

/JOINER/KUMHO TIRE WORLD

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I.

INTRODUCTION

As the use of innovative scientific and technical evidence continues to increase in the American civil and criminal litigation systems, federal trial courts have been given unprecedented power to review and determine whether such testimony should go to the jury. *Daubert v. Merrell-Dow Pharmaceuticals*¹ ("*Daubert I*") marked the Supreme Court's most direct foray into the world of expert scientific evidence in the 70 years since the D.C. Circuit decided *Frye v. United States*,² and in the almost 20 years since the Federal Rules of Evidence were adopted in 1975. Coupled with the Ninth Circuit's "*Daubert II*" opinion³ and the more recent Supreme Court decisions in *Joiner*⁴ and *Kumho Tire*,⁵ trial courts have received unparalleled guidance in effectuating their "gatekeeper" function under the Federal Rules of Evidence.

This article will not attempt to improve on the numerous pieces reviewing the history of *Frye* and the Federal Rules of Evidence as they apply to experts, or parse through every nuance of the *Daubert I* and *Daubert II* opinions.⁶ Rather, the primary aim of this article is to examine how courts have applied the recent *Joiner* opinion which, *inter alia*, clearly mandates that trial judges determine whether a proffered expert is relying on proper scientific methodology *and* whether the *application* of that methodology to the conclusions reached is consistent and demonstrable.

This article begins by articulating the guiding principles from *Daubert I* and *Daubert II* as well as other case law available to trial courts in performing their gatekeeping function. That analysis is followed by discussion of a somewhat "prophetic" pre-*Joiner* case, which foretold how *Joiner* should be applied. Following an examination of *Joiner* itself, this article concludes by reviewing several recent decisions purporting to apply *Daubert* and *Joiner*, including the Supreme Court's latest pronouncements in *Kumho Tire*.

II.

AN EFFICIENT HISTORY

Prior to *Daubert I*, a majority of federal and state courts required that admissible expert testimony be based on generally recognized principles or discoveries.⁷ This view evolved from the D.C. Circuit's 1923 opinion in *Frye v. United States*.⁸ The case

involved defendant James Frye, who appealed a second-degree murder conviction, seeking to introduce the results of an early form of polygraph testing to support his innocence plea. The court rejected Frye's proffered evidence. In a two-page opinion, it announced a rule that, for decades to come, would form the guiding principle in assessing the admissibility of scientific evidence.

The *Frye* court ruled that ". . . while courts will go a long way in admitting expert testimony deduced from a well-recognized scientific principle or discovery, the *thing* from which the deduction is made must be sufficiently established to have gained *general acceptance* in the particular field in which it belongs."⁹ This "general acceptance" test eventually became the icon for assessing the admissibility of scientific evidence (i.e., general acceptance within the field).¹⁰ However, courts and commentators over time identified significant limitations inherent in the "general acceptance" test. In particular, they noted that the test was vague and vulnerable to manipulation.¹¹

In 1975, approximately fifty years after *Frye's* adoption, the Federal Rules of Evidence were enacted. The drafters seriously undermined *Frye's* vitality by providing a more liberal approach to admitting opinion testimony.¹²

FRE 104(a) provides the foundation of a judge's role in discharging the responsibilities associated with evaluating the admissibility of expert testimony. It is essential that the court determine *preliminary questions* concerning the qualifications of prospective witnesses and the admissibility of evidence.¹³ While Federal Rules of Evidence 702-706 generally outline the court's role in determining whether expert testimony is admissible, FRE 702 specifically addresses the issue of admitting *scientific* expert testimony.¹⁴

Read as a whole, the Federal Rules of Evidence represent a "liberal thrust" regulating how courts examine expert testimony.¹⁵ Neither the drafting history of these rules nor the rules themselves mention a "general acceptance" requirement. This absence suggests a clear departure from the *Frye* standard for admitting expert testimony.¹⁶ Nevertheless, the "general acceptance" test dominated federal and state court analyses of expert witness testimony until 1993, when the United States Supreme Court decided *Daubert v. Merrell Dow Pharmaceuticals*.

Daubert I involved allegations that Bendectin, a prescription antinausea drug marketed by Merrell Dow, caused birth defects when ingested by pregnant women. Directed at the element of causation, each side proffered scientific evidence to bolster its respective position on Bendectin's ability to cause human birth defects. In an initial ruling on the admissibility of this evidence, the Ninth Circuit Court of Appeals affirmed the district court's application of *Frye* as the appropriate standard for assessing the admissibility of expert testimony.¹⁷ The United States Supreme Court granted certiorari specifically to resolve the issue of whether *Frye's* general "acceptance test" remained the prevailing standard for admitting expert testimony in light of the Federal Rules of Evidence.¹⁸

At the outset, the Supreme Court made it clear that the Federal Rules of Evidence superseded *Frye*. It stated unambiguously that "[although] *Frye* made 'general acceptance' the exclusive test for admitting expert scientific testimony . . . [t]hat austere standard, absent from, and incompatible with, the Federal Rules of Evidence, should not be applied in federal trials."¹⁹ Rather, the Federal Rules of Evidence govern whether expert testimony is or is not admissible. Under the Rules, a trial judge's primary charge is to ensure that all admissible scientific testimony or evidence is both *reliable* and *relevant*.²⁰

FRE 702 was denominated the starting point for any evaluation of the admissibility of scientific expert testimony. It provides, in part, that "[i]f scientific . . . or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert . . . may testify thereto in the form of an opinion or otherwise."²¹ The Court then formulated a corollary threshold "reliability" requirement necessitating that "[t]he subject of an expert's testimony must be 'scientific . . . knowledge.'"²² "Scientific" means grounded in scientific methods and procedures; "knowledge" indicates "more than subjective belief or unsupported speculation."²³ Read together, "scientific knowledge," as used by the Court, would establish and ensure evidentiary reliability.²⁴ And, in order to qualify as "scientific knowledge," an inference or assertion must be derived by the scientific method.²⁵

In addition to derivation by the scientific method, other indicia of reliability would include whether a theory or method had been: (i) tested; (ii) peer reviewed and published; (iii) generally accepted in the scientific community; (iv) deemed to have an acceptable rate of error; and (v) subjected to standards controlling technique operation.²⁶

The Supreme Court also found that FRE 702 embodied a "relevancy" threshold in that the evidence or testimony must "assist the trier of fact to understand the evidence or to determine a fact in issue."²⁷ When examining this second prong of the admissibility test, trial courts would need to consider whether proffered expert testimony was sufficiently tied to the facts of a case such that the evidence would help a jury to resolve factual disputes.²⁸ In other words, as a precondition to admissibility under Rule 702, a party proffering scientific expert testimony would need to establish a valid scientific "connection" to the pertinent inquiry.²⁹ Thus, faced with a proffer of expert scientific testimony, the trial judge would determine at the outset, pursuant to FRE 104(a) and FRE 702, whether the expert proposed to testify regarding (1) scientific knowledge that (2) would assist the trier of fact in understanding or determining a fact in issue.

A. Methodology v. Conclusions

In providing this new evidentiary standard, the *Daubert I* Court noted that the focus of these inquiries "must be solely on principles and methodology, *not on the conclusions* that they generate."³⁰ However, some confusion arose from the Court's analysis because even if expert testimony was deemed reliable (i.e., scientific knowledge), courts might nevertheless exclude the evidence if it did not pass what some commentators termed a unique "fit" test.³¹ Arguably then, despite language

in *Daubert I* requiring focus on methodology instead of conclusions, an expert's *conclusions* could be excluded if deemed *irrelevant* for failure to fit the facts of a particular case. As discussed later, the Supreme Court ultimately resolved this philosophical "methodology/conclusion" contradiction three years later in *Joiner*.³²

In 1995 the Ninth Circuit Court of Appeals revisited *Daubert v. Merrell Dow* on remand from the United States Supreme Court and enumerated yet another factor to consider in examining reliability.³³ According to the court of appeals, establishing the fact that an expert's proffered testimony grows out of *pre-litigation research* is one of two principal ways proponents of expert testimony can demonstrate that proffered evidence satisfies the first (i.e., reliability) prong of Rule 702. In other words, the fact that an expert bases her testimony on research conducted independent of litigation increases the reliability of such testimony. Also, reiterating the importance of a criterion earlier noted, the court observed that a second way to establish evidentiary reliability is for experts to base their testimony on peer-reviewed research.³⁴ The court further explained that if such evidence is unavailable, a proponent of scientific evidence might satisfy its burden of demonstrating reliability by using its own expert's testimony to establish adherence to the scientific method. Under these circumstances, the expert must explain precisely how she arrived at her conclusions and specify an objective source, such as a learned treatise or other publication, to show that the scientific method is practiced by at least a recognized minority of scientists in the field.

Using the analytical framework and instruction provided by *Daubert I* and *Daubert II*, a federal district court in Oregon assessed the admissibility of scientific evidence related to breast implant litigation.³⁵ In a detailed and comprehensive manner, the Oregon district court rendered what would effectively become a prophetic precursor to the United States Supreme Court's decision in *Joiner* one year later.

III.

HALL: PROPHETIC ANTICIPATION OF JOINER

The *Hall* opinion provides a comprehensive analytical framework for assessing the admissibility of scientific evidence. *Hall* involved consolidated breast implant cases in which plaintiffs sought damages from various breast implant manufacturers, alleging injuries suffered from implantation with silicone gel breast implants.³⁶ According to plaintiffs' causation theory, silicone from the implants migrated and simultaneously degraded in their bodies, resulting in a systemic illness termed "atypical connective tissue disease" (ACTD).³⁷ The defendants jointly filed a series of motions in limine to exclude plaintiffs' expert testimony, arguing no causal link between silicone breast implants and the proposed systemic illness.³⁸ The court then scheduled an integrated hearing under FRE 104(a) on the admissibility of plaintiffs' scientific evidence.³⁹

The primary issue before the *Hall* court, as with the Bendectin litigation involved in *Daubert II*, was causation. In assessing whether proffered expert testimony would assist the trier of fact in resolving the causation issue, the court had to consider the substantive standard in that case. Oregon's substantive law requires that an expert state

a causal connection between the suspected agent and the alleged injury in terms of medical probability in order to admit such testimony.⁴⁰ The *Hall* court ultimately found that plaintiffs' experts were unable to state a sufficient causal connection between silicone breast implants and plaintiffs' alleged injury. Moreover, the court was not convinced that a cognizable injury existed; it therefore precluded any testimony regarding ACTD, which the court then labeled an "untested hypothesis."⁴¹ In so ruling, the court noted that ACTD is not by definition a classical autoimmune disease,⁴² such as lupus,⁴³ scleroderma⁴⁴ or rheumatoid arthritis.⁴⁵ In addition, proposed criteria for the alleged disease had not yet been tested. Plaintiffs' own expert testified that ACTD did not yet exist, even as a hypothesis, and the rheumatology community did not accept the existence of ACTD. Consequently, the court concluded that no scientific basis existed for any expert testimony regarding the cause and presence of the alleged ACTD in plaintiffs.

A. *The Methodology v. Conclusion Distinction*

In *Daubert I*, the Supreme Court expressly stated that "[t]he inquiry envisioned by Rule 702 is, we emphasize, a flexible one. Its overarching subject is the scientific validity -- and thus the evidentiary relevance and reliability -- of the principles that underlie a proposed submission. *The focus, of course, must be solely on principles and methodology, not on the conclusions that they generate.*"⁴⁶ Based on this language, plaintiffs in *Hall* contended that the court was restricted to considering expert methodology *only*; it was precluded in all other respects from assessing admissibility based on expert *conclusions*.⁴⁷ However, the trial judge dismissed plaintiffs' argument as untenable based on a superficial reading of *Daubert I*. Judge Jones found that the methodology/conclusion distinction bore limited practical import. In fact, in 1994 the Ninth Circuit found that district courts had both the authority and the obligation to scrutinize the reasoning and methodology underlying an expert's proffered testimony.⁴⁸ Again in 1996, the Ninth Circuit held that a district court need *not* ignore an expert's anomalous conclusions in determining admissibility under FRE 702.⁴⁹ Persuaded by these determinations, the *Hall* court concluded that ". . . this court need not accept, as scientifically reliable, any conclusion that good science does not permit to be drawn from the underlying data but which, instead, constitutes 'unsupported speculation,' or . . . 'a leap of faith.'"⁵⁰

Collectively, these findings demonstrate a clear trend identifying how district courts assess the admissibility of scientific and technical evidence. In deciding whether evidence is admissible, judges will examine the expert's methodology used to reach a conclusion *and* the expert's ultimate conclusions which, in and of themselves, could constitute grounds for excluding the evidence.

B. *Methods of Establishing Causation*

1. Epidemiological Studies

Epidemiology is "the study of the *distribution* and *determinants* of health-related states or events in specified populations, and the application of this study to control health

problems."⁵¹ Epidemiological studies are designed to determine whether people exposed to a hypothetical cause of disease carry a greater risk of developing that disease than do people who are not exposed to the hypothetical cause.⁵² In epidemiological terms, any difference in the risk of getting the disease between an exposed and unexposed group is an exposed individual's "relative risk" of developing the disease.⁵³

Relevant epidemiological studies can be a significant factor in establishing general causation in toxic tort cases.⁵⁴ In *Hall*, the court found that under Oregon substantive law epidemiological studies must demonstrate a relative risk exceeding two in order to warrant evidence that a defendant's conduct more likely than not substantially caused plaintiffs' injury.⁵⁵

The *Hall* plaintiffs' expert epidemiologist offered to testify that epidemiological and other scientific data demonstrated that women with silicone breast implants bore a significantly increased probability of experiencing related classical diseases than did women without breast implants.⁵⁶ Plaintiffs' expert relied on sixteen epidemiological studies, none of which found that women with silicone breast implants had a relative risk of disease even near two. Consequently, the studies could not support expert testimony suggesting that silicone more likely than not caused plaintiffs' disease. Although the *Hall* court noted that epidemiological studies showing a relative risk of less than two might be relevant under some circumstances, the emerging trend required a threshold relative risk of two for concluding that an agent increases, in a statistically significant manner, the likelihood of developing a particular disease.

2. Animal Studies

Plaintiffs also offered immunology experts to testify that silicone was capable of eliciting a variety of damaging immune responses in women. The majority of these studies relied upon by both experts in forming their opinions were animal studies, which generally involved rodents. However, extrapolating data from animal studies and assuming that such data applies to human beings is generally unreliable without a scientific explanation as to why the extrapolation is warranted. The court found that plaintiffs' experts failed to explain why extrapolations from rodent studies to human beings were justified in these circumstances; it therefore excluded related testimony.

3. Case Reports / Case Studies

The court summarily ruled that case reports and case studies provide an insufficient basis for reaching conclusions about causation. Since neither case reports nor case studies include test controls, they cannot form the basis of a scientifically reliable expert opinion.

Under *Daubert*, a court's gatekeeping function requires that proffered scientific opinions be excluded if they involve too great a "leap of faith" from currently available scientific knowledge. In examining whether scientific methodology is valid for *Daubert* purposes, courts should evaluate how expert conclusions relate to the bases

upon which the expert relies. Plaintiffs' experts made too great a leap of faith from underlying experimental data to their final conclusions. According to the court, their expert conclusions did not result from a faithful application of valid scientific methodology and were therefore inadmissible.

4. Silicone Degradation

Similarly, the court excluded proffered testimony from plaintiffs' chemistry expert, who was prepared to testify that silicone degrades in vivo to silica, a bioreactive and harmful chemical. Here again, plaintiffs' expert made too great a leap of faith from underlying data to his conclusion because the concept of in vivo silicone degradation was unsupported by scientific literature. Moreover, because testimony about silicone degradation was deemed inadmissible, the court ruled that any other immunological or toxicological studies involving silica ingestion were irrelevant. In other words, such studies would not "fit" the issue of whether silicone breast implants could cause clinical manifestations of disease in women.

5. Differential Diagnosis

Plaintiff LeaAnn Hall's treating physician was also offered as a case-specific expert. He purported to testify, based on a differential diagnosis, that Ms. Hall suffered from systemic scleroderma due to silicone gel breast implants. Briefly, differential diagnosis is a patient-specific process of elimination that medical practitioners use to identify the most likely cause (from a list of causes) of patient signs and symptoms.⁵⁷ However, differential diagnosis does not alone establish specific causation (i.e., whether silicone gel breast implants caused disease in this specific plaintiff). It also does not address the issue of general causation (i.e., whether silicone gel can cause disease in anyone).⁵⁸ Unless general causation is established, testimony regarding specific causation is irrelevant.⁵⁹

The trial court excluded plaintiffs' expert testimony regarding differential diagnosis on several bases. First, Judge Jones already had excluded all other proffered testimony regarding general causation, which left differential diagnosis as plaintiffs' only means of establishing general causation. However, a single differential diagnosis is a scientifically invalid methodology for establishing general causation. Second, the proffered testimony was deemed inadmissible to prove specific causation because plaintiffs' expert did not testify as to how he had excluded other potential causes of Ms. Hall's disease, which is required in the "process of elimination" differential diagnostic technique. Third (and more fundamental), without proof of general causation, the testimony did not "fit" plaintiff Hall's case because no evidence existed to establish that silicone gel breast implants were a legitimate possible cause of Hall's disease. The court then concluded by granting defendants' motions in limine to exclude expert testimony concerning a general causal link between silicone gel breast implants and ACTD, or any systemic illness or syndrome.

IV.

JOINER CLARIFIES THE METHODOLOGY v. CONCLUSION DICHOTOMY

A major question left unanswered by *Daubert I* was whether trial judges, acting as gatekeepers, should consider an expert's conclusions as well as underlying methodologies in assessing the admissibility of proffered evidence.⁶⁰ After the *Daubert I* decision courts and commentators wrestled with the distinction between expert methodology and conclusions.⁶¹ Indeed, the *Hall* court and others found that distinguishing between conclusions and underlying methodologies in assessing the admissibility of scientific evidence was of limited practical importance.⁶² One year after *Hall* the United States Supreme Court decided *Joiner*, which mirrors *Hall's* analysis of the methodology/conclusion distinction.⁶³

Joiner involved allegations that plaintiff Robert Joiner developed small cell lung cancer resulting from exposure to polychlorinated biphenyls (PCBs) and their derivatives.⁶⁴ Joiner's experts testified that PCBs alone could promote cancer and that PCB derivatives could also promote cancer. In moving for summary judgment the defendants argued that Joiner failed to show significant PCB exposure and that no admissible scientific evidence existed to establish that PCBs promoted Joiner's cancer. The district court ruled that Joiner's PCB exposure was a genuine issue of material fact; nevertheless, it granted defendants' motion for summary judgment. According to the district court, no genuine issues existed regarding Joiner's exposure to PCB derivatives. In addition, the testimony of Joiner's experts failed to demonstrate a link between PCB exposure and small cell lung cancer. Since the testimony was tantamount to subjective belief, it was inadmissible.

The Court of Appeals for the Eleventh Circuit reversed, ruling that the district court improperly excluded testimony from plaintiff's expert witnesses by drawing "different *conclusions* from the research than did each of the experts."⁶⁵ Further, the court of appeals opined that the district court should have limited its role to determining the legal reliability of expert testimony and allowed the jury to decide if the expert opinions were correct. The court of appeals also concluded that a genuine issue of material fact did exist regarding Joiner's exposure to PCB derivatives; accordingly, it reversed the district court on this ground as well.

Before ruling on the admissibility of the experts' testimony, the Supreme Court held that an abuse of discretion standard applies to appellate review of district court evidentiary rulings.⁶⁶ The Court next examined the district court's evidentiary rulings themselves, paying particular attention to scientific studies upon which the experts relied in forming their opinions.

Joiner's experts relied on epidemiological and animal studies to conclude that exposure to PCBs and PCB derivatives caused Joiner's cancer. However, none of the four epidemiological studies upon which the experts relied established a statistically significant association between PCB exposure and small cell lung cancer development in humans. In addition, the animal studies involved infant mice which had been injected

with massive doses of PCBs and subsequently developed cancer. The Court questioned the propriety of extrapolating from these studies to form opinions applicable to Mr. Joiner. As the Court noted, the mice were exposed to a far greater PCB dose than was Mr. Joiner. Also, the mice were infants and Joiner was an adult, and the mice developed alveologenic adenomas -- a cancer different from Joiner's small cell carcinomas. The Supreme Court found that the animal studies were so dissimilar to the *Joiner* fact pattern that the district court did not abuse its discretion in rejecting the experts' reliance upon them.⁶⁷

The Court then addressed language in *Daubert I* which, according to respondent, allowed the district court to consider only an expert's methodology in assessing reliability, rather than her conclusions. In a ruling analogous to *Hall's* ruling on the same issue, the Supreme Court stated that:

[C]onclusions and methodology are not entirely distinct from one another. Trained experts commonly extrapolate from existing data. But nothing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence which is connected to existing data only by the *ipse dixit* of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered. . . . That is what the District Court did here, and we hold that it did not abuse its discretion in so doing.⁶⁸

Consequently, district courts exercising their gatekeeper role under *Daubert* may properly assess whether an expert's conclusions follow from the methodology employed to reach those conclusions.

Though not all, many states have adopted *Daubert* as their guiding authority for assessing the admissibility of expert testimony.⁶⁹ Below is a review of some recent cases that apply the teachings of *Daubert* and *Joiner* to various factual scenarios.

V.

POST JOINER APPLICATIONS

A. Case Law

1. Minersville Safe Deposit Bank & Trust Co. v. BIC Corporation (1997)

Based on a less extensive *Daubert/Joiner* analysis, the *Minersville*⁷⁰ court also rejected proffered expert testimony. This action arose out of the deaths of two young children who were killed during a house fire allegedly started by Jared Klemka, the decedents' three-year-old sibling, with a BIC cigarette lighter. Plaintiffs' experts, Shaner (a state police fire marshal) and Keeler (an independent private fire investigator), believed that the fire began when an open flame, such as a lighter, ignited a living room chair. Two days after the fire both experts returned to the burned home. Based on Jared's responses to questions concerning the fire, both experts concluded that the three-year-old had set

the fire. Defendant contended that plaintiffs' experts erroneously relied on Jarad's statements which were unreliable because of his age.⁷¹ On the other hand, plaintiffs maintained that Jarad's statements were reliable evidence upon which their experts could predicate opinions regarding the fire's cause and origin.

The federal trial court briefly discussed FRE 702 and FRE 703 in evaluating the admissibility of plaintiffs' expert testimony. According to the court's interpretation, Rule 703 allows experts to rely on hearsay if it is trustworthy (i.e., normally employed by experts in the field), whereas Rule 702 provides for the admissibility of scientific or technical expert opinion if it will assist the trier of fact in understanding evidence.⁷² Rather than focus its analysis on FRE 702, the court emphasized FRE 703 in denying admissibility. Jarad's statements were ruled untrustworthy and therefore inadmissible because Shaner had employed a suggestive interviewing technique in soliciting Jarad's responses and possessed no expertise in child psychology. Furthermore, defendant's expert child psychologist had opined that Shaner's interviewing technique would not be relied upon by other qualified child psychology experts.

2. United States v. Scheffer (1998)

Scheffer presented the question whether Military Rule of Evidence 707, a per se rule excluding polygraph evidence in court-martial proceedings, unconstitutionally abridged the defendant's right to present a defense.⁷³ The *Scheffer* court interpreted Rule 707 as a safeguard against admitting unreliable evidence at trial and focused its analysis primarily on the "reliability" of polygraph tests, rather than their relevance. According to the court, Military Rule of Evidence 707 (like FRE 702, *Daubert* and other evidentiary rules) ensures that only reliable evidence is admitted at trial.⁷⁴

In evaluating the constitutionality of Rule 707, the court did not examine the validity of scientific principles underlying polygraph testing. Rather, the court relied heavily on the "lack of scientific consensus" regarding the reliability of polygraph tests to uphold the rule's constitutionality.⁷⁵ Under *Daubert I*, a lack of general acceptance (i.e., consensus) in the scientific community indicates that proffered evidence is unreliable but does not constitute a per se evidentiary ban if there exist other indicia of reliability.⁷⁶ Indeed, some federal courts of appeal have abandoned per se rules excluding polygraph evidence, leaving its exclusion or admission to judicial discretion under *Daubert*.⁷⁷ However, as a constitutional matter, nothing in *Daubert* foreclosed *per se* exclusionary rules for certain types of expert or scientific evidence.

In addition, the court found that Rule 707 helped to preserve the jury's role in making credibility determinations and avoided litigation of collateral issues involving the reliability of polygraph test results and corresponding experts. The court therefore held that Military Rule 707 did not unconstitutionally abridge the defendant's right to present a defense.

3. Lanni v. State of New Jersey (1998)

*Lanni*⁷⁸ addressed the issue of expert testimony in the context of a claim under the Americans with Disabilities Act. Plaintiff alleged that he suffered from dyslexia, dyscalculia, dysnomia and other neurological impairments, and that he was the victim of unlawful discrimination by a former employer because of these disabilities. However, defendants proffered the testimony of Dr. Michael Welner, a forensic psychiatrist who refuted plaintiff's disability diagnosis. Dr. Welner opined instead that plaintiff suffered from major depression, factitious disorder and narcissistic personality disorder, none of which result from neurological impairment. Plaintiff's motion in limine to exclude Dr. Welner's testimony was grounded primarily on the fact that Dr. Welner lacked the appropriate qualifications in psychology to render an opinion regarding plaintiff's learning disabilities. In addition, plaintiff challenged as unreliable Dr. Welner's proposed reports discussing plaintiff's medical condition.

As a threshold issue, the *Lanni* court explored whether *Daubert* was even applicable to cases "outside the scope of *scientific* evidence" (i.e., cases involving medical, technical or other types of expert testimony).⁷⁹ The court noted that in a prior opinion the Third Circuit Court of Appeals acknowledged that *Daubert's* applicability in non-scientific cases remained an open question.⁸⁰ Nevertheless, "in an exercise of caution," that court reviewed the expert testimony of handwriting specialists under the *Daubert* standard. In doing so, it noted that applying *Daubert* would assist the court in considering the expertise in question. Moreover, the court noted that the Federal Rules of Evidence embody a strong preference for admitting any evidence having some potential for assisting the jury.

The *Lanni* court then ruled that Dr. Welner's qualifications as a forensic psychiatrist were sufficient to permit an expert opinion regarding plaintiff's learning disabilities. According to the court, neither *Daubert* nor *Joiner* requires an expert to be the "best" qualified expert in order to proffer an opinion. In fact, witnesses may be competent to testify as experts even though they may not be the best qualified expert.⁸¹ Determining who is best qualified to render an expert opinion in a particular case is a matter properly left to the jury.⁸²

The court also rejected plaintiff's contention that Dr. Welner's testimony was unreliable because he failed to administer any of the accepted psychological and neurological tests to diagnose plaintiff's condition. In so ruling, the court observed that Dr. Welner conducted a forensic psychiatric evaluation of plaintiff, reviewed reports prepared by plaintiff's learning disability consultant, and concluded inter alia that plaintiff's test results and daily functioning level demonstrated that plaintiff did not suffer from dyslexia. The court also reviewed Dr. Welner's curriculum vitae and detailed expert report, which discussed the existence or non-existence of Lanni's dyslexia in addition to the doctor's view of plaintiff's psychiatric state and how that condition might explain the plaintiff's perception of mistreatment. Based on this evidence, the court concluded that Dr. Welner's testimony would serve the dual role of assisting the fact finder in understanding various mental conditions as well as clarifying issues of causation. Because plaintiff failed to demonstrate a *prima facie* case of evidentiary unreliability, the court also concluded that an evidentiary hearing was not required by *Daubert* and would involve unnecessary expense and delay.

4. Robinson v. Metro-North Commuter Railroad Company (1998)

Robinson also involved claims of employer discrimination, but these were based on race.⁸³ In support of their discrimination claims plaintiffs relied in part on statistical opinions offered by their expert, Dr. Zellner. Defendants, however, had challenged the validity, reliability and relevance of Dr. Zellner's opinions. The *Robinson* court expressed "grave reservations" about whether Dr. Zellner's opinions, described as being "dressed in the garb of 'regression analysis,'" could even satisfy the threshold relevance and reliability requirements.⁸⁴ However, the court stopped short of a *Daubert/Joiner* analysis, assuming arguendo that Dr. Zellner's proffered testimony was valid, reliable and relevant.

According to the court, even if Zellner's testimony satisfied the evidentiary requirements of reliability and relevance, such generalized statistical evidence alone would be insufficient to refute a defendant's particularized evidentiary showing of non-discriminatory practices for summary judgment purposes. Though statistical evidence might sometimes enable a plaintiff to carry its burden to establish a prima facie case, such evidence alone was insufficient to refute a defendant's particularized evidentiary showing on summary judgment.⁸⁵ Because plaintiffs relied entirely on Dr. Zellner's generalized statistical opinions and failed to provide any particularized evidence refuting defendant's non-discriminatory explanations, the court granted defendant's summary judgment motion on these claims. Thus, opinions based on regression analyses alone could not substitute for the lack of a particularized evidentiary showing, even if those analyses are relevant and reliable pursuant to *Daubert* and *Joiner*.

5. Forsyth v. Eli Lilly And Company (1998)

Forsyth provides a fairly comprehensive analysis of scientific evidence admissibility under the *Daubert/Joiner* paradigm.⁸⁶ This case arose from plaintiffs' wrongful death action against Eli Lilly (Lilly) based on Mr. Forsyth's murder of his wife and subsequent suicide, allegedly resulting from Forsyth's ingestion of Prozac.⁸⁷ Lilly moved for summary judgment in the matter, arguing primarily that the testimony of plaintiffs' experts was inadmissible under *Daubert*, which precluded plaintiffs from establishing medical causation in fact for their failure-to-warn claim against Lilly.⁸⁸

Plaintiffs' experts relied heavily on the interpretation of an epidemiological study (the "Jick Study"), entitled "Antidepressants and Suicide," which was the only study plaintiffs could cite to demonstrate a statistically significant causal connection between Prozac use and suicide.⁸⁹ Based on empirical data from the Jick Study, Prozac consistently demonstrated an adjusted relative risk level of 2.1 or greater, which more than satisfied the reliability requirement for epidemiological studies under *Daubert II*.⁹⁰ While empirical data reflected that the suicide risk more than doubled in subjects exposed to Prozac, however, Jick researchers cautioned that the increased risk might have resulted from selection bias rather than Prozac exposure.⁹¹ Nevertheless, the court concluded that despite selection bias concerns, the reported results satisfied *Daubert's* relative risk requirement. In addition, the methodology, design, sample size and statistical analysis provided by the study were scientifically reliable.

Consequently, the court found that the Jick Study would assist the jury if offered to prove causation and ruled the study admissible as a basis upon which plaintiffs' experts could form opinions.

After summarizing the two-pronged *Daubert* test for assessing the admissibility of scientific testimony and noting that abuse of discretion prevailed on review, the court evaluated the admissibility of testimony proffered by each of plaintiffs' three experts. Plaintiffs' psychopharmacology expert, Dr. Healy, intended to testify that "Prozac was a substantial cause of William Forsyth's murder of his wife and his subsequent suicide."⁹² The court deemed this testimony both reliable and relevant. The testimony was reliable because Dr. Healy's opinion was based on information derived from scientific methodology and procedures (i.e., scientific knowledge), including Dr. Healy's own peer-reviewed, generally accepted publications as well as the Jick Study. His testimony was relevant since it was based on studies that apparently revealed a causal relationship between Prozac and suicide, which would assist the fact finder in making its determinations.

Likewise admissible was the proffered testimony of Dr. Schlensky, plaintiffs' psychiatry expert, who intended to testify regarding general causation issues involving Prozac and suicide. Although Dr. Schlensky's opinion was not based on his own peer-reviewed publications or an independent examination of Mr. Forsyth, his testimony was deemed reliable and relevant nonetheless. Dr. Schlensky's findings were based on his extensive review of relevant materials and his experience as a clinical psychiatrist (prescribing Prozac on over 1,000 occasions), which the court ruled was sufficient to establish reliability under *Daubert*.⁹³ The court deemed Dr. Schlensky's proposed opinion relevant since it would assist the jury in determining causation and liability issues.

However, the court rejected proffered testimony from plaintiffs' toxicology expert, Dr. Bost, who planned to testify only that a "possible association" exists between Prozac and suicide but could offer no medical opinion that Prozac causes suicide. His proffered testimony failed *Daubert's* reliability prong because it was based on Dr. Bost's own research and publications, which were peer-reviewed but derived from questionable methodology.⁹⁴ The court also found that even if scientific methodology and procedures did support Dr. Bost's studies, his testimony would be inadmissible for failing the relevancy prong under *Daubert*. Dr. Bost's testimony about "possible" causation could only confuse the jury on causation issues because it would not clearly support plaintiff's argument that Prozac ingestion causes suicide.

6. Moore v. Ashland Chemical Inc. (1998)

In August, 1998, the Court of Appeals for the Fifth Circuit rendered its decision in *Moore v. Ashland*, which provides another comprehensive application of *Daubert* and *Joiner* principles when evaluating expert testimony.⁹⁵ Plaintiff Moore, a delivery truck driver, filed suit against Ashland Chemical, the Dow Corning Corporation, and others, primarily alleging that Ashland had negligently exposed him to vapors from a Toluene solution while delivering Dow chemicals to Ashland's

Houston terminal. Following a jury trial, the district court entered a "take nothing" judgment against Mr. Moore. A divided panel of the Fifth Circuit Court of Appeals reversed and remanded the case for a new trial, concluding that the district court erred in refusing to allow one of plaintiff's experts (Dr. Jenkins) to testify regarding the cause of Moore's illness.⁹⁶ The appeals court subsequently granted rehearing to consider the case en banc and to clarify the standards that district courts should apply when determining whether to allow such expert testimony.

On review, the *Moore* court employed *Joiner's* abuse of discretion standard to evaluate the district court decision to exclude Dr. Jenkins' testimony.⁹⁷ As a preliminary matter, the court in *Moore* capsulized *Daubert's* reliability and relevancy principles as follows:

[T]he law cannot wait for future scientific investigation and research. We must resolve cases in our courts on the basis of scientific knowledge that is currently available. The inquiry authorized by Rule 702 is a flexible one; however, a scientific opinion, to have evidentiary relevance and reliability, must be based on scientifically valid principles.⁹⁸

Having stated these principles, the *Moore* court then applied the *Daubert* and *Joiner* directives to determine whether excluding Dr. Jenkins' testimony was an abuse of discretion. Dr. Jenkins was certified by the American Board of Internal Medicine in 1941 and also had special training in pulmonary disease, allergy, and environmental medicine. After examining plaintiff Moore, performing a series of tests and reviewing his medical records, Dr. Jenkins concluded that Moore suffered from reactive airways dysfunction syndrome (RADS) induced by vapors from the chemical spill at Ashland's facility. Dr. Jenkins based this conclusion on certain factors: a Dow material safety data sheet (MSDS) warning that exposure to fumes from the Toluene solution could cause lung injury; the fact that Moore's onset of symptoms occurred shortly after exposure; an article reporting on a RADS study co-authored by Dr. Stuart Brooks (the Brooks article);⁹⁹ his training and experience, and Mr. Moore's physical examination and test results.

The *Moore* court found that the district court had acted within its discretion when it concluded that these bases were individually and collectively inadequate under *Daubert* to justify admitting Dr. Jenkins' testimony on causation. The district court correctly ruled that the MSDS was of limited value to Dr. Jenkins in reaching his causation opinion since Dr. Jenkins did not know what tests Dow had conducted in generating the MSDS. Moreover, the MSDS itself had clearly indicated that the effects of Toluene exposure depended on the concentration and length of exposure. Dr. Jenkins lacked any information regarding the threshold level of exposure necessary for injury and offered no scientific support for his general theory that Toluene exposure at any level would cause RADS.

Dr. Jenkins also had made no attempt to explain his conclusion by linking the properties of the Toluene solution to any other chemical that had been causally linked to RADS.¹⁰⁰ Furthermore, with inaccurate information about Moore's exposure level to the fumes, Dr. Jenkins necessarily had no basis for theorizing that the level of Moore's

chemical exposure caused him to develop RADS. In fact, Dr. Jenkins' causation opinion would have been suspect in any event since he had so little information about the actual level of Moore's exposure to Toluene.¹⁰¹ These failings ultimately led Dr. Jenkins to rely on a "fall-back" position that any irritant to the lungs could cause RADS in a susceptible patient. But again, he cited no scientific support for this theory, which intrinsically failed to demonstrate any *Daubert* indicia of reliability. "Under the [*Daubert/Joiner*] regime, trial courts are encouraged to exclude such speculative testimony as lacking any scientific validity."¹⁰²

According to the court of appeals, the district court was also correct in minimizing Dr. Jenkins' reliance on the temporal proximity between plaintiff Moore's alleged exposure and the onset of symptoms.¹⁰³ In the absence of an established scientific connection between exposure and illness, or other compelling circumstances, the temporal connection between chemical exposure and the onset of symptoms is itself accorded little weight in determining causation.¹⁰⁴

The Brooks article was also insufficient to support Dr. Jenkins' opinion that Mr. Moore's chemical exposure resulted in the development of his illness. Because of the study's limitations, even the authors had reported that their conclusions were speculative.¹⁰⁵

Finally, Dr. Jenkins had failed to explain why his own training and experience, when combined with Moore's physical examination and test results, had produced his conclusion on specific causation. Other than plaintiff Moore, Dr. Jenkins had treated no patient who had suffered exposure to a Toluene solution.¹⁰⁶ Under this *Daubert/Joiner* analysis, Dr. Jenkins' proffered causation testimony constituted unscientific speculation offered by a scientist, rather than scientific evidence.¹⁰⁷

The *Moore* court summarized that the analytical gap between Dr. Jenkins' causation opinion and the scientific knowledge available to support that opinion was too wide. Consequently, the district court could legally conclude that Dr. Jenkins' causation opinion was not based on scientific knowledge that would assist the jury as required by FRE 702. It was therefore inadmissible.

B. A Final Word: *Kumho Tire Co. v. Carmichael*

In *Carmichael v. Samyang Tire, Inc.*,¹⁰⁸ the Eleventh Circuit Court of Appeals held that "the Supreme Court in *Daubert* explicitly limited its holding to cover only the 'scientific context.'" It added that a *Daubert* analysis applied only when an expert relied "on the application of scientific principles" rather than "on skill -- or experienced-based observation."¹⁰⁹

In March, 1999, the United States Supreme Court reversed the Eleventh Circuit's decision. *Carmichael* itself had involved the admissibility of an engineer's expert testimony, which was based upon the engineer's experience and training rather than "scientific knowledge."¹¹⁰ The Supreme Court there focused on the application of *Daubert*, deciding whether *Daubert's* applicability extended beyond "scientific"

knowledge to encompass "technical" and "other specialized" knowledge as well.¹¹¹ The Supreme Court also addressed whether district judges, as reliability gatekeepers, should apply the *Daubert* factors when examining the reliability of a particular theory or technique.¹¹²

Reversing the Eleventh Circuit, the Supreme Court ruled that *Daubert*'s general holding -- setting forth the trial judge's general "gatekeeping" obligation -- applies not only to testimony based on "scientific" knowledge, but also to testimony based on "technical" and "other specialized" knowledge.¹¹³ The Court reasoned that the evidentiary rationale underlying the *Daubert* "gatekeeping" function was not limited to "scientific" knowledge.¹¹⁴ According to the *Kumho* opinion, the *Daubert* decision "pointed out that Federal Rules 702 and 703 grant expert witnesses testimonial latitude unavailable to other witnesses on the 'assumption that the expert's opinion will have a reliable basis in the knowledge and experience of his discipline.'"¹¹⁵ The Court also observed that requiring trial judges to administer evidentiary rules under which a gatekeeping obligation depended upon distinguishing between "scientific" knowledge and "technical" or "other specialized" knowledge would be difficult, if not impossible.¹¹⁶

The Supreme Court further stated that a trial court "should" consider one or more of the specific *Daubert* factors when doing so will help determine the reliability of that testimony.¹¹⁷ The Court emphasized that the *Daubert* reliability test is a flexible one, and the list of *Daubert* factors neither necessary nor exclusive in every case. Just as district court judges enjoy wide latitude in deciding "whether" proffered evidence is reliable, they also have great discretion in deciding "how" to determine the reliability of proffered expert evidence.¹¹⁸ The Court agreed with the Solicitor General that "[t]he factors identified in *Daubert* may or may not be pertinent in assessing reliability, depending on the nature of the issue, the expert's particular expertise, and the subject of his testimony," and concluded that they could "neither rule out, nor rule in, for all cases and for all time the applicability of the factors mentioned in *Daubert*"¹¹⁹

VI.

CONCLUSION

Kumho makes clear that *Daubert*'s interpretation of FRE 702 is not, and was never intended to be, limited in application to "scientific knowledge." In fact, read literally, the language of FRE 702 makes no relevant distinction between "scientific," "technical" or "other specialized" knowledge, thereby indicating that any quantum of knowledge may be the subject of expert testimony. Furthermore, trial judges have great latitude in deciding "how" to determine whether proffered expert testimony is reliable in any given case. In this sense, the *Daubert* factors, among others not yet identified, may be used to measure the reliability of an expert's proffered testimony. As noted at the outset, this evolving standard accords trial judges unprecedented power. Undoubtedly, it will cause some level of mischief and generate increasing appellate review.

1 509 U.S. 579 (1993).

2 293 F. 1013 (D.C. Cir. 1923).

3 *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 43 F.3d 1311 (9th Cir. 1995), *cert. denied*, 116 S.Ct. 189 (1995).

4 *General Electric Co. v. Joiner*, ___ U.S. ___, 118 S.Ct. 512 (1997).

5 *Kumho Tire Co. v. Carmichael*, ___ U.S. ___, 119 S.Ct. 1167 (1999).

6 *See, e.g.*, 1 David L. Faigman et al., *Modern Scientific Evidence* at 2-45 (1997) (hereafter "*Modern Scientific Evidence*"); Margaret A. Berger, *Evidentiary Framework*, Reference Manual on Scientific Evidence 40-117 (1994)(hereafter "*Evidentiary Framework*").

7 *See generally*, *Modern Scientific Evidence* § 1-2.3, at 7.

8 *Frye*, 293 F. 1013.

9 *Id.* at 1014 (emphasis added).

10 *Modern Scientific Evidence* § 1-2.3, at 7.

11 *Id.* at 8.

12 *See Daubert*, 509 U.S. at 588 (citing *Beech Aircraft Corp. v. Rainey*, 488 U.S. 153, 169 (1988)) (explaining that the drafting history of the Federal Rules of Evidence "makes no mention of *Frye*, and a rigid 'general acceptance' requirement would be at odds with the 'liberal thrust' of the Federal Rules and their 'general approach of relaxing the traditional barrier to 'opinion' testimony.'").

13 FRE 104(a) provides that "[p]reliminary questions concerning the qualification of a person to be a witness, the existence of a privilege, or the admissibility of evidence shall be determined by the court, subject to the provisions of subdivision (b) [pertaining to conditional admissions]. In making its determination it is not bound by the rules of evidence except those with respect to privileges." Fed. R. Evid. 104.

14 *See Evidentiary Framework* at 43 (emphasis added). FRE 702 states that "[i]f scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise." Fed. R. Evid. 702.

15 *Id.* at 46.

16 *See Daubert*, 509 U.S. at 579, 588.

17 *Daubert v. Merrell Dow Pharmaceuticals Inc.*, 951 F.2d 1128 (9th Cir. 1991).

18 *Daubert*, 509 U.S. at 585.

19 *Id.* at 589.

20 *See id.* (emphasis added).

21 Fed. R. Evid. 702.

22 *Daubert*, 509 U.S. at 590. Whether this process applies to disciplines other than the core sciences, e.g., engineering, architecture, etc., remains an open question.

23 *Id.*

24 *Id.*

25 *Id. See*, Gloria S. Caldwell, Scientific Evidence in Toxic Tort Drug and Medical Device Cases § 8.01 *in* Product Liability: Winning Strategies and Teahniques (Richard J. Heafey & Don M. Kennedy eds. 1999) (hereafter "Scientific Evidence in Toxic Tort Cases") (explaining that the scientific method involves four basic steps: (1) making observations; (2) generating a hypothesis based on those observations; (3) testing that hypothesis through carefully controlled experiments or studies; and (4) if necessary, refining the hypothesis and testing the refined hypothesis. The critical feature of the scientific method is hypothesis testing through rigorously controlled studies or experiments).

26 *Daubert*, 509 U.S. at 593-94.

27 *Id.* at 591.

28 *Id.* This has been called the "fit" standard.

29 *Id.* at 592.

30 *Id.* at 595 (emphasis added).

31 *Id.* at 591.

32 *General Electric Co. v. Joiner*, ___ U.S. ___, 118 S. Ct. 512 (1997).

33 *Daubert*, 43 F.3d 1311.

34 *Id.* at 1318. However, in specifically considering the admissibility of epidemiological studies proffered to establish causation, the court ruled that the proffered studies failed the "relevancy" prong of *Daubert I* since they demonstrated

relative risk values below 2. *Id.* at 1321. Relative risk is the ratio of the risk of disease among those exposed to a risk factor, to the risk of disease among non-exposed individuals. PDR Medical Dictionary 1554 (1st ed. 1995).

35 *Hall v. Baxter Healthcare Corp.*, 947 F. Supp. 1387 (D. Or. 1996).

36 *Id.* Silicone is a polymer of organic silicon oxides, which may be liquid, gel, or solid, depending on the extent of polymerization. It was formerly widely used in surgical implants, including breast implants. PDR Medical Dictionary 1620 (1st ed. 1995).

37 *Id.* at 1391, 1401. Connective tissue diseases are "a group of generalized [diseases] affecting connective tissue, especially those not inherited as mendelian [genetic] characteristics; rheumatic fever and rheumatoid arthritis were first proposed as such [diseases] and other so-called collagen [diseases] have been added." PDR Medical Dictionary 494 (1st ed. 1995). A specific definition of *atypical* connective tissue disease was not available.

38 In ruling on defendants' motions in limine, the court noted that ACTD was not by definition one of the classical autoimmune diseases such as lupus, scleroderma or rheumatoid arthritis. In fact, plaintiffs' own expert testified that ACTD did not yet exist as an hypothesis. The court later granted defendants' motions, finding that that ACTD was "at best an untested hypothesis" and that no scientific basis existed for any expert testimony as to its causes or presence in plaintiffs. *Hall*, 947 F. Supp. at 1402.

39 *See Hall*, 947 F. Supp. at 1392-93. The judge appointed four independent, unbiased technical advisors, each with expertise in one of the four key scientific areas, to assist in assessing the admissibility of plaintiffs' epidemiological, toxicological, rheumatological and chemical evidence. These advisors reviewed each party's proposed evidence in preparation for the Rule 104 hearing at which counsel, the court and technical advisors questioned experts on both sides. At the close of the hearing, the court asked each party to submit proposed questions which would guide the technical advisors in evaluating the proffered testimony and preparing their reports. The court considered the parties' proposed questions and prepared a list of questions subsequently submitted to each technical advisor. The technical advisors thereafter submitted individual reports, which counsel on each side could review. After reviewing the entire record and all of its advisors' reports, the court rendered the *Hall* opinion, which focused on defendants' motions in limine to exclude the testimony of plaintiffs' experts regarding causation.

40 This was the relevancy prong of FRE 702 as applied. The *Daubert II* Court applied a similar California standard, which required plaintiffs to show not merely that Bendectin increased the likelihood of injury, but that it more likely than not caused their injuries. *Daubert*, 43 F.3d at 1320.

41 *Hall*, 947 F. Supp. at 1402.

42 Autoimmune diseases comprise "any disorder in which loss of function or destruction of normal tissue arises from humoral or cellular immune responses of the individual to his own tissue constituents;" these disease may be systemic or organ specific. PDR Medical Dictionary 492 (1st ed. 1995).

43 "Lupus is a term originally used to depict skin erosion (as if gnawed) and is now used with modifying terms designating various diseases. . . ." PDR Medical Dictionary 1000 (1st ed. 1995).

44 Scleroderma is thickening and induration of the skin caused by new collagen formation, with atrophy of the follicles. This condition is either a manifestation of progressive systemic sclerosis or localized. PDR Medical Dictionary 1582 (1st ed. 1995).

45 Rheumatoid arthritis is "a systemic disease, occurring more often in women, which affects connective tissue." The dormant clinical manifestation of this disease involves many joints, especially those of the hands and feet, accompanied by thickening of articular soft tissue. The course is often "chronic and progressive, leading to deformities and disability." PDR Medical Dictionary 149 (1st ed. 1995).

46 *Daubert*, 509 U.S. at 594-95 (emphasis added).

47 *Hall*, 947 F. Supp. at 1399.

48 *Claar v. Burlington Northern R.R. Co.*, 29 F.3d 499 (9th Cir. 1994). Courts must examine whether experts arrive at their conclusions using scientific methodology and ensure that the conclusions go beyond subjective belief or unsupported speculation. *See id.* at 502.

49 *Lust v. Merrell Dow Pharmaceuticals, Inc.*, 89 F.3d 594, 598 (9th Cir. 1996). Based on Ninth Circuit reasoning, "[w]hen a scientist claims to rely on a method practiced by most scientists, yet presents conclusions that are shared by no other scientist, the district court should be wary that the method has not been faithfully applied [T]he district court can exclude the opinion if the expert fails to identify and defend the reasons that his conclusions are anomalous." *Id.*

50 *Hall*, 947 F. Supp. at 1401. Collectively, these findings seem to demonstrate a discernible trend in how some district courts assess the admissibility of scientific and technical evidence. In deciding whether evidence is admissible, these judges examined both an expert's methodology and the expert's ultimate conclusions, which by themselves could render testimony inadmissible.

51 PDR MEDICAL DICTIONARY 582 (1st ed. 1995) (emphasis added).

52 *Hall*, 947 F. Supp. at 1403.

53 *Id.*

54 *Id.* (emphasis added).

55 Plaintiffs must show that exposure to a causative agent more than doubles the risk of developing an alleged injury. The court also cites California law for the same proposition since, under California law, epidemiological studies must report a relative risk exceeding two for the study to establish causation under a preponderance standard.

56 As previously discussed, the court refused to admit any testimony regarding ACTD since such testimony would be without scientific basis. *Id.* at 1402.

57 *Id.* at 1413.

58 *Id.*

59 *Id.*

60 The *Daubert I* Court wrote: "The inquiry envisioned by Rule 702 is, we emphasize, a flexible one. Its overarching subject is the scientific validity – and thus the evidentiary relevance and reliability – of the principles that underlie a proposed submission. The focus, of course, must be *solely on principles and methodology, not on the conclusions that they generate.*" *Daubert I*, 509 U.S. at 594-95 (emphasis added).

61 *Hall*, 947 F. Supp. at 1399.

62 *See id.* at 1401 (explaining that "[t]his court need not and should not ignore any step in [the scientific] process, but must ensure that in each step, from initial premise to ultimate conclusion, the expert faithfully followed valid scientific methodology. In other words, this court need not accept, as scientifically reliable, any conclusions that good science does not permit to be drawn from the underlying data but which, instead, constitute 'unsupported speculation' or, . . . a 'leap of faith.'").

63 *Joiner*, 118 S.Ct. at 519.

64 864 F. Supp. 1310 (N.D. Ga. 1994).

65 78 F.3d 524, 533 (11th Cir. 1996) (emphasis added).

66 *Joiner*, 118 S. Ct. at 517. The Supreme Court dismissed the court of appeals "particularly stringent" standard of review as failing "to give the trial court the deference that is the hallmark of abuse of discretion review." *Id.*

67 The Court apparently left open the possibility of extrapolating from animal studies. It cited respondent's failure to extrapolate when criticizing the studies for their failure to link PCB exposure to human cancer:

Rather than explaining how and why the experts could have extrapolated their opinions from these seemingly far-removed animal studies, respondent chose "to proceed as if the only issue [was] whether animal

studies can ever be a proper foundation for an expert's opinion" Of course, whether animal studies can ever be a proper foundation for an expert's opinions was not the issue. The issue was whether *these* experts' opinions were sufficiently supported by the animal studies on which they purported to rely. The studies were so dissimilar to the facts presented in this litigation that it was not an abuse of discretion for the District Court to have rejected the experts' reliance on them.

Id. at 518 (quoting *Joiner*, 864 F. Supp. at 1324).

68 *Id.* at 519.

69 Nineteen states have accepted the essential principles contained in *Daubert I*; eight states have stated their openness to reconsidering their own rules regarding the admissibility of scientific evidence; eleven states have rejected *Daubert I*, favoring *Frye* or their own state version of general acceptance; four states are undecided, and three states have not considered the question. Modern Scientific Evidence § 1-3.0 n. 7, at 12.

70 *Minersville Safe Deposit Bank & Trust Co. v. BIC Corp.*, No. 95-5538, 1997 U.S. Dist. LEXIS 20897 (E.D. Pa. Dec. 23, 1997).

71 During a pre-trial hearing on plaintiffs' motion for a protective order regarding Jared's deposition, both plaintiffs and defendant acknowledged that Jared was incompetent to testify because of his age. The trial judge subsequently ruled that Jared was incompetent to testify, and neither party contested this ruling. Moreover, according to the *Minersville* court, Jared's incompetency did not automatically preclude the admissibility of his statements. For example, in sexual abuse cases courts often admit the *res gestae* statements of children because the hearsay exception for excited utterances reflects their trustworthiness (FRE 803(2)). The same holds true for statements made by young children for the purpose of medical treatment (FRE 803(4)). However, the *Minersville* court found that no Federal Rule of Evidence permitted statements made to fire investigators several days after the incident. Jared's out-of-court actions and words were not considered reliable within any established hearsay exception under FRE 803 or FRE 804. *Id.* at 6-8.

72 *Id.* (citing *In re Paoli R.R. Yard PCB Litigation*, 35 F.3d 717 (3d Cir. 1994)).

73 *United States v. Scheffer*, No. 96-1133, 1998 U.S. LEXIS 2303 (U.S. Mar. 31, 1998). Military Rule of Evidence 707 provides in part that: "(a) Notwithstanding any other provision of law, the results of a polygraph examination, the opinion of a polygraph examiner, or any reference to an offer to take, failure to take, or taking of a polygraph examination, shall not be admitted into evidence." *Id.* at *6-7.

74 Rule 707 also serves the legitimate governmental interests of (i) preserving the jury's core function of making credibility determinations at trial and (ii) avoiding

litigation over collateral issues involving the subjectivity of polygraph testing. *Id.* at *18-19.

75 *Scheffer*, 1998 U.S. LEXIS 2303, at *13.

76 *Daubert*, 509 U.S. at 593-94.

77 *See* United States v. Posado, 57 F.3d 428 (5th Cir. 1995). Miriam Posado and two other defendants were convicted of conspiracy to possess and possession with intent to distribute cocaine. On appeal the defendants argued that the trial court inappropriately excluded proffered polygraph evidence without conducting a hearing on the admissibility of such evidence under FRE 702, as required by *Daubert*. Even the prosecution conceded that a per se rule precluding polygraph evidence, without further inquiry, is not viable after *Daubert*, but argued alternatively that the proffered evidence was properly excluded under Rule 403. The court of appeals rejected "the government's invitation to short-circuit the *Daubert* analysis by finding that the district court implicitly relied on Rule 403 to exclude the evidence" and concluded that the district court improperly applied a per se rule excluding polygraph evidence. *Id.* at 432. The Fifth Circuit's decision did not hold that polygraph examinations were scientifically valid or that they would always assist the trier of fact. Rather, the court simply removed the obstacle of a per se rule against admissibility, which was based on "antiquated concepts" regarding polygraph reliability and legal precepts now overruled by the Supreme Court. The defendants' convictions were vacated and the case remanded to the district court for consideration of the evidentiary reliability and relevance of polygraph evidence under *Daubert* and FRE 702. *See also* United States v. Cordoba, 104 F.3d 225 (9th Cir. 1997). Defendant Frank Cordoba, also convicted of cocaine possession with intent to distribute, argued on appeal that the district court improperly excluded his proffered polygraph evidence, which he had offered to rehabilitate his credibility should the government attempt to impeach it. The district court granted a motion to exclude this evidence based on a per se rule precluding unstipulated polygraph evidence. In view of *Daubert*, the Ninth Circuit Court of Appeals vacated defendant's conviction and remanded the case to the district court for proceedings consistent with *Daubert's* scheme for assessing the admissibility of scientific evidence.

78 *Lanni v. New Jersey*, No. 96-3116, 1998 U.S. Dist. LEXIS 408 (D.N.J. Jan. 16, 1998).

79 *Id.* at *10 (emphasis added). Somehow, the concept that medical analysis and diagnosis (including psychological and neuropsychological testing), should not be included within the parameters of science seems strained, if not incredible.

80 *Id.* at *9-10 (citing *U.S. v. Velasquez*, 64 F.3d 844 (3d. Cir. 1995)).

81 *Id.* (citing *Holbrook v. Lykes Bros. S.S. Co.*, 80 F.3d 777, 782 (3d. 1996)).

82 *Id.*

83 Robinson v. Metro-North Commuter R.R. Co., 1998 U.S. Dist. LEXIS 373 (S.D.N.Y. Jan. 16, 1998).

84 *Id.* at *29-30.

85 *Id.* at *30.

86 Forsyth v. Eli Lilly & Co., No. 95-00185, 1998 U.S. Dist. LEXIS 541 (D. Haw. Jan. 5, 1998).

87 Mr. Forsyth's physician prescribed Prozac for treatment of depression. After ingesting the drug for approximately two weeks, Forsyth stabbed and killed his wife and then killed himself. Plaintiffs' complaint stated claims for negligence, strict liability and express and implied warranty. It also sought punitive damages.

88 The court noted that Lilly used different warnings for Prozac in foreign countries than those used in the United States. Warnings for Prozac in foreign countries indicated a stronger link between Prozac and suicide than did warnings used in the United States. For example, the Swedish warning for Prozac stated that the risk of suicide from Prozac ingestion "may increase initially," whereas the United States warning more ambiguously stated that the "risk is greater before remission." *Id.* at *14.

89 *Id.* at *25-26.

90 *See Daubert*, 43 F.3d 1311 at 1320-21 (for an epidemiological study to establish causation under a preponderance standard, the study must demonstrate a relative risk of at least 2, which means that the risk of developing an alleged disease more than doubles when compared to unexposed individuals).

91 Selection bias is error due to systematic differences in characteristics between those who are selected for epidemiological study and those who are not. Such error can obscure results derived from epidemiological studies. *See Modern Scientific Evidence* § 2-3.3 at 60.

92 *Forsyth*, 1998 U.S. Dist. LEXIS 541, at *33.

93 *Id.* at *35. *See also* Kannankeril v. Terminix Int'l, Inc., 128 F.3d 802, 807 (3d Cir. 1997) (the reliability of expert's opinion 'is not necessarily diminished by the fact that he himself did not perform a physical examination').

94

Although subjected to peer review, there is no indication that Dr. Bost's theories have been accepted by other scientists. There is also no indication of the error rate of Dr. Bost's studies. In fact, Plaintiffs admit that Dr. Bost's methodology "consisted of counting the number of people who died with a particular drug or substance in their body, and then analyzing the data as a possible relation between drug and death." This hardly seems

to conform to scientific standards and would confuse the jury under F.R.E. 702.

Id. at *37 (quoting *Daubert*, 43 F.3d at 1320-21).

95 *Moore v. Ashland Chemical, Inc.*, 151 F.3d 269 (5th Cir. 1998).

96 *Moore v. Ashland Chemical, Inc.*, 126 F.3d 679 (5th Cir. 1997).

97 *Moore*, 151 F.3d at 274.

98 *Id.* at 276.

99 Dr. Jenkins initially stated in his deposition that he knew of no reported literature that supported his causation opinion. During his in limine testimony outside the jury's presence at trial, Dr. Jenkins cited the Brooks article for the first time. The article had been relied upon by Dr. Alvarez, Moore's primary treating physician and a former student of Dr. Jenkins.

100 To support a conclusion based on such reasoning, the extrapolation or leap from one chemical to another must be reasonable and scientifically valid. *See Daubert*, 43 F.3d at 1319-20; *Cavallo v. Star Enterprise*, 892 F. Supp. 756, 769 (E.D. Va. 1995), *aff'd in part*, 100 F.3d 1150 (4th Cir. 1996).

101 *Moore*, 151 F.3d at 279 n.10.

102 *Id.*

103 To support this finding the *Moore* court relied upon *Cavallo*, 892 F. Supp. 756. In *Cavallo* the plaintiff allegedly suffered from respiratory illness resulting from exposure to aviation jet fuel vapors. The proffered expert relied significantly on the temporal proximity between exposure and the onset of symptoms. The *Cavallo* court concluded that this reliance was unsupported by appropriate validation, as required by *Daubert*, and ultimately unreliable.

104 *See Cavallo*, 892 F. Supp. at 774 (although "there may be instances where the temporal connection between exposure to a given chemical and subsequent injury is so compelling as to dispense with the need for reliance on standard methods of toxicology," this was not such a case because the plaintiff was not doused with jet fuel and there was no mass exposure to many people who suffered similar symptoms).

105 Also, in this single study involving exposure to Toluene fumes, experimental exposure level and duration were several times greater than plaintiff Moore's exposure.

106 The *Moore* court further noted that the district court was entitled to conclude that plaintiff Moore's personal habits and medical history made Dr. Jenkins' theory even less reliable. Moore had been a moderate to heavy cigarette smoker for twenty years, had recovered from pneumonia shortly before his contact with the chemicals, and had

suffered from childhood asthma, a condition yielding symptoms similar to RADS. *Id.* at 279.

107 *Cf.*, *Rosen v. Ciba-Geigy Corp.*, 78 F.3d 316, 318 (7th Cir. 1996) ("[u]nder the regime of *Daubert* . . . , a district judge asked to admit scientific evidence must determine whether the evidence is genuinely scientific, as distinct from being unscientific speculation offered by a genuine scientist.").

108 131 F.3d 1433 (11th Cir. 1997).

109 *Id.* at 1435-36.

110 *Kumho Tire Company, Ltd. v. Carmichael*, ___ U.S. ___, 119 S. Ct. 1167 (1999).

111 *Id.* at 1171.

112 *Id.* (citing *Daubert*, 509 U.S. at 593-94, which identifies peer review, testing, error rates, and acceptability in the relevant scientific community as useful factors in determining the reliability of a scientific technique or theory).

113 *Id.* at 1173.

114 *Id.*

115 *Id.* (quoting *Daubert*, 509 U.S. 592).

116 *Id.*

117 *Id.* at 1176.

118 *Id.*

119 *Id.* at 1175 (quoting brief for United States as amicus curiae at 19).

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