IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA

IN AND FOR THE COUNTY OF SAN MATEO

JASON WIENER, an individual; and DARRELL RODRIGUEZ, an individual,

Plaintiffs,

v.

STEPHANIE STONE; NICHOLAS STONE; IRIS REYES; and DOES 1-100, Inclusive,

Defendants,

Case No. 18Civ00255

TENTATIVE RULINGS ON MOTIONS IN LIMINE

Date: May 17, 2021
Time: 2:00 p.m.
Dep't: 4
Judge: Hon. Nancy L. Fineman

Motion in Limine 13

Disclosure

On April 21, 2021, the Department 4 clerk sent an email to counsel advising them that Judge Fineman's daughter-in-law's sister is a neurosurgeon at an out-of-state hospital. Judge Fineman does not believe, based upon a quick search that the doctor has written on DTI-MRI, but her webpage at the

hospital lists publications that deal with MRIs, brain tumors and other issues. Judge Fineman has not read any of her articles or had any substantive discussions with her about her work. The name of the doctor and the hospital for which she works was disclosed in the email. For privacy purposes, Judge Fineman does not disclose that information in this public record.

The Parties' Overview Arguments and the *Kelly* Test

Defendant seeks to preclude Plaintiff from introducing any evidence or mentioning DTI-MRI testing or imaging or the results of tests performed on Plaintiff. Defendant argues that DTI-MRI is a "recognized tool for research but has been deemed not to be reliable for use in individual patients with suspected traumatic brain injury – the very type of injury Plaintiff is attempting to prove via DTI-MRI imaging." Defendants' Motion in Limine No. 13 at 2. Plaintiff argues that DTI-MRI has been in use since 1994, the Food and Drug Administration approved DTI-MRI for marketing in 2001 and courts have overwhelming rejected Defendants' arguments. Plaintiff's Opposition at 2. If the DTI-MRI evidence is used in conjunction with other medically accepted evidence which supports the diagnosis, *Ruppel v. Kucanin* (N.D. Ind., June 20, 2011, No. 3:08 CV 591) 2011 WL 2470621, the Court confirms the substance of the articles it requests Plaintiff provide, and Plaintiff supplies the foundation for the 10 expert declarations, the motion is DENIED.

Defendants correctly rely on *Sargon* that "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 speculative." *Sargon Enterprises, Inc. v. University of Southern California* (2012) 55 Cal.4th 747, 771–772 relying on Evidence Code §§ 801(b) and 802; *id.* at 770. Plaintiff explains that: "Expert testimony deduced from novel scientific principles may be admissible if the proponent of the evidence makes a 'preliminary showing of general acceptance of the new technique in the relevant scientific community.'" Plaintiff's

Opposition at 4 quoting *People v. Kelly* (1976) 17 Cal.3d 24[1] The burden to establish the *Kelly* factors is on the proponent of the evidence. *Id.* at 612. As Justice Mark Simons explains, Plaintiff must establish:

> • The reliability of the method must be established, usually by expert testimony;
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> • The witness furnishing such testimony must be properly qualified as an expert to give an opinion on the subject; and
>
> • The proponent of the evidence must demonstrate that correct scientific procedures were used in the particular case.[2]

Simons *California Evidence Manual* § 4:27 (2021). "'General acceptance'" under *Kelly* means a consensus drawn from a typical cross-section of the relevant, qualified scientific community. *People v. Leahy* (1994) 8 Cal.4th 587, 612. "With respect to the first prong of this test, reliability means that the technique must be sufficiently established to have gained general acceptance in the particular field in which it belongs. In determining whether there has been general acceptance, the goal is not to decide the actual reliability of the new technique, but simply to determine whether the technique is generally accepted in the relevant scientific community. Courts must consider the quality, as well as quantity, of the evidence supporting or opposing a new scientific technique. Mere numerical majority support or opposition by persons minimally qualified to state an authoritative opinion is of little value." *People v. Morganti* (1996) 43 Cal.App.4th 643, 656 (internal citations, quotations and brackets omitted).

The Court Applies the *Kelly* Test to DTI-MRI

"*Kelly* applies only to that limited class of expert testimony which is based, in whole or in part, on a technique, process, or theory which is *new* to science and, even more so, to the law." *People v. Cowan* (2010) 50 Cal.4th 401, 470 (emphasis in original; internal quotations and citations omitted). The parties appear to agree that the *Kelly* standard applies to the DTI-MRI testing. Therefore, the Court assumes that

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[1] *Kelly* is still the controlling law in California. *Sargon*, 55 Cal.4th at 772, n. 6.

[2] Defendants have not challenged this third prong, that the correct scientific procedures were not used in this case.

(continued . . .)

it must apply the *Kelly/Sargon* analysis. Since Plaintiff does not argue to the contrary, the Court also assumes that the DTI-MRI is not an improvement of the MRI, which would make the *Kelly* analysis unnecessary. *People v. Cordova* (2015) 62 Cal.4th 104, 128.[3]

If a California appellate court has approved the scientific method, then the Court does not need to conduct a *Kelly* hearing. *Kelly*, 17 Cal.3d at 32. The Court may look at decisions from other jurisdictions and relevant scientific literature in determining whether a technique is generally accepted. *Kelly* at 35; *People v. Allen* (1999) 72 Cal.App.4th 1093, 1099.

The Court should review the scientific literature and may rely solely on the scientific literature to conclude that there is no generally accepted scientific consensus about the reliability of the new technique at that time. *Kelly*, 17 Cal.3d at 35 ("Such writings may be considered by courts in evaluating the reliability of new scientific methodology"); *In re Jordan R.* (2012) 205 Cal.App.4th 111, 128 citing *Leahy*, 8 Cal.4th at 611; *Shirley*, 31 Cal.3d at ("if a fair overview of the literature discloses there is significant public opposition to the technique as unreliable, the court may rely on the literature alone to conclude there is no general consensus at the present time"). *People v. Morganti* (1996) 43 Cal.App.4th 643, 665 ("As our Supreme Court has recently confirmed, *Kelly* does not demand absolute unanimity of views in the scientific community. If a fair overview of the literature discloses that scientists significant either in number or expertise publicly oppose the technique as unreliable, the court may safely conclude there is no such consensus at the present time." (citations, internal quotations, brackets omitted)).

A court may also rely on disinterested experts regarding the technique's general acceptance in the relevant community. *In re Jordan R.* (2012) 205 Cal.App.4th 111, 130 citing authorities. "A witness qualifying as an expert is *disinterested* if he is not 'so personally invested in establishing the technique's

[3] Neither party has cited to a case finding that diagnostic medical imaging is admissible. However, the Supreme Court has analyzed the qualifications concerning MRIs suggesting that testimony regarding MRIs is permissible. *People v. Pearson* (2013) 56 Cal.4th 393, 445.

acceptance that he might not be objective about disagreements within the relevant scientific community.'" *Id.* (emphasis in original) quoting *People v. Brown* (1985) 40 Cal.3d 512, at 530. The expert does not have to be totally disinterest; "a certain degree of "interest must be tolerated if scientists familiar with the theory and practice of a new technique are to testify at all." *People v. Morganti* (1996) 43 Cal.App.4th 643, 667.

The Evidence Submitted by the Parties

Defendants' Evidence

In support of their motion, Defendants submit six exhibits: (1) portions of a publication from the American College of Radiologists; (2) a law review article; (3) 3 pages from a Veteran's Affairs and Department of Defense publication; (4) a statement by the Radiological Society of North American; (5) portions of plaintiff's expert radiologist Murray Solomon, M.D. deposition; and (6) portions of plaintiff's expert neurologist Mark D'Esposito. M.D deposition.

Plaintiff's Evidence

In support of his motion, Plaintiff submits: (1) Declaration of Murray Solomon M.D., Plaintiff's expert radiologist, which attaches as exhibits his CV, a 2013 article entitled, "A Decade of DTI in Traumatic Brain Injury: 10 Years and 100 Articles Later" and a 2014 article entitled "Clarifying the Robust Foundation for and Appropriate Use of DTI in mTBI Patients;" and (2) an attorney declaration that includes portions of the deposition of Jerome Barakos, M.D., Defendants' neuroradiologist, portions of the deposition of Mark D. Esposito, M.D., Plaintiff's neurologist, portions of deposition of David Patterson, M.D., Plaintiff's physiatrist; 27 state and federal orders across the nation allowing DTI-MRI testimony and 10 declarations of physicians who confirm DTI-MRI is reliable and useful. The Court notes that Plaintiff fails to provide any analysis or highlighting of these orders and declarations. The Court cautions Plaintiff's counsel that in the future they should not depend on the trial court having the time to spend as much time as this Court was able to during a Pandemic staycation to review the

materials. Instead, it is incumbent upon the attorneys to provide the information to the Court in a well-organized and analytical manner rather than simply providing the underlying material to the Court.

Court's Analysis

Case Law

There has been no California appellate authority that has ruled on the admissibility of DTI-MRI. None of Plaintiff's attached orders, save one, are from an appellate court[4]—they are all out-of-state or federal trial court orders. Plaintiff does not discuss or attach any of the cases where courts have denied the admissibility of DTI-MRI. Defendants only citation to other court's ruling is through the University of Cincinnati Law Review article published in 2018. The articles appear to only list cases where the courts have admitted the DTI-MRI evidence. Andrew M. Lehmkuhl II, Diffusion Tensor Imaging: Failing Daubert & Fed. R. Evid. 702 in Traumatic Brain Injury Litigation, 87 *U. Cin. L. Rev.* 279,283 (2018) at 298, n. 150, 151. In affirming a death sentence, the Ohio Supreme Court referred to three brain scans, including "an MRI diffusion tensor imaging ("DTI") scan", but there is no affirmation of the use of the test. *State v. Kirkland* (2020) 160 Ohio St.3d 389, 417, reconsideration denied (2020) 160 Ohio St.3d 1421 (case found through Court's research; not cited by the parties). In the Court's Westlaw research, there are only three California trial court cases on DTI-MRI, all in the motion in limine context, but none of orders contain a substantive ruling. *Rivera v. PCH Beach Resort, LLC*, (Aug. 6, 2019 Cal. Super.) 2019 WL 8438465, at *1 ("MIL13 to exclude evidence of diffusion tensor imaging (DTI) studies is reserved as E.C. 402 hearing is required.")[5]; *Camacho v. Brentwood Holdings Partners LLC* (Cal.Super. Feb. 1, 2018) 2018 WL 3304510, at *2 ("Defendant's #16 to Exclude Evidence of Non

[4] The appellate court opinion is not designated for publication. *LeBoeuf v. B&K Contractors, Inc.* (4th Cir. May 27, 2009) 2009 La.App. Unpub. Lexis 324; 2009 WL 8688909.

[5] This case went to jury verdict. *Rivera v. PCH Beach Resort, LLC* (Cal.Super. Aug. 5, 2019) 2019 WL 8438461, at *1 (judgment).

Disclosed Medical Doctor, Aaron Filler, M.D., and any reference to His Undisclosed DTI MRI of the Brain is RESERVED."); *Morales v. Harris* (Cal.Super. Oct. 18, 2018) 2018 WL 7077590, at *2 (Motion in Limine No. 15 For Order to Conduct a Hearing Out of the Presence of the Jury to Determine the Admissibility of the DTI MRI and Opinions and Findings Relative Thereto - Denied.").

In most of the orders submitted by Plaintiff, the courts do not analyze the scientific articles supporting the reliability of DTI-MRI. An exception is " *Ruppel v. Kucanin* (N.D. Ind., June 20, 2011, No. 3:08 CV 591) 2011 WL 2470621.

The cases cited by the parties are several years old. The Court's research finds that more recent cases further demonstrate that motion to exclude the DTI-MRI has been denied or the DTI-MRI evidence has been considered without objection. See e.g. *Kim v. Stewart* (S.D.N.Y., Mar. 23, 2021, No. 18 CIV. 2500 (SLC)) 2021 WL 1105564, at *2 (summary judgment motion where plaintiff introduced doctor's review of MRI diffusion tensor imaging study which indicated injury); *Woods v. Saul* (S.D.N.Y., Mar. 5, 2021, No. 1:19-CV-0336S(SN)) 2021 WL 848722, at *6 (Social Security Commission decision refers to MRI and diffusion tensor imaging of the brain showing no acute intracranial abnormality and had unremarkable DTI maps but recommendation for additional testing for a possible traumatic brain injury); *Lance Meadors v. D'Agostino* (M.D. La., Oct. 29, 2020, No. CV 18-01007-BAJ-EWD) 2020 WL 6342637, at *4 (denying defendant's motion to exclude DTI on the basis on unreliability); *Shuchun Li v. Harper* (Ohio Com.Pl. Aug. 17, 2020) 2020 WL 9256903 (denying motion to exclude DTI testimony); *Johnson-Borman v. Taylor* (Ind.Super. Feb. 26, 2020) 2020 WL 4034902, at *1 (motion to exclude results of diffusion tensor imaging denied).

The Court's research has only found one case where DTI-MRI was found unreliable and excluded. *Malone v. Taylor* (Tenn.Cir.Ct. 2019) 2019 WL 6456250, at *3–5.[6]

[6] The Court used its best efforts to discover cases where courts exclude the testimony based on unreliability, but may have missed cases.

While the trial court orders are helpful to this Court, they are not precedential authority and this Court does not read *Kelly* and its progeny as allowing this Court to rely on these trial court decisions. Simons *California Evidence Manual* § 4:29 (2020) ("no hearing need be held if another trial court has already admitted such evidence and that decision has been affirmed on appeal by a published decision."). Thus, to comply with *Kelly*, the Court must conduct its own analysis rather than rely on other court's rulings.

Articles

Defendants' Articles

Defendants attach portions of two articles to an attorney declaration, a law review article and a criteria analysis.

While the law review article, Exhibit 2 to the Declaration of Denise Billups-Sloane, provides criticism of the case law, there is no identifying information about the author, he does not appear to be a medical expert, and there is no underlying expert analysis of the DTI-MRI testing.

Exhibit 1 to the Declaration of Denise Billups-Sloane is the American College of Radiology ACR Appropriateness Criteria, date of original review 1996, date of last review 2015. Defendants state it states the use and limitation of DTI-MRI imaging. However, there is no explanation on how to interpret the chart, no support for the conclusions and no information about the American College of Radiology.

Defendants submit as Exhibit 3 to the Declaration of Denise Billups-Sloane two pages of a 133-page Veteran Administration Practice Guideline. The article is attached to an attorney declaration and there are no facts, principles or methodologies supporting the conclusions. The article, apparently from 2016, refers to significant methodological problems with DTI studies as well as control problems and that the DTI findings have not been linked to clinical presentations or outcomes. However, Defendants have provided no analysis from the article for the Court to analyze the reasonableness of these statements. Another part of the military apparently holds a different view. "[T]he United States Army

Telemedicine and Advanced Technology Research Command ("TATRC") sponsored a 'Diffusion MRI TBI Roadmap Development Workshop' at which it was acknowledged: "DTI has detected abnormalities associated with brain trauma at several single centers.' It was also stated that 'the workshop seeks to identify and remove barriers to rapid translation of advanced diffusion MRI technology for TBI ... in order to expedite getting the benefits of diffusion MRI to reach those who need it most, especially injured soldiers and veterans.'" *Ruppel v. Kucanin* (N.D. Ind., June 20, 2011, No. 3:08 CV 591) 2011 WL 2470621, at *7 (citing plaintiff's expert).[7]

Defendants also submit as Exhibit 4 to the Declaration of Denise Billups-Sloane a statement as by the Radiological Society of North America dated April 15, 2017 that provides: "At present, there is insufficient evidence supporting the routine clinical use of these advanced neuroimaging techniques for diagnosis and/or prognostication at the individual patient level." (emphasis in original). Once again, there are no facts, principles or methodologies supporting this conclusion and Defendants provide no information about this Radiological Society.

The Court concludes from Defendants' submission that some experts do not believe that DTI-MRI is reliable in clinical settings, but finds that these experts constitute significant amount of public opposition in light of the articles discussed below.

Plaintiff's Articles

Attached to Plaintiff's expert Solomon's declaration are two articles. This Court agrees that the "A Decade of DTI" article is a literature review and noted the same problems that the court in *Malone v. Taylor* (Tenn.Cir.Ct. 2019) 2019 WL 6456250 discussed. However, the Court's review of the expert opinions presented in this case and the explanation of the scientific literature rebut the criticisms.

[7] This order was one attached to Plaintiff's motion. The Court cites the Westlaw cite.

The article discusses the number of peer-reviewed articles supporting the reliability of DTI-MRI, but there are no facts, principles or methodologies supporting the conclusions. Peer review is the chief way to demonstrate scientifically valid principles. *Metabolife Intern., Inc. v. Wornick* (9th Cir. 2001) 264 F.3d 832, 841 (applying *Daubert* standard). Many of the courts in the orders Plaintiff submits rely on the "A Decade of DTI article". See e.g. *Marsh v. Celebrity Cruises* at 7; *White v. Deere & Company* at 6. Defendants provide no information about whether any of their authorities have been peer reviewed.

Plaintiff's articles also do not provide the basis for the conclusions reached or provide any information about the qualifications of the authors.

However, the orders Plaintiff provided and their expert declarations analyze the underlying articles and other factors demonstrating reliability. Therefore, the Court turns to those authorities.

Articles Cited in Cases and Expert Opinions

As a preliminary matter, the Court finds significant that the Food and Drug Administration has approved use of DTI-MRI.[8]

> [I]in 2001, the Food and Drug Administration ("FDA") approved the product "Diffusion Tensor Imaging Option for MRI" for marketing as a Class II Special Control device. (Pl.'s Exh. 8, DE # 57–8.) Ruppel, citing to 21 U.S.C. § 360c(a)(3)(A), states that the FDA tested the software for safety and effectiveness before granting marketing permission. (DE # 57 at 21.) The letter from the FDA does not say this specifically. However, 21 U.S.C. § 360c(a)(3)(A) provides that approved Special Control devices are determined to be effective:
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> on the basis of well-controlled investigations, including 1 or more clinical investigations where appropriate, by experts qualified by training and experience to evaluate the effectiveness of the device, from which investigations it can fairly and responsibly be concluded by qualified experts that the device will have the effect it purports or is represented to have under the conditions of use prescribed, recommended, or suggested in the labeling of the device.
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> So although the FDA letter itself does not address the effectiveness of DTI, but its approval for marketing by the FDA indicates that its effectiveness was determined pursuant to 21 U.S.C. § 360c(a)(3)(A). In fact, other courts that have found DTI to be a reliable method have noted that it is "FDA approved, peer reviewed and approved, and a commercially marketed modality which has been in clinical use for the evaluation of suspected head traumas including

[8] See *Geffcken v. D'Andrea* (2006) 137 Cal.App.4th 1298, 1310 (the procedure had not been evaluated or approved by the Food and Drug Administration).

mild traumatic brain injury." *Hammar v. Sentinel Ins. Co., Ltd.*, No. 08–019984 at *2 (Fla.Cir.Ct.2010).

Ruppel v. Kucanin (N.D. Ind., June 20, 2011, No. 3:08 CV 591) 2011 WL 2470621, at *7

It is reported that there are specific peer-reviewed articles showing that DTI on the effectiveness of DTI, thus refuting one of the criticisms of the reliability of DTI. *Ruppel v. Kucanin* (N.D. Ind., June 20, 2011, No. 3:08 CV 591) 2011 WL 2470621, at *9 citing Michael Lipton, Diffusion–Tensor Imaging Implicates Prefrontal Axonal Injury in Executive Function Impairment Following Very Mild Traumatic Brain Injury, *Radiology*, Sept. 2009, Vol. 252: No. 3 and Calvin Lo, Diffusion Tensor Imaging Abnormalities in Patients with Mild Traumatic Brain Injury and Neurocognitive Impairment, Comput Assist TOmogr, March/April 2009, Vol. 33, No. 2; *Marsh v. Celebrity Cruises, Inc.* (S.D. Fla., Dec. 15, 2017, No. 1:17-CV-21097-UU) 2017 WL 6987718, at *4 & n. 3 (citing the same articles); Declaration of Joseph C. Wu ¶¶ 10-12, 16 citing Miles et al. 2008, Inglese, M. et al. (2005) "Diffuse axonal injury in mild traumatic brain injury: a diffusion tensor imaging study, 103 *J. of Neurosurgery* 298-303 (Aug. 2005), Abraham, A., "Admissibility of Diffusion Tensor Imaging;" "Mild Traumatic Brain Injury Assessment with Diffusion Tensor Imaging (DTI) and Positron Emission Tomography (PET_ scan finding and Neuropsychological Tests of Cognition and Attention" (peer reviewed presentation by Wu); Erin David Bigler Declaration ¶¶ 8, 12 citing Aoki et al, Diffusion tensor imaging studies of mild traumatic brain injury: a meta-analysis, *J. Neurol Neurosurg Psychiatry* 2021 Sep; 83(9); 870-6, Hellyer et al. Individual prediction of white matter injury following traumatic brain injury Ann Neurol 2012 Nov 29 doi 10.1002/ana.23834; Bozzali et al. white matter integrity assessed by diffusion tensor tractography in a patient with a larger tumor mass but minimal clinical and neuropsychological deficits Functional Neurology, 2012, Oct.-Dec; 27(4); 239-246. Bigler also states that the National Institute of Health and the Department of Defense sponsor the use of DTI and that the webpage of the Defense and Veterans Brain Injury Center outlines the use of DTI in the evaluation of mTBI, www.dvbic.org, but the Court could not find the website. *Id.* at ¶9. William W. Orrison, Jr. M.D. lists numerous articles and studies

showing that there is a known potential error rate and the existence and maintenance of standards controlling DTI. Declaration of William W. Orrison, Jr. M.D. ¶13. He also discusses the public guidelines for operation and interpretation of DTI and peer-review medical literature with a single subject citing to Krishna, Giordano, et al. and Gold, MM, Lipton, ML, Neurological Picture: Diffusion Tractography of axonal degeneration following shear injury, J. Neurol Neurosurg, 2008; 79:1374-75. Id. ¶15-16.

There are articles cited with different conclusions. Some of the cases also refer to a November 2014 article by Wintermark *et al.* that finds DTI to be suitable only for research but not routine clinical use at the individual patient level. See White v. Deer & Company (submitted by Plaintiff) at 6.[9]

The Court was unable to find these documents online and requests that Plaintiff provide them to the Court (and opposing counsel) so that the Court can review the articles. If there are any of the 112 articles identified in the "A Decade of DTI" that any party wants the Court to review, those articles shall be provided. However, the conclusion that the Court draws from commentary about these articles is that the consensus of the scientific community is that DTI-MRI is reliable in a clinical setting.

Experts

Defendants provide no expert declarations. They attach portions of depositions from two of Plaintiff's experts. The Court does not agree with the characterization of the testimony provided by Defendants.

Plaintiff provides portions of deposition excerpts from this case, including three of his experts and a defense neuroradiologist expert, Jerome Barakos, M.D. who testified that he has used MRI DTI for

[9] See M. Wintermark et al., American College of Radiology Head Injury Institute, Imaging Evidence and Recommendations for Traumatic Brain Injury: Advanced Neuro- and Neurovascular Imaging Techniques, in 36 Am. J. Neuroradiology El (2015), https://pdfs.semanticscholar.org/a951/cafdf3b64d005cf27da048c8b80ab7baa34e.pdf, published on behalf of the American College of Radiology Head Injury Institute cited by *Malone v. Taylor* (Tenn.Cir.Ct. 2019) 2019 WL 6456250.

over 15 years in 40 different clinical trials and that it can be useful when used in the appropriate fashion Declaration of Jonathan C. Harriman, Exhibit A at 48-49.

Plaintiff's expert Solomon represents that he along with well recognized centers "utilize the same methodology used by myself is discerning the damage to white matter, and its probable cause from neuroimaging. Among others, the University of California, San Francisco,[10] Cedars Sinai in California, the Brooke Army Medical Center, Harvard Medical School, University of Cincinnati, Duke University Medical Center utilize DTI-MRI sequence, *in conjunction with other sequences* to routinely determine white matter damage in patients with traumatic brain injury at the individual level, clinically." Solomon Declaration in Support of Plaintiff's Opposition to Defendants' MIL No. 13 ¶¶12 (emphasis in original). The fact that DTI-MRI is used to treat patients clinically is not necessarily evidence that DTI-MRI is reliable. See e.g. *Leahy* at 605–606 (Horizontal gaze nystagmus (HGN) used by police for 30 years; case law and scientific articles different views; remanded for *Kelly* hearing);[11] *In re Jordan R.* (2012) 205 Cal.App.4th 111 (significant controversy within the relevant scientific community about the reliability of polygraph test results).

Plaintiffs also provide 10 expert declarations although the exhibits are not attached. None of them have been submitted under penalty of perjury under California law although one (Wu) was executed in California. None of them have case captions; thus, it is unclear the purpose of the declaration. Plaintiff is to provide further foundation for these declarations.

One of the experts is Randell Benson, appears to be a leading authority on DTI-MRI. One court in analyzing a declaration submitted by him stated:

> In his affidavit, Dr. Benson discusses some of the testing that he has conducted "to demonstrate the clinical validity and reliability of DTI in TBI" as part of his work with the U.S. Army

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[10] Defendants' deposition excerpt from Esposito, states UCSF does not read DTI-MRI for clinical uses.

[11] The use of HGN was later approved in *People v. Joehnk* (1995) 35 Cal.App.4th 1488, 1504-5 based upon three experts who testified that HGN was accepted in the relevant scientific community.

> Telemedicine and Advanced Technology Research Command at a "Diffusion MRI TBI Roadmap Development Workshop." Docket No. 116-1 at 11-12, ¶ 18. As part of his research for his presentation at that workshop, Dr. Benson found "excellent correlation between DTI and injury severity" and "repeatability of DTI for a single mTBI case scanned in two different cities." *Id.* Dr. Benson also notes that "[o]ther speakers presented data showing the correlations of DTI with neurocognitive outcome and experience using DTI on Iraq war veterans." *Id.* Dr. Benson states the known rate of error for DTI analysis is .4%, Docket No. 116-1 at 14, ¶ 28; however, he provides no support for this rate.

White v. Deere & Company (D. Colo., Feb. 8, 2016, No. 13-CV-02173-PAB-NYW) 2016 WL 462960, at *3. This court thus concluded: "The publications and workshops cited by Dr. Benson support the conclusion that DTI has been subjected to peer review and is generally accepted in the medical community as a tool for detecting TBI" even though there was not a known error rate. *Id.* at *4.

Benson in his affidavit discusses his work studying brain injuries in former National Football League players, including testifying before the United States House Judiciary Committee (January 4, 2010). Affidavit of Randall Benson, M.D. ¶2. He discusses a seminal peer-reviewed paper he published with E. Mark Haacke, Ph.D. *Id.* ¶4. Benson cites to over ten specific articles showing the reliability of DTI testing. *Id.* ¶42.

Andrew Walker, a board-certified neuroradiologist declares that the DTI-MRI "is FDA approved, recognized and recommended as a useful MRI technique by the American College of Radiology (ACR), American Society of Functional Neuroradiology (ASFNR), the Defense Centers of Excellence (DCOE), and by the United States Air Force Surgeon General's Center for Excellence in Medical Multimedia (CEMM). DTI is one of the core MRI techniques used to evaluate TBI at NICoE, the Department Of Defense's elite brain injury institute at Walter Reed National Medical Center." Declaration of Andrew T. Walker, M.D. ¶3. Walker states that there is long-standing recognition of the clinical usefulness of DTI in the evaluation of TBI and standards in place for its use. *Id.* at ¶8.

Based upon these experts who have significant experience in the DTI-MRI field and work at well-respected medical centers, there is significant evidence that DTI-MRI is accepted in the scientific community. There is nothing in the testimony that suggests that they are interested, *i.e.*, have a financial

interest in promoting DTI-MRI.

The Court Concludes that DTI-MRI Meets the Kelly Criteria

Based upon the rulings of other courts, substantially all of whom have found DTI-MRI testing admissible, the consensus of the scientific literature and the disinterested experts, this Court after conducting its own review and analysis finds (subject to the confirmation set forth previously) that Plaintiff has met his burden in showing that DTI-MRI satisfies the *Kelly/Sargon* criteria and should be admitted into evidence. The case law, while not precedent, provides overriding support for the admission of the DTI-MRI. There is no question, as Defendants' exhibits demonstrate, that there is not unanimity in the scientific community about the reliability of DTI-MRI in a clinical setting. Unanimity, however, is not required—only consensus. *People v. Leahy* (1994) 8 Cal.4th 587, 612. Further, all studies have limitations and flaws, which should be taken into account, but the court should take into account the body of studies as a whole. *Cooper v. Takeda Pharmaceuticals America, Inc.* (2015) 239 Cal.App.4th 555, 589.

In this case, there is significant peer-reviewed scientific literature that supports the reliability of DTI-MRI. All the expert testimony submitted to this Court opine that DTI-MRI is reliable in a clinical setting. These declarants all have sufficient training to express these opinions and most provide significant foundation for their opinions, including specific examples from their practice and reliance on the literature. While our Supreme Court in *Kelly* and *Sargon* make the trial court the gatekeeper for expert opinion, the trial court does not resolve scientific controversies, but conducts a circumscribed inquiry to determine "whether the matter relied on can provide a reasonable basis for the opinion or whether that opinion is based on a leap of logic or conjecture." *Cooper v. Takeda Pharmaceuticals America, Inc.* (2015) 239 Cal.App.4th 555, 590.