room for the individual investigator who has mapped one small region of a chromosome in detail. In contrast, with the STS approach, data from any mapping endeavor, no matter how small, can be readily added to the evolving map. "It gives the individual investigator the power to map things," says Botstein. "He doesn't have to join up with Los Alamos."

Technically, there appear to be few obstacles. "It's a good strategy," says Henry Erlich of Cetus Corporation, one of the developers of PCR. "There are potential problems that can be imagined, but there are potential solutions too." Occasionally, Erlich says, the PCR assay is not perfectly specific; it amplifies DNA in other places in the genome that are similar to the two primers. But it is simple enough to build in "fail-safe" measures, he says, like adding an additional primer between the other two.

Ultimately, success will depend, of course, on people sequencing that bit of DNA—the 500 or so bases—and reporting it to the database. To Botstein the approach is self-implementing: "If people want to play in the arena, they will have to do this."

Olson, however, is less inclined to leave it to good intentions or peer pressure. Instead, he thinks that reporting map data in STS language should be a requirement of the genome project. "The genome project is trying to develop a physical map. It is reasonable to ask people to report in a common language."

DOE's support is crucial, as it is funding the biggest mapping efforts under way. So far, the reception has been enthusiastic.

"It's a terrific new concept," says Ben Barnhart, manager of DOE's genome program. "I certainly hope the scientific community adopts it. But it is not something you can impose."

"No question, we'll try it out in-house," says Robert Moyzis, who heads DOE's genome center at Los Alamos, where chromosome 16 is being mapped. "Los Alamos has the largest contig mapping project going, so we are in a good position to see how well this [STS] approach works." Moyzis, who was at the Cold Spring Harbor meeting where Olson first described the proposal, calls it a "conceptual breakthrough," though he predicts "there will be further iterations at further meetings. We need a way to be able to talk to one another and compare data. We need a mutual language, and this is likely to be it."

How far the proposal actually goes—and what, if anything will be required—will be hammered out in the hallways at San Diego and in the closed-door meetings as DOE and NIH plan their strategy for the next 5 years. ■ **LESLIE ROBERTS**

Conflict Over Conflict of Interest

If your spouse has ten shares in K Mart Corporation, should you be forced to disclose that fact the next time you file a grant application with the National Institutes of Health? If new draft guidelines on conflict of interest published earlier this month are adopted, you certainly will. And that's just for starters.

NIH, which developed the guidelines along with the Alcohol, Drug Abuse and Mental Health Administration, is tackling the conflict-of-interest question head-on because of what associate director for extramural affairs George Galasso describes as a climate that requires it to do so. And if NIH doesn't come up with strict requirements, Congress may step in with even stricter legislation. NIH signaled that it was taking the issue very seriously when it convened at a 2-day meeting on the topic on 27 and 28 June (*Science*, 7 July, p. 23).

The proposed guidelines would require anyone involved in NIH- or ADAMHA-funded research—as well as their spouses, dependent children, and other dependents—to make "full disclosure of all financial interest and outside professional activities" to their host institution. This information is to be provided by everyone receiving or applying for money from NIH or ADAMHA and is to be updated at least once a year. The guidelines would also prohibit anybody involved in an ADAMHA- or NIH-funded research project (or their dependents) from having "personal equity holdings or options in any company that would be affected by the outcome of the research or that produces a product or equipment being evaluated in the research project." Researchers would also be barred from receiving honoraria from companies whose products they are testing. Universities would be permitted to grant waivers from these restrictions, but the waivers would have to be reviewed by NIH.

Many worry that conflict-of-interest issues are too complex to resolve with such a sweeping but basically simplistic set of restrictions. "It is silly," says Carol Scheman of the Association of American Universities. "It is a misapprehension of what research is all about." Scheman argues that conflict of interest is essentially inescapable, and that what is needed is a more thoughtful set of principles that spells out which conflicts society will tolerate and which are unacceptable.

David Blake, associate dean for administration and planning at Johns Hopkins University School of Medicine, worries that the rules regarding consultantships will ultimately have a chilling effect on pharmaceutical companies that have come to rely on university researchers for advice. "We really need an economic impact statement on that one," he says.

Blake says universities will also have problems keeping track of the proposed disclosure of financial information. "It's a tremendous administrative burden for very little yield," he says.

Blake also believes that the mechanism NIH used to promulgate its proposals—it simply published them as guidelines in the 15 September issue of the NIH guide for grants and contracts—is an attempt to sidestep bureaucratic procedures that must be followed in issuing formal regulations. But Robert P. Charrow, formerly in the Department of Health and Human Services general counsel's office and now with the law firm Crowell and Moring, says guidelines that tell institutions what they shall and shall not do are regulations, like it or not. As such they must be published in the *Federal Register*, signed by the Secretary of Health and Human Services, and comply with the terms of the Paperwork Reduction Act, among other requirements. NIH has not followed any of these steps, and Charrow believes the guidelines would be nullified if anybody cared to mount a legal challenge.

Despite these problems, NIH has won some praise from Capitol Hill. Representative Ted Weiss (D–NY), whose hearings on conflict of interest focused attention on the issue, calls the proposals "an important step forward in dealing with this growing problem." But he says he is concerned about how NIH will punish institutions or individuals who violate the conflict standards, and he worries that universities may abuse their waiver rights for favored faculty.

"When the federal government is paying for the research, that research should not be tainted by any possibility of bias due to financial conflicts of interest," he says.

NIH has asked for comments on its proposals by 15 December. "Keep in touch," says Blake. "I'm sure this topic's going to be alive all year." ■ **JOSEPH PALCA**