It is stated that "[t]he most consequential result of [the National Academy of Sciences report on proposed policy for regulating recombinant DNA–manipulated plants] will be to promote unwarranted regulatory barriers." The question of whether limbless snakes could re-evolve legs is part of a wider exchange regarding issues of the evolution of snakes, based on the discovery of a Middle Eastern fossil snake with limbs. And an imagined exchange between a newly made immortal and John Harris, the author of a recent Science and Society Essay on immortality, emphasizes the potential pitfalls of such a radical change for human society and leads off a series of exchanges on the matter.

NAS Report Under Scrutiny

In her News of the Week article "Transgenic crops report fuels debate" (14 Apr., p. 245), Jocelyn Kaiser discusses the National Academy of Sciences (NAS) report on the proposed Environmental Protection Agency (EPA) policy for regulating recombinant DNA–manipulated plants with enhanced disease or pest resistance. This report is flawed in several respects.

The report is internally inconsistent and conflicts with previous reports by the NAS (*1, 2*) and by other prominent scientific groups (*3, 4*). Two studies from the Academy itself concluded that recombinant DNA techniques are merely an extension, or refinement, of the kinds of genetic manipulation that have been performed for decades or even centuries. In one of those studies, the committee wrote, "With classical techniques of gene transfer...we cannot always predict the phenotypic expression that will result. With organisms modified by molecular methods, we are in a better, if not perfect, position to predict the phenotypic expression" (*2*, p. 13). That committee also made a policy recommendation relevant to the EPA's proposed policy—namely, that "the nature of the process (of genetic modification) is not a useful criterion for determining whether the product requires less or more oversight."

Nor was it only NAS committees that objected to the EPA approach. Kaiser mentions a 1996 report by 11 scientific societies that excoriated the EPA's approach (*3*), but she did not mention that 2 years later the Council on Agricultural Science and Technology (CAST), an international consortium of 41 scientific and professional groups, reiterated the former report's criticisms. The CAST report characterized the EPA's approach as "scientifically indefensible" and said that treating gene-spliced plants as pesticides would "undermine public confidence in the food supply" (*4*).

However, the committee that produced the present NAS report appears to have ignored the crucial aspects of its charge—namely, to "examine the existing and proposed regulations to qualitatively assess their consequences for research, development, and commercialization," and to "provide recommendations...for the existing and proposed regulation" of recombinant plants with enhanced pest-resistance (*5*). Instead, it seems to have accepted the EPA's fundamentally flawed regulatory approach as "given."

How could the NAS have gone so far wrong in its assessment of the EPA policy? Consider the committee members. Members and invited reviewers were included who had obvious conflicts of interest and bias. Three members of the 12-person committee (Stanley Abramson, Fred Betz, and Morris Levin) are former EPA staff who had helped to craft and defend a variety of process-based regulatory policies while at the agency, and another, Rebecca Goldburg, has produced a succession of antibiotechnology tracts over the past decade. Moreover, during the formal review process, the document was reviewed by another former senior EPA official, Lynn Goldman, who had been instrumental in crafting and defending the policy in question, and by an antibiotechnology activist, Jane Rissler.

The most consequential result of this report will be to promote unwarranted regulatory barriers to the development of much-needed pest control strategies that can reduce reliance on chemical pesticides and enhance productivity. The warnings of the reports by the 11 societies and CAST—including decreased choices available to farmers for defending against disease and pests, increased reliance on chemical pesticides, and competitive disadvantages to U.S. research and development—apply as well to this NAS report.

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3. Report from 11 professional scientific societies, "Appropriate Oversight for Plants with Inherited Traits for Resistance to Pests" (Institute of Food Technologists, Chicago, IL, July 1996). Available at www.ift.org/navigate/index.shtml
4. "The Proposed EPA Plant Pesticide Rule," (CAST, Ames, IA, October 1998). Available at www.cast-science.org/epar_ip.htm
5. A prepublication copy of the NAS report is available at http://books.nap.edu/books/0309069300/html/R1.html#pagetop

Snake Origins

The Perspective about snake origins by Harry W. Greene and David Cundall, "Limbless tetrapods and snakes with legs" (17 Mar., p. 1939), misrepresents the alternative viewpoint. They support the idea that the limbed snakes *Haasiophis* and *Pachyrhachis* are advanced snakes that reacquired legs (Reports, "A fossil snake with limbs," E. Tchernov *et al.*, 17 Mar., p. 2010), rather than our interpretation of them as very primitive snakes bridging the gap between mosasaur marine lizards and modern snakes (*1–3*). They then add that "[t]he fossil evidence supports the notion that *Haasiophis* and *Pachyrhachis* are more closely related to terrestrial Macrostomata [advanced snakes] than to marine mosasaurs." These juxtaposed statements imply that we proposed that *Haasiophis* and *Pachyrhachis* are not true snakes but long-bodied mosasaur relatives convergent with snakes. This is not so; our interpretation of them as primitive snakes still views them as true snakes, and thus as being more closely related to other snakes (including macrostomatans) than to mosasaurs.

Artist's rendition of *Pachyrhachis* on a Cretaceous reef.

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Greene and Cundall also ascribe to us the statement that the extreme feeding adaptations of advanced (macrostomatan) snakes are primitive for snakes, and promptly refute it by noting that basal