

FINAL WORD

by Thelma H. Carter

THE NEED FOR NEW PROJECT REVIEW SYSTEMS

Commercial developers and biologists need to form useful relationships and address the issues that are fundamental to the development of biotechnology businesses. For example, how do worthy scientific projects find worthy backers? How will the scientific merit of a new enterprise be determined? Who will evaluate the commercial potential of advances in biology and how will this be done? How can problems like access to capital and the ethics of open competition be resolved by universities? What resources now exist and what new resources must be developed to fund fruitful biotechnological projects?

While older academics may wax nostalgic about simpler times when industry or private individuals gave unencumbered donations to their favorite academic institutions for a variety of altruistic reasons, new plans for tapping these private or industrial sources are being made in the present setting of focused spending. There is a new demand for academic officers whose duties include raising funds from profit-making businesses for the university. Ideally the individual who fills the position of Vice President (Chancellor, Dean, etc.) for University/Industrial Relations is someone with a doctoral degree in science and extensive corporate connections who can both understand scientific research and explain the commercial potential of on-campus research to business people. There are very few skilled and experienced individuals for these positions, and many universities cannot afford to hire technically trained people at academic supervisory levels. Instead they satisfy their needs with business school graduates willing to do a lot of on-the-job learning. This tends to perpetuate the phenomenon of the rich universities getting richer, with the most eminent universities claiming far more industrial and venture capital money than their less prestigious academic siblings.

Direct funding by corporations has also contributed to imbalances in funding of university research. It has been estimated that large, established industrial firms in the United States spend somewhere between \$250 and \$500 million per year on research and development projects in universities. These funds are not evenly supplied, with one-third of all R&D money coming from only 10 companies. Two of these 10 companies alone provide 20 percent of all basic research funding by industry. Seventy-five percent of all university-industrial cooperative research programs are based on pre-existing consulting arrangements between a company and a university researcher. One large industrial concern (SOHIO) has addressed the issue of the provinciality of industrial research support by advertising in scien-

tific and academic journals an open competition for projects compatible with their corporate objectives and offering awards of up to \$2.5 million for a period of five years. The techniques used by large firms such as SOHIO for identifying worthy projects result in innumerable, less costly projects remaining unfunded. It is in this area that venture capitalists and smaller businesses can have their greatest impact.

Publicly funded government agencies and some philanthropic foundations have long provided open and objective competition for grant funds to all researchers. Presently, there is no such equitable competition for access to industrial and venture capital funds. Private sources of funding need to establish their own system for evaluating projects that will prove beneficial to their interests, rather than relying on competitive programs established by public agencies.

A national center for industrial policy could not reasonably be expected to provide the necessary information for private developers to evaluate the technical and economic feasibility of research projects. Furthermore, efforts to match research projects and capital should be international in scope—neither good ideas nor investment capital are unique to any nation. Although scientific societies and professional organizations could work together with the business community to design an information system listing available projects and persons willing to serve as evaluators, such societies may not agree that they are appropriate vehicles for listing or evaluating research projects, in that they view themselves as non-profit organizations.

An alternative means for private investors to gain access to academic research projects is through specialized consulting firms. The objectives of private consulting firms should be to maintain registries of available projects, new patents available for implementation, and firms interested in technology transfer. Evaluation of these projects should be made both by scientists active in the field of the proposed project and by business professionals. Standards for the evaluation process should be established and made known to all participants. In addition, the scientific experts' evaluations should include the most important task of making the scientific nature of the proposal clear to the business people interested in the project. When the scientist has fulfilled his role as an educator and given the businessman an understanding of the nature of the research, its likelihood of success, the capability of the researchers, and possible applications of the development, it is the businessman's decision whether or not the project meets financial objectives.

The peer review system established by the U.S. government for evaluating grant proposals for federal funds could benefit private investment in scientific

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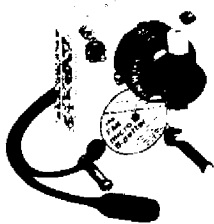


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loan is not paid back in full, partial payment would be preferable to the current alternative granting system that gives money without expectation that it will be repaid.

Government loans for university research should never be a substitute for the existing granting system; grants must continue to provide money for excellent basic research where no immediate technological implications are envisioned. The research loan would be an additional mechanism for universities to fund advanced research without locking themselves into exclusive corporate arrangements. It would also provide another method for the government to assist indirectly in technological development with the opportunity for funding agencies to return money to the tax-based federal coffers.

—Christopher G. Edwards

COMMENTARY (Continued from page 777)

Quite the reverse: calves, piglets, and lambs can actually acquire phages in this way and thus become protected against disease.

Back in 1944, one of Hitler's bombs destroyed the Brown Institution laboratories, attached to London University, where Frederick Twort was pursuing a dogged dream of exploiting his discovery that bacteria themselves are plagued by parasites. Forty years later, it seems that those studies—never again pursued amid postwar austerity—are on the verge of being fulfilled. █

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research by identifying projects for preferential tax status. Tax forgiveness should be available to businesses that are developed from investments in research and technological areas that the government wishes to stimulate and encourage. This forgiveness would act as an endstage grant to support the development of new technology, but only in proportion to the commercial success of the proposed development. Such incentives would make research investment more valuable to financial underwriters and this sort of investment in new technology would be even more appealing. For this purpose, a national center for industrial policy might help focus government objectives.

In the United States, the private sector has demonstrated increasing interest in new technologies, and with increasing amounts of money going into tax-sheltered R&D limited partnerships, private sources may account for a greater share of the financial interest in biotechnology than large industry. This growth of new investors will require mechanisms that can serve the needs of all participants, allow for access to worthy projects, and provide the means and standards by which these projects can be evaluated. █

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