Clinton Team Announces Science Policy

In a newly released report describing its national policy for science, the Clinton administration calls for stronger funding of basic science, expanded use of the peer-review system, and better recruitment of minorities into science. It also asks scientists to consider how their work can help solve national problems.

"The report is telling scientists that [the administration] has a broadened set of national goals and they need to think about how they can contribute," including protecting the environment, improving human health, boosting the economy, and preventing violence, says M.R.C. Greenwood of the White House Office of Science and Technology Policy. It prepared the report in collaboration with scientists and other policy makers.

"The highlight of this report is that it leaves no doubt about the critical role that fundamental research must play in achieving a more prosperous economy and better quality of life for all citizens," says Rep. George E. Brown Jr. (D-Calif.), chairman of the House Science, Space, and Technology Committee.

This first substantial attempt by the Clinton White House to set a national science policy seeks to ensure that Congress does not have sole responsibility for that job, says Robert L. Park, director of the Washington, D.C., office of the American Physical Society (APS). No U.S. president since Jimmy Carter has issued a formal statement on science policy, Vice President Gore noted in releasing the report on Aug. 3.

The report outlines five broad goals: maintain the country's position as a world leader in science; ensure that fundamental research addresses national concerns; promote industry-university collaboration; train the finest scientists and engineers; and raise the scientific and technological literacy of all Americans.

"These are the principles by which we will be developing our [science] budgets," Greenwood says.

To accomplish this agenda, the report suggests that the federal government and industry substantially boost their funding of science. "A reasonable long-term goal for the total national [research and development] investment (both civilian and defense) might be about 3 percent of the [gross domestic product]," up from the current 2.6 percent, the authors argue.

Because the private sector normally funds short-term, applied R&D, the government must focus its support on fundamental research, science infrastructure, and long-term applied R&D, the report states. Industry now supports about 10 percent of academic research.

The Clinton administration will also work with universities and the private sector to modernize the country's research infrastructure, says John H. Gibbons, the president's science adviser. To promote these private sector investments, the administration will recommend, among other measures, that Congress lift the $150 million cap on tax-exempt state bonds used to finance such building projects.

The report strongly endorses the peer-review system, in which nonfederal scientists are called on to judge the merits of grant proposals. In fact, the administration wants to expand the practice to federal agencies that now fund research based on reviews performed by agency experts, says Greenwood. These include the Defense Department and the Environmental Protection Agency.

While supporting all the right objectives, the new document fails to provide the specifics for how to achieve them, some researchers say.

"This is just a vision statement, and it provides no outline for what we should do Monday morning," says Carol S. Nichols of Cornell University, who testified on the report at an Aug. 4 congressional hearing.

APS' Park disagrees that the report needs such detailed recommendations. "It's a document of principles, and it gets those principles right," he says.

The policy prescription will require the strong support of the administration to be implemented, and Park says he feels "a little skeptical that [the Clinton White House is] going to really be able to do what is necessary on this one."

Brown agrees that quickly putting into action the broad goals of the report will be "the hard part." — *T. Adler*

Brain graft causes hypertension in rats

About 90 percent of the time, physicians do not really know why a patient develops high blood pressure, a problem that affects some 63 million people in the United States. Diet, exercise, and emotions play a role (SN: 10/16/93, p.246; 12/4/93, p.380), as does genetics. But researchers now think they may have come closer to identifying the real reason behind primary hypertension.

By transplanting brain tissue from specially bred rats into normal rats, neurobiologists have homed in on a brain region that can cause hypertension.

The transplant procedure also provides researchers with a new way to study the selective loss of nerve cells, says Raya Eilam, a neurobiologist at the Weizmann Institute of Science in Rehovot, Israel. Cell losses seem to underlie many neurological disorders that affect adults, including Alzheimer's, Parkinson's, and Huntington's diseases. "It's possible that, in humans, primary hypertension is also caused by the death of specific cell groups," she says.

Eilam hopes to use this transplant procedure to test whether growth factors or other substances protect these cells from dying. "From this model, we can learn many things about degeneration in the brain," she predicts.

Researchers already knew that the area of the brain known as the hypothalamus produces a substance called vasopressin, which helps regulate blood pressure. The hypothalamus consists of nuclei, or groups of nerve cells, that perform various roles.

For this study, Eilam and her colleagues removed the hypothalamus from 15-day-old embryos belonging to a hypertensive strain of rats. They divided this tissue into front (rostral) and back (caudal) pieces and implanted the pieces into normal 8-week-old rats.

By the time the animals reached 4 months of age, the scientists noticed increased blood pressure in the rats with rostral implants but not in those receiving caudal tissue or no tissue at all, Eilam says. Also, the heart and kidneys of rats with rostral tissue got much bigger, the researchers report in the August JOURNAL OF NEUROSCIENCE. Enlargement of the heart tends to occur in people and animals with high blood pressure, she notes.

During the 8 months after transplantation, her group also examined the different types of brain cells in the rats with rostral tissue. The researchers counted the number of each type present in a rat's own hypothalamus as well as in its graft. The rat's own hypothalamus lost most of the nerve cells that make and use vasopressin as a neurotransmitter, while cells involved in making this molecule for use as a hormone remained intact, she reports.

"I think the [rostral grafts] produce something that causes damage to the adult cells," Eilam says. She speculates that the lack of these cells then causes the body's feedback system for regulating blood pressure to malfunction.

— *E. Pennisi*