ITALY

Scientific Superpower Status Remains Elusive

ROME—Luigi Nicolais has reason to be frustrated. In 1989, he was told by the government that he would soon be heading a new composite materials technology institute in Naples. An initial spurt of funding allowed him to recruit one-third of the planned center's 20 staff, but since then...nothing. "We cannot make any plans," says Nicolais. "We don't know when we're going to get the money."

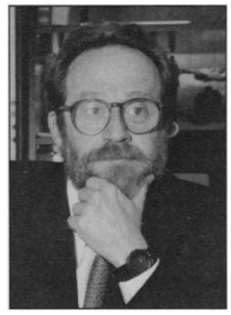
Nicolais' case may be extreme, but it's one example of the kind of administrative problems underlying the underachieving record of Italian science. On average, an Italian scientific paper is less likely to be cited than one from any of the other major economic powers. And with no tradition of strict peer review of grant proposals, no recognizable network of postdoctoral positions, and constant interference from Italy's political parties to contend with, most Italian researchers are not optimistic about their chances of dragging Italian science up to the level of its European neighbors any time soon. Even research minister Antonio Ruberti admits to problems: "There is no...strong evaluation of projects and results," he says.

Ruberti has been fighting hard to win reforms, and has even convinced the Italian government to increase its traditionally low spending on science. But the barriers to progress remain formidable. Unfortunately, says Franco Pacini, director of the Arcetri Astrophysical Observatory near Florence, more money for science also means more political interference. In most government science agencies, he says, "it's very clear that if the president is a Christian Democrat, then the director-general has to be a Socialist, and vice versa."

Not that the Italian system is without advantages. "There's not a single example of a good scientist who hasn't been funded here," says Luigi Rossi Bernardi, president of Italy's National Research Council (CNR). Indeed so, say the critics, but there are also plenty of mediocre ones who've found it just as easy to win research grants. It's "rain funding," says cell biologist Jacopo Meldolesi, from the University of Milan. "There are larger drops, and there are smaller drops," he says, "but it rains on everybody." The result: a shortage of research groups with the critical mass to compete internationally.

At the root of Italian science's problems is the inefficiency of Italy's bloated public sector, which includes the universities. "Out of 100 administrators...maybe 10 are really managers," says Carlo Rizzuto, a low-temperature physicist from the University of Genoa. "You may have to invent procedures that are very complicated, just to keep them all busy."

It's hardly surprising, then, that Italian researchers who are trying to improve their lot are looking for allies outside the universities and CNR, the two traditional public-sector supporters of academic science. One candidate is the European Community (EC). Unlike north European academics, many Italian researchers take a favorable view of the EC's research programs. "Their evaluation is quite good," says Maurizio Iaccarino, director of the International Institute of Genetics and Biophysics in Naples.



No alibi. Riccardo Cortese.

And for inspiration there is also the one Italian agency that has managed to avoid most of the usual failings of the Italian system: the National Institute for Nuclear Physics (INFN). Well-funded and well-organized, Italy's high-energy physicists visit CERN in greater numbers than those from any other country. The secret is that they run their own agency—following the tradition of independence set by Italian high-energy physics founding father, Enrico Fermi.

Many researchers would like to copy INFN's success. In several disciplines, elite networks of laboratories are trying to break away from the university and CNR systems and create their own agencies that can deal directly with the government. Furthest down the line is the National Consortium for the Physics of Matter, which boasts some 1800 members and has cheekily adopted the acronym INFM. "I joked with [INFN president] Nicola Cabibbo that I was hoping that the government would make a mistake just once. Then we'd be well off for 10 years," says Rizzuto, the consortium's director.

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–Jacopo Meldolesi

Next to move may be the molecular biologists, who plan a National Institute for Advanced Biology (INBA). "It could start today," says Glauco Tocchini Valentini, from the CNR Institute of Cell Biology in Rome. He envisions an initial network of 15 centers, employing a novel system for Italian science: international peer review.

But Tocchini Valentini and his colleagues face a tough fight. Researchers in disciplines that have not yet produced plans to mimic INFN view the maneuverings with alarm. "The physicists already have one [agency]," complains chemist Ivano Bertini from the University of Florence. If INFM gets its own budget, he says, "we also want our own [agency]."

And CNR president Rossi Bernardi draws the line at an exodus of molecular biologists from his organization. The proponents of the new agencies, he believes, have one motive: to win more funding from parliament. "It's not right that a certain group of disciplines should get more money just because they have an [agency] of their own."

Given the likely resistance, few predict that the landscape for Italian research funding will change overnight. But for those who aren't prepared to wait, there is another escape route from the stultifying state bureaucracy: institutes that marry government funding and private-sector management.

One such initiative is the Institute for Research in Molecular Biology (IRBM) at Pomezia, near Rome. Its director, Riccardo Cortese, says he was enticed back from the European Molecular Biology Laboratory in 1990 only by the promise of a private management team, supplied—along with a hefty chunk of the funding—by the drug company Merck, Sharp and Dohme. Separated from the state bureaucracy, IRBM "is possibly the only [Italian] institution in the field of basic molecular biology with a coherent plan," says Cortese.

But others are following. In Milan, for instance, the San Raffaele Hospital, run by a private nonprofit foundation, is putting the finishing touches to an 80-researcher basic biomedical research institute.

Whether centers like IRBM and the San Raffaele Institute can provide Italy with the world-class laboratories it needs is, of course, still uncertain. But Cortese is confident that IRBM itself will make the grade, even if it doesn't lead a revolution in Italian research. But then he has to be. With no scope for blaming the Italian state bureaucracy, he says, "I shall have no alibi," if things go wrong.

–Peter Aldhous

We would like to hear your response to this special report on science in Europe. Please turn to page 488.