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To the editor:

A news article in the September issue, describing a New Zealand Royal Commission's deliberations on the future of recombinant DNA technology in that country (*Nat. Biotechnol.* 19, 792, 2001), reminded me of a cartoon that is especially apt in this international context. The cartoon depicts a lawyer conversing with his client, a primitive prehistoric warlord, who has just been informed he is accused of pillaging and plundering Paris. "What'll we do," asks the worried client? "I'll try to get it reduced," the lawyer promises. "To what," the other asks? "Pillaging and plundering Helsinki," says the lawyer.

Even if the Royal Commission rejected the absurd measures demanded by extremists—namely, "the idea of branding New Zealand 'clean and green' and free of all genetically modified material"—its assumptions and conclusions leave much to be desired. They all but ignore scientific principles and knowledge as the basis for public policy, and it appears that all of the available options open to the New Zealand government would still be excessively precautionary, discriminate against the use of recombinant DNA technology, and impose upon it what amounts to a punitive tax.

The remit of the inquiry was to cover the whole gamut of scientific, economic, environmental, ethical, indigenous, intellectual property, legislative, and regulatory aspects of the subject. How ironic that, in spite of such a broad mandate, the commission accepted terms of reference too narrow to enable it to get the correct answers.

The commission accepted the pseudo-category of GMOs as a meaningful one, despite scientific consensus to the contrary^{1,2}. We should certainly by now consider a "given" that recombinant DNA techniques are an extension (or refine-

ment) of earlier, less precise techniques for genetic modification. Just as we no longer argue about whether Pons and Fleischmann deserve the Nobel Prize for their alleged demonstration of cold fusion or whether water retains "memory" of a solute at infinite dilution, we must get past the pseudo-controversy, false assumptions, and unsubstantiated rhetoric about recombinant DNA technology.

The regulation of risk is complex, to be sure, but if democracy must eventually take public opinion into account, good government must also discount heuristic errors or prejudices. Edmund Burke emphasized governments' pivotal role in making such judgments. He observed that in a republic with leaders elected to represent public interests, "[y]our representative owes you, not only his industry, but his judgment; and he betrays, instead of serving you, if he sacrifices it to your opinion."

Finally, the objective of deliberations of the sort undertaken in New Zealand is to get the right answer, not merely to sample public opinion in an open and egalitarian fashion. Although it may be useful, and also politic, for governments to consult widely on

high-profile public policy issues, when the consultations and deliberations have been completed, government leaders are supposed to *lead*. We will soon see if they choose to do so in New Zealand.

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1. Anonymous. *Nature* 356, 1–2 (1992).

2. National Academy of Sciences. *Field testing genetically modified organisms: framework for decisions*. (National Academy Press, Washington, DC; 1989).

Cheryl Norrie and Liz Fletcher respond:

New Zealand's Royal Commission Inquiry was charged with investigating and reporting on genetic modification and was not bound to accept a "scientific consensus" (if indeed such a consensus exists). The Royal Commission would agree with Miller that its objective was to aim at a "right" answer, and not merely to sample public opinion. Indeed, its chairman, former chief justice Sir Thomas Eichelbaum, explicitly rejected the notion that the commission was conducting a public referendum. The processes of the inquiry were geared toward informing the

four commission members (a former judge, a member of the clergy, a general practitioner, and a scientist) as well as consulting with New Zealand's publics—both lay and scientific. Nevertheless, New Zealand deserves credit for allowing the public to air their views and for attempting to develop some consensus on the best way forward. At a time when public confidence in government policies on food and food safety is at an all-time low, no politician can afford to ignore the potential damage inflicted by a disgruntled populace: the GM debacle in Europe is a case in point. However, New Zealand Prime Minister Helen Clark agrees with Miller that in the end, government leaders need to "lead". Questioned over her decision to ignore public antagonism to GMO trials, she said: "There are times when you have to show leadership. A nation that's going to stop its scientists discovering things, is a nation which is heading backwards."

Plotting a course for GM forestry

To the editor:

In recent months, the destruction of transgenic field experiments¹ and the firebombing of our own university offices and laboratories² by extremists from the Earth Liberation Front have propelled GM trees into the headlines. Ironically, at the same time that our research was under attack from "ecovandals", we were in the final stages of putting together a two-day symposium* bringing together all sides of the debate for a discussion of the science, ethics, and policy of forest tree genetic engineering.

One of our main goals in convening the meeting was to try to reach a broad consensus on a research agenda that would facilitate the development of transgenic forest trees as an alternative source of wood, fiber, and fuel for human use. Current projections estimate that an *additional* 800 × 10⁶ hectares (25% of the earth's current forest estate) of low-yielding native forest might have to be logged to meet demand by 2050 (ref. 3). This outcome might be avoided with further development of plantation forests and continued improvement in yield of food crops. Indeed, intensification of forestry has the potential to spare the vast majority of native forest from commercial harvest, although this favorable outcome might not be inevitable, especially if the value of wild forests were to decline as a consequence.

While groups on all sides concur on the urgency of conserving forest reserves, there is less agreement on the need for GM technology in enhancing forest intensification strategies. Even here, however, common