Redfield suggest that while he may have been mistaken in his Amsterdam presentation, that is hardly a scientific sin. Gerald Eddy, the Jackson Foundation's laboratory director, argues that "if people were officially reprimanded for overexaggerating data in oral presentations, there wouldn't be many scientists left who had not been reprimanded in one way or another." Edmund Tramont, Redfield's former boss and now head of the University of Maryland's Medical Biotechnology Center, speculates that the real motivation for the investigation has more to do with the congressional appropriation than with Redfield. "If there weren't this $20 million, these goings on never would have happened."

Indeed, a Redfield colleague who is well informed of the details told *Science* that at least two forces have been unleashed on the Army by the legislation singling out MicroGeneSys's gp160. In the wake of the appropriation, the source said, the Navy and the Air Force—which have long been upset that all military AIDS research money goes to the Army before being distributed to other services—began calling for an investigation. An Army spokeswoman acknowledges that "information from the other services was one of several factors in the decision to initiate the investigation."

Another factor, says a well-placed source, was the Army's desire to head off an investigation by Senator Sam Nunn (D–GA), who played a key role in allocating the $20 million. Nunn, when introducing the measure on the Senate floor, said that according to "Army medical experts" the large-scale trial of the MicroGeneSys gp160 should happen "as soon as possible." Now Nunn, who has yet to name the Army experts, is modifying his stance. In a 23 October press statement Nunn denied he had been interested in any particular product and that in putting forward the measure he was only attempting to bring the Army's AIDS research program "back to approximately the same level as previous years." That statement, however, does little to explain Nunn's motivation, since before adding the $20 million, Congress had already boosted the Department of Defense's 1993 AIDS research budget to $50 million—$5.6 million more than was appropriated in 1992.

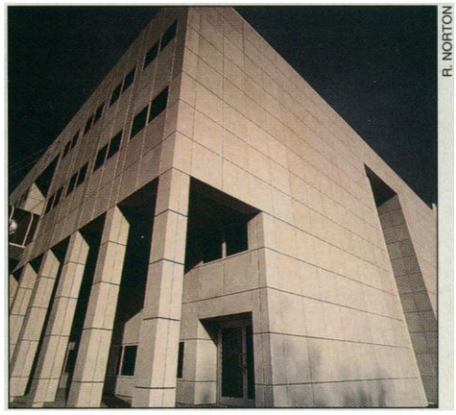
What all this means for Robert Redfield won't be settled for 60 days or more. When the investigation is concluded, the matter could be dropped, a letter of reprimand could be issued to Redfield (and possibly others in his lab), or, if serious wrongdoing is judged to have occurred, those involved could be court martialed. In the meantime, a blue-ribbon panel organized by Bernadine Healy was scheduled to hold its first meeting on 5 November to discuss the $20 million appropriation, and it's clear the last word on these matters has yet to be spoken.

–Jon Cohen

SCIENCE IN IRELAND

Brussels Provides Funding Lifeline to Irish Research

DUBLIN—If you took a walk around Dublin's Trinity College this summer, it wouldn't have taken you long to realize to whom Ireland's scientists owe their allegiance nowadays. At Trinity, there aren't too many flagpoles flying the Irish tricolor, but the European Community's (EC) distinctive emblem—a circle of 12 gold stars on a blue background—was proudly displayed at the construction site of a new 4-story biotechnology institute that will open later this fall. Faced with an impoverished government that provides next to no money for basic research—and certainly can't afford by itself to bankroll major campus building projects—Ireland's researchers have turned to Brussels for funding. And while scientists in southern European countries like Greece and Portugal, where research money is equally hard to come by, have also looked to the EC, no one has succeeded in playing the Brussels system as well as the Irish.



Courtesy of the EC. Trinity College's new biotechnology institute.

Most European scientists hoping to build a research empire don't make Brussels their first stop when looking for money—the EC's research budget is still less than 4% of the total science spending of its member governments. But by turning to the EC for grants, Irish scientists who might otherwise be tempted to leave the Emerald Isle in search of greener research pastures abroad are finding it possible to hold their own. Indeed, some have managed to thrive. Take Trinity's genetics department: In 1980, it was a quiet backwater, teaching students, carrying out small research projects, but influencing virtually no one. Today, however, it commands the respect of Europe's top researchers in the field. "In terms of excellence per unit of resource, they're near the top," says evolutionary geneticist Steve Jones from London's University College.

Trinity's geneticists gladly acknowledge their debt to Brussels. Department head David McConnell says he was so demoralized about the Irish government's low spending on science that, in the late 1970s, he was on the point of leaving for the United States. "Then I heard about EC funding and I guessed there was one more chance to get science going in Ireland," he says. It was a chance that McConnell and his colleagues seized with both hands. "The level at which we operate here is hugely dependent on an influx of funds from the EC," says bacterial geneticist Kevin Devine. His group, for instance, currently rakes in about $68,000 a year from Brussels to study how *Bacillus subtilis* ensures that copies of its plasmids get transmitted to both daughter cells at each cell division; and next year, he expects to land another $67,000 EC contract to sequence 25 kilobases of the *B. subtilis* genome. Then his EC funding will easily surpass the $85,000 he's getting each year from EOLAS—the Irish government's main science and technology agency—to support the sequencing work and study bacterial gene expression.

It's a similar story throughout the department. "I think everybody has had EC money at some point," says evolutionary geneticist Paul Sharp. And for researchers like Ken Wolfe, who joined the Trinity faculty in January after finishing a postdoc at Indiana University, EC funding is literally the only lifeline. When Wolfe returned to Ireland, he was given a few thousand dollars to set up his lab—nowhere near enough to buy sufficient equipment and reagents to pursue his work in mammalian molecular evolution. To make ends meet, Wolfe has become a high-tech equivalent of the traditional Irish laborer, churning out DNA sequences under contract for the EC's yeast genome project (*Science*, 24 April, p. 462). Because the EC pays more to its contract sequencers than the basic cost of doing the work, Wolfe can use the difference to equip his lab.

Although Wolfe and his Trinity colleagues are all doing fundamental research, many of the EC programs that they've tapped for funds were set up primarily to help industry. Most European academics grumble about the EC's bias toward applied research, but then they haven't had to deal with EOLAS. More than three-fourths of the money that the country's main science agency channels to Ireland's universities is spent on applied projects, and

many Irish researchers have found it far easier to get money for basic research from nominally applied EC programs than from their own government. Sharp, for instance, has received money to analyze DNA sequences from the EC's biotechnology research program. The grant was given to design better software to analyze sequence data, "but I wrote into the proposal the idea that we [first] needed to know more about these sequences," he says.

Insider knowledge of the EC's grant programs helps make Irish scientists like Sharp successful in working the Brussels system. They've been aided by some careful coaching from EOLAS, which has made up for its own parsimony toward basic science by helping Irish researchers cut through the EC bureaucracy. Granting agencies in many of the richer European countries have only recently begun to develop close ties with Brussels, but Irish science administrators realized early on that the EC was the best hope to reduce the pressure on the stretched national science budget. Today, EOLAS has polished its role as broker between Brussels bureaucrat and bench scientist to perfection, sending out targeted mailshots to make sure that university researchers know well in advance about relevant EC programs. "We do everything but write the proposals," says EOLAS assistant chief executive Brendan Finucane.

R. NORTON

Looking toward Brussels. Trinity geneticists *(left to right)* Paul Sharp, Peter Humphries, Steven Whitehead, Tony Kavanagh; *(seated)* David McConnell and Kevin Devine.

With Ireland's scientists getting help like that, Trinity's geneticists aren't the only ones who've used EC money to make the leap into the major league. Ten years ago, the Trinity physics department was taking in a mere $260,000 in grant income each year. Now, it pulls in $2 million, half of it directly from Brussels. Solid-state theorist Denis Weaire admits that Trinity's physicists initially "jumped on the coattails" of research groups in the larger EC countries who needed to find foreign collaborators before they could apply for an EC grant. But now, Trinity's physicists are just as likely to be leading EC-funded collaborations. Michael Coey, for instance, heads a European consortium on magnet research, and it was his lab that in 1989 discovered a new high-performance magnetic compound of samerium, iron, and nitrogen that's touted as one of the EC's major research successes.

If Ireland's scientists have shown that they can compete successfully with researchers in the larger European countries for peer-reviewed EC grants, they nonetheless have an important advantage over their better heeled competitors. As one of the EC's poorest countries, Ireland qualifies for supplementary aid to help develop the community's economically disadvantaged regions, and the Dublin government uses some of that money for research. For many of Trinity's geneticists, this will shortly mean leaving the faded elegance of their present quarters—formerly a private hospital run by Oscar Wilde's father—for a sumptuous suite of labs in the new biotechnology institute next door, paid for in large part with a $5.1 million grant from the EC's regional development fund. They'll be joined there by university pharmacists and biochemists, plus a handful of local biotech firms.

With EC membership bringing sweeteners like that, it's no surprise that the Irish are strong Euro-enthusiasts. In the midst of a series of crushing blows for European unity—first Denmark's rejection in June of the Maastricht Treaty on EC political and economic union; then September's currency exchange crisis and a lukewarm "oui" to Maastricht from the usually EC-friendly French electorate—Ireland's faith in Brussels has remained unshaken. You don't find many Euro-skeptics among Ireland's politicians, and when the Irish held their referendum on Maastricht on 18 June, the result was a resounding thumbs up. You can be sure that there weren't many Irish scientists who voted no.

–Peter Aldhous

Researchers Turn to Charity and Gambling

Brussels may be Irish science's biggest benefactor, but the EC isn't the only source of funds that the pragmatic Irish have tapped into to supplement the measly $2.4 million that EOLAS, the main government science agency, gives to the universities each year for basic research. Ireland's biomedical researchers, for instance, are as likely to mail their grant proposals to London as to Dublin. The reason? That's the home of the Wellcome Trust, the largest UK medical research charity—which treats applications from Irish labs just the same as those from Britain. And one group of theoreticians has a steady source of income from state-run gambling. "I had concerns about doing science in Ireland," says Steven Whitehead, a Scottish medical geneticist who joined Dublin's Trinity College in summer 1991 after spending 10 years at Harvard Medical School. But now that he's got funding from Wellcome and topped that up with a series of smaller Irish grants, Whitehead says he's better off in Dublin than he ever was at Harvard.

Whitehead's colleague Peter Humphries, whose research group is acknowledged as a world leader in the genetics of retinitis pigmentosa, an umbrella term for a group of inherited disorders that cause progressive blindness, has looked to both sides of the Atlantic for charitable funding. Aside from winning a $1.7 million, 5-year grant from Wellcome earlier this year, he also has major grant support from the U.S. Retinitis Pigmentosa Foundation.

But it's the nearby Dublin Institute for Advanced Studies—a center unashamedly based on its famous Princeton namesake—that exemplifies the innovative approach to science funding that's been required to survive in Ireland. The institute was set up in 1940 around the Nobel Prize–winning father of quantum theory, Erwin Schrödinger. But despite this illustrious history, it came dangerously near to closure in the late 1980s, as the Irish government struggled to balance the national budget deficit. The solution? The Dublin Institute now gets its core $3.9 million-a-year budget from the takings of the national lottery. But doesn't this mean that its physicists could be thrown out of a job if the lottery doesn't sell enough tickets? Maybe so, but John Duggan, the institute's registrar, isn't too concerned: In Ireland, he says, "the cynic would say that you're better off relying on gambling rather than revenue returns."

–P.A.