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LETTERS

DNA Evidence

The legal system has been somewhat paralyzed by the appearance of a raging controversy over the statistical aspect of forensic DNA typing (*1*). The letter of D. L. Hartl and R. C. Lewontin (23 Apr., p. 473) continues the debate by creating the impression that a frequency estimate that might be off by a factor of 10 or 100 in the 1:1,000,000 range would have a meaningful impact in a given case. DNA evidence is rarely the major component of the prosecution's evidence.

Hartl and Lewontin find support in an "informal" telephone survey by Charles Taylor. The survey was actually conducted for another case (*2*) that did not involve the Federal Bureau of Investigation. The DNA evidence was admitted in spite of the "informal" survey. The survey did not play a role in the decision in the case mentioned by Hartl and Lewontin (*3*). In subsequent cases, trial judges have not admitted the survey as evidence (*4*). The survey has proved to be such an insignificant source of information that defense attorneys have long since stopped using it.

Hartl and Lewontin claim support for their current position with the assertion that four superior courts "have ruled that convictions based on faulty statistics be set aside." Their reference 3 describes those cases as *Barney/Howard* and *Breadmore* and *Lanigan*. *None* of these convictions has been "set aside." Both Barney and Howard will continue to spend a substantial part of their natural lives in prison. Their convictions were affirmed because there was more than enough evidence in addition to the DNA estimates to support their guilt. As for Breadmore and Lanigan, the appellate review of their trial court admissibility hearings took place *before* the trials. Because they had not been convicted, their convictions could not have been "set aside," as Hartl and Lewontin assert. The cases were remanded for additional admissibility hearings. Lanigan's hearing was held, and the DNA evidence was again ruled admissible on 5 January 1993.

Hartl and Lewontin's misuse of legal history to bolster their scientific opinions will only guarantee more contentiousness and controversy.

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References

1. *People* v. *Barney/Howard* (1992) 8 Ca. App. 4th 798.
2. *People* v. *Menephee*, Los Angeles Co., No. LA 003 852, 8 July 1991.
3. *People* v. *Halik*, Los Angeles Co., No. VA 00843, 26 September 1991.
4. *State* v. *Johnson* (Hennepin Co., Minn., SIP No. 89072014), 22 July 1991.

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Dioxin's Effects

I would like to amend a comment cited in Richard Stone's Research News article about dioxin (2 Apr., p. 31). When I said that the data "don't support the idea of a general threshold for dioxin's effects," I meant that in the context of Ah-receptor–mediated responses to dioxins, that is, induction of CYP1AA cannot be shown to have a threshold. However, I and many other European toxicologists do not share Linda Birnbaum's view that the *adverse* effects of dioxins (for example, tumor induction) might not have a threshold.

The fact that I share Birnbaum's reluctance to speculate on future decisions by the regulators depends more on the uncertainty of the importance of new data coming up, indicating possible effects on, for example, the immune system at lower doses than hitherto demonstrated.

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Alvin and Deep Ocean Research

The article, "Deep-sea debate pits Alvin against Jason" by John Travis (News & Comment, 12 Mar., p. 1534) obfuscates an ongoing dialog about the future of deep submergence science by suggesting that the use of manned or unmanned vehicles in the abyss is an either/or situation. In more than 25 years of service to the oceanographic sciences, the manned submersible Alvin has provided investigators with a capability to carry out controlled, manipulative, and interactive tasks in the deep ocean. Alvin has been, and still is, critical to advances in biological, chemical, and geological oceanography. A recent call for letters of interest

in the continued use of Alvin resulted in requests for more than 1300 dives in the 1994 and 1995 field seasons at sites around the globe.

Remotely operated vehicles (ROVs) and autonomous .underwater vehicles (AUVs) have developed to the point where they can be used as superb fine-scale imaging and mapping tools. The high-resolution data acquired by ROVs make it possible, for the first time, to completely image patterns and relationships created by biological and physical processes on a local scale (meters to kilometers). Rather than diminish Alvin's productivity, these vehicles can enhance it by creating a well-constrained framework into which a manned submarine can be placed to maximize its unique potential.

The challenge now is to devise an investigative strategy that best integrates the complete range of deep submergence assets available to an interdisciplinary research community. A long-term, programmatic commitment is necessary to ensure the continued development of deep submergence facilities and the implementation of a wide range of scientific experiments that will increase our understanding of the physical and biological processes of the deep ocean.

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The Future of IBM Research

Although IBM's physical sciences department is undergoing difficult and painful change, the comments made by David Freedman in his article "A clouded future for IBM research" (News & Comment, 23 Apr., p. 480) exaggerate the complexities that often accompany transitory periods. Freedman does not discuss the many new avenues being pursued by IBM Research to maximize their effectiveness in the parallel worlds of science and technology. A striking example is the Joint Study Program where, during these times of shrinking resources, IBM remains strongly committed to collaborative research efforts with other institutions.

When I left IBM Research in 1992 (for personal and career reasons and not, as implied in the article, because of a decrease in funding), senior IBM manager Stephan von Molnar was eager to formally establish a joint research program with the University of California at Santa Barbara. This relatively new interaction on the physics of novel nanostructures has already enjoyed considerable success—both parties have actively contributed to results that would have been difficult if not impossible to have achieved independently. In addition, IBM has supported students who are being trained in modern experimental techniques for technologically important areas, such as optical and magnetic spectroscopies in semiconductor structures.

The desired goal is being realized when IBM employees leave the company to join academic institutions, yet continue collaborations with IBM. Far from indicating "moral devastation" (a phrase I did not use), these new strategies for research are consistent with hope for and belief in an exciting future.

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Strangers in the Woodpile

In my 76 years, I have seen the ascribed causes of various diseases drift and flicker like smoke from Indian summer fires. I