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LETTERS

Livermore Lab Head

Ellis Rubinstein, in his 8 April article describing the events surrounding the resignation of John Nuckolls as director of the Livermore Laboratory (News, p. 195), refers to "negative testimony given to the review committee" by me and by several key staff members. In contrast with that statement, the thrust of my remarks to the review committee was in strong agreement with Nuckolls' strategic vision for the laboratory and was very supportive of the management structure that he had recently put in place. On the basis of informal conversations, I believe that a similar perspective was conveyed by the laboratory's associate directors.

C. Bruce Tarter
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Response: *Science*'s account was based on well-placed sources who were part of the evaluation process. Moreover, repeated calls to Livermore staff members to whom confidentiality was guaranteed elicited only one call from an individual already known to be critical of Nuckolls. A manager at the highest level of the laboratory volunteered to recruit individuals who supported Nuckolls; there were no spontaneous calls to *Science* and no response to repeated calls by *Science* to staff members.

—Daniel E. Koshland Jr.

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Viral Recombination in Transgenic Plants

Bryce W. Falk and George Bruening (Perspectives, 11 Mar., p. 1395) mistakenly cite our Union of Concerned Scientists' report *Perils Amidst the Promise* (Washington, DC, 1993) as assuming that viral recombination could occur "*only* when a virus infects a plant that is transgenically expressing the genes of other viruses" (emphasis added). Although our report does identify the creation of new viruses through recombination as a risk associated with transgenic, virus-tolerant plants, it does not suggest that transgenic plants represent the only circumstances under which recombination occurs. In fact, the report recommends that "rates and impacts of recombination" in traditional crops be compared to those in transgenics as a way of evaluating the risk represented by the transgenics (p. 38).

With regard to those tests, the Union of Concerned Scientists recommends that they be done *before* the government approves commercial release of virus-resistant transgenic crops. Sixteen virus-resistant transgenic crops comprising 39 crop-viral protein combinations have been field-tested, and many will soon be ready for commercialization. Virus-resistant plants may have a place in tomorrow's agriculture if, as Falk and Bruening say, their risks are indeed "vanishingly small." So far, however, the magnitude of the risks of transgenics is a matter of conjecture rather than experimental data. Our society has brushed off concerns about the risks of earlier technologies to our detriment. Let's do better this time around.

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Response: Mellon and Rissler refer to possible detriments from widespread introduction of transgenic crop plants expressing RNA encoding plant virus genes and support comparing rates of recombination between virus RNA and transgenic RNA with rates of recombination between two virus RNAs. We presented in our Perspective a figure that compares the apparent ease with which recombination has been detected for the two pairs of RNA types. We believe our figure takes a first small step in comparing rates of recombination and provides an indication that recombination between transgenic RNA and virus RNA, as reported in three cited studies, has been no more readily detected than recombination between two virus RNAs, all results under conditions of strong selection.

Mellon and Rissler state, quoting a phrase from our Perspective, that we assert that a report of the Union of Concerned Scientists assumes recombination could occur only when a virus infects a plant that is transgenically expressing the genes of other viruses. We made no such assertion. The sentence in our Perspective that contains the quoted phrase is concerned with the possibility of recombination between RNAs