The International Licensing Network, Ltd.

TECHNOLOGY MANAGEMENT CONSULTANTS
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December 16, 1988

Norman J. Latker, Esq.
Vice President, Legal and
Technology Affairs
University Science, Engineering
and Technology, Inc.
8000 Westpark Drive, Suite 510
McLean, Virginia 22102

Dear Norman:

The faxed letter of August 9, 1988, just received, does nothing to change the opinion expressed to you over the telephone. To wit:

- If it can be shown that the Maxwell Group followed up with a lead introduced by me, without my knowledge and acquiescence to your unilateral demurral to pay a finder's fee, you should recognize that I would be in a strong legal position to obtain a reasonable remedy.

- The fact that your letter was sent some six months after my bringing the matter to your attention, but only one month before the Maxwell Group surreptitiously approached TII, only supports that position.

I doubt if Mr. Robert Maxwell would be amused to learn about the manner in which his employees in Virginia and Connecticut conduct a business bearing his name. I know I wouldn't be.

Very truly yours,

Robert Goldscheider
Chairman

RG/nk
cc: Mr. Carl Wootten

University Science, Engineering
and Technology, Inc.
8000 Westpark Drive, McLean, VA 22102
Tel: 703/821-2030 Fax: 703/821-2049

August 9, 1988

Mr. Robert Goldscheider
Chairman
The International Licensing Network, Ltd.
630 Fifth Avenue
Suite 1540
New York, New York 10111

Dear Bob:

This is a long delayed response to your March 7 letter regarding your interest in participating in the initiatives undertaken by USET. As you know, we have been busily assimilating the acquisitions we made earlier this year. We are still moving in the general direction that I announced at the SUPA meeting in San Diego on February 29 and are interested in keeping our lines of communication open to you with regard to possible future initiatives. However, in checking with our headquarters people in Greenwich, Connecticut, I have been advised that Maxwell Communication Corp. does not have a finder's fee policy that would enable us to engage you to pursue any acquisitions. Greenwich insists on using their own extensive resources to investigate and conclude acquisitions.

Notwithstanding, I hope we can stay in touch in regard to other possible future joint undertakings.

Sincerely,

Norman J. Latker
Vice President -
Legal and Technology Affairs

M E M O R A N D U M

TO: Bill Miles

FROM: Norm Latker

DATE: December 15, 1988

SUBJECT: Enclosed Articles

Attached are three items that I sent on to Judy Obermayer to work into our SBIR proposal. The Mansfield article (see paper clip) concludes that the Japanese success is primarily due to the ability to utilize "external technology" developed outside the innovating firm between the United States.

"THREE GLOOMY REPORTS" on the loss of the US's lead areas of technology and recommends as a responsibility closer collaboration between the federal, academic, and industrial sectors.

The last article discusses unequal distribution of R&D funds which relate directly to our proposal.

I think the cites will strengthen our submission.

University Science, Engineering
and Technology, Inc.
8000 Westpark Drive, McLean, VA 22102
Tel: 703/821-2030 Fax: 703/821-2049

M E M O R A N D U M

TO: Bill Miles

FROM: Norm Latker

DATE: December 14, 1988

SUBJECT: Enclosed Articles

Reference your attached November 10, 1988 letter.

While I don't know, nor do I believe, that the issue of local preference on licensing has emerged in the context of 1992 it seems that the attached article on "reciprocity" could have a bearing on the licensing issue.

It seems predictable that the Europeans argument for "reciprocity" will eventually be aimed at the US local preference on licensing.

University Science, Engineering
and Technology, Inc.
1465 Post Road East
P.O. Box 915
Westport, CT 06881
Tel: 203/259-7997 Fax: 203/255-1536

November 10, 1988

MEMORANDUM TO: NORMAN J. LATKER

FROM: L. W. MILES

SUBJECT: EUROPEAN ECONOMIC COMMUNITY

Do you know (or is there information you could find) whether the local preference on licensing will be impacted by the 1992 changes?

Bill

LWM:sb

University Science, Engineering
and Technology, Inc.
8000 Westpark Drive, McLean, VA 22102
Tel: 703/821-2030 Fax: 703/821-2049

December 14, 1988

Mr. R. E. Jonas
American Maize-Products Company
ATTN: Accounts Payable
1100 Indianapolis Boulevard
Hammond, Indiana 46320

Dear Mr. Jonas:

Attached is the completed form you requested.

Sincerely,

N — T. Latk

Norman J. Latker
Vice President

Solutions Thru Technology

1227

AMERICAN MAIZE-PRODUCTS COMPANY

Request For Taxpayer Identification Number

1. Name and Address of Vendor

UNIVERSITY SCIENCE, ENGINEERING AND TECHNOLOGY

P.O. BOX 915

WESTPORT, CONNECTICUT 06881

Phone Number 203-259-7997

Please check one:

- [xxx] Corporation
- [ ] Partnership
- [ ] Individual Propriatorship

2. Please list either your Social Security Number | | | | | | | | | | |

OR

Federal I.D. Number | 6 | 2 | | 1 | 3 | 3 | 9 | 2 | 5 | 1 |

3. Effective **January 1, 1984**, we where required to **withhold 20%** from 1099 reportable payments if we did not have the Payee Tax I.D. Number.

The law also provides that Internal Revenue Service may assess you a **$50 penalty** for **failure to furnish** us the above requested identifying number.

4. Please return to:

American Maize-Products Company
Attn: Accounts Payable Dept.
1100 Indianapolis Blvd.
Hammond, Indiana 46320

R. E. Jonas
Supervisor of Accounts Payable

Note: If you have responded previously to this request, no reply is necessary.

NL FILE COPY

C:LTRFFXCO

University Science, Engineering
and Technology, Inc.
8000 Westpark Drive, McLean, VA 22102
Tel: 703/821-2030 Fax: 703/821-2049

November 15, 1988

Ms. Kay G. Anderson
County of Fairfax
Office of Assessments
Personal Property, State Income
and License Division
The Massey Building
Fairfax, VA 20030

Dear Ms. Anderson:

This is in regard to our conversation concerning University Science, Engineering and Technology, Inc.'s (USET) responsibility to obtain an occupational license from Fairfax County. As I advised you, USET came to the county's attention based on a prior application to locate its operation in McLean, Virginia. Since that time the corporation has decided to locate in Westport, Connecticut where all the business of the corporation is conducted. Presently, I am the sole employee of USET remaining in McLean, Virginia and am not conducting business within the definition of the ordinance requiring the license in question. My present assignment with the company involves gathering information from government sources and others, and advising our Westport office on matters of interest. No gross receipts of any kind are generated by this activity. Under the circumstances I do not believe that USET, Inc. is subject to the county license and tax discussed.

When, if ever, we begin providing services to the public from McLean which generate receipts, we will contact you regarding the license in question.

Thank you.

Sincerely,

Norman J. Latker
Vice President
Legal and Technology Affairs

cc: Bill Miles, President
USET
Westport, CT

the ordinance requiring the license in question. My present

University Science, Engineering
and Technology, Inc.
8000 Westpark Drive, McLean, VA 22102
Tel: 703/821-2030 Fax: 703/821-2049

November 3, 1988

Mr. Michael Behar
President
Foresight Management, Inc
15 Motor Rock Road
Westport, CT 06880

MIKE

Dear Mr. Behar:

I am attaching two items that I believe should be taken into consideration during the study to determine the market for the technology database being developed at TIC. Both the Boehringer Ingelheim and Johnson and Johnson items suggest that the interest these companies have in databases is broader than just finding licenseable technology. Boehringer Ingelheim's ad for an Information Scientist indicates that the focus of the position will be pursuit of "business intelligence". Johnson and Johnson describe their interest as being "technology forecasting".

The increased interest of businesses in technology databases is paralleled in government by the priorities identified by George Bush in a 14 October interview for Science Magazine.

> "We will encourage exchange of scientific information, especially between business and academic institutions, to speed up the application of research to benefit the public."
>
> "We will improve the acquisition of scientific and technical information from other countries through expedited translation services and more agressive outreach by federal agencies."

The only conclusion one can draw from these items is a growing interest in earlier access to information regarding new technology. Determining whether this can be converted into a profitable business remains to be determined from our market study.

Sincerely,

Norman J. Latker
Vice-President

cc: Richard Carlin
Bill Miles

The next president of the United States will decide many issues that make headlines. His decisions on national science policies will be much less publicized, but may have a profound effect on citizens' lives. Because these policies involve such matters as seeking cures for diseases, global competitiveness, and the ecosystem, they also affect citizens of all countries. At the invitation of Science, *Vice President George Bush and Governor Michael S. Dukakis have described their positions on a number of science policy issues. Their willingness to participate in this Policy Forum indicates their recognition of the importance of science in relation to the general welfare.*—DANIEL E. KOSHLAND, JR.

Science Policy

GEORGE BUSH

1) **Science advice.** *What will be the role and status of a science adviser in your administration? In particular, do you expect your science adviser to be a senior White House official, as in the Eisenhower-Kennedy era, or a mid-level appointee in the Executive Office, as in the Carter and Reagan administrations? Do you intend to appoint a science adviser early enough to participate in the selection of key officials in the science agencies?*

There is virtually no aspect of government that does not involve science and technology, and I plan to avail myself of the best advice on such matters. I will give serious consideration to implementing the Republican platform recommendation, which states "We will strengthen the role of science and engineering in national policy by reinforcing the Office of the President's Science Adviser."

2) **International competitiveness.** *What measures will your administration take to encourage critical technologies that are likely to play a leading role in industrial competitiveness? Would you favor increased government funding for applied research and development?*

Our nation is now in the midst of the longest peacetime expansion on record. There are many achievements for which we can be very proud. But there are many challenges ahead of us as well.

One of our most important challenges is for America to remain competitive as we move into the 1990s and prepare for the 21st century. To do this, we must do much more than simply talk about it.

To some people, competitiveness means massive spending programs and government interference in the private sector. It means protectionism and pointing the finger at our trading partners without trying to improve quality and productivity at home.

To me, that is not competitiveness. Instead, that is weakness and defeatism.

Competitiveness means a government that creates a climate for entrepreneurship and risk-taking. It means a government that gives you room to grow. That would be the policy of a Bush administration.

Being competitive means striving for excellence in education at all levels. We must provide merit pay and special recognition to reward good teachers. We must provide more assistance to the disadvantaged, more choice to parents and students within the public school system. In higher education, I favor the creation of College Savings Bonds to help parents meet the cost of a college education.

(**Bush,** *continued on page 174*)

George Bush is Vice President of the United States and the Republican candidate for president.

MICHAEL S. DUKAKIS

1) **Science advice.** *What will be the role and status of a science adviser in your administration? In particular, do you expect your science adviser to be a senior White House official, as in the Eisenhower-Kennedy era, or a mid-level appointee in the Executive Office, as in the Carter and Reagan Administrations? Do you intend to appoint a science adviser early enough to participate in the selection of key officials in the science agencies?*

It is time to revitalize the status and stature of the White House science and technology adviser. The best way the science adviser can serve the president is to provide the most objective analysis of the scientific evidence surrounding important government decisions and to present these facts to the president without political considerations. Of course my science adviser will be someone generally sympathetic to the values of my administration, but the adviser's job is to help the president choose the right policy or program, not to distort technical facts to sell a hastily adopted program.

The president needs expert help with three kinds of scientific issues: keeping the nation's scientific enterprise strong, making wise decisions that turn on complex and controversial debates about the technical facts, and carrying out the government's research and development programs effectively. These requirements call for an adviser who knows from personal experience as a scientist or engineer how scientific progress is made, and whose stature within the scientific and technical community is unquestioned.

I intend to appoint such an individual early in my administration. He or she will serve as Special Assistant to the President for Science and Technology, in addition to Executive Office of the President. The adviser will participate in formulating my administration's first budget to Congress, and will help ensure that the key cabinet and subcabinet jobs that call for people with scientific or technical credentials are filled with the best qualified people. The science adviser will work closely with my economic, budget, national security, and personnel advisers. My science adviser will be given the staff and resources to do the job effectively, and will be charged with bringing the advice of the best minds in the scientific and technical community to White House decision-making. Finally, because of my strong personal appreciation of the impact of science and technology on our society—from the standards of living and quality of health to economic competitiveness and national defense—my science adviser will have direct access to the president when she or he deems it necessary.

(**Dukakis,** *continued on page 176*)

Michael S. Dukakis is governor of Massachusetts and the Democratic candidate for president.

(**Bush**, *continued from page 173*)

Technology is America's economic fountain of youth. It is what keeps us prosperous and vital. To stimulate our technological progress, we must adopt a program emphasizing innovation:

- We must commit to increasing our national investment in research and development. Both government and business must devote more resources to research and development.
- The federal government should increase its research and development investment; we should make the research and development tax credit permanent.
- To encourage innovation, we must strengthen intellectual property protection both at home and abroad.
- We must constantly oppose regulation that stifles competition, striving instead for innovative products and services. An illustrative example is the new biotechnology industry, which offers much promise in improved health care.

American business needs to get closer to the source of American inventiveness. It should have closer partnerships with government and university labs, so business can better commercialize scientific advances.

3) **Science education.** *According to many measures, American students rank lower in math and science than their counterparts in most other industrial countries. As president, what specific steps will you take to improve education in general and sciences education in particular?*

All our hopes for our children will mean little if we do not make sure that the education they are given is outstanding. If we provide special attention to those with special needs, then we can wipe out illiteracy the way we wiped out polio.

Quality education is good policy. In the years ahead, education can be our most powerful economic program, our most important trade program, our most effective urban program, our best program for producing jobs and bringing people out of poverty. The best investment we can make is in our children.

We need to spend more on education. Providing excellent education is an investment in America's future—and it is one of the most basic roles of government.

Investments in education must be a responsibility of state and local governments who can recognize and respond to the different needs of students. The federal role must be to provide grants to state governments for new programs that enhance the standards of instruction and to improve the curriculum at the elementary and secondary levels.

In the years ahead, virtually everyone in the workplace will need to understand technology. It is education's role to prepare us for this.

To help further our technological future:

- We should strive for the goal of computer literacy for high school students.
- The federal government should consider helping states set up schools that would give our most gifted and talented students the chance to learn as much science and math as their abilities will allow. Here's a chance to find exceptional kids who otherwise would not have the opportunity to develop fully their abilities because their parents cannot afford to give them that opportunity.
- To improve the science and math skills of all our students, we need to have the best science and math teachers available.

We should consider using these schools of excellence to help high school science and math teachers across the state improve and upgrade their skills.

Our high schools must graduate students who understand enough science, math, and technology to perform well in the jobs of the future.

4) **Science budgets.** *According to figures from the National Science Foundation, the United States spends about 1.8% of its gross national product on nondefense research and development, about the same as France and the United Kingdom, while Japan and West Germany each spend more than 2.5%. Do you believe the United States is currently spending at about the right level or should it be increased or decreased?*

A Bush administration will ask the Congress to double the National Science Foundation's funding over the next 5 years.

- Our administration has made this request 2 years in a row, but the Democrat-controlled Congress has denied the request twice.
- The National Science Foundation is the primary federal agency for funding basic research and advancement of science education.
- Our administration has doubled government research expenditures over the last 8 years for both large and small projects.
- I realize the importance of both "big" science and "little" science. Little science is the backbone of our research efforts and will be strongly supported.

5) **Science priorities.** *Several major civilian science and technology projects are in early stages of development. Examples are the space station, the Superconducting Super Collider, and the project to map and sequence the human genome. "Little science" is also in need of funds for subjects as diverse as superconductivity and biotechnology. How do you decide priorities between and within "big science" and "little science"?*

Budget and priorities cannot be separated. A Bush administration will seek to achieve the science and technology priorities as outlined in the Platform Statement, which states:

Our nation's continuing progress depends on scientific and technological innovation. It is America's economic fountain of youth. Republicans advocate a creative partnership between government and the private sector to ensure the dynamism and creativity of scientific research and technology:

- We recognize that excellence in education, and especially scientific literacy, is a precondition for progress, and that economic growth makes possible the nation's continuing advancement in scientific research.
- We consider a key priority in any increased funding for the National Science Foundation the retooling of science and engineering labs at colleges and universities.
- We endorse major national projects like the Superconducting Super Collider.
- We will ensure that tax policy gives optimum incentives for the private sector to fund a high level of advanced research. Toward that end, we will make permanent the current tax credit for research and development and extend it to cooperative research ventures.
- We will encourage exchange of scientific information, especially between business and academic institutions, to speed up the application of research to benefit the public.
- We will improve the acquisition of scientific and technical information from other countries through expedited translation services and more aggressive outreach by federal agencies.
- We will include international technology flows as part of U.S. trade negotiations to ensure that the benefits of foreign advances are available to Americans.
- We will encourage innovation by strengthening protection for intellectual property at home and abroad. We will promote the public benefits that come from commercialization of research conducted under federal sponsorship by allowing private ownership of intellectual property developed in that manner.
- We will oppose regulation which stifles competition and hinders breakthroughs that can transform life for the better in areas like biotechnology.

This is an agenda for more than science and technology. It will broaden economic opportunity, sustain our ability to compete globally, and enhance the quality of life for all.

In addition, we will:

- Continue to support the NSF's National Science and Technology Research Centers to bring the private sector, university labs, and

(**Bush**, *continued on page 175*)

(**Bush**, *continued from page 174*)

the government together in cooperation to commercialize new technologies more quickly.

■ Continue to promote efforts to transfer technology from the federal labs to the private sector.

6) **Biomedical research.** *The United States has long been preeminent in biomedical research, but as competition for resources gets tougher, the number of good projects that go unfunded increases. At $6-plus billion a year, is the National Institutes of Health budget roughly where it should be? What are your own priorities for basic research in the biomedical sciences?*

Medical technology has made dramatic advances that have increased our ability to prolong life, but there are costs that go with this progress. Who does not worry about their ability to pay for their health care needs in their later years?

Currently, out-of-pocket payments account for about half of long-term care expenditures. Medicaid and other government programs pay about 48% of the bill, and private insurance less than 2%. Most home and community care is provided by family, friends, and volunteers.

We should try to reduce the need for care by devoting significant research attention to the prevention and cure of debilitating illnesses—illnesses like Alzheimer's, arthritis, and osteoporosis—that can keep us caring for ourselves.

We must commit the resources and the will to find a cure for AIDS. American science must know that we have the resolve to beat this disease. I believe that continued research on the virus combined with public education and testing are the best path to curb the spread of AIDS.

This year, the federal government will spend $766 million on AIDS. Next year, the figure will be $1 billion, and because these figures do not include state and private aid, the total is even higher. While we have a long way to go, we are beginning to see some results. We have learned more about the AIDS virus in a few years than we did about polio after 40 years. Recently, there have been reports of very preliminary testing of a vaccine. We must ensure that the drug approval processes of the Food and Drug Administration do not inhibit the new generation of wonder drugs.

But more than just spending money, we must also tell parents, students, and people throughout America in a thoughtful and sensitive manner the facts about AIDS and what they can do to protect themselves.

7) **Space program.** *What do you believe the goals and priorities for the space program should be? Do you consider that the space program is currently receiving the right level of resources? What should be the balance between manned and unmanned exploration of space? Would your administration encourage private sector involvement in the space program and, if so, how?*

I am committed to reestablishing America as the world's leader in space. Americans are explorers—we need to push back the frontier of our knowledge. Continued space exploration is vital to the nation's security and economic growth as well.

■ The new technologies resulting from space experiments have produced dynamic improvements in fields such as electronics and medicine.

■ Space exploration provides our children, the next generation of scientists and engineers, with a sense of vision to encourage their imaginations and energies.

■ These are three specific aspects to my space program: (i) The federal government should get out of the business of being a freight service for routine commercial payloads. I want to encourage the development of—not compete with—private commercial space development. (ii) I support construction of a replacement space shuttle and a heavy lift launch capability that will provide us with flexible, reliable access to space, and I have strongly supported the development of a space station. (iii) I support "Mission to the Planet Earth"—which is a project designed to establish platforms in space to observe climatic changes on Earth. The information gained through this project will be of great value to farmers, fishermen, weathermen, scientists, all of us.

(**Dukakis,** *continued from page 173)*

2) **International competitiveness.** *What measures will your administration take to encourage critical technologies that are likely to play a leading role in industrial competitiveness? Would you favor increased government funding for applied research and development?*

Science and technology are central to American economic competitiveness, and the federal government can play a key role in maintaining economic security—upon which our entire national security rests—through wise policies. Recent studies indicate that advances in science and technology account for one-third to one-half of all increases in our gross national product. The United States is the world leader in basic research, but other nations have proven more adept at commercializing new technologies. If we are to take full advantage of our nation's inventiveness, we must devise mechanisms for speeding the flow of ideas from laboratory to marketplace. I will support increased federal funding for applied research and development, and I will instruct my advisers to find those many instances in which modest additional federal investment in applied research and development would make a great deal of difference. Moreover, these increases will be on top of, and *not* at the expense of, the amounts we need to spend on basic research. For we must ensure that our basic research system continues to be the envy of the world. Without a sustained federal commitment to support long-term, basic and applied research, as well as science and engineering education, American schools, colleges, and businesses will not keep pace with changing circumstances, and our capacity to innovate will be hampered.

We need a national network of Centers of Excellence—working closely with our research universities and industries—in new and applied technology that will help America's industries regain their competitive footing and that will spawn new industries and new jobs.

Moreover, an increasingly integrated world economy means that U.S. firms should invest in product innovation so they are not forced to compete solely on the basis of price. Both the federal and state governments should work with our basic industries to encourage the development and diffusion of new manufacturing technologies. They should also work with industry and labor to support training and retraining programs so that workers will have 21st-century skills for 21st-century jobs. The recently passed omnibus trade bill—which I supported—provides $1 billion for job training. That is a big step in the right direction.

Because much of America's future will depend on the creation of intellectual property, we must be sure that the intellectual capital we produce will be protected by our legal system, so that we may *all* profit from its creation. If we fail in this regard, we not only lose the capital in question, but eventually less and less of that capital will be created.

The new trade bill provides many tools to address this and other issues related to economic competitiveness, and I will not hesitate to use those tools as the need arises. It is becoming clear that the government needs a new institutional focus, other than the existing "mission" agencies or the National Science Foundation, to yoke technological innovation to commercial competitiveness. The Department of Commerce is a prominent candidate for such a role. I look forward to hearing the views of the science and technical community about the best way to harness our nation's natural inventiveness for commercial application.

3) **Science education.** *According to many measures, American students rank lower in math and science than their counterparts in most other industrial countries. As president, what specific steps will you take to improve education in general and science education in particular?*

The United States faces a serious future shortage of scientists, engineers, and other technical professionals. The federal government has a strong traditional role in producing science and engineering professionals in partnerships with state governments and universities. This role will receive special attention early in my administration, beginning with a close look at seriously obsolete research facilities, inadequate support of graduate research fellowships, and the serious underrepresentation of women and minorities in the science and technology professions. The Reagan-Bush Administration has totally disregarded its responsibility to implement existing legislation that mandates the promotion of women and minorities in science and technology. Moreover, I plan a significant expansion of the National Science Foundation's science and engineering education programs (which the current administration tried to terminate in its early years in office), doubling their authorization over the next 5 years.

Commercial competitiveness and a rising standard of living depend on a better educated workforce at all levels and a strengthening of science and math education in grades K through 12. Within the context of state-initiated school reform, the National Science Foundation should assist in the development of science and math curricula. Last, we need to inspire young people with the beauty of science and give them the confidence to understand and contribute to an increasingly scientific and technological society. Inspirational national technological undertakings in space, subatomic physics, and genetics encourage more American students to take up science, engineering, and math.

Engineering education also needs review and federal support in light of the increasing importance of design production processes and quality in promoting competitiveness. Initiative can be expected from the state governments, engineering schools, universities, colleges, and from industry. But the federal government should accelerate this critical investment in competitiveness by helping with the cost of locally initiated reforms, by expanding the scope of the engineering research it supports, and by assisting the development of technical information services that link knowledge-creating and knowledge-using institutions.

4) **Science budgets.** *According to figures from the National Science Foundation, the United States spends about 1.8% of its gross national product on nondefense research and development, about the same as France and the United Kingdom, while Japan and West Germany each spend more than 2.5%. Do you believe the United States is currently spending at about the right level or should it be increased or decreased?*

The United States of America, the greatest power on Earth and leader of the free world, *must* maintain a first-class scientific and technological research enterprise. Such a commitment costs money, but it is an investment in our future. The nation's science and technology budget contains several different components, and each one requires a different kind of presidential attention. One-half of the nation's effort is funded by the federal government and the other half by the private sector. As much as one-half of the total national effort is associated with national defense. Within the federal research and development (R&D) budget, more than two-thirds of the funds go to defense. Most of the nonmilitary federal spending is for basic and applied research, whereas the military spending is heavily weighted toward development of specific weapons.

I intend to build on the increases in federal support for nonmilitary R&D of the 1980s, especially in the areas of basic research and science and engineering education, where the federal government has a vital role. But the Reagan-Bush years have also witnessed a steady increase in the fraction of the science budget that has gone to purely military projects. Of the $26.3-billion increase in federal

(**Dukakis,** *continued from page 176)*

R&D between 1980 and 1987, $23.3 billion—or almost 90%—was for defense R&D, and the remainder for civilian R&D. This means that civilian R&D has been *cut* by 13% in real terms since 1980. I will restore the balance between military and civilian research in the science budget. Under the current administration, defense R&D spending has shifted almost entirely to the "D" of specific weapons—there is hardly any generic "R" left. This trend not only mortgages our future military technology in favor of a spending binge on today's technology, it also threatens to smother spinoff from military to civilian technology since it is the defense department's generic research that contributes most to the nation's overall technology base. I will reverse this trend by increasing the percentage of basic and applied research in the defense R&D budget. I will also work to increase the spinoff between the defense and civilian technology bases: our economic competitors spend a larger fraction of their gross national product on civil R&D than we do, so we must try to reap nonmilitary benefits from our large defense R&D spending.

Half of the nation's science and technology investments are made by the private sector, not by government. But the federal government can work with industry to increase the incentives and efficiency of R&D in private firms. For this reason, I favor making the R&D tax credit a permanent feature of the tax code. Moreover, I will work with Congress to strengthen patent and copyright protections, antitrust policy, and public-private partnerships such as SEMATECH. We should also search for ways to facilitate the flow of scientific and technological information from government laboratories to the private sector and between private firms, while better coordinating federal and state science and technology policies. Ultimately, the United States should be investing as large a fraction of its gross national product in nondefense research, both publicly and privately funded, as do our major economic competitors.

5) **Science priorities.** *Several major civilian science and technology projects are in early stages of development. Examples are the space station, the Superconducting Super Collider, and the project to map and sequence the human genome. "Little science" is also in need of funds for subjects as diverse as superconductivity and biotechnology. How do you decide priorities between and within "big science" and "little science."*

The federal government's science and technology budget of over $60 billion per year amounts to half of the nation's annual investment in research and development for its future economic, military, and social welfare. Research and development programs total almost one-fifth of the federal government's discretionary spending. Establishing priorities among these investments will therefore be one of my major responsibilities as President.

As scientists and engineers well know, there is no general rule about whether "big science" or "little science" should have priority. Sometimes big science is the only way to make progress, as in high-energy physics. Yet the discovery of high-temperature superconductivity was an achievement of little science. Big projects can also squeeze out valuable small projects, as happened in NASA under the Reagan-Bush Administration. My first priority will be to ensure that our basic research capability is protected and nourished. Beyond that, I will seek funding for large projects of national importance, such as the space station. We are a great nation, and we should support great endeavors.

I intend to make these difficult decisions about science projects on a case-by-case basis, drawing heavily on the advice of the best scientific minds in the country to help me assess the relative merits of different projects. Moreover, the scientific and technical community itself must take greater responsibility for determining R&D priorities.

6) **Biomedical research.** *The United States has long been preeminent in biomedical research, but as competition for resources gets toughter, the number of good projects that go unfunded increases. At $6-plus billion a year, is the National Institutes of Health budget roughly where it should be? What are your own priorities for basic research in the biomedical sciences?*

The National Institutes of Health and a national network of individual investigators continue to lead this country's successful biomedical research effort. The creativity and initiative of these two groups have made possible a revolution in biotechnology in the last few years. This revolution has had an enormous impact on immunology, and has helped our ability to understand a variety of health disorders.

A vibrant biomedical research enterprise promotes not only the health of our citizens; it promotes economic development as well. The Massachusetts economy benefits from the healthy biomedical research effort at our universities and from our many biomedical business start-ups.

Inexplicably, the current administration sees little value in biomedical research and has attempted to cut its budget on several occasions. A Dukakis administration will understand that support for biomedical research is an investment in our nation's medical and economic future.

7) **Space program.** *What do you believe the goals and priorities for the space program should be? Do you consider that the space program is currently receiving the right level of resources? What should be the balance between manned and unmanned exploration of space? Would your administration encourage private sector involvement in the space program and, if so, how?*

During the past 8 years, our space program has lost its sense of purpose, vision, and pride. Our space program is in disarray; it suffers from a lack of purpose and from ineffective leadership, and our space policy is lost in a maze of executive committees. Some have begun to doubt our ability to compete in this vast new frontier.

As president, one of my first actions will be the reestablishment of the cabinet-level National Aeronautics and Space Council, which will determine how best to reinvigorate our space program. We should emphasize R&D in innovative space technology to expand our knowledge of the earth's resources and the world's oceans, to improve communications, and to reveal the mysteries of the universe. We must assure stable funding for important ongoing space science projects, such as the great observatories and exploration of the solar system, and consider new missions such as those described in recent reports of the National Academy of Sciences.

The shuttle program is essential to our plans for space exploration and utilization, and I support the production of a fourth orbiter to replace the Challenger. I support a diverse fleet of launch vehicles and a viable commercial expendable launch industry that will provide us assured access to space. I am committed to the development of advanced aviation and space technologies with broad commercial and national security applications. But we do not need to spend billions of dollars developing an "Orient Express" to transport business executives between New York and Tokyo.

I also support a proposal for a permanently manned space station and our first priority in space policy is an intensive review of the space station program to ensure success of this important effort. Elements of the station will enable scientists to observe our planet and develop a better understanding of the earth's climate and ecology. The space station will also allow us to answer questions about the effects of long-term space flight on astronauts, which is essential if we are to explore the possibility of establishing outposts on the moon or sending expeditions to Mars.

(**Dukakis,** *continued on page 177)*

(**Dukakis,** *continued from page 177*)

As the Apollo program demonstrated, the civilian space program can be a tremendous engine of change, spawning new technology and innovation that will help create new industries and keep existing industries on the cutting edge. The private sector should take the lead in developing commercial activities in space, but the federal government must serve as a stable, consistent, and responsive partner that will promote an American industry that can compete in the growing international market for space goods and services. We can no longer be satisfied with living off the technology of the Apollo era. By strongly supporting NASA research in such key areas as automation, robotics, and new materials, I will maintain a vigorous aerospace industry that will enhance our international competitiveness and domestic employment.

FACE TO FACE



Technology Forecasting at J&J

An Interview with Jonathan Rosen, PhD
Vice President, R&D, Codman & Shurtleff, Inc., a Johnson & Johnson Company

MD&DI: What is J&J's corporate expectation for company-wide technology forecasting?

ROSEN: The corporate expectation is that each J&J company in its own way will be responsible for technology forecasting, or mechanisms through which the organization becomes aware of technological changes in its area of interest that may affect its business. For example, if a drug can be administered more effectively by a transcutaneous patch than orally, and we're in the oral drug business, we're sensitized by that development. It's both an opportunity and a concern. We examine process and product technologies as well as developments in clinical science, and we make strategic planning decisions based on that information—decisions regarding the games that are being played and which ones we want to participate in.

MD&DI: Where do you get your information?

ROSEN: First, there are on-line data bases of all kinds. Someone here at J&J recently counted 5000 that were health-care related, ranging from pure scientific literature to financial and competitor analysis, patent information, demographics, epidemiology studies, biostatistics, environmental information, and updates on legislation.

Basically, all the information that's published or in the public domain that is accessible legally and ethically is fair game.

The computer side is just one piece of the puzzle. We aggressively use freedom of information. Then there are focus groups, scientific advisory boards, committees, councils, and consultants. Also, we attend scientific and clinical symposia and conferences. Basically, all the information that's published or in the public domain that is accessible to us legally and ethically is fair game, and we keep careful and rigorous control to make sure it stays on that side of the line.

MD&DI: Once you find an area you're interested in, what's next?

ROSEN: The first time you access the information, it's to define the technological borders of your field of interest and compare it with your current strengths and limitations as a company. The next step is to decide whether you're going to give something the full treatment or not. A full-fledged due diligence analysis could conceivably cost hundreds of thousands of dollars, or it could amount to a 15-minute search on a computer. It all depends. In any case, you can't afford to do that for the heck of it.

Since congressional passage of the Technology Transfer Act of 1986, industry interest in technology transfer has increased dramatically. But the potential for cooperative research agreements with federal and university research laboratories far exceeds the current level of activity.

Codman & Shurtleff, a Johnson & Johnson Company, believes technology transfer is important to a company's long-term strength. Jonathan Rosen, vice president of R&D for the Randolph, MA–based neurosurgical device company, says the key to a successful program is technology forecasting.

MD&DI: What role does forecasting play in technology transfer?

ROSEN: Forecasting really is the key. You have to know what you want before you go through your business development or internal R&D group, or any other resource. The purpose of forecasting is to identify emerging technologies, both short and medium range. That's how you move forward. If you keep doing the same things, the field will pass you by. Forecasting keeps you in the middle of the wave longer. It gets down to picking an accurate time frame for the availability of a technology.

For example, I may forecast that an optic fiber will become available between one and five years from now. Within that four-year span, I may forecast that it will become available sooner if certain developments come to pass, later if they don't. The trick is to figure it out before it happens.

You can mobilize your forces quickly to evaluate whether a technology is what it's cracked up to be, how far along it is toward development, and what resources you need to bring it in and take advantage of it.

MD&DI: What is involved in a full fledged due diligence analysis?

ROSEN: It amounts to getting a complete background on the technology by answering these kinds of questions. How important is the technology? What is the state of the art? Who are the leading research groups? How close to fruition is their research? Who are your potential competitors?

Technology forecasting should be the number one objective of the whole organization.

MD&DI: How does technology forecasting interface with the strategic planning process?

ROSEN: There's an absolute explosion of available new technologies, more than any corporation can handle or absorb. And so you have to establish some criteria for selection. That's where planning from a technology perspective rather than a more traditional market-based strategic plan comes in. The use of available technologies, independent of which companies are sponsoring them or the competitive environment, is often a very practical and creative way of looking at the world and the future. Near the end of the technology forecast, the strategic planning effort—which is more an analysis of the competitive environment, the growth markets, and the part you want to play in them—follows on. When strategic planning follows technology forecasting, it can usually be made very complementary from the standpoint of identifying and pursuing technologies that are emerging over the short and medium range.

MD&DI: What would you say is the greatest barrier to technology forecasting and transfer?

ROSEN: We're all working very hard to do the best possible job of finding technology transfer opportunities and assessing them. But in a strange way, this tremendous opportunity is also our greatest limitation. So much exciting development is available in health care right now that it's extremely difficult to make good choices. Moreover, the pace of development is outstripping the decision-making process. From the time you recognize an opportunity to the time you're able to bring the resources to bear and effect a technology transfer, that technology has moved on a couple of notches. So making good decisions as quickly as possible is becoming more and more critical. The key is in the planning cycle—doing your homework ahead of time. Because if you read about an opportunity in the *Wall Street Journal*, for example, and then begin your evaluation of whether or not you're interested, it's too late.

MD&DI: Once your choice is made and you decide to bring your resources to bear on a particular technology, how do you decide whether you will develop it internally or acquire it through transfer mechanisms?

ROSEN: That's why I'm here. One of the responsibilities of the director of research is to be a primary decision maker on the issue of inside versus outside development of technology. And it's a tough question. Basically, it's a complex mixture of matching your own resources against what's available and the timetable for the technology's development. Then, of course, there's a hard-core business analysis that goes on as well. How much is it going to cost? What will your return be? You can do a cost-benefit analysis of inside versus outside R&D and get pretty far. And we do that. It's part of the full-fledged due diligence, and it can take several months to do a good job. You have to decide if that's how you want to spend your time.

But even if 90%, for example, of your technology is developed outside, it's ultimately the company's responsibility to develop a technology base. Somebody inside has to know if you're doing a good job or not. No matter which way the pendulum swings, you've got to be an expert in your business to be effective in making decisions over the long run. You can't swing so far to the side of contract research that you give up your ability to evaluate your success. And that's the responsibility of the whole board of directors—not just of the research director.

MD&DI: How important is technology forecasting to the overall operation of a medical device company?

ROSEN: In my mind, technology forecasting should be the number one objective of the whole organization. It's an absolutely vital first step in charting the course of the company. As I've said, most areas of health care are in a tremendously growth-intensive period, and we're flooded with new opportunities and technologies. If you look out at the horizon in the areas we're working in, health care will be provided in fundamentally different ways than it is now. It's obvious that these changes will have an enormous impact on our business over the next two decades. —D.H.



THE NEW YORK TIMES, SUNDAY, OCTOBER 30, 1988

INFORMATION SCIENTIST

BOEHRINGER INGELHEIM PHARMACEUTICALS, INC., a highly respected and rapidly growing pharmaceutical company has a career opportunity in its Scientific Information Service group in DANBURY, CONNECTICUT.

To further develop our business intelligence program, we are seeking an experienced professional with well developed on-line and information research/analysis skills. Responsibilities include searching scientific and business databases; assisting in the generation of product, industry and company profiles; providing rapid, focused information to support decision making and participation of interdepartmental project teams.

Qualifications: MS in Information Science or related field, with 2 to 3 years of industry experience in a highly automated information environment.

BOEHRINGER INGELHEIM PHARMACEUTICALS, INC. offers a highly competitive compensation and benefits package, relocation assistance, an excellent work environment and the opportunity to have your contributions recognized.

Please send your resume and salary requirements to: Dept. PTG-1H, BOEHRINGER INGELHEIM PHARMACEUTICALS, INC., 90 East Ridge, P.O. Box 368, Ridgefield, CT 06877. We are an equal opportunity employer m/f/h/v.

Boehringer Ingelheim

SEPTEMBER 22, 1988

TO: NORM LATKER

FROM: JIM LIVERMAN

SUBJECT: MATERIALS FOR MILES TALK.

In response to your request, I have gone into the NSF University Data Base and copied the information from the front summary screen for each of our affiliated universities. In addition I have included the Smithsonian Institution's budget items although it is not a University, even though at times it acts like one.

Notes were compared with Carl Wooten as to institutions. He clearly has some that are not in the NSF data base at this point and I have no other information about them:

BTG, INRA, GKSS, AND THE MARYLAND BIOTECHNOLOGY INSTITUTE.

Perhaps they can generate the numbers from their sources of information since they are in direct contact with these groups.

One thing to note for Bill is that these figures are for FY 1986. The 1987 final figures will be out this fall and we are in line to obtain the diskettes as soon as they are available, maybe even before they are generally available. The point is that our people in direct contact with the Universities can probably get the material needed to update some of the $ figures although they wont be able to determine the relative ranking since that depends on the total US data base.

I hope this is what was wanted. If not quite, then I can probably instruct Jay on the telephone as to what other steps need to be taken to provide that info to Bill.

information since they are in direct contact with these groups.

MILETLK2.WK1

1986 FUNDING TO USET AFFILIATED INSTITUTIONS
FUNDS X 1000

INSTITUTION	FEDERAL FUNDS	NON FEDERAL FUNDS	TOTAL FUNDS
UNIVERSITIES:			
U. OF ILLINOIS	86789	71630	158419
U. OF PENNSYLVANIA	105925	46821	152746
U. OF MARYLAND	43971	62730	106701
GEORGIA INST TECHNOLOGY	58432	47025	105457
U. OF COLORADO	74887	29689	104576
U. OF IOWA	52497	21099	73328
U. OF CONNECTICUT	36142	36224	72366
NEW YORK UNIVERSITY	69099	23688	69200
PRINCETON UNIVERSITY	36199	15590	51789
KANSAS STATE UNIVERSITY	12969	27739	40708
N.J. INST. OF TECHNOLOGY	940	7639	8579
MEDICAL COL PENNSYLVANIA	4864	3956	8413
TOTAL FOR UNIVERSITIES	582714	393830	952282
**********			
FEDERAL AGENCIES			
SMITHSONIAN INSTITUTION	77640		77640
********			
OTHER INSTITUTIONS			
No funding information in data base.			
BTG			
INRA			
GKSS			
MARYLAND BIOTECHNOLOGY INSTITUTE			

Agency: [Smithsonian Institution]
Department/Code: [SI]
Address: 1000 Jefferson Drive, S.W.
City: Washington State: DC Zip: 20560

DEVEL: 0.0 BASIC: 77640.0 APPLIED: 0.0 TOT R&D: 77640.0

(Funding in thousands of dollars)

	Basic:	Applied:	Total:
LIFE SCIENCES	28165.0	0.0	28165.0
ENVIRONMENTAL	5797.0	0.0	5797.0
ENGINEERING	0.0	0.0	0.0
PHYSICAL	15127.0	0.0	15127.0
MATH/COMPUTER	0.0	0.0	0.0
PSYCHOLOGY	0.0	0.0	0.0
SOCIAL	28551.0	0.0	28551.0

LIFE SCIENCES — Basic: 28165.0 Applied: 0.0 Total: 28165.0

	Basic:	Applied:	Total:
BIOLOGICAL	13750.0	0.0	13750.0
ENVIRO BIOLOGY	14415.0	0.0	14415.0
AGRICULTURE	0.0	0.0	0.0
MEDICAL	0.0	0.0	0.0
NEC	0.0	0.0	0.0

ENVIRONMENTAL SCIENCES — Basic: 5797.0 Applied: 0.0 Total: 5797.0

	Basic:	Applied:	Total:
ATMOSPHERIC	42.0	0.0	42.0
GEOLOGICAL	4144.0	0.0	4144.0
OCEANOGRAPHY	1611.0	0.0	1611.0
NEC	0.0	0.0	0.0

PHYSICAL SCIENCES — Basic: 15127.0 Applied: 0.0 Total: 15127.0

	Basic:	Applied:	Total:
ASTRONOMY	15127.0	0.0	15127.0
CHEMISTRY	0.0	0.0	0.0
PHYSICS	0.0	0.0	0.0
NEC	0.0	0.0	0.0

SOCIAL SCIENCES — Basic: 28551.0 Applied: 0.0 Total: 28551.0

	Basic:	Applied:	Total:
ANTHROPOLOGY	3001.0	0.0	3001.0
ECONOMICS	0.0	0.0	0.0
POLITICAL	0.0	0.0	0.0
SOCIOLOGY	0.0	0.0	0.0
NEC	25550.0	0.0	25550.0

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MILETLK1.WK1

RANKING OF USET CLIENTS IN R&D IN THE US

	GEO INST TECH	KAN STA	MED COL PENN	NJ INST TECH	NYU	PRINCU	U OF COLO	U OF CONN	U OF ILL	U OF IOWA	U OF MD	U OF PENN
TOTAL FUNDS	27	85	175	178	33	71	28	48	13	46	26	15
TOTAL FEDERAL	31	115			25	57	23	58	18	36	46	12
TOTAL NON-FEDERAL	22	48		129	52	82	45	34	7	60	13	23
LIFE SCIENCES		76			19		31	44	56	38		8
FEDERAL					18		31	37	57	27		7
AGRICULTURAL		27						57	26		50	92
BIOLOGICAL		79			27	73	21	23	52	40	78	16
MEDICAL			75		24		26	35	82	20		5
ENVIRONMENTAL SCI	29					36	12	57	7		26	
FEDERAL	28					38	8	60	20		21	100
ENGINEERING	3	80		93		34	66	65	6	70	19	
FEDERAL	4	99				29	51	100	6	68	31	
												39
PHYSICAL SCIENCES	44	73			82	21	19	57	12	38	5	20
FEDERAL	55	63			74	19	18		13	32	11	21
CHEMISTRY	27					22	20	58	4	64	8	19
PHYSICS	54	43			60	23	35	56	10	26	4	15
COMPUTER SCIENCES	9			48	11	30	37	73	5	43	13	14
MATHEMATICS	75	82			3	18	87		19	54	2	46
PSYCHOLOGY	43				22	33	13	39	5	46	14	49
SOCIAL SCIENCES	55	82			45	22	56	57	11	88	4	
FEDERAL	42	87			90	20	31		22	81	37	72

THE NUMBERS REPRESENT THE RANKING OF EACH INSTITUTION IN THE PARTICULAR DISCIPLINE OR SUB DISCIPLINE IN COMPARISON TO ALL OTHER REPORTING INSTITUTIONS IN THE U.S. IF A RANKING IS NOT SHOWN IN A CATEGORY FOR ANY OF THE DISCIPLINES THEN THE INSTITUTION FELL BELOW THE TOP 100 IN THAT CATEGORY. IF THERE IS NO NUMBER FOR THE TOTAL FUNDS CATEGORY THEN THE INSTITUTION FELL BELOW THE TOP 200 INSTITUTIONS IN TOTAL FUNDING. FURTHER, IF AN INSTITUTION WAS IN THE TOP 100 IN ANY CATEGORY, THEN IT WILL APPEAR IN THE NATIONAL SCIENCE FOUNDATION TABLES IRRESPECTIVE OF ITS RANK IN TOTAL FUNDING.

UNIVERSITY R&D FUNDING

Institution: [University of Illinois]
Address: Urbana
City: Urbana State: IL Zip: 61801

FF: 86789.0 NON FF: 71630.0 TOTAL: 158419.0

(Funding in thousands of dollars)

	FF:	Non FF:	Total:
LIFE SCIENCES	20721.0	18147.0	38868.0
ENVIRON. SCIENCES	6210.0	13885.0	20095.0
ENGINEERING	26099.0	15526.0	41625.0
PHYSICAL SCIENCES	17270.0	4733.0	22003.0
COMPUTER SCIENCE	7413.0	8484.0	15897.0
MATH	1149.0	655.0	1804.0
PSYCHOLOGY	3993.0	1979.0	5972.0
SOCIAL SCIENCES	1929.0	5789.0	7718.0
OTHER	2005.0	2432.0	4437.0

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UNIVERSITY R&D FUNDING

Institution: [UNIVERSITY OF PENNSYLVANIA]
Address:
City: Philadelphia **State:** PA **Zip:** 19104

FF: 105925.0 **NON FF:** 46821.0 **TOTAL:** 152746.0

(Funding in thousands of dollars)

LIFE SCIENCES -	**FF:**	73321.0	**Non FF:**	30234.0	**Total:**	103555.0
ENVIRON. SCIENCES -	**FF:**	13.0	**Non FF:**	43.0	**Total:**	56.0
ENGINEERING -	**FF:**	5239.0	**Non FF:**	4256.0	**Total:**	9495.0
PHYSICAL SCIENCES -	**FF:**	12548.0	**Non FF:**	2432.0	**Total:**	14980.0
COMPUTER SCIENCE -	**FF:**	4278.0	**Non FF:**	674.0	**Total:**	4952.0
MATH -	**FF:**	749.0	**Non FF:**	117.0	**Total:**	866.0
PSYCHOLOGY -	**FF:**	1354.0	**Non FF:**	202.0	**Total:**	1556.0
SOCIAL SCIENCES -	**FF:**	4427.0	**Non FF:**	8495.0	**Total:**	12922.0
OTHER -	**FF:**	3996.0	**Non FF:**	368.0	**Total:**	4364.0

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UNIVERSITY R&D FUNDING

Institution: [UNIVERSITY OF MARYLAND]
Address:
City: College Park **State:** MD **Zip:** 20742

FF: 43971.0 **NON FF:** 62730.0 **TOTAL:** 106701.0

(Funding in thousands of dollars)

LIFE SCIENCES	**FF:**	5183.0	**Non FF:**	8598.0	**Total:**	13781.0
ENVIRON. SCIENCES	**FF:**	6040.0	**Non FF:**	2245.0	**Total:**	8285.0
ENGINEERING	**FF:**	8132.0	**Non FF:**	11836.0	**Total:**	19968.0
PHYSICAL SCIENCES	**FF:**	18467.0	**Non FF:**	16584.0	**Total:**	35051.0
COMPUTER SCIENCE	**FF:**	2860.0	**Non FF:**	2331.0	**Total:**	5191.0
MATH	**FF:**	917.0	**Non FF:**	5199.0	**Total:**	6116.0
PSYCHOLOGY	**FF:**	973.0	**Non FF:**	2530.0	**Total:**	3503.0
SOCIAL SCIENCES	**FF:**	1399.0	**Non FF:**	13407.0	**Total:**	14806.0
OTHER	**FF:**	0.0	**Non FF:**	0.0	**Total:**	0.0

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UNIVERSITY R&D FUNDING

Institution: [GEORGIA INSTITUTE OF TECHNOLOGY]
Address:
City: Atlanta **State:** GA **Zip:** 30332

FF: 58432.0 **NON FF:** 47025.0 **TOTAL:** 105457.0

(Funding in thousands of dollars)

LIFE SCIENCES -	FF:	380.0	Non FF:	306.0	Total:	686.0
ENVIRON. SCIENCES -	FF:	4298.0	Non FF:	3459.0	Total:	7757.0
ENGINEERING -	FF:	40272.0	Non FF:	32411.0	Total:	72683.0
PHYSICAL SCIENCES -	FF:	4421.0	Non FF:	3558.0	Total:	7979.0
COMPUTER SCIENCE -	FF:	5588.0	Non FF:	4497.0	Total:	10085.0
MATH -	FF:	242.0	Non FF:	194.0	Total:	436.0
PSYCHOLOGY -	FF:	664.0	Non FF:	534.0	Total:	1198.0
SOCIAL SCIENCES -	FF:	1289.0	Non FF:	1038.0	Total:	2327.0
OTHER -	FF:	1278.0	Non FF:	1028.0	Total:	2306.0

<ESC> - Exit <F8> - Graph <F10> - HELP! <ENTER> - Select