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U.S. RESEARCH FUNDING

Physical Sciences Need Boost, Advisory Panel Tells Bush

Researchers in the physical sciences sorely need a significant budget boost to close a ballooning gap with biomedical research, a high-profile White House advisory panel said last week. But in a bow to budgetary realpolitik, the President's Council of Advisors on Science and Technology (PCAST) is vague about specific spending targets and timetables.

The recommendation will be contained in a letter to be delivered shortly to President George W. Bush, just as the White House begins crafting its 2004 spending proposal to Congress. The move reflects growing pressure on the Administration and Congress to reverse a decade-long slowdown in federal funding for basic and applied research in physics, chemistry, math, and other non-biomedical disciplines, which totaled about $9 billion last year. That stagnation, advocates say, has imperiled the nation's ability to develop new talent and technologies and to fully cash in on the taxpayers' $25 billion investment in biomedical science.

"It's great: PCAST is [endorsing] what a lot of people have said needs to happen," says David Peyton, a technology specialist with the National Association of Manufacturers in Washington, D.C., and vice chair of the Alliance for Science and Technology Research in America. The nonprofit alliance is one of many that have called for doubling the budgets of the National Science Foundation and other agencies that fund the physical sciences.

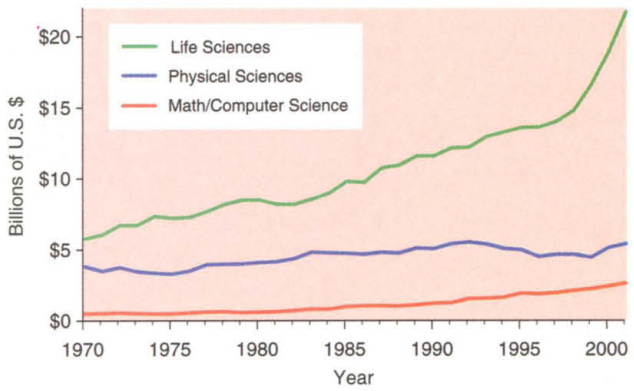
But while some industry and congressional leaders have embraced the idea, the White House has remained quietly skeptical. Last week, presidential science adviser John Marburger again challenged physical science advocates to back their case with solid numbers. The president "bristles at arbitrary formulas," he told PCAST members during a hastily called teleconference to fine-tune the letter, drafted by a PCAST subcommittee led by G. Wayne Clough, president of the Georgia Institute of Technology in Atlanta. Marburger suggested deleting the word "doubling" from the draft letter, saying it had become "politically charged" and "unpalatable." He also urged panel members to take the long view, noting that it recently took 5 years to double the budget of the National Institutes of Health. Swayed by such arguments, the panel is expected to recommend that physical sciences' funding reach "parity" with the life sciences by 2009.

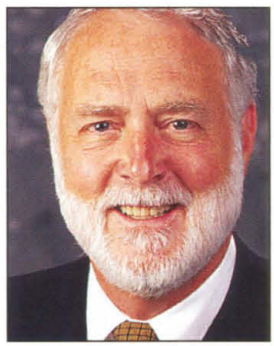
The definition of "parity" will be up to the reader, says Clough. "It doesn't make sense to say that the physical sciences should get whatever the life sciences are getting," he told *Science*. "But the idea is that significant makeup [for the physical sciences] is due here."

The letter's two other recommendations are more direct but no more specific on the fiscal implications. One calls for a major new program to fund graduate school fellowships for U.S. citizens, on the theory that greater support might attract more students into the sciences. The other urges the government to do a better job of analyzing what it gets for its money, how the United States compares with other countries, and the future demand for scientists and engineers.

The effect of the letter won't be visible until February, when the president releases his 2004 budget request. But Clough is optimistic. Budget chief Mitch Daniels, he says, "has proven to be a person that understands good advice." And even if the Bush budget proposal doesn't include a healthy boost for the physical sciences, science lobbyists will surely point to PCAST's high-level endorsement when they take their case to Congress.

–DAVID MALAKOFF





Unbridgeable gap? Funds for physical sciences (mostly chemistry, physics, and astronomy) have remained flat while life sciences have soared. A panel chaired by G. Wayne Clough (*right*) is calling for "parity."

OCEANOGRAPHY

Survey Confirms Coral Reefs Are in Peril

A new census of key coral reef inhabitants shows that they are in terrible shape. Spiny lobsters and bumphead parrotfish have disappeared from most of the surveyed reefs they were known to inhabit, as have Nassau groupers, a favorite food fish in the Caribbean. Even moray eels seem to be suffering.

The tallies come from Reef Check, a 5-year survey of the world's coral reefs by scientists and some 5000 volunteer scuba divers and local fishers. The resulting report, "The Global Coral Reef Crisis: Trends and Solutions," released last week, describes the decline of both fish and invertebrates essential to the well-being of reef communities. The final word: Reefs "are in dire straits," says Steve Gittings, a marine biologist at the National Oceanic and Atmospheric Administration (NOAA) in Silver Spring, Maryland.

The conclusion comes as no surprise. For more than a decade, marine biologists have been complaining about the state of the world's reefs, citing ever more frequent observations of dead or dying coral. Some of the first warning bells sounded in 1990, when it appeared that global warming was killing the microscopic algae that feed corals. Over the ensuing years, researchers also traced the blame to coastal development, overfishing, and pollution.

These conclusions were somewhat shaky, however, because so few reefs had been evaluated; even fewer had been monitored long

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