

# nature medicine

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## Funding cancer research

US science policy makers are on the verge of an unprecedented commitment to biomedical research. Recent announcements and proposals include the Administration's promise of a 50 percent rise (to \$20 billion) in NIH funding over the next five years and suggestions from Republican representatives that they will push Congress even further, requesting a doubling in NIH funding by 2003. In a September 1997 response to a request from Congress, Richard Klausner, Director of the National Cancer Institute (the NIH's best supported institute) released a report detailing the NCI's needs for 1999. Since cancer research is likely to do particularly well out of the proposed NIH increases, now is a good time for them to be considering their long-term objectives.

In his report, Klausner called for an ambitious increase from the 1998 budgeted figure of \$2.4 billion to \$3.2 billion. He looks likely to have his wish granted—the NCI is now forecast to receive \$2.9 billion in 1998 and the full \$3.2 billion next year. Klausner argued that the time is right for a major increase in cancer funding given the progress made over the last five years and the prospects this has opened up. Advances in areas such as molecular diagnostics and genetic susceptibility have been matched by the first sustained drop in cancer mortality rates since records began sixty years ago. However, this improved ability to treat cancers is balanced by the trend toward more cases being diagnosed each year and the prediction that by 2003 cancer will replace cardiovascular diseases as the leading cause of death in the US. The life time risk of cancer for a US resident is now nearly 50 percent.

The NCI's 1999 budget proposal is broken down into three parts. The lions share (80 percent) is for sustaining the well established mainstream research activities currently supported by the institute, including the competitively awarded extramural grants, the intramural program and con-

tract research arrangements. The other two components are new.

Thirteen percent of the 1999 budget is set aside for translational research. Klausner explains that simply having the wherewithal to make an impact on cancer does not guarantee that those skills will find their way to the patient and that in some cases it is even unclear how this transition should occur. To address this concern, specific programs investigating better access to clinical trials, improved clinical research and a greater emphasis on cancer centers (which will be increased from the current 57 to 75) are planned. At a time when so many innovative pre-clinical and early clinical trials are yielding encouraging results—results that only a few years ago still smacked of science fiction—this transition from the laboratory to bed skills is timely and should not be delayed.

The other area that Klausner has introduced as a new line in the 1999 budget is dubbed "Seizing Extraordinary Opportunities". Stemming from a 1996 initiative to identify areas that held particular promise for the years to come, the NCI has highlighted four opportunities for which they are requesting additional support: Research toward more sophisticated and early diagnosis; identifying cancer-pre-disposing genes; imaging technologies; and animal models of human cancers. Although the report makes a convincing case for why each area is important and needs to be funded and managed centrally—the need for networks or repositories, major engineering and computing requirements etc.—it does not make a strong case for why other areas of tremendous promise have not also been selected for special treatment.

The design, development and delivery of cancer vaccines, for example, is now within reach (see box) but well beyond the capacity of single groups. Likewise, a reduction in smoking is an immense challenge. These two areas are mentioned in the report and it is clear that the NCI considers them important. Given that they fulfill the requirements for concerted and collective action, it is unclear why they have not received greater emphasis.

The report highlights the massive morbidity and mortality associated with smoking, but stops short of new and definitive plans on how to tackle the problem. This is particularly surprising given the attention that the issue is attracting from elsewhere. There is also a great irony in that, heaven forbid, tobacco might be the undoing of many of the NIH's plans for biomedical research. The administration has stated that the increase in NIH funding will come from the much-discussed \$368.5 billion tobacco industry settlement. However that money has not yet been secured and reports of major disagreements over details of the settlement abound. Before we get too excited about the prospect of major new monies for biomedical research, that all-important settlement must be secured.

### Cancer vaccines

One strategy for cancer therapy is to elicit an immune response to tumor cells, and the cloning of tumor-specific antigens has increased our ability to selectively target tumors. Rosenberg *et al.* describe the therapeutic benefit of combining immunodominant peptides from the gp100 melanoma-associated antigen with IL-2, to treat melanoma patients. Tumor regression was seen in 42 percent of patients. Schadendorf *et al.* describe a strategy that combines antigen presenting dendritic cells and tumor lysates or a combination of peptides that are recognized by CTL. A marked immunological response was apparent and regression of metastatic melanoma was seen in one-third of patients. See pages 269, 321 and 328.