A155940 & A156706

IN THE

Court of Appeal

OF THE STATE OF CALIFORNIA
FIRST APPELLATE DISTRICT
DIVISION ONE

DEWAYNE JOHNSON,
Plaintiff and Respondent,

v.

MONSANTO COMPANY,
Defendant and Appellant.

Appeal from the Superior Court of the State of California
for the County of San Francisco, Case No. CGC-16-550128
Hon. Suzanne Bolanos

AMICI CURIAE BRIEF OF CALIFORNIA MEDICAL ASSOCIATION, CALIFORNIA DENTAL ASSOCIATION, AND CALIFORNIA HOSPITAL ASSOCIATION

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TABLE OF CONTENTS

TABLE OF AUTHORITIES

State Cases Page(s)

Out of State Cases

Federal Cases

Statutes

Other Authorities

INTRODUCTION

As the trial court noted, "this case required the jury to resolve the complex scientific question of whether Plaintiff's exposure to GBHs [glyphosate-based herbicides] caused his NHL [non-Hodgkin's lymphoma]." (Appellant's Appendix ("AA") 6146:10-11.) Answers to that and other scientific questions should be based on accepted scientific evidence and rigorous scientific reasoning, which is why both sides to this appeal argue there is a "*consensus*" of scientific thought on that question. Defendant argues there is a "*regulatory scientific consensus*" that glyphosate does not cause cancer in humans. (Appellant's Opening Brief ("AOB"), pp. 14-15. Emphasis in italics added.) Plaintiff argues there is a "*consensus among independent scientists* . . . that glyphosate is carcinogenic." (Respondent/Cross-Appellant's Combined Response and Opening Brief ("RB/XAOB"), p. 18. Emphasis in italics added.) Those opposing claims of scientific consensus reflect the opposing sides of the ongoing scientific debate whether GBHs cause NHL.

As Plaintiff points out, "'[t]he court does not resolve scientific controversies.'" (RB/XAOB, p. 72, quoting *Sargon Enterprises, Inc. v. University of Southern California* (2012) 55Cal.4th747,772.) "It is not the court's role to resolve these debates." (*Ibid.*, citing *Cooper v. Takeda Pharmaceuticals America, Inc.* (2015) 239Cal.App.4th555,589-590.) Even though

scientists continue to debate whether GBHs cause NHL, the jury in this case was required to resolve that complex scientific question.

As Plaintiff explains, the question was reframed as a question of *public policy* and the jury rejected the analysis of the official policymakers. (RB/XAOB, pp. 19 ["the jury was entitled to assign more credibility to Johnson's experts and IARC than to the EPA" and "European agencies' glyphosate assessments were likewise flawed"], 89 ["[t]he jury simply did not find the evidence from regulators credible"].) That strongly suggests the jury acted as policymakers themselves. (*Id.* at pp. 22 ["identifying risks of pesticides not yet recognized by the EPA"], 84 ["changing the world"].)

Amici Curiae California Medical Association, California Dental Association, and California Hospital Association submit that whenever scientific questions are reframed in litigation as questions of public policy, the relevant science will be on trial. Here, the relevant scientific literature, scientific investigators, and governmental agencies were on trial. Worse, the jury's answer was based on their policychoices, not on scientific consensus. Worst of all, the jury's analysis of risk and benefit was subject to emotional manipulation.

Amici take no position on the public policy question Plaintiff asked the jury to decide in this case.[1] Instead, *Amici* focus on the proper approach to *specific* causation in this and other cases that present complex scientific questions — cases that almost always are decided based on physician testimony. *Amici*'s purpose, like that of the authors of the *Reference Guide to Medical Testimony*, is to assist the Court by "emphasizing the tools and methods that doctors use to make decisions and highlighting the challenges in adapting them when testifying as medical experts." (John B. Wong, Lawrence O. Gostin, Oscar Cabrera, *Reference Guide to Medical Testimony*, Reference Manual on Scientific Evidence (3rd ed., 2011), pp. 694-695.) *Amici*'s point is that the answer to complex scientific questions such as that which the jury was required to resolve in this case should be based on accepted scientific evidence and rigorous scientific reasoning, not speculation and emotion.

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[1] Nor do *Amici* take a position on the issues of failure-to-warn and design defect (AOB, pp. 40-56), preemption (*id.* at pp. 64-67), regulatory documents (*id.* at pp. 68-73), punitive damages (*id.* at pp. 74-86; RB/XAOB, pp. 98-116), or the cost award (AOB, p. 94). This brief only addresses two issues on appeal, the speculative analysis of Plaintiff's retained physician expert witness on the complex scientific question of specific causation (AOB, pp. 56-63), and the jury's emotional analysis that was revealed by the excessive amount of noneconomic damages (*id.* at pp. 86-94).

INTERESTS AND CONCERNS OF *AMICI*

The California Medical Association ("CMA") is a nonprofit, incorporated, professional association of more than 44,000 member–physicians practicing in the State of California, in all specialties. The California Dental Association ("CDA") represents over 27,000 California dentists, more than 70 percent of the dentists practicing in the State. CMA's and CDA's memberships include most of the physicians and dentists engaged in the private practices of medicine and dentistry in California. The California Hospital Association ("CHA") represents the interests of more than 400 hospitals and health systems in California, having approximately 94 percent of the patient hospital beds in California, including acute-care hospitals, county hospitals, nonprofit hospitals, investor-owned hospitals, and multi-hospital systems. Thus, *Amici* represent much of the health care industry in California.

CMA, CDA, and CHA have been active before the Courts in all aspects of litigation affecting California health care providers. Such cases have included *American Bank & Trust Co. v. Community Hospital* (1984) 36Cal.3d359, *Barme v. Wood* (1984) 37Cal.3d174, *Fein v. Permanente Medical Group* (1985) 38Cal.3d137, *Central Pathology Service Medical Clinic, Inc. v. Superior Court* (1992) 3Cal.4th181, *Western Steamship Lines, Inc. v. San Pedro Peninsula Hospital* (1994) 8Cal.4th100, *College*

Hospital, Inc. v. Superior Court (1994) 8Cal.4th704, *Delaney v. Baker* (1999) 20Cal.4th23, *Bird v. Saenz* (2002) 28Cal.4th910, and *Covenant Care, Inc. v. Superior Court* (2004) 32Cal.4th771. More recently, CMA, CDA, and CHA filed briefs in *Howell v. Hamilton Meats & Provisions, Inc.* (2011) 52Cal.4th541, and *Rashidi v. Moser* (2014) 60Cal.4th718. Most recently, CMA, CDA, and CHA filed briefs in *Flores v. Presbyterian Intercommunity Hospital* (2016) 63Cal.4th75, and *Winn v. Pioneer Medical Group, Inc.* (2016) 63Cal.4th148.

CMA, CDA, and CHA have long been concerned about the potential for unpredictable and unreasonably large awards in professional negligence actions against health care providers. CMA, CDA, and CHA provided substantial input to the legislative process that led to enactment of the Medical Injury Compensation Reform Act ("MICRA"), and they continue to support MICRA's ongoing viability.

CMA, CDA, and CHA have advocated improvements in decision-making by judges and juries, primarily in personal injury litigation, where medical care is an important factual consideration. The MICRA statutes, for example, require damages to be assessed according to their various characteristics: economic damage versus noneconomic damage, past damage versus future damage, medical expense damage versus loss of earnings damage, and insurance-compensated damage versus

other compensation for damage. MICRA requires lawyers, judges, jurors, arbitrators, and all others involved in the resolution of medical malpractice cases to think more precisely about the reasons and the methods for calculating damages. In other words, MICRA has resulted in improved decision-making and fairness, particularly in assessing damages during jury trials, which in turn has improved the administration of justice in tort litigation generally.

Improved decision-making also is the reason why *Amici* filed briefs in the most significant cases on the issue of causation, *Mitchell v. Gonzales* (1991) 54Cal.3d1041, and *Viner v. Sweet* (2003) 30Cal.4th1232, and on the issue of expert witness opinion testimony on causation, *Jennings v. Palomar Pomerado Health Systems, Inc.* (2003) 114Cal.App.4th1108, and *Sargon Enterprises, Inc. v. University of Southern California, supra,* 55Cal.4th747. Most recently, *Amici* filed a brief on the specific causation issue in *Johnson & Johnson Talcum Powder Cases, Echeverria v. Johnson & Johnson* (2019) 37Cal.App.5th292.

Amici reassure the Court that this brief was not authored, either in whole or in part, by any party to this litigation or by any counsel for a party to this litigation. No party to this litigation or counsel for a party to this litigation made a monetary contribution intended to fund the preparation or submission of this brief.

Some funding for this brief was provided by organizations and entities that share *Amici*'s interests, including physician-owned and other medical and dental professional liability organizations and nonprofit entities engaging physicians, dentists, and other health care providers for the provision of medical services, specifically The Cooperative of American Physicians, Inc., The Dentists Insurance Company, The Doctors Company, Kaiser Foundation Health Plan, Inc., Medical Insurance Exchange of California, Norcal Mutual Insurance Company, and The Regents of the University of California.

STATEMENT OF THE CASE

Factual Background

Plaintiff was concerned about a skin rash, so he spoke with various physicians at Kaiser. In 2014, based on tests and examinations of him, extensive imaging of his body and biopsies of his lymph nodes (Reporter's Transcript on Appeal ("RT") 3124:13-18), they diagnosed the cause of his skin irritation as mycosis fungoides ("MF"), one type of the immune system diseases collectively known as non-Hodgkin's lymphoma ("NHL"). Based on recent advances in research, technology, and medical knowledge,[2] those physicians were able to more precisely diagnose the disease as cutaneous T-cell lymphoma ("CTCL"). Plaintiff's primary treating dermatologist at Kaiser referred him

[2] Those recent advancements are summarized in the *Reference Guide on Medical Testimony:* "With advances in medical technologies in diagnosis and preventive and symptomatic treatment, the practice of medicine will be profoundly altered and redefined. For example, consider lymphoma, a blood cancer that used to be classified simply by appearance under the microscope as either Hodgkin's or non-Hodgkin's lymphoma. As science has evolved, it is now further classified by cellular markers that identify the underlying cancer cells as one of two cells that help with immunity (protecting the body from infection and cancer): T cells or B cells. Current research is attempting to characterize those cells further by identifying underlying genetic and cellular markers and pathways that may distinguish these lymphomas and provide potential therapeutic targets." (Reference Manual, *Reference Guide on Medical Testimony,* pp. 636-637.)

to Stanford, where the treatment of Plaintiff's disease was equally state of the art, including drugs that were so new they were still in the clinical-trial stage (RT3158:24-3159:7) and the total electron beam radiation therapy that was available at Stanford. (RT3160:6-10.)

Plaintiff was concerned that the cause of his MF was his use of pesticides and other chemicals at his work as a groundskeeper for a school district. In 2015, Plaintiff emailed his physician, explaining that "I had an exposure to a chemical at work called Ranger Pro. I came into industrial health so it's on record and hopefully it doesn't send my current situation into a frenzy. So far it's been just a little irritated, red, but nothing too extreme." (RT3143:15-20.) His physician responded, "Thanks for letting me know. I'm not familiar with this chemical but will look into it. I do not anticipate that it will make things much worse, but let's keep an eye and let me know if you notice your skin worsening." (RT3143:20-3144:2.) His physician then researched whether there was a relationship between Ranger Pro and CTCL, research that physician was very qualified to do because he had a master's degree in public health involving epidemiology. (RT3119:2-8 ["a more in-depth way of how to review the literature"].) He did not "get anything substantial back" from that review of the epidemiologic literature (RT3144:7-11), however.

It is undisputed that, in most cases, the cause of MF is unknown. Even Plaintiff's expert witness on specific causation, Dr. Chadi Nabhan, acknowledged it is idiopathic 80 to 90 percent of the time. (RT2996:20-24 ["the majority of T-cell lymphomas we don't know the cause"], 2997:20-23 ["I know that for sure"].) He reviewed the records and depositions of Plaintiff's treating physicians at Kaiser and Stanford, from which he learned that none of those treating physicians claimed to know what caused the MF. That was significant because Plaintiff's expert acknowledged the expertise of those treating physicians regarding NHL, and he acknowledged that Dr. Hoppe and Dr. Kim at Stanford were experts in MF specifically, so much so that they could be characterized as "frontrunners." (RT2988-2996.)

Even though the consensus of opinion of Plaintiff's treating physicians was that the cause of Plaintiff's MF was unknown, Plaintiff's expert Dr. Nabhan disagreed. He claimed to have knowledge that was superior to the knowledge of those treating physicians because he had reviewed certain "epidemiological literature":

> Again, none of them really reviewed the epidemiologic literature. As I told you before, even before I reviewed the literature myself in the spring of 2016, I was not aware of the association, but after reviewing the literature, I became

> aware. So, I don't know if they have actually had a chance to review all of the literature that we went through today

(RT2989:17-24.)

> [A]ll of these physicians were treating physicians. I'm not really aware that they took the time to actually review the epidemiologic literature. I'm not sure they actually looked at the IARC Monograph or any of these much, so, you know, again, unless you actually review the literature, unless you look at what is published, you probably can't comment on that. You know, again, it will take time and effort to look at the literature before you provide an opinion as to whether there's an explanation or not.

(RT2990:18-2991:2.) The "IARC Monograph" to which Dr. Nabhan was referring was a document from the International Agency on Research of Cancer, a subdivision of the World Health Organization (RT2816:3-6, 2819:5-10), which concluded that "glyphosate is probably carcinogenic to humans." (RT2819:25.)

To his credit, Plaintiff's expert admitted that he was not an epidemiologist and that to rely upon *some* of the epidemiological studies would *not* be scientific:

> You have to keep in mind there is absolutely no perfect epidemiological studies. There's no perfection in these studies whatsoever. There are some that may be better than others, but there is no perfect epidemiologic.
>
> I'm not an epidemiologist, but I can assure you there is no epidemiologist that will ever tell you there is a perfect epidemiologic study.

> Nonetheless, I reviewed the epidemiologic studies. Some of them were positive in terms of association and causality; some of them were negative in terms of association or causality. So you have to look at the total body of evidence, the positive and the negative.

(RT2789:11-24.) Stated slightly differently, a scientist should not "cherry pick" only those epidemiological studies that support his hypothesis.

The causal reasoning by which Dr. Nabhan ruled out the other possible causes of the disease in Plaintiff's specific case was the single fact of Plaintiff's age at the time of diagnosis, 43. "Red flag" is the metaphor by which Dr. Nabhan explained this causal reasoning, in particular how he ruled out all of the unknown ("idiopathic") causes.[3] (RT2884:17-2844:19 ["it raises a red flag"].) That certainly was how the trial court understood his causal reasoning process. (AA6148:14-15 ["a 'red flag' that his cancer is not likely to be idiopathic and more likely to be caused by an exposure"].) As the trial court summarized Plaintiff's

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[3] As Plaintiff now explains it, the age at which Plaintiff developed NHL is "a 'red flag' suggesting to [Dr. Nabhan] there was something behind the NHL." (RB/XAOB, p. 42, citing RT2843:2-2844:19.) The problem is, a "red flag" is a warning; it is not evidence of causation and certainly is not proof. As a metaphor for a specific thought process, a "red flag" is nothing more than a *suspicion*, that is, speculation.

evidence, it was the "linchpin" on specific causation. (AA6146:12-27.)

Procedural History

At the trial, the central issue was causation. (AA6146:10-12 ["this case required the jury to resolve the complex scientific question of whether Plaintiff's exposure to GBHs caused his NHL"].) According to Plaintiff, glyphosate causes MF generally, and glyphosate was the cause of his MF specifically. According to Defendant, glyphosate does not cause MF generally, and glysophate did not cause Plaintiff's MF specifically.

During closing argument, Plaintiff's counsel conceded that the epidemiological studies, the animal studies, and the mechanism studies, by themselves, are not sufficient to establish specific causation. (RT5063:15-18.) "But when you put all three together, then you have causation." (RT5063:18-19.)

As summarized by Plaintiff's counsel, "there's a lot of evidence here about the epidemiology, but let's be clear. Nobody is saying it gets you there. Nobody." (RT5072:16-18.) He also told the jury the relevant animal studies were not sufficient to establish causation. (RT5063:17-18.) He argued that the defense, by relying upon such categories of proof, "atomized the evidence" and "that's not science." (RT5063:4,7.) Rather, he argued, "when you look at the totality of the evidence, it causes

cancer." (RT5063:13-14.) He urged the jury to be policymakers and render a verdict "that actually changes the world" (RT5058:2), promising that "your verdict will be heard around the world." (RT5127:21-22.) In other words, he reframed the question of complex science in this case into a question of public policy.

Both sides attacked the relevant science, with Plaintiff attacking the EPA and Defendant attacking the International Agency for Research on Cancer ("IARC"). For example, Plaintiff argued to the jury that the EPA "has made mistakes before. Government agencies make mistakes. We've heard time and time against about the various things that we found out were cancer after decades, if not hundreds of years, of thinking we were safe." (RT5066:20-23.) For another example, Defendant argued the IARC "didn't have the Journal of the National Cancer Institute 2018. They didn't have all the animal studies. They had nowhere near all of the genotoxicity studies. They had a very limited universe to look at." (RT5182:19-23.)

Defendant argued Plaintiff's counsel engaged in misconduct, and Defendant asked for mistrial. (RT1534:12-1536:16.)

The jury agreed with Plaintiff, apparently relying upon that "linchpin" opinion testimony. (AA6146:12-27.) The jury awarded a total of $289,253,209.35. Of that, $2,253,209.35 was

compensatory damages for economic loss. $37,000,000 was compensatory damages for noneconomic loss. $250,000,000 was punitive damages. (AA6147:1-3.)

Defendant filed a motion for judgment notwithstanding the verdict and motion for new trial, which Plaintiff opposed but which the court tentatively granted. The court explained,

> Both Plaintiff's and Defendant's experts testified that glyphosate has developed one of the largest bodies of scientific data of any substance in the world. Apart from the IARC evaluation, all of the worldwide regulators continue to find that glyphosate-based herbicides (hereinafter "GBH products") are safe and not carcinogenic, including US EPA, EFSA, ECHA, Australia, New Zealand, and the German BfR authority.

(AA6147:4-9.)

Following oral argument, and after juror letters and newspaper commentary imploring the trial court not to grant the motions (see AOB, pp. 37-38), the JNOV and motion for new trial were denied. (AA6154:2-3.)

The court acknowledged in its order granting new trial conditionally as to punitive damages that "the compensatory damages award of $39,253,209 is extremely high for a single plaintiff and consists largely of non-economic damages[.]" (AA6153:7-8.) Also, "Monsanto is correct that future damages are limited by a plaintiff's projected remaining lifespan." (AA6149:23-25, citing *Bigler-Engler v. Breg, Inc.* (2017)

7Cal.App.5th276,305-306.) The court denied the motion for new trial nevertheless, reasoning that the jury followed the jury instructions. (AA6149:25-28.) Plaintiff accepted the remittitur. (RB/XAOB, p. 15.)

Defendant appealed, and Plaintiff cross-appealed.

On the issue of causation, Defendant argues "there is no substantial evidence of causation" (AOB, p. 16) because the opinions of Plaintiff's experts "are speculative and entitled to no evidentiary weight" (AOB, p. 17) and "the jury was inflamed" (Combined Appellant's Reply Brief and Cross-Respondent's Brief ("ARB"), p. 93.) Plaintiff rejects the analysis of the EPA and argues the opinions of his expert witnesses "are supported by the findings of the International Agency for Research on Cancer." (RB/XAOB, p. 18.)

On the issue of noneconomic damages, according to Defendant, "the $33 million award in future noneconomic damages is excessive as a matter of law" because it is "the result of improper argument of counsel fueling the passions and prejudices of the jury[.]" (AOB, p. 18; ARB, p. 93 ["the jury was inflamed"].) According to Plaintiff, "[t]he compensatory damages were not grossly disproportionate to Johnson's extreme suffering." (RB/XAOB, pp. 79-85. Emphasis in heading omitted.)

SUMMARY OF *AMICI'S* ANALYSIS

There are two features of this case that *Amici* submit are suspicious. The first is that Dr. Nabhan's conclusion about (and, therefore, the jury's finding of) specific causation was contrary to the consensus of Plaintiff's treating physicians — namely, that the cause is unknown. That suggests his analysis was based on speculation, which would be wrong. The second is that Plaintiff's argument for (and, therefore, the jury's award of) noneconomic damages $37,000,000 was calculated at the flat rate of $1,000,000 per year. That suggests the analysis was based on emotion, which also is wrong.

Amici advocate analysis that is based on scientific reasoning, not speculation and emotion.

In medicine, as in law, causation is established by reasoning, not by speculation.[4] Deductive exclusion of the hypothetical alternatives, which is known in the law as "*but for*" analysis, is the type of causal reasoning that physicians use. Dr. Nabhan himself used it in expressing his conclusion.

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[4] Like the authors of the *Reference Guide to Medical Testimony*, one of *Amici*'s purposes is "to introduce the practice of medicine to federal and state judges, emphasizing the tools and methods that doctors use to make decisions and highlighting the challenges in adapting them when testifying as medical experts." (Reference Manual, pp. 694-695.)

(RT2849:16-17 ["But you can be very certain that if he had not been exposed, he would have not had it today"], RT2887:14-20 ["but for Mr. Johnson's exposure to Roundup, he would not have developed non-Hodgkin's lymphoma"].) He claimed to have ruled out all the alternative explanations by use of "a process whereby the physician begins by 'ruling in' all possible causes of the plaintiff's illness then 'rules out' the least plausible causes until the most likely cause remains." (AA6148:8-10].)

Dr. Nabhan did not rule out the alternatives, however, which explains why Plaintiff argued (and the trial court agreed) that "Dr. Nabhan did not need to eliminate every other possible cause of Plaintiff's cancer. Because there is no substantial evidence of an alternative explanation for Plaintiff's NHL, the jury here was free to give weight to Dr. Nabhan's testimony that GBHs were a *substantial factor* in causing the cancer." (AA6149:12-15. Emphasis added.) But Plaintiff cannot excuse a claimed failure to rule out alternative explanations simply by stating the question of whether the defendant's tort caused the plaintiff's harm in terms of the "*substantial factor*" legal standard. (RB/XAOB, pp. 17, 72); this contradicts the fundamental idea behind the differential diagnosis approach.

Here, Dr. Nabhan had to speculate that Plaintiff was different from the patient population with which Dr. Nabhan was familiar. As the trial court noted, Dr. Nabhan "is unable to

identify a cause of NHL in the majority of his patients." (AA6148:1-2.) At best, in using the "differential diagnosis" approach to rule out all alternative explanations where the cause is unknown in the vast majority of patients, Dr. Nabhan was expressing little more than a conclusion. After all, as even the trial court recognized, the differential diagnosis "approach is only valid if general causation exists and a substantial proportion of competing causes are known." (See also, Reference Manual, *Reference Guide on Epidemiology*, p. 618.)

Such medical testimony invites the jury to speculate. In this case, there is reason to suspect the jury's decision also may have been based on emotion, rather than reason.

Plaintiff does not deny or attempt to explain the per diem damages argument by which he achieved the obviously arbitrary amount of $1,000,000 per year for noneconomic damages (RB/XAOB, pp. 26, 79), or the other arguments Defendant claimed to have inflamed the jury (*id.* at pp. 84-85). The trial court characterized the compensatory damages award as "extremely high for a single plaintiff and consists largely of non-economic damages which the due process clause recognizes has a punitive element." (AA6153:7-9.) *Amici* submit that, precisely because that "extremely high" award of compensatory damages has an obviously "punitive element," there is a strong indication the jury was inflamed. Then, after rendering that award, the

jury went on to award an additional $250,000,000 in punitive damages.

It is quite possible that the jury was inflamed not only in making their decision on damages but also in making their decision on causation. As noted above, California health care providers are very familiar with tort litigation, specifically professional negligence litigation, in which plaintiffs pursue a strategy of demonizing the defendant physicians, dentists, hospitals, and/or other health care providers. Plaintiffs do so not only to achieve large damage awards, but also to persuade juries to decide issues of negligence and causation based on emotion, rather than reason.

Amici submit that it is a problem for which the best solution is judicial insistence upon more reason and less emotion in the litigation process, both as it relates to causation and to damages. Overall, the point is that this case is suspicious because of two problems in tort litigation that health care providers have seen in professional liability litigation. First, in those cases where causation turns on complex questions of science, the decision-making sometimes is based on speculation. Second, the decision-making sometimes is based on emotion. *Amici* submit that all litigation in which there are such complex questions of science should be based on evidence, analyzed with reason.

LEGAL ANALYSIS

I. THE ANSWERS TO COMPLEX SCIENTIFIC QUESTIONS SHOULD BE BASED ON ACCEPTED SCIENTIFIC EVIDENCE

A. *Amici* Are Concerned About The Implications Of The Way In Which Specific Causation Was Analyzed In This Case

California physicians have had experience in litigation in which an entire technique or technology is suspected to be the cause of cancer or other serious disease. The most dramatic example was the torrent of litigation against plastic surgeons after the FDA banned silicone-gel-filled breast implants in 1992 out of fear they caused autoimmune and connective tissue diseases. There were huge damages awards against the manufacturers and the physicians involved, after which there was a $4.25 billion class action settlement. Only then, as documented by Dr. Martha Angell, Executive Director of the New England Journal of Medicine, in her book, Science on Trial: The Clash of Medical Evidence and the Law in the Breast Implant Case (W. W. Norton & Co. 1996), did rigorous scientific studies begin to show that there was no significant link between breast implants and disease.

Dr. Angell explained the basic concern: "In product liability cases, expert testimony by scientists is usually central.

The question of causation is, after all, a scientific one. But scientific questions are handled very differently in the courtroom than they are outside the courtroom. The difference turns on the relationship between evidence and opinion." (*Id.* at, p. 116.) "[S]cientific testimony in the courtroom is often at most only marginally related to scientific evidence." (*Id.* at p. 132.)

That is why the causation issue in this case concerns *Amici.* The jury relied upon the testimony of Plaintiff's physician expert witness whose opinion on specific causation was based on "differential diagnosis" type methodology that physicians routinely use to diagnose their patients' diseases. He did so even though the cancer in question, non-Hodgkin's lymphoma, is "idiopathic" in 80 to 90% of cases. His causal reasoning, as it was summarized by the trial court, was that expert "explained that because Mr. Johnson was much younger than the average patient who developed the disease[,] this raised a 'red flag' that his cancer is not likely to be idiopathic and more likely to be caused by an exposure." (AA6148:13-15.) Like the opinions of the expert witnesses in prior cases where *Amici* filed *Amicus* briefs, particularly *Jennings* and *Sargon,* this opinion not only was simplistic, it was flawed.

Judging by the jury award of $37,000,000 in noneconomic damages, based on the obviously arbitrary finding of $1,000,000 per year, it appears the verdict was the result of passion and

prejudice. That certainly would be equally true if this was a case against a physician for failure to timely diagnose and treat NHL.

B. *Amici* Also Are Concerned About The Potentially Adverse Effect Of Chemicals On Humans

On the basic question of science that is at the core of this case, California health care providers are concerned about the impact of chemicals in the environment on all of us. They respect the efforts of scientists who research the many complex scientific questions that entails.

As scientists themselves, health care providers understand toxicology and its central tenets**.** As explained in the Reference Manual, one of the central tenants of toxicology is that "'the dose makes the poison'; this implies that all chemical agents are intrinsically hazardous—whether they cause harm is only a question of dose. Even water, if consumed in large quantities, can be toxic." (Reference Manual, *Reference Guide on Toxicology*, pp. 636-637.) The question of "dose" refers to exposure.

Health care providers also understand exposure science. "Understanding exposure is essential to understanding whether the toxic properties of chemicals have been or will be expressed. Thus, claims of toxic tort or product liability generally require expert testimony not only in medicine and in the sciences of epidemiology and toxicology, but also testimony concerning the

nature and magnitude of the exposures incurred by those alleging harm." (Reference Manual, *Reference Guide on Exposure Science*, pp. 505-506.)

Health care providers further understand that the analysis of causation requires more than just toxicology and exposure science, however. It also requires analysis of the relevant epidemiology. For example,

> A plaintiff may have been exposed to a dose of the agent in question that is greater or lower than that to which those in the study were exposed. A plaintiff may have individual factors, such as higher age than those in the study, that make it less likely that exposure to the agent caused the plaintiff's disease. Similarly, an individual plaintiff may be able to rule out other known (background) causes of the disease, such as genetics, that increase the likelihood that the agent was responsible for that plaintiff's disease. Evidence of a pathological mechanism may be available for the plaintiff that is relevant to the cause of the plaintiff's disease. Before any causal relative risk from an epidemiologic study can be used to estimate the probability that the agent in question caused an individual plaintiff's disease, consideration of these (and related) factors is required.

(Reference Manual, *Reference Guide on Epidemiology,* pp. 615-616.)

And finally, and perhaps most importantly, health care providers understand that in tort litigation, medical testimony almost always is required to show specific causation. For that,

triers of fact must rely upon medical opinion testimony, whether of treating physicians or retained physician expert witnesses. Triers of fact are required to judge that testimony in terms of the applicable legal standard, however, which means, "[a]lthough treating physicians generally are concerned less about discovering the actual causes of the disease than treating the patient, the testifying medical expert will need to tailor his or her opinions in a way that conforms to the legal standard of causation." (Reference Manual, *Reference Guide to Medical Testimony*, p. 694.)

II. WHERE THE ISSUE OF CAUSATION IS A COMPLEX SCIENTIFIC QUESTION, THE ANALYSIS SHOULD BE SCIENTIFICALLY RIGOROUS

A. In Medicine, As In Law, Causation Is Established By Logical Reasoning, Not By Speculation

In this case, as in prior cases where *Amici* have filed briefs, *Amici* are concerned that causation be decided based on reason and not speculation. There are three reasons why *Amici* are concerned.

First, causation often is the central factual issue in medical *professional liability* cases, just as it is in *product liability* cases such as this, and it is a factual issue that fundamentally is scientific in nature. That is because (1) causation is a factual

issue for which "the interpretation of all scientific evidence" is "germane" (Reference Manual, Preface, p. *xiii*), and (2) legal disputes "increasingly involve the principles and tools of science." (Reference Manual, Introduction, p. 2.)

Second, causation opinions by physician expert witnesses in professional liability cases, just as in this product liability case, often are based on the analytical process known as "*differential diagnosis*," or occasionally on the variation that was applied in this case, "*differential etiology*." That process usually is not well understood by non-scientists.

Third, patients who pursue litigation often ask their *treating physicians* to testify as experts on specific causation in professional liability cases, as well as in most product liability cases,[5] and failing that find non-treating physicians to testify as *retained experts*. Either way, whether as treating physicians or as retained experts, physicians sometimes are persuaded to step out of their usual approach to diagnosing and treating specific patients and to step into a different role testifying in court to opinions on causation.

Amici submit that physician expert witness opinion testimony in the courtroom on the issue of causation should

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[5] Here, however, the treating physicians at Stanford were not asked by Plaintiff to testify, apparently because none of them believed that glyphosate caused Plaintiff's MF.

reflect the same high level of scientific reasoning that is expected of physicians in diagnosing and treating patients in the office, clinic, or hospital. In other words, it should be with "'the same level of intellectual rigor.'" (*Sargon, supra,* 55Cal.4th747,772, quoting *Kumho Tire Co., Ltd. v. Carmichael* (1999) 526U.S.137, 152.)

There is a fundamental similarity of medical diagnostic reasoning using differential diagnosis methodology, on the one hand, and legal causation analysis, on the other. *Amici*'s point is that **it is the same basic approach: ruling out the hypothetical alternative.** In medicine, it is properly analyzed by "eliminating a known and competing cause[.]" (Reference Manual, *Reference Guide on Epidemiology,* p. 617.) In law, it is properly analyzed in terms of but-or or counterfactual causation, which is accomplished by comparing and evaluating "hypothetical situations concerning what might have happened," such that "the crucial causation inquiry is what would have happened." (*Viner v. Sweet, supra,* 30Cal.4that1242. Emphasis omitted.)

Amici also submit that the first and perhaps most important indication of the "intellectual rigor" of a physician expert witness's opinion on the question of specific causation is whether the opinion was *based on* the consensus of medical and scientific opinion for ruling out the hypothetical alternative. If not, was it at least *consistent* with the consensus of medical and

scientific opinion? If not even that, then what other scientific approach that the physician applies in his own practice was applied by him in his role as expert witness to rule out the hypothetical alternative?

The causal reasoning offered by Plaintiff's expert witness physician Dr. Nabhan, as summarized by the trial court, was the "red flag" that Plaintiff was younger than the average NHL patient ruled out all unknown causes. (AA6148.) The obvious implication is that all unknown causes are age related. The problem with that testimony is that there is no evidence to support that assumption. Rather, that was a speculative leap that Dr. Nabhan made.

B. Expert Opinion Testimony On Causation Should Have "The Same Level Of Intellectual Rigor That Characterizes The Practice Of An Expert In The Relevant Field"

The Court of Appeal in *Cooper v. Takeda Pharmaceuticals America, Inc.* (2015) 239Cal.App.4th555 (hereafter "*Cooper*"), upon which both Plaintiff and Defendant primarily rely, recognized the standards for admission of expert testimony and applied them to evaluation of posttrial motions. (239Cal.App.4th at588,576-577,590-592, citing *Sargon Enterprises, Inc. v. University of Southern California*, *supra*, 55Cal.4th747, as well as *Sargon Enterprises, Inc. v. University of Southern*

California (2013) 215Cal.App.4th1495 ("*Sargon II*"); *Jennings v. Palomar Pomerado Health Systems, Inc.* (2003) 114Cal.App.4th 1108,1117; *Bushling v. Fremont Medical Center* (2004) 117Cal.App.4th493.)

In *Sargon,* the Court explained what California Evidence Code sections 801, subdivision (b), 802, and 803 required for the expert witness opinion testimony in that case, relating to proposed testimony on defendant's causation of plaintiff's claimed lost profits, to be admissible. The Court's "Discussion" began, "This case stands at the intersection of two legal principles: (1) Expert testimony must not be speculative, and (2) lost profit damages must not be speculative. We will discuss both principles, then apply them to this case." (55 Cal.4that769.) The Court then explained,

> under Evidence Code section 801, the trial court acts as a gatekeeper to exclude speculative or irrelevant expert opinion. As we recently explained, "[T]he expert's opinion may not be based 'on assumptions of fact without evidentiary support [citation], or on speculative or conjectural factors. . . . [¶] Exclusion of expert opinions that rest on guess, surmise or conjecture [citation] is an inherent corollary to the foundational predicate for admission of the expert testimony: will the testimony assist the trier of fact to evaluate the issues it must decide?' (*Jennings v. Palomar Pomerado Health Systems, Inc.* (2003) 114Cal.App.4th1108,1117 [8Cal.Rptr.3d363].)"

(*People v. Richardson* (2008) 43Cal.4th959,1008 [77Cal.Rptr.3d163,183P.3d1146]; accord, *People v. Moore* (2011) 51Cal.4th386,405 [121Cal.Rptr.3d280,247P.3d515].)

(55Cal.4that770.) The Court held,

> under Evidence Code sections 801, subdivision (b), and 802, the trial court acts as a gatekeeper to exclude expert opinion testimony that is (1) based on matter of a type on which an expert may not reasonably rely, (2) based on reasons unsupported by the material on which the expert relies, or (3) speculative.

(55Cal.4that771-772.)

> The goal of trial court gatekeeping is simply to exclude "clearly invalid and unreliable" expert opinion. (Black *et al*., *Science and the Law in the Wake of* Daubert: *A New Search for Scientific Knowledge* (1994) 72Tex.L.Rev.715, 788.) In short, the gatekeeper's role "is to make certain that an expert, whether basing testimony upon professional studies or personal experience, employs in the courtroom **the same level of intellectual rigor that characterizes the practice of an expert in the relevant field**." (*Kumho Tire Co. v. Carmichael, supra,* 526 U.S. at p. 152, 119S.Ct.1167.)

(55Cal.4that772. Emphasis in bold added.)

C. Causal Reasoning In Both Medicine And Law Is An "Alternative Reasoning Process," That Is, "Ruling Out" All The Alternatives

1. Admittedly, Medicine And Law Use Different Terminology

While the medical and legal professions use the same words in discussing causation, they give the words different meanings. The solution to that problem is to recognize that, whether discussed in the clinic or in the courtroom, the concepts involve the same basic issues.

> [M]edical terms shared in common by the legal and medical professions have differing meanings, for example, differential diagnosis, differential etiology, and general and specific causation. The basic concepts of diagnostic reasoning and clinical decisionmaking and the types of evidence used to make judgments as treating physicians or experts involve the same overarching theoretical issues: (1) **alternative reasoning processes**; (2) weighing risks, benefits, and evidence; and (3) communicating those risks.

(Reference Manual, *Reference Guide to Medical Testimony*, at pp. 740-741. Emphasis in bold added.)

As the trial court in this case explained it, Plaintiff's physician expert witness

> Dr. Nabhan elected to conduct a type of causation analysis known as a differential diagnosis, or differential etiology, in reaching the opinion that GBHs caused Plaintiff's NHL. Differential diagnosis is a process whereby the physician

> begins by "ruling in" all possible causes of the plaintiff's illness then "rules out" the least plausible causes until the most likely cause remains. The final result of a differential diagnosis forms the basis of the physician's conclusion regarding what caused the plaintiff's illness.

(AA6148:6-12, citing *Cooper v. Takeda Pharmaceuticals America, Inc.*, *supra,* 239Cal.App.4th555,565-566.) Or, as Dr. Nabhan explained it, "for some situations where we have several possibilities, we look at other causing factors that may be contributing to this particular cancer and we try to delete them" (RT2815:6-9) — that is, "you delete the ones that are not associated or they're not proven, and you are left up with one or two or three or whatever factors you're left with that may be related to the disease." (RT2815:13-17.) Overall, he characterized it as "process of elimination or process of exclusion." (RT2842:3-4.)

The point, as will be explained in the following two subsections, is that both medical and legal analyses of causation are based on a deductive process of ruling out the hypothetical alternatives. In medicine, this process is commonly referred to as the "ruling in" the disease causing a patient's symptoms and signs. In law, it is commonly referred to as the "but-for" test of factual causation.[6] Either way, the process "requires evaluation

[6] The deduction driven analysis of "factual causation" is distinguished from the policy driven analysis commonly known in

of hypothetical situations concerning what might have happened, but did not," and "[t]his is so because the very idea of causation necessarily involves comparing historical events to a hypothetical alternative." (*Viner v. Sweet, supra,* 30Cal.4that1042.)

In both medicine and law, the question of causation must be analyzed from both general and specific vantage points. The first question that must be answered is

> whether the putative source of the harm is in fact capable of causing such harm. If the defendant's conduct or product could not cause the harm claimed, perhaps liability should be excluded on the ground that the defendant did not breach a duty of care or that the harm was outside the scope of the risk created by the defendant. However, the usual approach now treats this problem as one of causation. Courts say that when the defendant's conduct is incapable of causing the harm claimed by the plaintiff, the plaintiff has failed to prove general or generic causation. Although such general causation is necessary to plaintiff's case, it is not sufficient; the plaintiff must then go further and present evidence that causation is not merely scientifically possible, but that it existed in her particular case.

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the past as "legal causation," sometimes also referred to in the past as "proximate cause." That concept now is being referred to as "scope of liability." (See, *e.g.,* Dobbs *et al.*, The Law of Torts (2d ed. 2011) vol. 1, ch. 18, "Scope of Liability (Proximate Cause)," § 198 et seq., pp. 679-760, and Restatement Third of Torts (Liability for Physical and Emotional Harm), § 29, "Scope of Liability (Proximate Cause)," pp. 492-542.)

(Dobbs, *et al.*, The Law of Torts, § 184, p. 616.)

The methodology of differential diagnosis or etiology is used to determine specific causation, *i.e.*, to differentiate between the alternative possible general causes of the disease in question. If most of the general causes are not known, the methodology is unreliable.

As it is explained in the Reference Manual,

> this idea of eliminating a known and competing cause is central to the methodology popularly known in legal terminology as **differential diagnosis** but is more accurately referred to as **differential etiology**. Nevertheless, the logic is sound if the label is not: Eliminating other known and competing causes increases the probability that a given individual's disease was caused by exposure to the agent. In a differential etiology, an expert first determines other known causes of the disease in question and then attempts to ascertain whether those competing causes can be "ruled out" as a cause of plaintiff's disease . . . . Similarly, an expert attempting to determine whether an individual's emphysema was caused by occupational chemical exposure would inquire whether the individual was a smoker. By ruling out (or ruling in) the possibility of other causes, the probability that a given agent was the cause of an individual's disease can be refined. Differential etiologies are most critical when the agent at issue is relatively weak and is not responsible for a large proportion of the disease in question.
>
> Although differential etiologies are a sound methodology in principle, **this approach is only valid if general**

> **causation exists and a substantial proportion of competing causes are known**. Thus, for diseases for which the causes are largely unknown, such as most birth defects, a differential etiology is of little benefit. And, like any scientific methodology, it can be performed in an unreliable manner.

(Reference Manual, *Reference Guide on Epidemiology*, at pp. 617-618. Footnotes omitted. Emphasis in bold added.)

2. In Medicine, "Differential Diagnosis" Is The Analytical Process By Which A Physician "Rules In" The Disease The Patient Actually Has And "Rules Out" The Other Suspected Diseases The Patient Does Not Have

Differential diagnosis is a reasoning process in which each of the alternative suspected diseases can be viewed as an hypothesis to be determined as true or false. It is deductive reasoning. It is the procedure used by a physician or other health care provider when there are multiple diseases that could explain the patient's abnormal signs and symptoms. That is, it is an analytical process to "rule in" the one disease that is causing those signs and symptoms, so that disease can be properly treated and the patient cured. In a medical emergency, where a physician or other health care provider is unable in the short time available to rule in a specific disease, at the very least he or

she will use such procedure to rule out any imminently life-threating conditions.

In order to accomplish the differential *diagnosis* analysis, the physician or other health care provider must

- gather information about the patient, then
- list all the possible diseases that are known to cause signs and symptoms of the type the patient exhibits, and prioritize the list in order to
- first rule out the possibilities that are most urgently dangerous, and once that is done,
- eliminate or "rule out" the merely possible diseases on the list, and
- confirm or "rule in" the disease on the list that is the probable cause of the patient's signs and symptoms.

In order to accomplish the differential *etiology* analysis, it also is necessary to list all the possible causes, "rule out" the merely possible, and "rule in" the probable cause.

In either methodology, differential diagnosis or differential etiology, the deductive process is the same. To use the words of the California Supreme Court, "the crucial causation inquiry is *what would have happened*" in each of the hypothetical alternatives. (*Viner v. Sweet, supra,* 30Cal.4that1242. Emphasis in original.) In this case, obviously, that question can be stated as follows: even if Plaintiff had never been exposed to

glyphosate-based herbicides manufactured by Defendant, would Plaintiff have developed MF without it? That is why Dr. Nabhan was asked to express his ultimate opinion on specific causation in terms of but-for causation. (RT2887:14-18 ["but-for Mr. Johnson's exposure to Roundup, he would not have developed non-Hodgkin's lymphoma"].)

Dr. Nabhan acknowledged that there was at least one known risk factor on his list that applied to Plaintiff and, more importantly, he acknowledged that in the majority of patients with MF, the etiology is unknown, *i.e.*, "idiopathic." Dr. Nabhan knew from his own prior clinical practice as an oncologist that "the majority of cutaneous T-cell lymphomas we don't know the cause." (RT2996:22-23.) That is because 80 to 90 percent of the time the cause is idiopathic. (RT2997:17-23 ["I know that for sure"].) He was adamant on the point: "The majority of mycosis fungoides I've seen was unable to identify a cause, and I think I said that to everybody in this courtroom." (RT2998:19-21.)

Even though Dr. Nabhan acknowledged there were mostly unknown causes of MF (RT2997:3 ["That's implied"]), he only put the known causes in his differential etiology. (RT2997:4 ["I put in here the known causes"].) He did not put in unknown causes. That was contrary to the whole idea of differentiable methodology.

> Although differential etiologies are a sound methodology in principle, this approach is **only valid if** general causation

> exists and **a substantial proportion of competing causes are known**.

(Reference Manual, *Reference Guide on Epidemiology*, at p. 618. Emphasis by bold added.)

Regardless, he relied upon the IARC Monograph and other literature he deemed significant to establish general causation (RT2997:5-13 ["somebody who has been exposed to an agent of known carcinogen causing non-Hodgkin's lymphoma"], in order to justify adding that possible cause to the list of "known" causes.

Plaintiff now argues it was unnecessary to rule out those alternative, proven causes ("known" causes), not to mention the alternative, unproven causes that have not yet been identified by science ("unknown causes"). Plaintiff essentially argues that the fact a substantial proportion of competing causes of MF are unknown is irrelevant. To support this argument, Plaintiff relies upon the "substantial factor" formulation of causation, and dismisses the "but-for" standard, citing *Cooper v. Takeda Pharmaceutical America, Inc., supra,* 239Cal.App.4th555. (RB/XAOB, p. 17 ["the applicable substantial factor test"].) In effect, Plaintiff argues that Dr. Nabhan could as an expert in litigation disregard the methodology he followed in his prior practice as a physician, diagnosing and treating patients.

In the law, for the reasons explained in the next subsection of this brief, the same analytical approach applies as in medicine.

To again quote the California Supreme Court, "[d]etermining causation *always* requires evaluation of hypothetical situations concerning what might have happened, but did not." (*Viner v. Sweet, supra,* 30Cal.4that1242. Emphasis added.) "This is so because the very idea of causation *necessarily* involves comparing historical events to a hypothetical alternative." (*Ibid.* Emphasis added.)

Obviously, if there are *mostly* unknown causes, it is even more important that the expert explain why Plaintiff's cancer was not caused by an unknown factor. *Amici* submit, in that situation, differential diagnosis methodology does not provide the means of doing so.

3. In Law, Counterfactual Or But-For Causation Is The Analytical Process By Which A Judge Or Jury "Rules In" The Negligence Or Other Tort As The Actual Cause Of Plaintiff's Harm And "Rules Out" The Other Possible Causes Of Plaintiff's Harm

The foregoing section of this brief is a discussion of scientific analysis by means of a counterfactual, hypothetical inquiry known as the "differential diagnosis" method. This section discusses the legal analysis by means of the counterfactual, hypothetical inquiry known as the but-for test.

There is nothing controversial about counterfactual or but-for causation. Most simply stated, it is that event A caused event

B because if A had not happened then B would not have happened. *But for A, there would have been no B.* In legal analysis, the traditional test for attributing causal responsibility is the counterfactual but-for ("*conditio sine qua non*") test, which asks whether, but for the defendant's wrongful act, the injury complained of would have occurred.[7] In the law, "[t]he but for test of causation can be applied only by comparing what would have happened if the defendant had *not* been negligent. Would the plaintiff have been injured in the same way in that case? If so, then the defendant's conduct is not a factual cause of the harm." (Dobbs, *supra,* § 187, p. 626. Emphasis in original.)

But-for causation is a concept familiar to laymen as well, if only because "our causal knowledge often plays a role in assessing counterfactuals, and counterfactual 'but for' reasoning is frequently part of causal reasoning." (Danks, *The Psychology of Causal Perception and Reasoning* in The Oxford Handbook of Causation (Beebee *et al*. edits., 2012) p. 459.) It is abstract reasoning by logical deduction, which was the final step in

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[7] Menzies, *Counterfactual Theories of Causation*, Stanford Encyclopedia of Philosophy (Zalta edit., Summer 2002 ed.) <http://plato.stanford.edu/archives/sum2002/entries/causation-counterfactual> (as of Aug. 28, 2019).

childhood cognitive development investigated by Jean Piaget.[8] David Hume, when defining causation, referred to it:

> [W]e may define a cause to be *an object, followed by another, and where all the objects, similar to the first, are followed by objects similar to the second.* Or in other words, *where, if the first object had not been, the second never had existed.*

(Hume, *An Enquiry Concerning Human Understanding* (Beauchamp edit., Oxford University Press, 1999) p. 146. Emphasis in original.)

Counterfactual or but-for causation is important today, for example to those scientists who are working to improve artificial intelligence. (See, *e.g.,* Pearl & MacKenzie, *supra*, ch. 8 ["Counterfactuals: Mining Worlds That Could Have Been"], pp. 259-297, in particular p. 296 ["I hope that by now it is obvious that counterfactuals are an essential part of how humans learn about the world and how our actions affect it"].)

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[8] Counterfactual or but-for causation is an ancient idea, dating back at least to the Greek historian Thucydides, if not earlier. (Pearl & MacKenzie, The Book of Why: The New Science of Cause and Effect (2018) pp. 262-263, quoting from Thucydides, History of the Peloponnesian War ["The last sentence of the quote is especially interesting because it expresses the notion of necessary or but-for causation"]).

That is why it is still the test to be applied in most cases, and it still is the test of causation in California.[9] That was reaffirmed by the California Supreme Court in *Viner v. Sweet, supra,* 30Cal.4th1232. As the Court explained, the purpose of the but-for requirement is to safeguard against speculative and conjectural claims. (30Cal.4that1241.)

The but-for test reflects a familiar and ubiquitous form of reasoning that it is regularly used by courts to ascertain the basis (that is, the fundamental cause) of an expert witness opinion on causation. This is precisely what the California Supreme Court did in *Sargon, supra,* where the trial court deemed inadmissible the expert's testimony, finding "[t]o the extent that this ranking of 'innovativeness,' . . . rests on the fact that some [dental implant companies] have larger market shares, it rests on nothing more than a tautology. As there is no evidentiary basis that equates the degree of innovativeness with the degree of difference in

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[9] "The first element of legal cause is cause in fact: *i.e.*, it is necessary to show that the defendant's negligence contributed in some way to the plaintiff's injury, so that 'but for' the defendant's negligence the injury would not have been sustained. If the accident would have happened anyway, whether the defendant was negligent or not, then his or her negligence was not a cause in fact, and of course cannot be the legal or responsible cause. The 'but for' rule has traditionally been applied to determine cause in fact." (6 Witkin, Summary of Cal. Law (11th ed. 2018) Torts, § 1334.)

market share, the question posed to the jury — to rank innovativeness and assign a market share, the *sine qua non* of [the expert's] opinion — has no rational basis." (55Cal.4that778-779.)

"In the great mass of cases, courts apply a but-for test to determine whether the defendant's conduct was a factual cause of the plaintiff's harm, although there are some important exceptions." (Dobbs, *supra,* § 186, p. 623. Footnote omitted.)

To be absolutely clear, it must be emphasized that the California Supreme Court did not abandon the but-for test of causation when it decided *Mitchell v. Gonzales* (1991) 54Cal.3d1041, as some lawyers once argued in the past. As the Court itself explained in *Viner v. Sweet, supra, "Mitchell* did not abandon or repudiate the requirement that the plaintiff must prove that, *but for* the alleged negligence, the harm would not have happened." (30Cal.4that1239. Emphasis in original.) "*Mitchell* also stated that 'nothing in this opinion should be read to discourage the Committee on Standard Jury Instructions from drafting a new and proper 'but for' instruction.'" (*Ibid.*)

Finally, as the Court further explained, "the 'substantial factor' test *subsumes* the 'but for' test" of causation. (*Viner v. Sweet, supra,* 30Cal.4that1239, quoting *Mitchell v. Gonzales, supra,* 54Cal.3dat1052. Emphasis added.) The Court quoted the Restatement Second of Torts, the source of the "substantial

factor" test, at section 432, subsection (1): "the actor's negligent conduct is *not a substantial factor* in bringing about harm to another *if the harm would have been sustained even if the actor had not been negligent*." (*Viner v. Sweet, supra,* 30Cal.4that1240. Emphasis in original.) To this day, juries routinely are instructed on the but-for test of causation, in CACI 430, where they are told, "[c]onduct is not a substantial factor in causing harm if the same harm would have occurred without that conduct."

III. THE COURT SHOULD REJECT THE ARGUMENT, RAISED BY PLAINTIFF FOR THE FIRST TIME ON APPEAL, THAT THERE SHOULD BE AN EXCEPTION TO RIGOROUS COUNTERFACTUAL REASONING

A. Notwithstanding That Dr. Nabhan Testified In Terms Of But-For Causation, Apparently Based On His Claim Of Having "Ruled Out" All Other Possible Causes, Plaintiff Argues It Is Not Necessary To "Rule Out" Other Possible Causes

Even though the essence of the scientific method is ruling out and ruling in hypotheses, and that also is the essence of the but-for test of causation (*Viner v. Sweet, supra,* 30Cal.4that1239 ["*but for* the alleged negligence, the harm would not have happened"]; emphasis in original), Plaintiff argues that it is unnecessary to "rule in" and "rule out" the known causes of non-

Hodgkin lymphoma cancer. (RB/XAOB, pp. 17-18.) For authority, Plaintiff relies on *Cooper v. Takeda Pharmaceuticals America, Inc., supra,* 239Cal.App4th555, even though it is distinguishable from this case in at least two important respects.

First, in *Cooper*, the expert witness physician performed a proper differential etiology, explaining why he ruled out certain factors and ruled in others. For example, he "ruled in" smoking as another cause of the cancer. (239Cal.App.4that596 ["He candidly admitted that smoking 'could be a cause of his bladder cancer'"].) Here, Dr. Nabhan did not perform a proper differential etiology. Rather than properly rule out unknown risk factors, he simply ignored them based on the "red flag" of Plaintiff's age.

Second, in *Cooper,* the epidemiological studies *collectively* found risk ratios far in excess of 2.0. (239Cal.App.4that593-594.) Here, Dr. Nabhan chose to rely upon the epidemiological studies that supported his hypothesis and to reject those that did not, sidestepping the overall epidemiological evidence.

Correctly read, *Cooper* stands for the proposition that, in forming an affirmative opinion on specific causation, *i.e.,* that the cause of Plaintiff's disease was the substance at issue in the case, an expert witness reasonably relies upon the epidemiological evidence, all of it, collectively establishing a relative risk greater than 2.0. (239Cal.App.4that593 ["a relative risk greater than 2.0

is needed to extrapolate from generic population-based studies to conclusions about what caused a specific person's disease"].) In other words, the studies should be "considered as a whole" — that is, there should not be "piecemeal rejection of individual studies." (*Id.* at 589-590.)

B. The "*Substantial-Factor*" Test Was An Exception To The But-For Test, To Be Applied Only In The Rare Situation Where There Are Two Or More "Independent" Concurrent Causes

Plaintiff relies upon the "substantial factor" test for causation. (RB/XAOB, pp. 17, 72.) That test derives from and should only be invoked in the relatively rare circumstance of two or more causes that are completely independent but are both but-for causes, as is demonstrated in the hypothetical situation familiar to all first-year law students: two fires of completely separate origin merge into a single fire and then burn down a farm. As explained in Witkin,

> The primary function of the substantial factor test was to permit the factfinder to decide that factual cause existed when there were multiple sufficient causes, i.e., each of two separate causal chains sufficient to bring about the plaintiff's harm, thereby rendering neither a but-for cause (infra, § 1344). However, the substantial-factor test has revealed a tendency to be understood as permitting something less than a but-for cause, or as demanding something more than a but-for cause, to constitute a factual

> cause. (Rest.3d, Torts: Liability for Physical and Emotional Harm § 36, Comment a.) Thus, '[t]he substantial-factor test has not . .. withstood the test of time, as it has proved confusing and been misused.' Confusion has resulted from the different ways that the substantial-factor test has been employed in the fields of negligence and comparative negligence and in enhanced-injury cases when proof of the amount of harm caused by a second actor is uncertain. (Rest.3d, Torts: Liability for Physical and Emotional Harm § 26, Comment j.)

(6 Witkin, Summary of Cal. Law (11th ed. 2018) Torts, § 1334.)

The Supreme Court explained the concept in *Viner v. Sweet, supra,* in terms of "concurrent *independent* causes, which are multiple forces operating at the same time and independently, each of which *would have been sufficient by itself* to bring about the harm." (30Cal.4that1240; emphasis added; see also *State Dept. of State Hospitals v. Superior Court* (2015) 61Cal.4th 339,352,fn.12, citing *Viner v. Sweet*, *supra,* 30Cal.4that1239-1241 ["[t]his case does not involve concurrent independent causes, so the 'but for' test governs questions of factual causation"].) That is the only exception to the but-for test of causation.[10]

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[10] In that relatively rare situation, the but-for test will lead to "overdetermination." "Causal overdetermination" occurs where two defendants' actions were each sufficient to bring about the harm. (See, *e.g., Orange County Water Dist. v. Sabic Innovative Plastics US, LLC* (2017) 14Cal.App.5th343,385, citing *Boeing Co. v. Cascade Corp.* (9th Cir. 2000) 207F.3d1177,1185 ["[w]e therefore conclude that in the special case of causal

The Supreme Court warned, "'Concurrent independent causes' should not be confused with 'concurrent causes.' The former refers to multiple forces operating at the same time and independently, each of which would have been sufficient by itself to bring about the harm. The latter refers simply to multiple forces operating at the same time." (*Viner v. Sweet, supra,* 30Cal.4that1240,fn.3.)

C. The Restatement Third Of Torts Eliminated The Expression "*Substantial Factor*" From The Exception To The But-For Test Of Causation That Was In The Restatement Second Of Torts

Because "substantial factor" was criticized as a source of controversy and confusion in the proof of causation, that phrase was eliminated in the Restatement Third of Torts. Instead, the exception to the but-for test in the Restatement Second of Torts (at §§ 431-432) that was formerly known as "substantial factor" is

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overdetermination, i.e., where either polluter's conduct would have caused the same response cost to be incurred in the same amount, and the conduct was of substantially equal blameworthiness, the proper construction of the causation requirement in the statute is that both polluters should be treated as having caused the response cost"].)

now stated in the Restatement Third of Torts as "multiple sufficient causes."[11]

> § 26 Factual Cause
>
> Tortious conduct must be the factual cause of harm for liability to be imposed. Conduct is a factual cause of harm when the harm would not have occurred absent the conduct. Tortious conduct may also be a factual cause of harm under § 27.
>
> § 27 Multiple Sufficient Causes
>
> If multiple acts occur, each of which under § 26 alone would have been a factual cause of the physical harm at the same time in the absence of other act(s), each act is regarded as a factual cause of the harm.
>
> § 36 Trivial Contributions to Multiple Sufficient Causes
>
> When an actor's negligent conduct constitutes only a trivial contribution to a causal set that is a factual cause of harm under § 27, the harm is not within the scope of the actor's liability.

In *Viner v. Sweet, supra*, the California Supreme Court noted "various labels" (other than "substantial factor") that could be used to describe the exception to the but-for test: "concurrent independent causes," "combined force criteria," and "multiple

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[11] Causation now appears in the volume entitled "Liability for Physical Harm" of the multiple volume Restatement Third of Torts.

sufficient causes." (30Cal.4that1240.) The Court explained the exception as "multiple forces operating at the same time and independently, each of which would have been sufficient by itself to bring about the harm." (*Ibid*.)

In summary, the broad "substantial-factor" test that originally appeared in the first Restatement of Torts and then reappeared in the Restatement Second of Torts, has been eliminated.[12] For purposes of analyzing the issue of specific causation in this case, the Court should reject the argument, based on the "substantial factor" test, that it is not necessary to rule out the other possible causes.

IV. WHEN A LAWSUIT BETWEEN TWO PARTIES IS FRAMED IN TERMS OF A PUBLIC POLICY DEBATE AS TO WHETHER TO "CHANGE THE WORLD," THE JURY'S DECISION WILL BE POLITICAL, IF NOT EMOTIONAL

A. The Trial Of This Case Was An Example Of A Strategy That Has Been And Continues To Be Pursued Against Health Care Providers

California health care providers are very familiar with tort litigation, specifically professional negligence litigation, in which

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[12] "Expelled" is another word that has been used. (Sebok, *Actual Causation in the Second and Third Restatements: Or, the Expulsion of the Substantial Factor Test* in Causation in European Tort Law (Infantino and Zervogianni edits., 2017) pp. 60-84.)

plaintiffs pursue a strategy of demonizing defendant physicians, dentists, hospitals, and/or other health care providers. Arguably, the medical malpractice insurance crisis that led to the enactment of MICRA was a result, at least in part, of the very high awards of compensatory damages against health care providers that were the result of such a strategy being pursued in the late 1960's and early 1970's.

The strategy continues to be pursued today. For example, it was pursued against the health care provider, manufacturer, and distributor defendants in the trial that led to the recent decision in *Bigler-Engler v. Breg, Inc.* (2017) 7Cal.App.5th276 ("*Bigler-Engler*").[13]

There are similarities between *Bigler-Engler* and this case. In *Bigler-Engler*, one of the issues was whether the jury's awards of noneconomic compensatory damages and punitive damages were excessive. (7Cal.App.5that298-311.) The plaintiff made a so-called "per diem" argument for damages, and the jury awarded $900 per day for past noneconomic damages and $100 per day for the rest of the plaintiff's projected life expectancy. (*Id.* at 301.) The jury awarded $68,270.38 in economic compensatory damages and $5,127,950 in noneconomic compensatory damages. (*Id.* at

[13] *Bigler-Engler* was cited by both sides in this appeal, although for different propositions. (AOB, pp. 87-89, 93-94; RB/XAOB, pp. 80-81.)

284.) The jury allocated responsibility for the plaintiff's harm as follows: 50 percent to the physician defendant, 10 percent to the distributor of the product, and 40 percent to the manufacturer. (*Ibid.*) The jury found malice, oppression, or fraud as to each defendant on at least one claim. (*Ibid.*) In the punitive damages phase of trial, the jury awarded $500,000 against the physician and $7 million against the manufacturer. (*Ibid.*)

Here, Plaintiff also made a per diem argument, and the jury awarded $1,000,000 per year for both past and future noneconomic damages. (See AOB, pp. 36, 87-89, citing RT5110:11-15; see also RB/XAOB, pp. 26, 79-80.) The jury awarded $2,253,209.35 compensatory damages for economic loss, $37,000,000 compensatory damages for noneconomic loss, and $250,000,000 punitive damages. (AA6147:1-3.)

Another issue in *Bigler-Engler* was whether Engler's counsel committed prejudicial misconduct, including during closing argument to the jury. (7Cal.App.5that292-298.) The Court of Appeal agreed there was misconduct but concluded that prejudice was not shown by the defendants. (*Id*. at 292.)

> Although we conclude Chao and Oasis have not shown prejudice here, Stern's conduct was improper. Such conduct not only falls below professional standards, it unnecessarily places the client at risk. "'[P]unishment of counsel to the detriment of his client is not the function of the court. [Citation.] Intemperate and unprofessional conduct by counsel . . . runs a grave and unjustifiable risk

> of sacrificing an otherwise sound case for recovery, and as such is a disservice to a litigant.'" (*Neumann v. Bishop* (1976) 59Cal.App.3d451,489,130Cal.Rptr.786 (*Neumann*).) We expect more from our attorneys; in another context reversal may well have been warranted.

(*Id.* at 298.)

The Court of Appeal found the noneconomic damages to be excessive (7Cal.App.5that298-306), concluding,

> the jury's noneconomic compensatory damages award is excessive, is not supported by the evidence, and appears to be the result of passion and prejudice. For reasons we will explain, and as a matter of judicial economy, we will exercise our authority to reverse the jury's noneconomic compensatory damages award and remit the award to the maximum amount supported by the current record, conditioned on Bigler-Engler's acceptance of the reduced amount. If Bigler-Engler does not accept the reduced amount, the trial court should conduct a new trial on that issue.

(*Id.* at 299.) After explaining the lack of evidence supporting the jury's award and the disproportionality of the award shown by the reported cases (*id.* at 300-304), the Court of Appeal explained how the verdict "was influenced by improper factors" (*id.* at 304), referring to counsel's many episodes of misconduct, motivating the jury to award noneconomic damages based on passion or prejudice. (*Id.* at 304-305.) The Court reversed and remitted the award to $1.3 million. (*Id.* at 305.)

Here, there also were aggressive arguments by Plaintiff arguably calculated to inflame the jury, and the trial court asked the parties to address in oral argument whether they were "sufficiently prejudicial to warrant a new trial" and "improper as a matter of law." (AA6147:2-8.) In its final order, the court cited *Bigler-Engler* on life expectancy (AA6149:23-25), noted the noneconomic damages award was excessive and "punitive" (AA6153:7-9), but otherwise said nothing regarding the arguments that led to that award.

B. Such "Per Diem" Arguments Often Succeed In Achieving Arbitrary And Excessive Awards Of Noneconomic Damages

For the authority of an appellate court to address such a problem, the *Bigler-Engler* court cited the seminal case of *Seffert v. Los Angeles Transit Lines* (1961) 56Cal.2d498. (*Bigler-Engler, supra,* 7Cal.App.5that299.) In *Seffert*, Justice Peters summarized the standard for appellate analysis of excessive noneconomic damages. "Basically, the question that should be decided by the appellate courts is whether or not the verdict is so out of line with reason that it shocks the conscience and necessarily implies that the verdict must have been the result of passion and prejudice." (56Cal.2dat508.) He and three other justices acknowledged that "the amount of the award is high, and may be more than we would have awarded were we the trier of

the facts," but affirmed nevertheless because "we cannot say, as a matter of law, that it is so high that it shocks the conscience and gives rise to the presumption that it was the result of passion or prejudice on the part of the jurors." (*Id.* at 509.)

Justice Traynor, writing for the minority of three, agreed with that standard (56Cal.2dat510 (dis. opn. of Traynor, J.) ["A reviewing court, however, has responsibilities not only to the litigants in an action but to future litigants and must reverse or remit when a jury awards either inadequate or excessive damages"]), but dissented because "it is my opinion that the award of $134,000 for pain and suffering is so excessive as to indicate that it was prompted by passion, prejudice, whim, or caprice." (*Id.* at 509. Footnote omitted.) He explained,

> The excessive award in this case was undoubtedly the result of the improper argument of plaintiff's counsel to the jury. Though no evidence was introduced, though none could possibly be introduced on the monetary value of plaintiff's suffering, counsel urged the jury to award $100 a day for pain and suffering from the time of the accident to the time of trial and $2,000 a year for pain and suffering for the remainder of plaintiff's life.
>
> The propriety of counsel's proposing a specific sum for each day or month of suffering has recently been considered by courts of several jurisdictions. (See 19OhioL.J.780; 33So.Cal.L.Rev.214,216.) The reasons for and against permitting "per diem argument for pain and suffering" are reviewed in *Ratner v. Arrington* [(Fla.Dist.Ct.App. 1959)]

111So.2d82,85-90 [1959 Florida decision holding such argument is permissible] and *Botta v. Burnner* [(N.J. 1958)] 26N.J.82[138A.2d713,718-725,60A.L.R.2d1331] [1958 New Jersey decision holding such argument to be an "unwarranted intrusion into the domain of the jury"].)

The reason usually advanced for not allowing such argument is that since there is no way of translating pain and suffering into monetary terms, counsel's proposal of a particular sum for each day of suffering represents an opinion and a conclusion on matters not disclosed by the evidence, and tends to mislead the jury and result in excessive awards. The reason usually advanced for allowing "per diem argument for pain and suffering" is that it affords the jury as good an arbitrary measure as any for that which cannot be measured.

Counsel may argue all legitimate inferences from the evidence, but he may not employ arguments that tend primarily to mislead the jury. (*People v. Purvis* [(1959)] 52Cal.2d871,886[346P.2d22]; *People v. Johnson* [(1960)] 178Cal.App.2d360,372[3Cal.Rptr.28]; *Affett v. Milwaukee and Suburban Transport Co.* [(Wis. 1960)] 11Wis.2d604 [106N.W.2d 274,280]; Michael and Adler, *Trial of an Issue of Fact*, 34Col.L.Rev.1224,1483-1484; cf. *Rogers v. Foppiano* [(1937)] 23Cal.App.2d87,94-95[72P.2d239].) A specified sum for pain and suffering for any particular period is bound to be conjectural. Positing such a sum for a small period of time and then multiplying that sum by the number of days, minutes or seconds in plaintiff's life expectancy multiplies the hazards of conjecture. Counsel could arrive at any amount he wished by adjusting either

> the period of time to be taken as a measure or the amount surmised for the pain for that period.

(56Cal.2dat513-514.)

Such a per diem argument was made in this case, arguably resulting in what the trial court characterized as the "extremely high" noneconomic damages award. (AA6153:7-9.)

C. "Such Damages Originated Under Primitive Law As A Means of Punishing Wrongdoers and Assuaging the Feelings of Those Who Had Been Wronged"

The fundamental problem with such excessively high noneconomic damage awards was identified by Justice Traynor: they are **punitive**. He characterized this as "**primitive**."

> There has been forceful criticism of the rationale for awarding damages for pain and suffering in negligence cases. (Morris, *Liability for Pain and Suffering*, 59Col.L.Rev.476; Plant, *Damages for Pain and Suffering*, 19Ohio L.J.200; Jaffe, *Damages for Personal Injury: The Impact of Insurance*, 18 Law and Contemporary Problems 219; Zelermyer, *Damages for Pain and Suffering*, 6 Syracuse L.Rev.27.) Such damages originated under primitive law as a means of punishing wrongdoers and assuaging the feelings of those who had been wronged. (Morris, *Liability for Pain and Suffering*, *supra,* 59Col.L.Rev.at478; Jaffe, *Damages for Personal Injury: The Impact of Insurance*, *supra*, 18 Law and Contemporary Problems at 222-223.) They become increasingly anomalous as emphasis shifts in a mechanized society from

> ad hoc punishment to orderly distribution of losses through insurance and the price of goods or of transportation. Ultimately such losses are borne by a public free of fault as part of the price for the benefits of mechanization. (Cf. *Peterson v. Lamb Rubber Co.* [(1960)] 54Cal.2d339,347-348 [5Cal.Rptr.863, 353P.2d575]; *Henningsen v. Bloomfield Motors, Inc.* [(N.J. 1960)] 32N.J.358[161A.2d69,77, 75A.L.R.2d1]; *Escola v. Coca Cola Bottling Co.* [*of Fresno* (1944)] 24Cal.2d453,462 [150P.2d436] [concurring opinion].

(56Cal.2dat511 (dis. opn. of Traynor, J.).) Emphasis by italics added.) He acknowledged that,

> Nonetheless, this state has long recognized pain and suffering as elements of damages in negligence cases [citations]; any change in this regard must await reexamination of the problem by the Legislature. Meanwhile, awards for pain and suffering serve to ease plaintiffs' discomfort and to pay for attorney fees for which plaintiffs are not otherwise compensated.

(*Ibid.*)

Justice Traynor was prescient. The Legislature, in part responding to the excessive noneconomic damages awards in medical malpractice litigation later in that decade and the beginning of the next, enacted Civil Code section 3333.2, limiting noneconomic damages in such litigation to $250,000. Not surprisingly, when the California Supreme Court upheld Section 3333.2 from constitutional attack in *Fein v. Permanente Medical Group, supra,* 38Cal.3d137, the Court quoted Justice Traynor's

dissent in *Seffert v. Los Angeles Transit Lines*. (38Cal.3dat159, fn.16.)

Here, the "extremely high" noneconomic damages award was characterized by the trial court as including "a punitive element." (AA6153:7-9.)

D. Plaintiff's Strategy To Inflame The Jury In This Case May Be Part Of A Much Larger Campaign To Demonize Defendant, Not Only In Court, But In The Media

This case appears to be the first in a wave of similar litigation. It is reminiscent of some of the other waves of high stakes litigation against defendants who manufacture chemicals and defendants who use those chemicals in the products and services they provide to consumers.

California health care providers recall the campaign directed at defendants who produced silicone, who used the silicone in breast implants, and the plastic surgeons who implanted those implants into patients. (See, *e.g., In re Silicone Gel Breast Implants Product Liability Litigation* (C.D.Cal. 2004) 318F.Supp.2d879; *Artiglio v. Corning Inc.* (1998) 18Cal.4th604.) That campaign also resulted in substantial media attention, which was explained by Dr. Martha Angell, Executive Director of the New England Journal of Medicine, in her book Science on Trial: The Clash of Medical Evidence and the Law in the Breast Implant Case. (Angell, *supra*, ch. 8 ["Americans and Health

News: The Alarm of the Day"], pp. 154-176.) There are indications of that same media-oriented strategy in this case (see, *e.g.,* AOB pp. 37-38; RB/XAOB, pp. 55-56), the common thread of which is sympathy for the victims. *Amici* suspect the common goal is overcoming equivocal scientific evidence.

There is one very big difference between the public health controversy regarding silicone, of which the breast implant litigation was a part, and the public health controversy regarding glyphosate, of which this litigation is a part. The breast implant controversy began with a regulatory ban on breast implants, which ban turned out to be premature. (Angell, *supra*, ch. 3 ["The FDA Ban on Implants: Regulation in Modern America"], pp. 50-68.) Here, there was no regulatory ban on glyphosate. The regulatory agencies found no support for such. (See discussions at AOB, pp. 20-22 ["Regulatory and large-scale studies of glyphosate show no evidence of a cancer risk"], 24-26 ["Following IARC, domestic and foreign regulatory agencies reaffirm their conclusion that there is no evidence glyphosate causes cancer"], and RB/XAOB, pp. 19-20 ["The jury rejected the regulatory reviews relied upon by Monsanto"], 86-88 ["Johnson presented evidence that the government documents were not trustworthy"].)

The ultimate goal in the breast implant litigation, of course, was to achieve maximum recovery (see, *e.g.,* Angell,

supra, pp. 133-138), and the same may be true in the apparent wave of glyphosate litigation, of which this case may be an early manifestation. The most striking achievement of maximum recovery in this case, obviously, was the award of $250,000,000 punitive damages, although the trial court reduced that award to $39,253,209.35, the amount of the compensatory damages. (AA6153:17-19.) That leaves the question whether the award of compensatory damages, most of which were to compensate for noneconomic harm to the Plaintiff, was the product of an emotional decision-making process. Arguably, it reinforces that question, because the punitive damages award has the effect of doubling what already are acknowledged to be "extremely high" and includes "a punitive element." (AA6153:7-9.)

Amici submit that excessive compensatory damages awards in tort litigation is a problem for which the best solution is judicial insistence upon more reason and less emotion in the litigation process, both as it relates to causation and as it relates to noneconomic damages.

CONCLUSION

The answer to the complex scientific question the jury was required to resolve in this case should have been based on accepted scientific evidence and rigorous scientific reasoning, not the jury's policy choices. Even worse, there is reason to suspect the jury's analysis was based on speculation and emotion.

Dated: August 30, 2019 COLE PEDROZA LLP

By: _____

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CERTIFICATION

Appellate counsel certifies that this document contains 13,790 words. Counsel relies on the word count of the computer program used to prepare the document.

Dated: August 30, 2019 COLE PEDROZA LLP

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PROOF OF SERVICE

I am a resident of or employed in the County of Los Angeles; I am over the age of eighteen years and not a party to the within action; my business address is: 2295 Huntington Drive, San Marino, California 91108.

On this date, I served the ***AMICI CURIAE*** **BRIEF OF CALIFORNIA MEDICAL ASSOCIATION, CALIFORNIA DENTAL ASSOCIATION, CALIFORNIA HOSPITAL ASSOCIATION** on all persons interested in said action in the manner described below and as indicated on the service list:

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By United States Postal Service – I am readily familiar with the business's practice for collecting and processing of correspondence for mailing with the United States Postal Service. In that practice correspondence would be deposited with the United States Postal Service that same day in the ordinary course of business, with the postage thereon fully prepaid, in San Marino, California. The envelope was placed for collection and mailing on this date following ordinary business practice.

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I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed this 30th day of August, 2019.

Joseph Hernandez

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