Enhancing the Role of the Scientific Expert Witness

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There is growing attention to complex scientific questions in legal cases and the need for scientific expert testimony in these cases, including environmental health issues. This commentary addresses some problems common in expert witness work and recommends ways in which the legal system, the scientist, and our educational institutions can enhance the roles of experts. These recommendations may be particularly relevant for training programs in toxicology, epidemiology, and risk assessment. *Key words:* *Daubert v. Merrell Dow*, environmental health, expert witness, litigation. *Environ Health Perspect* 102:674–675 (1994)

Scientists are generally untutored and psychologically unprepared for roles as expert witnesses, until they learn through personal experience. Because science and technology are increasingly important in our everyday world, it is no surprise that complex technical matters may emerge in disputes which lead to litigation and trials. Recently, courts have been asked to rule on use of DNA tests of identification in criminal cases, patentability of living organisms and tagged DNA sequences in intellectual property cases, and a host of toxic tort issues, including silicone gel implants, repetitive motion injury, electric and magnetic field exposures from power lines, and exposures to lead from various sources. In 1993 the U.S. Supreme Court issued a landmark opinion in *Daubert v. Merrell Dow* intended to clarify the criteria for a witness to be granted expert status and for evidence to be considered "scientific" and admissible (*1*). This commentary addresses some of the context of expert witness work and makes recommendations for better preparing interested scientists for such activities.

Positives and Negatives

Judges, juries, and lawyers seem to need expert witnesses in many cases. As noted above, many cases turn on scientific evidence or directly address issues arising from scientific and technical advances. In other situations, scientists can help enlighten the court and the parties about relevant issues. And a whole host of ethical issues leads to legal disputes often requiring medical and scientific input.

Yet, most scientists are loathe to participate in cases for which they clearly have relevant expertise. Why? I think there are five types of reasons:

First, there is a clash of cultures and language. Litigation emphasizes differences, while science seeks consensus. Lawyers/advocates are expected to select the evidence that supports their argument, while scientists are expected normally to reconcile all the relevant evidence. Courtroom proceedings are intimidating to most scientists. The legal construct of "more likely than not" is a far less certain test than the test scientists usually apply in peer review of manuscripts or in debate at meetings. Courtroom jargon is unfamiliar to scientists, just as scientific jargon is unfamiliar to the general legal community.

Second, the legacy of scientific experts is distasteful. It is discomforting to be stacked up against another person who is accepted by the court as an expert, but who may really be a marginal scientist and/or professional testifier, and find the only conclusion the court seems to draw is that "the experts disagree." Then there is the widespread suspicion in both the scientific and legal communities of physicians, scientists, and engineers who do appear regularly in court as expert witnesses; they are often called "hired guns" by the lawyers who oppose them or recruit them, as well as by their colleagues (*2*).

Third, the expert witness may even be confused about her or his role with the hiring lawyer. Scientists may be attracted to the task by an invitation to be a consultant or adviser (the teaching/explaining role), then find they are expected to be willing to testify if needed. Academics are particularly prone to get hooked with the adviser role. As noted by Hollien (*3*), conflicts of ethics arise when an expert is invited to strategy sessions, called upon to help impeach the opposing expert(s), or asked to assist counsel with cross-examinations. Hanley (*4*) and Beall (*5*) warned experts of pitfalls from not learning enough about the case, attempting to testify outside one's real expertise, letting the lawyers control the extent and direction of the expert's investigation and information-gathering, being too careful, or being too aggressive.

Fourth, scientists and physicians lack training for this work, both in the United States and in Britain (*6,7*). As described in the article in this issue by Eaton and Kalman (*8*), it is essential to have specific preparation and, preferably, organized training about the initial request, the deposition phase, and the trial phase. Unless the scientists are veterans, they are unprepared for a personal attack on their credentials and intentions, for questions about their compensation, or for extremely focused questions designed to confuse them or reveal deficiencies in their knowledge of the topic or the case.

Finally, there are serious logistical problems. Seldom can the dates or times of required testimony be predicted, let alone guaranteed. Sometimes the venue is uncertain. The duration of testimony is unpredictable. Extensive preparation may be necessary, yet little of that preparation may be useful. In fact, lawyers or their recruiters may line up experts they have no intention of using, partly to block the opposition from recruiting the same person(s) and partly to intimidate the opposition and, in the end, what may seem to a jury to be high compensation may not really be worth the time to a busy physician, engineer, or scientist.

A New Context for Expert Witnesses

During 1990–93, I served on the Task Force on Judicial and Regulatory Decision-Making of the Carnegie Commission on Science, Technology and Government. The group included prominent federal judges, leading attorneys, and eight people from the scientific community. I was the only active scientist on the task force. There were four main conclusions of our report (*9*): 1) Federal judges have adequate authority under present Federal Rules of Civil Procedure and Rules of Evidence to manage science and technology issues more effectively, as do most state judges under their rules; 2) increased attention to science and technology issues at the pretrial stage, including involvement of experts, could make cases more amenable to disposition by summary judgment, facilitate settlements, or lead to more focused, speedier trials; 3) in the trial stage, judges and jurors may need assistance in handling science and technology information that the parties do not furnish because of insufficient expertise, mismatched resources, or excessive partisanship, which may justify court-appointed experts in highly selected cases; and 4) trial courts need guidance on the legal standards that control science and technology issues.

Our report recommends that judges take a more active role in managing the presentation of science and technology issues in litigation, using new manuals and protocols developed by the Federal Judicial

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Center (*9*); that "modules" about science and technology issues be integrated into judicial education programs; that institutional linkages between the judicial and scientific communities be established, including development of rosters of appropriate experts by various scientific and engineering societies; and that an independent nongovernment Science and Justice Council of lawyers, scientists, and others outside the judiciary be established to monitor, adjudicate, and initiate improvements in the courts' access to an understanding of science and technology information.

The Carnegie Task Force provided an *amicus curiae* brief for the *Daubert v. Merrell Dow* case decided by the U.S. Supreme Court in the 1992–93 term (*1*). The Court made clear that Rules of Evidence rule 702 gives the trial judge the task of ensuring that a purported scientific expert's testimony pertain to "scientific knowledge" tied to scientific methods and procedures and to a body of known facts or ideas accepted as true on good grounds and as relevant to the case. The Court reaffirmed Rule 702's requirement that an expert witness be qualified by knowledge, skill, experience, training, or education.

Recommendations for Enhancing the Role of Scientific Experts

My recommendations for enhancing the role of scientific experts are as follows:

1) Make the expert status more respectable by having judges use criteria for recognition of experts that are tied to their capacity to evaluate evidence admissible in the case under the *Daubert v. Merrell Dow* interpretation.

2) Encourage judges to experiment more with hiring expert witnesses to work for the court, rather than the adversaries. Most scientists would prefer to be responsive to the court, the judge, and the jurors, than be in competition with and perceived as another hired gun. However, judges are wary of choosing someone to be the expert and must have ways of keeping both sides fully informed. The National Conference of Lawyers and Scientists, a joint effort of the American Association for the Advancement of Science, the American Bar Association, and the Federal Judicial Center, co-sponsored a workshop in November 1993 to stimulate practical measures by which scientific societies might assist judges in identifying appropriate scientists in selected fields.

3) Separate the consultant and witness roles. Scientists differ in their talents for explaining and for arguing; there are uses for both. Consultants (including both parties' experts and court-appointed "masters") can be especially helpful in the pretrial stage.

4) Offer training for scientists and physicians in legal procedures, courtroom techniques, and conflicts of interest. Apply what may be called the "light of day" to expert witness work by disclosing such activities to colleagues and one's institutional administrators and by participating in data collection and publishable research about the process and its results. Eaton and Kalman's article (*8*) helps advance this educational mission, based on a special continuing education program co-sponsored by the School of Public Health and the School of Law at the University of Washington in December 1993, involving federal and county judges and plaintiff and defense attorneys, around a case of a hazardous waste site and a community with numerous complaints of ill health. Environmental health is particularly fertile ground for these cooperative efforts to improve the professional interactions of scientists and the legal system.

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