A Unique Lab Design Fits the British to a Tea

The UK's newest lab boasts an innovative structure and has raided the United States for expatriates

Cambridge, England—IF YOU BELIEVE THAT good science comes from vast armies of postdocs, harnessed to huge amounts of equipment and driven by a single-minded, concentrated effort, then Britain's newest laboratory is not for you. Empire builders are unlikely to be welcome at the just-opened $9-million Institute of Cancer and Developmental Biology—there are no plans even to appoint a director. But if you're interested in innovative research environments, the institute surely qualifies as one of the most unusual around.

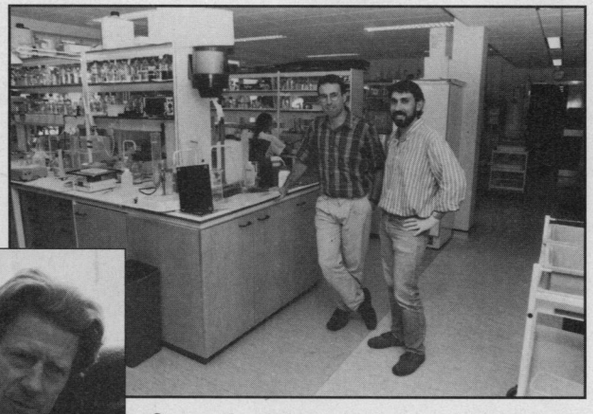
"An assemblage of independent research groups," is the official description of the institute, but some of its 100 researchers—most of whom also hold posts at nearby Cambridge University—say the description doesn't do justice to the way the place is run. Says John Gurdon, the institute's most senior scientist: It's "almost a collective."

In its physical design—laid out by scientists for scientists—the institute is unique. Corridors circle around, vanishing abruptly in open-plan laboratories. The idea is not simply to save space but to maximize chance encounters by forcing researchers to pass through other laboratories to get to their own. The point: The researchers behind this lab believe that critical conversation and chance encounters are the lifeblood of scientific creativity.

There is no library; journals, after all, can be passed along and provide yet other opportunities for interaction. But there is a central facility that all the researchers agree is extremely important—a sunny and spacious tea room. There everyone, regardless of interests, is expected to mingle. "The plan is to make people bump into one another," says Gurdon. "After all, interesting scientific ideas come in an unplanned way."

Gurdon, a professor in the department of zoology at Cambridge University, performed the now-classic nuclear transplantion experiments showing that gene expression, not content, changes during differentiation. He chairs the institute's committees but he says firmly "I am not the director." The model is Cambridge's famous Laboratory of Molecular Biology in the days when it had no director and Max Perutz served simply as "chairman."

The result is a lab style, staff say, that is distinctively British, rather than American. And the staff should know. The leaders of the first five "junior" research groups (nine groups of three to five people are planned), brought in to complement the seven more senior teams (each of eight to 10 people), were all recruited by tempting Britain's brightest back from U.S. labs. Reversing the brain drain was one of the aims of the laboratory. "We wanted to create a place that the best people would like to come back and work at," Gurdon says. "Researchers in America are often receptive about coming back, but the opportunities are so poor."



Open plan. *Steve Jackson and Tony Kouzanides' corridor-lab; senior scientist John Gurdon* (left) *says, "I am not the director."*

Steve Jackson, who worked on transcription factors in Bob Tjian's lab at Berkeley, jumped at the chance to come home and run his own group. He faced some stiff competition: "Just about every British scientist in California applied for jobs here," he says. Other successful candidates came from Harvard, MIT, and New York University. As an expatriate scientist, Jackson knew well how hard it was to get a job back in Britain; he was one of the first members of the group British Scientists Abroad, which campaigns for better research support in Britain to help reverse the brain drain.

Along with the British returnees came developmental biologist Nick Brown, a self-confessed Anglophile American from Fotis Kafatos' lab at Harvard. He says he was very excited when he heard about the new institute. What was the attraction? Here, he points out, scientists are less likely to turn into administrators, "a job scientists are not trained for," he says. (Even Gurdon, with much administration to do, still spends most of his days in the lab.) "At Harvard few senior faculty will do experiments," Brown explains. "That really comes about because people are viewed as most successful if they have the biggest labs. I looked ahead and it didn't appeal."

British groups tend to be less isolated than their U.S. counterparts, Brown thinks. "Each lab in the United States tends to be an independent island," he says. His suggestion to reform U.S. labs: "Try the English tradition of 4 o'clock tea."

Tea may be a key lubricant in professional interactions, but some group leaders are trying a few other little tricks to help break down barriers. "I've deliberately not equipped our lab with certain facilities," says Michael Akam, who heads a group working on fruitfly homeotic genes, "that means we have to go down to other laboratories and chat; that's the way you can initiate the contacts that blossom." The method apparently works; Chris Wylie, who leads a group studying how cells behave as embryos develop, claims he has entered into collaboration with five groups in the building in the few months he has been here.

The fields that the institute spans are ripe for collaboration. Although once thought of as separate, cancer and developmental biology are now regarded as just two sides of the same coin—a cancer cell is a cell whose development is out of control. And developmental biology itself has just emerged from an era when the favored experimental animals—fruitflies, amphibia, and mice—seemed to have little in common. Gone are the days, explains Akam, when "people working on mouse embryos would look at drosophila and say, 'Its all very fancy but what has it got to do with us.'" Now, he says, there is a much wider recognition of the way ideas, techniques, and tools can move from one experimental system to another." Everyone is swapping probes as they recognize functionally

equivalent molecules in analogous developmental systems," he says.

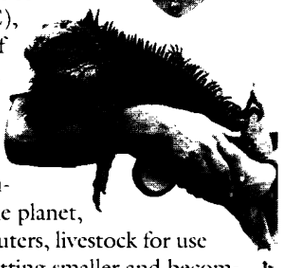
The emerging unity of cancer and developmental biology research helped win the institute its funds. For the first time, the Cancer Research Campaign and the Wellcome Trust—two of Britain's biggest medical charities—came together to provide complete support for an institute. Serendipity—of the very kind that the institute likes to encourage—brought the two charities together when groups who had separately approached them overheard one another's plans.

For the British who have come home, the lab is more than just a symbol of changing disciplinary boundaries. It's also a reminder of what can be achieved in Britain—if there is funding. "It's the lack of new blood that hits you when you travel in Britain," says Akam. "We have created something new and exciting—not old and decaying." All research support is provided by the two charities at a cost of some $3 million a year. Which raises the interesting question: Must the best of British science now expect to live on charity? ■ ALUN ANDERSON

Small Is Beautiful: Microlivestock for the Third World

Forget macrobiotic, that's as far out of style as Marxism in Prague. It's time to think microbiotic. Not microbiotic as in bacteria or fungi; microbiotic as in miniature pigs, cows, and sheep. It seems the proper "diet for a small planet" isn't brown rice, it's small animals. At least that's the view of an expert panel of the National Research Council (NRC), an arm of the National Academy of Sciences (NAS). In a report released last week carrying the intriguing title "Microlivestock: Little-Known Animals with a Promising Economic Future," the panel argues that as humans take up more open space on the planet, something's got to give. "Like computers, livestock for use in developing countries should be getting smaller and becoming more 'personal,' " says the report. "Conventional 'mainframes' such as cattle are too large for the world's poorest people; they require too much space and expense."

New York Times



Instead, the NRC would have Third World citizens invest in "tiny, user-friendly species for home use." Some are animals we've all come to know and love—in miniature. But some are extra-meaty versions of creatures we haven't been salivating over lately—like the giant rat of Nigeria. This macrorodent, the report says, could feed millions in developing nations where food shortages might make people a touch less choosy about their cuisine than they are in, say, Paris.

Indeed, the list of "small is beautiful" candidates on the NRC's menu would make up a nice size and rather exotic children's zoo. Among the recommended microlivestock are species that are inherently diminutive, like rabbits and chickens, and compact versions of your giant economy-size animals: cattle, sheep, goats, and pigs less than half the size of common breeds. Some of these bantamweights go even smaller than that. For example, Mexico's "mini Brahman" cow is only 60 cm tall and weighs 140 kg; the southern Sudan dwarf sheep of eastern Africa can weigh as little as 11 kg; the Terai goat of Nepal weighs less than 12 kg; and the cuino pig of Mexico weighs merely 10 kg.

Then there are the breeds you've never come across on your average American menu. Besides the giant rat—which at 1.5 kg and 40 cm is called one of the "the most striking of all African rodents"—there is a panoply of fellow rodents: the agouti, capybara, hutia, mara, coypu, paca, and vizcacha. These, the report points out, are among the world's most adaptable mammals—and they breed like crazy. And if rodents don't tickle your palate, how about the black iguana, which can be raised in towns or cities and survives nicely on a diet of weeds and garbage?

In all, the NRC report gives high marks to 40 different nanospecies, culled from a list of 150 small wonders proposed by 300 animal scientists in 80 countries.

The common thread is that these minimalist flocks are less expensive to buy and feed—1 ton of hay can feed either one (ordinary, Brobdingnagian) cow or 300 rabbits—and they take up less space, reproduce quickly, and can be moved around easily. A side benefit: Some Lilliputian domesticates are endangered, and breeding keeps them and their gene pools alive. And the genomes of most of these microchip species are "virtually unstudied," the report notes.

But even advocates of smallness concede that downsizing your herd can have drawbacks. What happens, for example, if a passing dog snaps up 20 of your prize-winning agouti? One solution: Keep them around the house. But that presents another kind of challenge, this time in the realm of more conventional microbiotics: Some species could become reservoirs for diseases and parasites that affect people and other animals. And that was one of the problems that led the NRC to put a disclaimer in their report. Right up front, in bold letters: "If misunderstood, this book is potentially dangerous."

It seems that if they're exploited improperly, the agouti, the black iguana, and the giant rat could become "serious pests," not merely spreading disease to human beings and their pets, but also pushing bigger, slower breeding species out of their previously stable ecological nichezs. Which is no small problem.

■ ANN GIBBONS

Salt Lake City Tribune

Stephen Ellison/ PEOPLE

Nouvelle cuisine. *Microlivestock entrées include the Vietnamese pot-bellied pigs, Navajo sheep, and the green iguana* (above).