

SOUTH KOREAN SCIENCE

Armed With Cash, Institute Chief Launches an Education 'Blitzkrieg'

DAEJEON, SOUTH KOREA—For months, Robert Laughlin has talked up plans for transforming one of South Korea's top science universities into an academic powerhouse able to compete with the likes of the Massachusetts Institute of Technology. Now the Nobel laureate physicist has a war chest to make it happen. South Korea's legislature has approved the first installment of a \$97 million "globalization package" for the Korea Advanced Institute of Science and Technology (KAIST) in Daejeon, a science city 150 kilometers south of Seoul. "It's time for a blitzkrieg," Laughlin says.

In December 2004, a few months after being appointed KAIST president, Laughlin roiled the campus with a proposal to triple KAIST's enrollment and shift the balance toward undergraduates, quadruple tuition charges, and transform in-house research from an industry subsidy into a money spinner. Critics denounced the plan as disruptive (*Science*, 25 February 2005, p. 1181). "It was such a shock," says nuclear engineer Chang Soon Heung, a KAIST vice-president. "We were afraid he would mess up our efforts to raise funds



Bold moves. Robert Laughlin says he aims to "internationalize" the Korea Advanced Institute of Science and Technology.

and attract students." Science ministry officials repeatedly ruled out tuition hikes. "They said, 'No, no, no,'" Laughlin says, but promised support. "I said, 'Show me the money.'"

Now they have. The ministry has set up a special fund of 20 billion won (\$19.4 million) per year over the next 5 years to make KAIST more competitive; on 30 December 2005, the National Assembly approved the 2006 allotment.

Although the increase is less than 10% of KAIST's \$200 million budget, it will allow the university to raise the fraction of foreign faculty to 15% and aim to teach all graduate courses in English by 2010, among other changes. (Currently, about one in three are in English.) "We're trying a bold experiment to internationalize students," Laughlin says. "It's what the parents want."

Top science students tend to enroll at Seoul

National University, Laughlin says, unless they flunk SNU's tough English entrance exam. That means that the best KAIST students often have poor English skills. Many KAIST faculty members, however, are SNU grads proficient in English. Last year, Laughlin canvassed faculty members to see who would lecture in English rather than Korean. "They didn't want to do this at first," he says, "but I got big smiles when I mentioned they'd be paid a bonus." The fund will also strengthen KAIST's R&D, allowing Laughlin to award seed money for innovative projects and lure talent with handsome start-up packages.

Although Laughlin now has more spending power, the blunt-talking reformer also has fences to mend. He has made enemies in prodigal professors to compete for grants and for failing to aggressively court corporate R&D sponsors, such as the semiconductor giant Samsung Electronics. "He just pushes his way without listening to us and thus lowers our morale," claims one senior professor.

Even Laughlin's fiercest critics, though, admire the accomplished scientist as a role model for Korean students and credit him for attracting more top-notch students to KAIST. "This is a conflict between two different visions," says Kim Sang-Soo, KAIST's vice president of operations. Laughlin agrees—and vows to press ahead with implementing his vision. The "real reforming," he says, "hasn't happened yet."

—RICHARD STONE

With reporting by Ahn Mi-Young, a freelance writer in Seoul.

SCIENTIFIC PUBLISHING

Hwang Aftereffects Reverberate at Journals

As *Science* announced its retraction last week of two fraudulent papers by teams led by Woo Suk Hwang of Seoul National University, other journals that had published papers by the disgraced Korean scientist or his colleagues at MizMedi Hospital in Seoul were investigating whether phony or misleading data had appeared in their pages, too.

Hwang and his co-authors published a flurry of papers in at least nine journals within the past 2 years. *Molecules and Cells*, a Korean journal that published several papers last year on human embryonic stem (ES) cells and cloning by the MizMedi co-authors, told *Science* it would formally retract three papers on 28 February. Associate Editor Ahn Kwangseog said photographs used in those papers also appeared in papers submitted to *Science*, *Stem Cells*, *Reproduction*, and *Biology of Reproduction*.

Biology of Reproduction has already retracted one paper—on an animal-free culture system for human ES cells—because of apparent duplication of images that also appeared in the 2004 *Science* paper. Judith Jansen, managing editor of the journal, says she does not know

whether additional papers have problems; the journal has published at least four co-authored by either Hwang or the MizMedi group. "We're looking at everything that we have," Jansen says.

The journal *Stem Cells* has expressed "concern" about a technical paper from MizMedi researchers on the cultivation of human ES cells, citing apparent duplications of images within the paper as well as use of an image that also appeared in the 2004 *Science* paper. Editor-in-Chief Curt Civin of Johns Hopkins University in Baltimore, Maryland, says the authors have acknowledged "mistakes." The journal is awaiting results of investigations under way in Korea to determine whether the paper is still valid.

At *Molecular Reproduction and Development*, editors are sifting through at least six Hwang-authored papers, all of them involving research with animals, while they await results of investigations under way in Korea and at the University of Pittsburgh, according to Susan Spilka of the publisher, John Wiley & Sons.

Several other journals published papers detailing animal studies by Hwang or the



No end in sight. More papers by the Hwang team are under investigation.

MizMedi group. Anthony Trioli of Elsevier, publisher of *Theriogenology*, says it is looking into an unspecified number of papers; the results aren't expected for several weeks.

A spokesperson for the publisher of the *Korean Journal of Veterinary Science*, said the journal is not investigating a Hwang paper from last year.

—JENNIFER COUZIN,
CONSTANCE HOLDEN, AND SEI CHONG