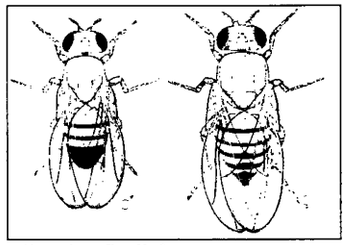
LETTERS

Battleground?



T. H. MORGAN/DROSOPHILA GUIDE

A "biochemical 'arms race'" exemplifies the evolutionary conflict that can occur between the sexes of a species, says one author, but "highly convergent interests" between the sexes are common in many species as well. (Right, fruit flies provide a model of the distance between the sexes.) Writers discuss the merits of a program—"under fire" from some academics—that funds research and development performed by small companies. And in France, funds for the humanities and social sciences are being cut in a manner that is said to be "brutal and incomprehensible."

Sexual Warfare?

In her discussion of William Rice's selection experiments in fruit flies showing the evolution of seminal components toxic to females, Virginia Morell (Research News, 17 May, p. 953) states that "a basic tenet of sociobiology [is] that the reproductive interests of males and females are essentially at odds." Divergent reproductive interests occur between the sexes in many species, but highly convergent interests are common in many other species, indicating no fixed pattern of relationships between males and females across all species. The experiments she describes by William Rice provide an exciting illustration of an intense coevolutionary biochemical "arms race" that can evolve when reproductive interests have diverged. Rice suggests that intersexual biochemical competitition may be a widespread cause of speciation, but, so far, the mechanism he found is known only in one species and its general importance may be limited by a convergence of male and female reproductive interests. Male traits that produce toxic effects in females would often be selected against if there were prolonged female investment (for example, parental care) in offspring; if males have a future mating advantage with past mates; if single matings by females are common; or if there is inbreeding or a prolonged use of an individual male's sperm, or both, by the female. Many specious groups of organisms—for example, ants, parasitic hymenoptera, rodents, and passerine birds—have one or more of the above traits, making it unlikely that sexual antagonism has driven speciation in these groups.

Gerald Borgia
Department of Zoology,
University of Maryland,
College Park, MD 20742–4415, USA
E-mail: borgia@zool.umd.edu

Merit, Quality, and the SIBR Program

Jeffrey Mervis (News & Comment, 17 May, p. 942) correctly notes that the Federation of American Societies for Experimental Biology (FASEB) has raised serious concerns regarding the National Institutes of Health (NIH)–funded Small Business Innovative Research (SBIR) Program. FASEB does believe, as stated in our consensus conference report on funding for fiscal year 1997 (*1*), that there should be no increases in this program until the questions of merit and quality have been resolved and that NIH should be relieved of the obligation to award a fixed percentage of its extramural budget for such grants because such a restriction can be inconsistent with selection on the basis of merit. However, it is a distortion of the FASEB position to describe our reasonable recommendations for quality improvement as "an all-out war," as suggested by Robin Risser, Chief Executive Officer of Picometrix Inc. In fact, we find the description by Mervis of the success of Gerd Muehllehner entirely consistent with our position. It is not the high-quality proposals, such as Muehllehner's, that are of concern to us.

Ralph A. Bradshaw
President,
Federation of American Societies for Experimental Biology,
9650 Rockville Pike,
Bethesda, MD 20814–3998, USA

References

1. *Sustaining the Commitment: Federal Funding for Biomedical and Related Life Sciences Research FY 1997* (FASEB, Bethesda, MD, 1996).

The General Accounting Office (*1*), the National Academy of Sciences (*2*), and others, have consistently given SBIR high

marks for research quality and commercialization. A 1996 Department of Defense (DOD) review (3) found that research quality has kept pace with the program's expansion since 1992.

Small technology companies remain significantly underrepresented in the federal R&D effort (4), yet they introduce nearly 2.5 times as many innovations per employee as do large companies (5).

SBIR-developed technologies have significantly strengthened U.S. economic and military capabilities. For example, DOD's "SaviTag"—a miniature radio transceiver with an embedded microcomputer—automatically tracks the location and contents of cargo containers used for transport. It has become a central element in DOD's logistical operations and is used on most shipments into Bosnia. The Army has estimated that, if a technology like the SaviTag had existed during Operation Desert Storm, DOD would have saved roughly $2 billion—far more than DOD's annual SBIR budget.

I believe that this evidence, above all else, accounts for the program's strong bipartisan support in Congress and the White House over the past 10 years.

Jon Baron
SBIR Program Manager,
U.S. Department of Defense,
Washington, DC 20301–3061, USA

References

1. *Assessment of Small Business Innovation Research Programs* (RCED-89-39, U.S. General Accounting Office, Washington, DC, January 1989); *Interim Report on the Small Business Innovation Research Program* (RCED-95-59, U.S. General Accounting Office, Washington, DC, March 1995); *Small Business Innovation Research Shows Success But Can Be Strengthened* (RCED-92-37, U.S. General Accounting Office, Washington, DC, March 1992).
2. Committee on Science, Engineering, and Public Policy, *The Government Role in Civilian Technology* (National Academy Press, Washington, DC, 1992).
3. *Quality of Research Under the DOD Small Business Innovation Research Program* [Office of the Under Secretary of Defense (Acquisition & Technology), Department of Defense, Washington, DC, May 1996].
4. *Selected Data on Research and Development in Industry: 1992* (National Science Foundation, Washington, DC, 1994); *Science and Engineering Indicators* (National Science Foundation, Washington, DC, 1996).
5. Z. J. Acs and D. B. Audretsch, *Innovation and Small Firms* (MIT Press, Cambridge, MA, 1990); Gellman Research Associates, *The Relationship between Industrial Concentration, Firm Size, and Technological Innovation* (U.S. Small Business Administration, Washington, DC, May 1982); Gellman Research Associates, *Indicators of International Trends in Technological Innovation* (National Science Foundation, Washington, DC, April 1976).

I work for a small environmental research and consulting company that has received SBIR funding in the past and has an SBIR proposal submitted at present. I worked previously for more than 9 years in an academic research environment and was supported, as principal investigator, nearly entirely by grants and contracts. On the basis of my experience, I can make the following observations.

The format of SBIR proposals sets a maximum length limit, typically 25 to 30 pages, including budget and staff resumés. One may not have a chance to use sufficient detail to impress a reviewer. In the case of one proposal we submitted (not to NIH), I felt that space limitations seriously reduced the ability to explain the concept. We aroused more skepticism than support from reviewers, who raised issues that we hoped they would know as general background. In research proposals, one can spend much more space and effort describing procedures and place less emphasis on results: a nicely characterized study with an appropriate affinity frequently rates higher than one promoting the discovery of a novel solution. The goal of the SBIR program is tangible innovation. Other programs have different procedures, requirements, and goals.

Quotes from a FASEB member appear to be an attempt to establish that SBIR reduces funding opportunities for univer-

sity and academic researchers. This is not accurate. University faculty can easily work as consultants to a small business on these grants. They can be involved substantially in the intellectual effort and share in financial rewards. They cannot, however, administer it through a nonbusiness entity, such as a university.

Mervis, in a companion piece (p. 942), accurately and insightfully alludes to the role of shrinking budgets. The SBIR program is slated to increase to only 2.5% of the total research budget this year. Since 1982, the year SBIR began, all of us receiving federal support (whether for research or entitlements) have lived in an artificially enriched environment. Regardless of what FASEB members do, even if nothing at all, within their own institutions to bring research costs in line with the new reality, this is the wrong time and the wrong issue to raise as part of a public controversy over government support of research and development. No one can reasonably expect to win as much as they are certainly going to lose.

Roy Laughlin
Azurea, Inc.,
Post Office Box 561178,
Rockledge, FL 32956, USA
E-mail: laughlin@wwinternet.net

I disagree with the notion that the differences between the priority score distributions for RO1 grant proposals and those for SBIR proposals are significant. If anything, these differences point out the failure of RO1 study sections to properly use the scoring system to differentiate among proposals.

One of the chief reasons why SBIR priority scores are different is that the ad hoc study sections that review SBIR proposals generally contain academicians who apparently do not grasp the real purpose of SBIR programs, namely, to commercialize new technology. These programs are not for the purpose of conducting basic research. Thus, the importance of recent publications in peer-reviewed journals, for example, is truly secondary.

SBIR provides a direct return to the citizen taxpayers who pay for all government programs. It remains one of the few mechanisms available to support applied research, particularly in bioengineering.

I suspect that U.S. taxpayers want to fund programs that offer the public a direct return as well as support for basic research. The objections raised against the SBIR program are little more than a rationale on the part of some to justify why 97.5% of the available research funding is not sufficient for their perceived needs.

Robert L. Whalen
President,
*Whalen Biomedical Inc.,**
11 Miller Street,
Somerville, MA 02143, USA

*Recipient of more than 20 SBIR awards in a 10-year period and active in other federally funded programs as well.

■

French Humanities and Social Sciences in Crisis

In France, the Centre National de la Recherche Scientifique (CNRS) is dealing with the problem of how to balance its finances. For 2 years, this has been done in a way that is perceived by many to be brutal and incomprehensible. In 1996, in the midst of inextricable financial chaos, the General Director of CNRS announced that certain laboratories seemed to have overspent in 1994 and 1995, and as a consequence he reduced their finances to virtually zero. The funds still available on 31 December 1995 were canceled (even if they were for research programs running over a number of years), and it was decided to grant the laboratories only part of their annual budget (the other part being dis-