# Recombinant DNA meets the Cambridge City Council

In a move seen more as a bad precedent than a real impediment to research, the Cambridge, Mass., city council imposed a moratorium on moderate and high risk recombinant DNA experiments at Harvard and the Massachusetts Institute of Technology last week. No current research will be stopped or postponed by the three month moratorium, but researchers there and elsewhere are worried by the broad implications of this action.

It is not surprising that the first instance of community control over the new gene transplant technology was precipitated in Cambridge. That city is both the seat of intensive recombinant DNA research and of intensive opposition by radical scientists, based on the potential hazards of the work. There has been, too, a history of sniping by Cambridge Mayor Alfred Vellucci—a favorite among blue-collar workers—at the two wealthy universities.

The city council also established a review board of scientists and citizens to recommend, after a three-month study, a policy for the city to follow. The city could declare the moderate and high-risk experiments health hazards if the review board so recommended. Measures needed for safe containment of these so-called $P_3$ and $P_4$ experiments (as well as the less hazardous $P_1$ and $P_2$ experiments) have been established by the National Institutes of Health in extensive guidelines published June 23 (SN: 7/3/76, p. 3).

An attempt by Harvard to build a moderate-risk ($P_3$) facility led to the recent action. A Harvard recombinant DNA researcher requested funds from the National Cancer Institute to assist in the renovation to the $P_3$ level of the fourth floor of Harvard's biology laboratory building. A small part of the space would be used for cloning and gene transplantation work. The rest would accommodate traditional cancer research work such as tissue culturing and virus experiments. The university approved the project, and NCI agreed to fund 75 percent of the $600,000 cost.

A dispute broke out among biology faculty members over the safety of renovating an old, "vermin-infested" building for potentially hazardous experiments, and was sparked to a major battle by Science for the People members and other opponents of the new technology. Mayor Vellucci read about the dispute, called a city council meeting to discuss the matter, heard testimony from both sides, then introduced a resolution to prohibit all recombinant DNA experiments in Cambridge for two years. The council at their July 8 meeting, compromised on a three-month moratorium on only the higher risk experiments and the establishment of a review board.

The moratorium will not affect ongoing research at Harvard. There is no $P_3$ facility, and under NIH guidelines, moderate risk experiments cannot be conducted without one. The council's ruling did not refer to the building plans, and both NCI and Harvard are moving ahead with the renovation.

Research at MIT probably will not be affected either, at least during the next three months. That university does have a $P_3$ laboratory, and several biology researchers, including Phillip Sharp, have plans to conduct moderate risk experiments. But MIT's biohazard committee had been waiting for the final NIH guidelines and hasn't yet certified the facility as $P_3$ according to the new definitions. "The three-month moratorium time," Sharp says, "will probably be taken up as we wade through the bureaucratic process of getting the facility certified. If there had been more of an impact, the universities would have reacted more strongly."

Many individual researchers, however, have reacted strongly to what they see as a very bad precedent for recombinant DNA research and other more traditional areas of inquiry as well. Paul Berg of Stanford University sent a strongly worded letter to Mayor Vellucci and the city council when the resolution for a two-year ban was introduced. Berg is a pioneer in the new field and was one of the researchers to call for a moratorium on some forms of the work among scientists in 1974, until a conference could be held at Asilomar, Calif. in February 1975 (SN: 3/8/75, p. 148).

In his letter, Berg stated: "Many scientists and laymen alike are deeply concerned that the Cambridge city council is considering suppression of a serious and responsible search for new knowledge. The implications of such action are ominous indeed. What additional forms of legitimate and worthy inquiry—scientific, artistic, political—will self-appointed vigilante groups next condemn on the pretense of imagined risk?"

Committees of the NIH spent 18 months preparing guidelines sufficient, Berg says, to contain the potential risks inherent in the work and more stringent, in some cases, than evidence dictates is needed. "The city council," he said in a telephone interview, "lacks that kind of expertise, and has stepped in on the basis of a few critics who dredge up risks—some imaginary and all extremely unlikely—on very little evidence." The mayor and the strongest opponents, he says, seem to have motives other than safety and also seem to find that issue an expedient route to public attention.

One NIH scientist called the ruling "ludicrous," since researchers at Harvard Medical School, Brandeis and Boston Universities (all located in Boston) can still do $P_3$ and $P_4$ experiments with the proper facilities. "If there were a real biohazard," he said, "it clearly wouldn't respect municipal boundaries. How can they possibly feel secure if they are really worried that a lethal bug could be produced?"

A similar attempt to build two $P_3$ laboratories at the University of Michigan began in January 1975, and ended two months ago, after long and heated debate within the university community. Several committees of university scientists and nonscientists approved the proposed facilities but a small group of faculty members who oppose the research asked that the Board of Regents hold up funds. A series of debates, meetings and public forums followed, during which the Ann Arbor city council was urged to become involved. That council agreed, however, only to ask NIH for an environmental impact statement, then eventually tabled the motion. The Regents approved the building in late May. □

# Enzyme clue to earliest evolution

By carefully noticing how certain characteristics, such as color, varied among different plant and animal species, Charles Darwin was able to develop a picture of how the species had evolved. More recently, variations of protein structure have been used to refine the theory and push back knowledge of the origin of the species to very simple unicellular organisms. Now, a 12-year study of one such protein, the enzyme "cytochrome c," has revealed important clues to the evolution of the very earliest life forms, some 3.5 billion years ago.

Cytochromes are responsible for transferring electrons in plant or animal metabolism, enabling the organism to convert energy from one form to another. Since they are fundamental to the functioning of some of the earliest microorganisms, CalTech physical chemist Richard E. Dickerson and his associates began an extensive study of the complex structure of the 2,000-atom molecule to determine variations among different primitive species. The research has resulted in a