

## BUSINESS

# Ringling the changes at Bell Labs

Lucent hopes that a leader with an entrepreneurial bent will revive the legendary Bell Laboratories. Geoff Brumfiel reports.

Jeong Kim is having a frustrating day. The president of Bell Labs is supposed to be teleworking from his spacious home in Potomac, Maryland, but his broadband Internet connection is down and the repairman is nowhere to be found. When asked why he doesn't get his own researchers to work on the case, he shrugs: "I hadn't thought of that."

But 45-year-old Kim has been thinking a lot lately about the scientists and engineers that he oversees. Since taking the helm in April last year, Kim has been working overtime to change the culture of the world-famous Bell Labs at Murray Hill, New Jersey. He has reorganized researchers into smaller, interdisciplinary teams whose projects compete with each other for lab support. He has increased dialogue between researchers and business managers by arranging in-house technology summits. And he has dramatically reduced the number of technology-development projects, making sure those that remain are closely tied to company needs.

## Fresh face

For the legendary 81-year-old lab, this Korean-born reliability engineer represents a break with the past. Most of Bell's previous presidents spent years researching there; Kim is an outsider. He joined Bell's owner, Lucent Technologies, in 1998 after the firm bought up his Maryland-based voice and video networking company, Yurie Systems, for \$1 billion. He has chosen not to move to Murray Hill, but instead commutes the 300 km from his Maryland home for four days a week.

Lab scientists and outside observers say that Kim's appearance has created fresh enthusiasm at Bell, which was once one of the world's greatest research centres but has fallen on hard times in the past decade. "Jeong brings this energy," says Nobel laureate Horst Störmer, a physicist at New York's Columbia University who was at Bell in its heyday and still works there part-time. "He's an entrepreneur; he's a different kind of person from previous leaders."

Patricia Russo, Lucent's chief executive, says that Kim is teaching Bell's academically minded researchers to work better with

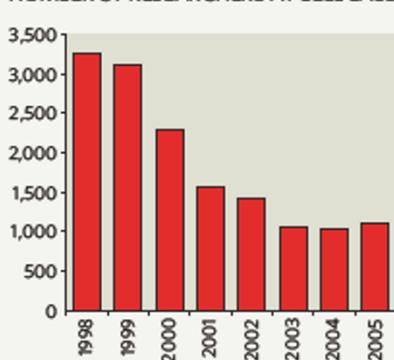
business executives. "I think it's fair to say that under Jeong Kim's leadership there is tremendous alignment," she says.

But changing course will not be easy. Through much of its history, Bell's cosy lab benches have resembled a university physics department more than an industrial research facility. Bell Laboratories was originally formed as the research arm of AT&T, a company that held a monopoly on US telecommunications for half a century. AT&T saw the lab as a brains trust: it employed thousands of scientists there, and allowed them to pursue a wide variety of interests. The lab became as well known for its Nobel-winning research — such as the 1965 discovery of the Big Bang's afterglow — as it was for commercial innovations such as the C programming language.

The halcyon days ended with the telecommunication industry's deregulation in the late 1980s. But the real shock came when AT&T spun off Lucent in 1996, according to Robert Calderbank, an electrical engineer at Princeton University and former AT&T vice-president for research. He says that the new, smaller company wasn't sure at first what to do with the lab.

For a while, Calderbank says, it trumpeted Bell's achievements — but relied on the acquisition of other companies for new technology. "At some point, I think the brand 'Bell Labs' became more important to Lucent than the technology." Things went from bad to worse when demand for telecommunications equip-

NUMBER OF RESEARCHERS AT BELL LABS



Bell's new chief, Jeong Kim, is looking ahead.

ment collapsed in 2001, leading Lucent to spin-off certain lab functions and downsize others.

Kim says he has made it his mission to improve morale and strengthen the relationship between Bell and its parent company. "I've clearly stated that we're going to be successful by making Lucent successful," Kim says.

## Focus on the useful

"We're trying to create more of an entrepreneurial spirit internally," agrees David Bishop, Bell's vice-president for nanotechnology research. He points to Kim's reorganization of the lab into teams that resemble small start-up companies and compete for funding. Bishop says that his nanotechnology group is now tightly focused on developing devices that improve communication over long distances — possibly by enabling remote touch or smell.

Basic research that does not feed into Lucent products immediately will still go on, Kim adds. But now researchers are being encouraged to find external sources of funding for such work. The lab's quantum-computing group, for example, is working with money from the Pentagon's Defense Advanced Research Projects Agency.

In the arena of development, Kim has gone still further. When he came to the lab, he says, the business unit and lab researchers were working on dozens of costly projects, with few clear goals. So he created a formal prioritization process. As a result, the number of projects



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has been cut from 160 to 30, saving money and freeing up personnel for other tasks.

These changes are viewed with scepticism by some Bell veterans. "I think start-up firms are much better than large telecom firms at taking chances," says Peter Shor, a mathematician formerly at AT&T, and now at the Massachusetts Institute of Technology. He adds that Kim's plans for creating a competitive environment could discourage researchers from pursuing some interesting lines of inquiry.

Others take the view that Lucent is just too small to use a lab the size of Bell. In recent years, most of its business has come from maintaining the equipment it has already installed, points out John Slack, an equity analyst with Morningstar, a Chicago financial-research firm. "Bell Labs doesn't have a huge impact on Lucent's operating business," he says.

Slack adds that however competitive the lab becomes, its fate ultimately depends on its parent. After several divestments, Lucent's revenues fell from \$34 billion in 2000 to just under \$10 billion last year. Revenues are now growing, but until Lucent gets on a firmer financial footing, Bell is unlikely to see a major rebound, Slack says.

Kim accepts these points, but remains bullish about the lab. This year, it increased its total research staff for the first time in nearly a decade, he points out (see graph). "There are smart people everywhere, but what's so different about us is our breadth and depth," he says. "It's not whether we do great research and development: it's how we do it." ■

## IN BRIEF

**VENTER VENTURE** Biologist Craig Venter has enlisted a high-profile ally in his quest to build microbes that are specially tailored to solve environmental problems.

Ari Patrinos, who has directed biological and environmental research at the US Department of Energy since 1995, was last month appointed president of Synthetic Genomics, a company that Venter founded last year to create such organisms. "I've known Craig for many years and we have always worked very well together," says Patrinos, adding that Venter approached him about the job — based in Rockville, Maryland — several months ago. "I'm going to be 59 this year," says Patrinos. "I felt I wanted to do one other, different thing."

**STRONG PRESCRIPTION** A US physicians' group has called for special government incentives to push companies into developing antibiotics for drug-resistant hospital nasties such as *Staphylococcus aureus*, better known as staph. In an article in the March issue of *Clinical Infectious Diseases*, the Infectious Diseases Society of America argues that few antibiotics are being developed because they are used for only a short time and do not fetch the prices that give manufacturers a decent return. The society calls for tax breaks and other incentives to get things going.

**BOTANIC YIELD** A UK biotechnology firm whose drug candidates are based on Chinese plants has launched itself successfully on London's Alternative Investment Market (AIM). Oxford-based Phynova raised about £4 million (US\$7 million) in its share offering on 27 February: two days later its shares were selling for £1.20 — 50% above the offer price. Phynova has six drug candidates under development, including potential therapies for hepatitis C and cancer.

## MARKET WATCH



Stocks in companies with a stake in nanotechnology started the year with a bang — although prices fell back a little in February, along with the rest of the market.

The Lux Research nanotechnology index tracks a mixture of companies that sell nanotechnology equipment and products based on nanotechnology, as well as some larger corporations that expect to make use of the technology.

Peter Hebert, president of Lux Research, says that companies performing well so far this year include Nanophase Technologies, an Illinois-based company that makes nanocrystalline materials. Nanophase is one of the oldest companies in the sector, having originally listed on the Nasdaq in 1997, and it has had a turbulent history. But this year its stock rose from \$5 to about \$7 after news

that it is finally managing to sell to customers in the chemicals industry, including BASF.

Other strong performers so far in 2006 include Altairano, a Nevada materials firm whose stock price has almost doubled since the beginning of January, and Arrowhead Research of Pasadena, California, which invests in start-up companies.

It has been a less happy couple of months for Accelrys, a San Diego-based computer-modelling company whose shares lost about a quarter of their value after the Securities and Exchange Commission asked it to revisit its 2005 accounts.

But Hebert says that, overall, interest in the nascent industry sector is strong: "Industrial corporations are getting more and more active" in nanotech, he says. ■

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