

SCIENTIFIC EVIDENCE IN BRAZIL: A CRITICAL VIEW UNDER THE DAUBERT STANDARD

*Bruno de Macedo Dias¹
Gilson Jacobsen²*

*Recebido em 10/03/2023
Aceito em 04/04/2023*

ABSTRACT

Legal professionals are frequently exposed to knowledge created outside their area proficiency, that should be restricted to the legal science (or jurisprudence), by the constrains of science and the scientific method. As the legal system is designed to provide the best outcome possible to each lawsuit presented, it needs to establish a procedure throughout which technical issues can be resolved in court. Notwithstanding the emptiness of the discussion inside legal cases/practice if those solutions are appropriated to the respect science, its methods and to Justice itself, it can be extremely relevant to address this academically in search for improvements. The purposed of this is study is to exam how scientific evidence is produced in Brazil and in the United States, while trying to extract possible enhancements to the former's legal system. Therefore, the first step in the comparative method is to identify determinant factors that might differ, then evaluate how each of them behave in Brazil and the United States, and finally try to identify possible improvements.

KEY WORDS: Scientific Evidence. Expert Testimony. Comparative Law. Daubert Standard.

A PROVA CIENTÍFICA NO BRASIL: UMA VISÃO CRÍTICA SOB O CRITÉRIO

DAUBERT

RESUMO

Profissionais do direito são frequentemente expostos a conhecimento produzido fora de sua área de proficiência, que deve ficar restrita à ciência jurídica, por respeito à ciência e ao método científico. Como o sistema jurídico é desenhado para entregar a melhor resposta possível para cada ação judicial apresentada, é necessário estabelecer um procedimento através do qual questões técnicas possam ser solucionadas em Juízo. Sem prejuízo da impraticabilidade de se discutir na prática forense se a solução existente é apropriada para cada ciência respectiva, seus métodos e até mesmo para a própria Justiça, o problema é extremamente relevante ao espaço acadêmico, na busca de potenciais

¹ Bruno de Macedo Dias is a State Attorney for Santa Catarina State/Brazil and a Doctorate in Juridical Science (SJD) Candidate at Delaware Law School/USA and UNIVALI/BRAZIL. Master of Laws (LLM) en Derecho Ambiental y de la Sostenibilidad at Alicante University/SPAIN and Master of Laws (LLM) at UNIVALI. This research and the doctorate is sponsored by FUNJURE/PGE/SC. E-mail: bruno@pge.sc.gov.br. ORCID: <https://orcid.org/0000-0002-3519-4904>.

² Gilson Jacobsen is a Doctor in Judicial Science (SJD) and Master of Laws by UNIVALI/BRA. Professor of the SJD and LLM programs and of Civil Procedure at UNIVALI/BRA. Visiting Processor at Widener University – Delaware Law School/USA. Trainer of Trainers at the National School for Training and Improvement of Magistrates - ENFAM, in Brasília/DF. Federal Judge in Florianópolis/SC. E-mail: giljacobsen@gmail.com. ORCID: <https://orcid.org/0000-0002-8250-8902>.

melhoramentos. O propósito deste estudo é avaliar como a prova científica é feita no Brasil e nos Estados Unidos, bem como tentar extrair possíveis evoluções ao sistema jurídico do primeiro. Para isso, o primeiro passo no método comparativo é estabelecer os fatores determinantes que podem distinguir os sistemas; na sequência, verificar como eles se comportam nos sistemas jurídicos do Brasil e dos Estados Unidos, respectivamente; para, finalmente, identificar se há espaço para evolução da prova pericial brasileira.

Palavras-chave: Prova científica. Perícia. Direito Comparativo. Daubert Standard.

1 INTRODUCTION

The litigation that legal professionals must deal with, more often than not, will involve knowledge of other sciences. The scientific controversy might be central or not and may be a consensus on the scientific community or can contain great divergence among scientists. The scientific arguments could be so common that a law professional – especially in Brazil – might not even realize that his argument is not legal, but it belongs to a different scientific field. The interaction between legal science and other sciences has reached a point that scientific knowledge is often included in regulations and statutes, creating a false premise that it would now belong to the legal science, not its former field. This aspect is, at the same time, extremely relevant to law professions and undoubtedly challenging.

Clear examples of complex cases that require the analysis of facts, knowledge and controversies that extrapolate the spectrum of the legal sciences are constant litigations regarding public and private healthcare and environmental problems .

The purpose of this study is to exam how scientific evidence is handle in Brazil and the United States, while trying to extract possible improvements to the former's legal system. The problem addressed, on the other hand, is to evaluate if the both judicial system is prepared to properly resolve lawsuits composed with scientific complex aspects.

Since this will involve comparing two very different structures, the first step is to define a few determinant factors that are crucial to the production of scientific evidence on both legal systems.

After that, a brief analysis needs to be made on the Brazilian legal system, focused on the procedure statute and decisions from the two most important courts; and on the United States legal system, centered on the Federal Rules of Evidence and the Daubert Standard (UNITED STATES, 1993).

The final part, evidently, will be to exam how could the differences on each approach could help improving scientific evidence in Brazil.

2 DETERMINANT FACTORS ON THE PRODUCTION OF SCIENTIFIC EVIDENCE

The first step to compare two different system is to identify the most important factors (PASOLD, 2018. p. 214) that will be considered. Only after that it will be possible to verify how they are addressed on each country.

One fundamental factor is to define who the expert is. Expert is the professional for a different science (not the legal science) that will exam the scientific evidence in a lawsuit. In Brazil and United States, it is well established that scientific knowledge should not be appreciated directly by the judge or jury. Therefore, for scientific evidence to be accepted, an expert is essential.

Obviously, the second factor is what scientific evidence is. On broader terms, this can be understood as the application of knowledge from other sciences to facts that are been addressed in a lawsuit. The requirements for this knowledge to be accepted can be quite different.

The third factor is to whom the evidence is destined to. Every evidence produced in court has the specific purpose of convincing the decision maker in order to reach a beneficial ruling.

Finally, it is relevant to identify how each system deals with scientific uncertainty or divergence. While this situation is normal on academic circles or scientific debates and it might take decades to achieve a scientific conclusion, a case presented in court needs to be decided (HANNA, MAZZA, 2006).

3 SCIENTIFIC EVIDENCE IN BRAZIL: THE COURT EXPERT

The most relevant source to understand the production of scientific evidence in Brazil is civil procedure statute (BRAZIL, 2015-A), as known as CPC. Brazilian most important Courts, Supremo Tribunal Federal (STF), that exams cases with constitutional relevance; and Superior Tribunal de Justiça (STJ), that deals with cases related to federal law, systematically refuse to rule cases involving production of scientific evidences.

Even though there are some important and clarifying decisions from those two courts, the vast majority of the appeals are not accepted, as STF considers it an issue with no constitutional relevance , while STJ refuses to reexam evidence and considers it essential to evaluate if evidence was produced in violation of CPC.

As a result, in a country with Brazilian extension, the same statute may receive different interpretation from each judge, the 27 State Courts and the 5 Federal Courts. This certainly complicates any intention of bringing stability or improve the scientific control over the expert opinion.

Nevertheless, CPC is particularly clear about the production of scientific evidence. First, article 156 indicates that the judge will be assisted by a court expert (*perito*) whenever a case requires scientific or technical knowledge (BRAZIL, 2015-A, 2019-A). According to articles 156 to 158 and 464, the expert may be select from a local data base that accepts any professional with minimum academic degree. The judge can, however, assign any professional he chooses, if he deems necessary or does not find one on this list.

The plaintiff and the defendant can also assign experts, but they are considered professionals in a relation of trust to each litigant (CPC, 466, §1º). Therefore, even though their presence on court is for scientific purpose, their testimony has far less value than the court experts, as it is presumed they will favor the litigant that appointed them.

To reach the answer to the first determinant factor, it is important to state that likely the most valuable characteristic of the court expert is not his knowledge, reputation or even the prove that his testimony is generally accepted among the scientific community. The main characteristic is that he is impartial, which can be an insult to the other experts that are not committed to the plaintiff or defendant – they are committed to science!

STJ recently decided (BRAZIL, 2019-A) that an opinion produced by experts from a public agency cannot overpower the testimony of the court expert, because he is impartial and equidistant from both litigants. His testimony is not necessarily better from a scientific standing point. He is simply impartial...

So, the expert in Brazilian legal system is a professional appointed by the court (judge), preferably selected from a list open to all those with a minimum degree, whose testimony will be presumably better than any other expert (even with greater knowledge) due to his impartiality. He is chosen by the judge and can only be removed by the litigants if proofed that he has (presumably) personal interest on the case.

Which guides to the second determinant factor: while the expert is assigned to give his technical view of the facts, are there limits to what he could or should sustain? Even though his assignment is limited to his specific knowledge, there are basically two restrictions to his testimony: he must indicate the method he followed, that should be accepted by the majority of his peers, and he cannot give a personal opinion of a non-scientific nature (CPC, 472, III and §2º).

The first limit establishes the idea that if a scientist chooses a valid method, he will reach a valid conclusion, regardless of the scientific premises that he adopts or ignores. It is the criteria the United States Supreme Court adopted until Daubert's ruling, under Frye ((UNITED STATES, 1923. HANNA, MAZZA, 2006).

The second limit does not reduce the first error. The court expert is only prohibited to submit an opinion that exceeds his scientific area. He could give a testimony that goes against the majority of his science. Or, as the statute explicitly permits, he could use a method that is accepted by 60% of the scientific community but considered absurd or invalid by 40% percent of his area.

Therefore, scientific evidence in Brazil is the opinion developed by a court expert, using a method that is accepted by most scientists of his field, regardless of how invalid or widely disregarded his premises or conclusions could be.

Third, the evidence is destined to convince the judge, who will, single handedly, provide the ruling for the lawsuit. And although he does not possess scientific or technical knowledge, he will decide freely, even if he will reach a technical conclusion that differs from the expert testimony (CPC, 479)

This aspect is very interesting, as the litigants will only learn if the expert's testimony will be used when the judge rules the case.

The most relevant decision of Brazilian Supreme Court on the production of scientific evidence expresses this idea. The RE 363889 precedent regards the use of DNA exams to reopen a parenting investigation had received a definitive ruling. On one of the majoritarian votes, Justice Luiz Fux states

However, this cooperation (between judge and expert) cannot be used without caution. There is a great risk that the judge simply renounces his decision making authority, delegating it to the court expert, without even considering the scientific evidence on its correct terms, and that, to achieve an appropriate ruling, that evidence must be examined with the other evidences, subject to the duty of motivate the decision, typical of the free motivated convincement based on evidence (BRAZIL, 2015-B).

Curiously, this was the only decision found on the court's database with a brief reference to United States Supreme Court's Daubert ruling.

While it is clear that a judge holds the final say on the Brazilian civil procedure, it is challenging to accept that he might provide a decision that demands scientific knowledge opposing the expert testimony.

STJ ruling in AgIntREsp 1.638.591 (BRAZIL, 2019-B) involves a discussion on the quality of bricks used to construct a building. The court's expert testimony concluded that, while the quality was below the expected, it was unnecessary to demolish the building and rebuilt it.

The final ruling was that demolish was necessary to demolish the building, with not expert testimony on that direction.

In Brazil, the scientific evidence is produced in order to convince the judge. Meanwhile, the judge can reach a conclusion that demands scientific evidence and opposes the expert testimony on the case.

Finally, it is worrisome that Brazilian procedure is not equipped to deal with scientific uncertainty or divergence. Since all there is required from the expert is that his method is accepted by the majority, he might adopt any controverted premise or conclusion to his liking.

It would be intriguing to find out how a ruling would take place in Brazil if a court expert emitted an testimony that scientists is still debating if the plaintiff or the defendant point of view has scientific validity or that there are several lines of research and one of them favors the plaintiff and the other the defendant.

The judge has the duty to provide a solution to every case. This solution, nevertheless, could be that the matter in hand was not effectively proofed and, therefore, the one that should proof it will suffer the consequences.

If the judge is not convinced that the court expert testimony provides the best (or even an acceptable) scientific evidence he has the authority – or the obligation – to appoint a new court expert (CPC, 480).

However, Brazilian civil procedure does not have a uniform solution to how to deal with scientific uncertainty or divergence.

4 SCIENTIFIC EVIDENCE IN THE UNITED STATES: THE DAUBERT STANDARD

The acceptance of scientific evidence in the United States rests on precedents form the Supreme Court for a long time, and on the Federal Rules of Evidence. The Committee on Daubert Standards reminded that the Frye standard preceded the Daubert standard:

For 70 years, many federal courts relied on the general acceptance standard laid out ia Frye v. the United States (1923) to determine the admissibility of expert testimony. Under the Frye standard expert testimony is admissible only if its methodology is "generally accepted" (i.e., a consensus has been reached) in the relevant scientific community. The Da11bert decision essentially held that Frye did not survive the enactment of the Federal Rules of Evidence, and interpreted Rule 702 of the Federal Rules of Evidence as requiring that scientific expert testimony be grounded in the methodology and reasoning of science (i.e., the expert must show the underlying validity of his opinion). In finding that the epidemiological and toxicological evidence offered by the plaintiff experts was inadmissible, the Jower court in Daubert had applied the Frye general acceptance test. However, the Supreme Court spelled out a new test for the admissibility of scientific evidence, aimed to ensure that it "is not only relevant, but reliable" (HANNA, MAZZA, 2006, p. 14-15).

Under the Frye standard, that is extremely similar to Brazilian rule (CPC 472, III), any expert testimony that uses a methodology generally accepted would be scientific evidence. With Daubert, both the methodology and the reasoning needed to be reliable.

Heide K. Brown summarizes the Daubert ruling:

Building on the threshold consideration of a witness's qualifications to testify as an expert, the Daubert Court provided a new set of factors for courts to use in determining whether opinion testimony "will assist the trier of fact to understand the evidence or to determine a fact in issue" as required in FRE 702. These factors include (1) whether the expert's theory or technique has been tested, (2) whether the theory or technique has been subjected to peer review and publication, (3) the technique's "known or potential rate of error" and "the existence and maintenance of standards controlling the technique's operation," and (4) the degree of acceptance of the theory or technique within the scientific community. The Court was careful to assert that "[m]any factors will bear on the inquiry, and we do not presume to set out a definitive checklist or test." Thus, the Court emphasized that this type of evaluation should be "flexible" and attentive to "principles and methodology, not on the conclusions that they generate." The Court reiterated that, to be admissible, expert testimony must be both reliable and relevant (BROWN, 2018. p. 148).

Four factors were suggested, in spite of its flexibility. The central concern was quite simple: the methodology and the reasoning of the expert testimony needed to be reliable. No scientific evidence could be acceptable if it would not be accepted among scientists of that specific field.

Daubert vs. Merrell Dow Pharmaceuticals, Inc. was a touching case. The plaintiff, represented by their parents, sued the company that produced a drug that was used by their mother, and it was suspect to cause damages to the infants during pregnancy:

Petitioners, two minor children and their parents, alleged in their suit against respondent that the children's serious birth defects had been caused by the mothers' prenatal ingestion of Bendectin, a prescription drug marketed by respondent. The District Court granted respondent summary judgment based on a well credentialed expert's affidavit concluding, upon reviewing the extensive published scientific literature on the subject, that maternal use of Bendectin has not been shown to be a risk factor for human birth defects. Although petitioners had responded with the testimony of eight other well credentialed experts, who based their conclusion that Bendectin can cause birth defects on animal studies, chemical structure analyses, and the unpublished "reanalysis" of previously published human statistical studies, the court determined that this evidence did not meet the applicable "general acceptance" standard for the admission of expert testimony. The Court of Appeals agreed and affirmed, citing *Frye v. United States*, 54 App. D. C. 46, 47, 293 F. 1013, 1014, for the rule that expert opinion based on a scientific technique is inadmissible unless the technique is "generally accepted" as reliable in the relevant scientific community (UNITED STATES, 1993).

In 1997, the Supreme Court reinforced the use of the Daubert standard on *General Electric v. Joiner* (UNITED STATES, 1997):

A second case provided court with additional guidance. In *General Electric v. Joiner* (1997) a plaintiff who was a longtime smoker with a family history of lung cancer claimed the exposure to polychlorinated biphenyls (PCBs) had promoted the development of his small-cell lung cancer. Relying on the Daubert criteria (described previously), the trial court excluded the plaintiff's expert testimony and granted

summary judgment. The intermediate appellate court reversed the lower court decision. The Supreme Court then held that in reviewing a trial judge's evidentiary ruling an appellate court must use an abuse of discretion standard, which requires the reviewing court to defer to the rulings of the trial court unless they are clearly in error. The Court concluded that the trial judge had not abused her discretion when she refused to admit the plaintiff's expert testimony, because the claims of a causal connection between the exposure and the injury made by the expert witness were too speculative (HANNA, MAZZA, 2006, p. 5).

Finally, under *Kumho Tire Co. v. Carmichael* (UNITED STATES, 1999), the court allow an expert testimony from tire failure analyst without fulfilling all the four factors because his expertise was more experience/skill based. Nevertheless, it was made clear that the Daubert standard was not limited to scientific context and that the most important aspect on the factors indicated was that the expert testimony should be reliable.

To summarize, the main concern of the Supreme Court is that only reliable scientific evidence is admitted in court, based on rule 702 of the Federal Rules of Evidence:

Rule 702. Testimony by Expert Witnesses

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:

- (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
- (b) the testimony is based on sufficient facts or data;
- (c) the testimony is the product of reliable principles and methods; and
- (d) the expert has reliably applied the principles and methods to the facts of the case (UNITED STATES, 2018).

Rule 706 is important as well to understand the characteristics of the expert:

Rule 706. Court-Appointed Expert Witnesses

(a) APPOINTMENT PROCESS. On a party's motion or on its own, the court may order the parties to show cause why expert witnesses should not be appointed and may ask the parties to submit nominations. The court may appoint any expert that the parties agree on and any of its own choosing. But the court may only appoint someone who consents to act.

(b) EXPERT'S ROLE. The court must inform the expert of the expert's duties. The court may do so in writing and have a copy filed with the clerk or may do so orally at a conference in which the parties have an opportunity to participate. The expert:

- (1) must advise the parties of any findings the expert makes;
- (2) may be deposed by any party;
- (3) may be called to testify by the court or any party; and
- (4) may be cross-examined by any party, including the party that called the expert.

[...]

(d) DISCLOSING THE APPOINTMENT TO THE JURY. The court may authorize disclosure to the jury that the court appointed the expert.

(e) PARTIES' CHOICE OF THEIR OWN EXPERTS. This rule does not limit a party in calling its own experts (UNITED STATES, 2018).

There is a possibility of a court-appointed expert witnesses. Only a possibility. A litigation can be concluded with scientific evidence without one expert being nominated by the Court. And, even if there is one, it is not more valuable than the one appointed by a party. They both have a strict commitment to science, not to the parties. Finally, the court expert can be deposed by any party, meaning he is not a professional of the judges' trust. Every actor on the litigation must trust him.

The expert in the United States civil procedure is a witness that will be qualified by its knowledge, skill, experience, training, or education. They are appointed by the parties or the court, but the value of its testimony is not presumed (in)partiality. It is the scientific reliability.

Under Daubert standard, scientific evidence can only be accepted if it is reliable, based primarily on the four factors recommended: (1) whether the expert's theory or technique has been tested, (2) whether the theory or technique has been subjected to peer review and publication, (3) the technique's "known or potential rate of error" and "the existence and maintenance of standards controlling the technique's operation," and (4) the degree of acceptance of the theory or technique within the scientific community. Both the methodology and the reasoning need to be generally accepted by the scientific community.

The concern of the reliability of the scientific evidence is to avoid expert witnesses with low qualification, one-sided testimonies, or statements with no scientific value. The so-called junk science or ipse dixit (he said himself). Gutheil and Bursztajn explain:

The original Daubert case and its successors emerged, by their own internal descriptions, as attempts to end what was perceived as a significant influx of junk science into the courtroom. Junk science was defined as one expert's basing an opinion on flawed, factitious, or idiosyncratic methodology that would not provide reliable approaches to the problem at bar. Indeed, the opinion in one case used necromancy, divination from corpses, as a metaphoric example of junk science. Courts mentioned in passing the need for a basis for an expert opinion that was more than an ipse dixit, as noted earlier (GUTHEIL, BURSZTAIN, 2003. p. 206).

Third, the final objective of the scientific evidence is not to convince a judge, as the Court will evaluate if they should allow the expert testimony on trial, but it will be produced in order to convince the jury.

That creates a great difference to the Brazilian system. If scientific evidence is not allowed on trial, that fact will not have reflections on a decision. Even more: without essential scientific evidence, the plaintiff might not even have a case.

So, finally, the final factor is reached. Under scientific inconclusion or divergence, the precedent based United States' system will not allow the scientific evidence, which will likely cost the plaintiff its case (unless it is need by the defendant).

5 CONSTRUCTING A CRITICAL VIEW OF THE SCIENTIFIC EVIDENCE IN BRAZIL UNDER THE UNITED STATES SUPREME COURT CRITERIA

Returning to each identified factor, it becomes obvious that the Brazilian and the American systems are extremely different regarding scientific evidence. The objective of this study is to identify possible improvements to the Brazilian system.

First of all, the expert in Brazil is essentially relied on a presumed impartiality, that makes him more reliable than other professionals. This conclusion is based on two assumptions: the court expert will remain impartial throughout his work, not being affected by the emotions of the parties; and that the expert from each party would be more interested on protecting “their client” than being committed to science and to their profession.

While the first assumption is positive and should be expected (although not guaranteed), the second one is offensive to those professionals. It is the lawyer's job to protect its client's interest. When an expert is called to court, court appointed or not, his only commitment is to his science, his field and his profession (HANNA, MAZZA, 2006. p. 17).

On the American system, the court appointed expert is not the most common figure. Expert testimony can be present by professionals chosen by one of the parties, with one requirement (albeit more complex): his opinion must be scientific and reliable. So, an expert for the plaintiff can be more relevant than the court appointed, if his opinion has better scientific standing.

So while the quality of the scientific evidence in Brazil is center on impartiality, on United States, it is centered on reliability.

Second, scientific evidence requirement in Brazil is similar to the Frye standard, established in 1923 and abandoned in 1993 in the United States. Actually, it is less reliable. While in Brazil it is enough that an opinion is built under a methodology that is accepted by a predominant part of the scientists, the Frye standard demanded that the methodology was generally accepted. The difference is subtle, but undeniable. A method might be preferred to the majority of a field, but considered unreliable by the rest, while another method may not be the most used but might be generally accepted by the scientific community as reliable. The meanings are different.

In the United States, however, it is not enough that the expert testimony uses a methodology that is generally accepted. His reasoning needs to be reliable and to have great scientific acceptance among the scientific community to be admitted.

Third, while in Brazil the scientific evidence is always produced to convince a Judge on judging the case, in the United States it might need to be accepted by the judge to be used to convince the jury.

The difference has deep consequences. If scientific evidence is unreliable, the scientific facts will not be examined in Court. In Brazil, however, a judge might consider that an expert testimony is not reliable and, therefore, provide a ruling based on scientific aspects that lead to a different conclusion.

Basically, if the judge considers the scientific facts necessary for his ruling and the expert testimony incorrect or inconclusive, it is his duty, not his option, to appoint another court expert.

Finally, if the scientific analysis is inconclusive or presents divergence, it will not be allowed in Court in the United States. In Brazil, however, as the court expert is not limited in his reasoning, he might omit the divergence (present his point of view) or reach a conclusion that is not already accepted by the scientific community.

The greatest risk for the Brazilian system on this last aspect is that the general acceptance of the reasoning (not only the method) presented by the expert is not even considered at this point.

If the Court expert reaches a conclusion that is different from both the plaintiff's and the defendant's expert, his opinion will likely prevail, without consideration on how three professionals reached different conclusions. Did they use the same method or reasoning? Which opinion would have more scientific value? If the scientific community actually accepts those three opinions as valid in the moment, is the case ready for a judicial ruling based on scientific evidence at this moment? Is the judge qualified to choose which opinion is better, if not even the scientific community reached a conclusion?

The failure to address those problems, unfortunately, reduces the quality of the scientific evidence in Brazil.

6 CONCLUSION

Despite the many evolutions need to improve the quality of the scientific evidence in Brazilian civil procedure, most of them could be implemented without changing the civil

procedure statute (CPC). Regardless of all the shortcomings of CPC on this matter, there is no rule that forces the judge to decide a case based (or even to accept) on an unreliable court expert opinion.

A concerned judge that desires to allow only reliable scientific evidence on his cases can promptly adopt some measurements that will reduce expert opinions with low quality:

(A) include a general acceptance by the scientific community to the expert's opinion reasoning as an additional requirement to the methodological acceptance;

(B) use a second court expert opinion whenever scientific doubts remain, constraining himself, in any opportunity, to decide without a reliable scientific opinion that supports the ruling;

(C) abandon the "impartiality" criteria, as expert testimonies should rely exclusively on scientific knowledge – if a professional decides to abandon his scientific obligations to protect the party that appointed him, he should be investigated by his peers or his scientific community;

(D) if the expert testimonies indicate inconclusiveness or divergence on the scientific community, that scientific fact should be considered unproven, as the judge should not decide the technical controversy instead of the scientific community; or

(E) even though the judge does not need to clarify the reason he has chosen a specific expert, if the goal is to achieve reliable scientific evidence, it is essential that the decision that appoints an expert evaluates and motivates on why the professional is qualified for the task.

All those changes can be adopted by the judicial system with no need to change the statutes. Nevertheless, to ensure uniformity on all courts and to ensure that only reliable scientific evidence will be allowed in court, altering the Brazilian civil procedure statute to implement the solutions proposed above would be the best alternative.

7 REFERENCES

BRAZIL. *Lei* nº 13.105, de 16 de março de 2015. *Código de Processo Civil*. Published in 17 mar. 2015. Available in: < http://www.planalto.gov.br/ccivil_03/_ato2015-2018/2015/lei/113105.htm>. Access in: 04 maio 2022 (2015-A).

BRAZIL. Superior Tribunal de Justiça. *Agravo Regimental em Recurso Especial* n. 1.391.146. Primeira Turma. Ministro Gurgel de Faria. Brasília, DF. Ruled in June, 25, 2019.

Published in August 09 2019 (2019-A).

BRAZIL. Superior Tribunal de Justiça. *Agravo Interno em Recurso Especial n. 1.638.591*. Terceira Turma. Ministro Paulo de Tarso Sanseverino. Brasília, DF. Ruled in March 13 2019. Published in May 17 2019 (2019-B).

BRAZIL. Supremo Tribunal Federal. *Recurso Extraordinário n. 363.889*. Tribunal Pleno. Relator: Ministro Gilmar Mendes. Brasília, DF. Ruled in June, 26, 2015. Published in June 29 2015 (2015-B).

BROWN, Heidi K. **Applying Daubert to Flaubert**: Standards for Admissibility of Testimony of Writing Experts. In: *Legal Communication & Rhetoric: JALWD*, Vol. 15, 2018.

CARDOSO, Daniel. *Judicialização da saúde: solução ou parte do problema*. Londrina: Thoth, 2020.

DIAS, Bruno de Macedo. **Forum Shopping na Judicialização da Saúde: o juiz natural como uma base ética na Administração da Justiça**. *Revista da Procuradoria-Geral do Estado de Santa Catarina*, n. 12, 2022. pp. 31-68.

GUTHEIL, Thomas G.; BURSZTAIN, Harold. **Avoiding ipse dixit mislabeling**: Post-Daubert approaches to expert clinical opinions. *Journal of the American Academy of Psychiatry and the Law*, Vol. 31, n. 2, 2003.

HANNA, Kathi E.; MAZZA, Anne-Marie; National Research Council (U.S.). **Discussion of the Committee on Daubert Standards**: Summary of Meetings. Washington: National Academies Press. 2006. (eBook). p. 17.

PASOLD, Cesar Luiz. *Metodologia da pesquisa jurídica: teoria e prática*. Florianópolis: Empório Modara, 2018.

UNITED STATES. **Federal Rules of Evidence**. Washington: U.S. Government Publishing Office, 2018.

UNITED STATES. Supreme Court. **Daubert v. Merrell Dow Pharmaceuticals** (92-102), 509 U.S. 579 (1993).

UNITED STATES. Supreme Court. **Frye v. United States**. 293 F. 1013 (D.C.. Cir 1923).

UNITED STATES. Supreme Court. **General Electric Co. v. Joiner**, 522 U.S. 136 (1997).

UNITED STATES. Supreme Court. **Kumho Tire Co. v. Carmichael**, 526 US 137 (1999).

ROCHA, Priscila Mendes. MIGOSKY, Felipe. *Ativismo Judicial e a Judicialização dos Direitos Fundamentais*. *Revista Eletrônica Direito e Política*. Itajaí: Univali, 2019, v.14, n.2. p. 220-238.

SARLET, Ingo Wolfgang. FENSTERSEIFER, Tiago. *Direitos Ambientais Procedimentais: Acesso à informação, a participação pública na tomada de decisão e acesso à justiça em matéria ambiental*. *Revista Novos Estudos Jurídicos*. Itajaí: Univali, 2018. Vol. 23. N.2. p. 417-465.

ISAIA, Cristiano Becker. TYBUSCH, Jerônimo Siqueira. ***Proteção processual ambiental: A necessidade de se reconstruir o significado das decisões liminares nas questões ambientais.*** *Revista Novos Estudos Jurídicos*. Itajaí: Univali, 2015. Vol. 20. n.1. Jan-Apr 2015. p. 171-202.