universities is in the national interest, that a larger network of high-quality institutions will improve Korean science, and that limited resources require them to set priorities. They also hope that training more graduate students locally will save money and ease the brain drain caused by students who remain abroad. "The 21st century is going to be a knowledge-based society, and we want to move with the changes," says Kim.

–MICHAEL BAKER

Michael Baker writes from Seoul.

PATENT LAW

Supreme Court Limits Scope of Appeals

The U.S. Supreme Court has limited a special federal court's power to second-guess decisions by government patent examiners. Last week's 6–3 ruling disappointed many biomedical and computer companies, who say it will make it harder to appeal patent rejections. But legal experts say it will be years before the impact is clear.

The case, *Lehman* v. *Zurko*, stems from the rejection of a patent application for cybersecurity software written by Mary Ellen Zurko, now with Iris Associates in Westford, Massachusetts, and her colleagues at the Digital Equipment Corp. (DEC). DEC—now Compaq Computer Co. of Houston, Texas—appealed the 1994 decision by the U.S. Patent and Trademark Office (PTO) to the Court of Appeals for the Federal Circuit, a panel that hears patent and other technical cases (*Science*, 27 November 1998, p. 1622).

Last May the court ruled that the denial

ScienceScope

Caught in the Crossfire Two Indian telescopes under construction in the Himalayas are the first scientific casualties in the latest battle with Pakistan over the disputed Kashmir region.

A $10 million, 2-meter optical and infrared telescope and another smaller instrument were scheduled to see first light in October at the world's highest site (4440 meters) for optical astronomy. But those plans are on hold due to fighting that erupted last month in the Kargil sector of the Himalayan state of Jammu and Kashmir. Intense shelling by Pakistani forces has blocked shipments of critical components to the remote observatory near Hanle—where the crisp, clear skies are great for astronomy.

It's not clear when peace might return. In the meantime, the Indian Institute of Astrophysics (IIA), which is building the telescopes, is preparing to reduce delays by airlifting equipment to the site. If all goes well, says IIA director Ramanath Cowsik, "there can be first light in early 2000."

By Any Other Name National Institutes of Health (NIH) director Harold Varmus is already taking plenty of flak from editors for a proposal to launch a government-backed online publishing venture (see p. 1887). Now comes another blow: Varmus's name for his brainchild, "E-Biomed," is already taken.

Last week, Mary Ann Liebert Inc., a medical publisher in Larchmont, New York, issued a press release saying that in April it applied for an International Standard Serial Number (ISSN) from the Library of Congress for a journal called *e-biomed*, which it plans to launch next year. The company has also tied up "www.e-biomed.com" and ".net" for Web sites.

That in itself doesn't mean NIH is prohibited from using E-Biomed, as an ISSN does not lock up exclusive rights to a title, according to the Library of Congress. It may not matter anyway: One editor who recently met with Varmus told *Science* that the NIH chief seems to be leaning toward broadening the journal to other life sciences, such as plant biology—so a different name might make sense.

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