constraints before when he likes something, three prime examples being the NASA space station, the "Orient Express" aerospace plane, and the "Star Wars" Strategic Defense Initiative. At this point there is no predicting how he will react to high energy physics.

Assuming that Reagan does give the go-ahead, the supercollider then faces one last hurdle: Congress. At the moment, however, that hurdle does not seem very high. Last April, for example, Representatives Vic Fazio (D–CA) and Ron Packard (R–CA) got 91 of their colleagues to sign a petition urging Reagan to support the supercollider. The petition cited the machine's potential for particle physics research and for technological spin-offs. What it did not mention, but what is a very real issue on Capitol Hill, is that the supercollider will be a prestigious and lucrative catch for whatever state it is located in, and will create an estimated 7000 jobs. Most observers believe that the supercollider will therefore receive a reasonably warm welcome in Congress—at least until a site is chosen and the congressmen from 49 states realize that their state was not the one.

In Washington, of course, this kind of political calculation is routine. From the perspective of the laboratory, however, many scientists find it outrageous that major scientific issues should be decided because the President thinks such-and-such a project is neat, or because a congressman sniffs some pork for the home district.

On the other hand, what are the alternatives? One oft-suggested solution is to institute some kind of national level peer-review system, so that projects on the scale of the supercollider can be evaluated systematically by the scientific community as a whole instead of by ad hoc political infighting. Unfortunately, no one has yet come up with a workable plan for doing that. As Trivelpiece asks, is it really such a good idea to put the future of U.S. science in the hands of a small elite? Indeed, one could argue that a national peer-review system already exists—and that the political system is it. One could even argue that science is inherently political, in the sense that federal support of basic research is itself the result of a political consensus. "The review process exists," says Trivelpiece, "but it is infinitely varied. There are lots of places to make your case, and there is always a second chance."

"It's a confusing and disordered system," he adds, "but it's been very successful. I like it." ■ **M. Mitchell Waldrop**

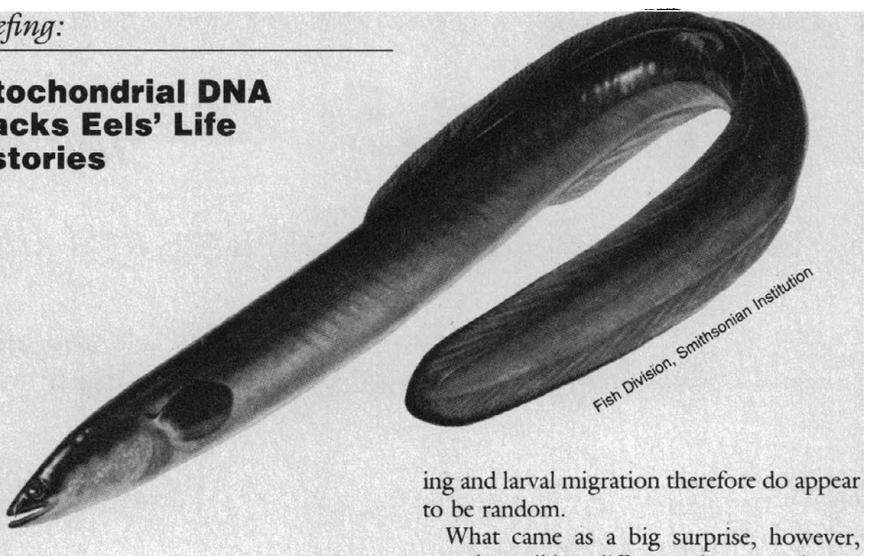
ADDITIONAL READING

C. Quigg and R. F. Schwitters, "Elementary particle physics at the Superconducting Super Collider," *Science* **231**, 1522 (1986).

L. M. Lederman, "Science must grow," and S. A. Rice, "Fight the Edifice Complex," *ibid.* **232**, 1096 (1986).

Briefing:

Mitochondrial DNA Tracks Eels' Life Histories



John Avise and his colleagues at the University of Georgia have been applying the rich potential information content of mitochondrial DNA (mtDNA) to a series of population genetics problems. Their latest venture involves American and European eels, which pursue a most bizarre life cycle.

These creatures spend their preadulthood in freshwater streams on their respective continents, and then at maturity embark upon a long migration to the tropical mid-Atlantic where they spawn more or less side by side. Examples of fishes making a marine-to-freshwater spawning migration are quite common, but the reverse is rare.

The fact that the American and European eels, named *Anguilla rostrata* (shown above) and *A. anguilla*, respectively, go to the same part of the ocean to breed raises all sorts of issues. For instance, how random is the mating within and even between the populations? And do the larvae find their way back to their continental habitats entirely passively, floating on the Gulf stream as it churns the Atlantic waters in a gigantic clockwise swirl?

Both these factors could potentially affect the genetics of the populations of *Anguilla*, a subject that has intrigued—and puzzled—researchers for half a century. For instance, George C. Williams and Richard Koehn noted a slight difference in allozymes from the Florida to Newfoundland populations, and suggested that it might be the result of local selection. This conclusion must, however, rest on an assumption of random mating among *A. rostrata* and a random distribution of larvae.

Using a series of restriction enzymes, Avise and his colleagues mapped mtDNA digests from eels along this geographic region and found the resulting fragment profiles to be remarkably uniform. Both spawning and larval migration therefore do appear to be random.

What came as a big surprise, however, was the striking difference between the results from American and European eels. Eleven of the 14 enzymes used produced distinct digestion profiles, and the sequence divergence implied by all this was 3.7%, which is substantial.

The two species of eels are virtually impossible to distinguish, the only morphological difference being a difference in the number of vertebrae. Of a series of enzyme loci tested by Koehn and others, only one (malate dehydrogenase) shows a sharp differentiation, and so the idea that the two populations are indeed separate species is obviously in question.

The mtDNA data show a clear genetic distance between the two, which Avise and his colleagues interpret to mean that, although the spawning grounds of the two populations are close together, for the most part they do not mix.

Koehn and Williams have evidence for hybrid populations (based on the malate dehydrogenase locus), which they find in Iceland, a geographical intermediate between the two main populations. The Iceland group might result from a hybrid zone where the *A. rostrata* and *A. anguilla* spawning grounds overlap. How such a hybrid population might also come to occupy an intermediate habitat geographically is still a puzzle.

American eel larvae appear to remain in the water column on their Gulf Stream drift for about a year, compared with between 2 and 3 years for their European cousins. Perhaps a hybrid might be genetically predisposed to drop out at an intermediate time and therefore at an intermediate location? Unfortunately, the Georgia team has not yet obtained mtDNA data from Icelandic eels. ■

Roger Lewin

J. C. Avise *et al.*, *Proc. Natl. Acad. Sci. U.S.A.* **83**, 4350 (1986).