demic, and advocacy representatives—pondered possible next steps in HIV vaccine development as part of a broader examination of AIDS research. The council's nine-member research committee solicited opinion about AIDS vaccine R&D from a wide variety of researchers at an April panel discussion. While the researchers heartily agreed on the need for more financial support, they had little collective enthusiasm for some of the specific recommendations the council had floated.

A draft that was widely circulated prior to the meeting raised many eyebrows by recommending that the U.S. government spend $400 million on AIDS vaccine research and development each year—roughly three times the total now spent on the effort. It also called for steps that would force NIH to share more of the responsibility for AIDS vaccine R&D with the Centers for Disease Control and Prevention and other federal agencies.

But it was the draft's recommendation that Clinton set a national goal of developing an AIDS vaccine by a certain date that drew the most fire. "It's folly to give a date," Fauci told the council at the April meeting. Added Paul: "Promising a vaccine within a specific period of time, within a decade, is not a wise thing. ... It could lead to disappointment." But Yichen Lu of the Virus Research Institute in Cambridge, Massachusetts, disagreed. "We need a date ... to generate a sense of urgency," said Lu.

Lu's point of view won out in the council, which in April called for Clinton to "declare an urgent goal of developing a vaccine to prevent HIV/AIDS within a decade." The goal "is clearly feasible and should be considered of the highest priority for our government," the group stated. But the council rejected the proposal to triple vaccine funding, urging only "a significant and sustained increase in funds." And specific proposals for greater coordination among agencies and additional White House oversight were watered down.

The president accepted the council's advice, but he tempered his vaccine pledge by saying that "there are no guarantees. It will take energy and focus and demand great effort from our greatest minds." He added, however, that "with the strides of recent years, it is no longer a question of whether we can develop an AIDS vaccine; it is simply a question of when. And it cannot come a day too soon."

After Clinton's announcement, Fauci said that "most of us were uncomfortable with saying we'll have a vaccine by this date," but he added, "I don't have an inherent fundamental problem with a goal ... as long as it's made clear that this is not a guarantee." Paul echoes that: "I would have had trouble [if Clinton had said] 'We will have a vaccine in a decade.' "

The most immediate outcome of the announcement will be an AIDS vaccine center, which NIH will establish at Clinton's direction. The details of such a center are being hashed out now by the NIH AIDS Vaccine Research Committee led by Nobel Prize–winning virologist David Baltimore, which met on 9 May to discuss the project. It will start off as a "virtual center" jointly administered by NIAID and the National Cancer Institute (NCI), says Paul, before finding a physical home. Its major thrust, he says, will be to bring more immunology to the AIDS vaccine field, which has been dominated by virologists. The center also aims to attract vaccine developers from other fields. Paul adds that the center—formally called the NIAID/NCI AIDS Vaccine Center—may manufacture pilot lots of vaccines, a task now left to industry. That should help researchers test their ideas more quickly.

"The size is not fixed," he says. "In the early phase, it will be relatively small ... and obviously we will need to recruit senior people from outside." NIH officials will soon set up a search committee to select a director and other senior staff. Meanwhile, the Administration has requested up to $10 million for such a center in the 1998 budget, although it's not clear what its total cost would be. Money for the center, says Paul, will not come at the expense of extramural research funds.

There is little question that Clinton's initiative will create a more favorable environment in Congress and within the Administration for AIDS vaccine funding. "Think of what [the announcement] might mean next year when we're asking for money," says Fauci. "When the president of the United States starts putting that out, it can't hurt." So, while Clinton's embrace may be too close for comfort, researchers likely will cling to their newfound admirer.

–Andrew Lawler with Jon Cohen

Additional reporting by Eliot Marshall.

BIOETHICS

Panel Weighs a Law Against Cloning

When a Scottish research team startled the world by revealing 3 months ago that it had cloned an adult sheep, President Clinton moved swiftly. Declaring that he was opposed to using this exotic animal husbandry technique to clone humans, he ordered that federal funds not be used for such an experiment—although no one had proposed to do so—and asked an independent panel of experts chaired by Princeton President Harold Shapiro to report back to the White House in 90 days with recommendations for a national policy on human cloning. That group—the National Bioethics Advisory Commission (NBAC)—has been working feverishly to put its wisdom on paper, and at a meeting on 17 May, members endorsed a near-final draft of their recommendations.

NBAC will ask that Clinton's 90-day ban on federal funds for human cloning be extended indefinitely, and possibly that it be made law. But NBAC members are planning to word the recommendation narrowly to avoid new restrictions on research that involves the cloning of human DNA or cells—routine in molecular biology. The panel has not yet reached agreement on a crucial question, however: whether to recommend legislation that would make it a crime for private funding to be used for human cloning.

DENISE APPLEWHITE/PRINCETON UNIVERSITY

Moral stand. Commission chair Harold Shapiro.

In a draft preface to the recommendations, discussed at the 17 May meeting, Shapiro suggested that the panel had found a broad consensus that it would be "morally unacceptable to attempt to create a human child by adult nuclear cloning." Shapiro explained during the meeting that the moral qualms stem mainly from fears about the risk to the health of the child. The panel then informally accepted several general conclusions, although some details have not been settled.

NBAC plans to call for a continued moratorium on federal government funding for any attempt to clone somatic cell nuclei to create a child. Because current federal law already forbids the use of federal funds to create embryos for research or to knowingly endanger an embryo's life, NBAC will remain silent on embryo research.

NBAC members also indicated that they will appeal to privately funded researchers and clinics to refrain from trying to clone humans by somatic cell nuclear transfer. But they were divided on whether to go further by calling for a federal law that would impose a complete ban on human cloning. Shapiro and most members favored an appeal for such legislation, but in a phone interview, he said this issue was still "up in the air."

Many NBAC members wanted to recommend that no regulations be adopted that would interfere with the cloning of animals, cells, or DNA. Others preferred a more muted approach, on

the assumption that what is not prohibited is permitted.

Because NBAC members feel that the public is woefully ignorant about genetics, the report will include recommendations for improving the public's understanding in this area, perhaps through a broad new education effort. To get an early start on this, according to one panel member, NBAC plans to include a section in its final report attacking ill-informed notions of "genetic determinism."

One NBAC member, R. Alta Charo, a law professor at the University of Wisconsin, Madison, urged the commission to take the opportunity to close a loophole in current bioethics regulations. Most NBAC members agree that regulations guaranteeing the protection of human subjects in federally sponsored research should be extended to the private sector, and Charo felt that the report was a good occasion to make that recommendation. Other NBAC panelists, including Steven Holtzman of Millennium Pharmaceuticals Inc., in Cambridge, Massachusetts, and Alexander Capron, a bioethicist at the University of Southern California Law Center, argued that such a recommendation would appear out of place in a report on cloning. NBAC members endorsed the recommendation, but did not vote to make it one of the items in the report. It may be issued as an independent NBAC resolution.

Shapiro says the panel had hoped to deliver its recommendations by 27 May, but they will not be ready until 7 June.

–Eliot Marshall

SCIENCE POLICY

A Report Card on European Science

"Doing quite well" in physics; biology "is strong, but there are notable weaknesses"; chemistry "is strong and competitive," although quality is patchy. No, these are not remarks on a school report card. They are European researchers' assessments of how they are doing compared with the rest of the world. These self-appraisals were published last week in a novel report that attempts to highlight the strengths and expose the weaknesses of European science.

The report—prepared by the European Science and Technology Assembly (ESTA), an advisory body to the European Commission, in collaboration with the heads of European research councils—is meant to get the attention of trans-European research funding agencies. It was timed to coincide with preparations for the European Union's (EU's) next 4-year Framework program of research and development. "The report will, to some extent, be a lobbying document," says mathematician Sir Peter Swinnerton-Dyer, the ESTA member who initiated the idea. He hopes it will be used to argue "either that these are our strengths and they must be supported, or that these are our weaknesses and they must be plugged."

The effort, however, has been controversial. Some scientists feared that clearly endorsed statements on strengths and weaknesses would be used unfairly on behalf of or against particular disciplines. To counter this concern, the report carries no official status: It is intended only to present the opinions of scientists in each of the nine* disciplines it covers. Each subject report "reveals the prejudices of that community," says Richard Brook, chair of the United Kingdom's Engineering and Physical Sciences Research Council, who oversaw its compilation. "They're not bad indicators of how the community thinks."

Each discipline was left to choose its own self-assessment strategy and define its own subject spread. "It's clear what's physics—but it's not clear what environmental sciences are," says Brook. Consequently, the assessments differ in scope and detail and are open to criticism about lack of comparability and the omission of some subjects. All disciplines surveyed relevant members of ESTA and Academia Europaea (a European academic honor society), others also consulted widely among their communities, and others referred to bibliometric evidence. Some reports are dispassionate statements; others lobby for remedies.

Nevertheless, several generic themes emerge across many disciplines. Researchers in the environmental sciences, geology, planetary sciences, and biological sciences all stress the need for more emphasis on complex systems. "The very success of reductionist thinking in allowing precise description of phenomena can set holistic thinking in shadow," says Brook in the foreword. An example, highlighted in organismal biology, is the physiology of whole microbial organisms, which lags behind knowledge of their genetic and metabolic pathways. The rigid structure of European university systems also comes in for widespread criticism for hampering the growth of interdisciplinary studies. "The university system in Europe retains an unattractive degree of inflexibility," writes Brook.

Many fields also call for easier access to research resources, including refereed literature, which libraries are increasingly unable to afford; databases; and large-scale, centralized research facilities. And they see a need for greater mobility and collaboration among European researchers, especially in the form of trans-European research networks.

The report is the first in a three-stage process, says Swinnerton-Dyer. The second will determine which gaps are significant, and the third, how to remedy them. ESTA is hoping to bring the assessments to bear directly on policy-making by appointing one or two of its members to advise the EU on the design of each of the specific research programs now being planned for Framework. In the meantime, acknowledging the subject reports' preliminary and somewhat ad hoc nature, Brook has invited comments that could be used to produce more refined successors.

–Judy Redfearn

Judy Redfearn is a writer in Bristol, U.K.

EXAMPLES OF STRENGTHS AND WEAKNESSES IN FOUR DISCIPLINES

Physics
Strengths: Elementary particle physics, astrophysics, and plasma physics.
Gaps and weaknesses: Astroparticle physics, computational physics, and some aspects of optical physics. Lack of coordination has resulted in too many physicists jumping on the high-temperature superconductivity "bandwagon."

Organismal Biology
Strengths: Plant sciences.
Gaps and weaknesses: Lack of integration between modern, reductionist biology and the whole organism; taxonomy; some aspects of ecology; emerging pathogens; and human-machine interfaces for prostheses. European neuroscientists look too much to the United States and should develop their own community.

Biochemistry and Molecular and Cell Biology
Strengths: Europe has a distinguished past and is still performing at world-class level in many areas.
Gaps and weaknesses: The "centre of gravity" has shifted to the United States in recent years "even in areas which Europe has pioneered"; failure to support a "critical mass" of researchers to follow up and amplify previous research successes; and poor interface between molecular and cell biology and medicine, causing Europe to lag behind the United States in research on cancer and immunopathologies.

Chemistry
Strengths: The European chemical industry leads the world; this has a positive impact on the academic discipline.
Gaps and weaknesses: Fuel-cell chemistry, chemistry in confined spaces such as zeolites, high-resolution chemistry, and photovoltaics.

* Environmental sciences; physics; economic and social sciences; organismal biology; biochemistry, molecular biology and cell biology; humanities; chemistry; geology and planetary sciences; and mathematics.