| DISTRICT COURT, JEFFERSON COUNTY, COLORADO<br>100 Jefferson County Parkway<br>Golden, Colorado 80401-6002 | |
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| **MARION WHILDEN AND MARY WHLDEN**<br>Plaintiff,<br><br>v.<br><br>**KIMBERLY CLINE, ELMER DUDDEN and COLORADO CAB COMPANY, L.L.C.**<br>Defendants. | ▲ **COURT USE ONLY** ▲<br><br>Case Number: 08CV4210<br><br>Div.: 7 Ctrm.: 4-A |

## ORDER

THIS MATTER comes before the Court upon Defendant's Motion in *Limine* re Testimony of William W. Orrison. The court having considered the motion, the supporting materials and oral argument, hereby **DENIES** the motion.

Plaintiff claims to have been injured in motor vehicle accidents in which the various Defendants were at fault. He claims to have suffered mild brain trauma as a result. Dr. Orrison, administered a 3-Tesla MRI to Plaintiff and read the results. He also employed computer software called Diffusion Tensor Imaging ("DTI") and auditory functional magnetic resonance imaging ("fMRI") and read those results. In his opinion Plaintiff's brain shows signs of axonal shearing, damaged or missing connective fibers, abnormal blood flow pattern and a smaller than expected hippocampus. Dr. Orrison has diagnosed Plaintiff with a mild traumatic brain injury. He relies on these readings in forming his opinion.

DTI and fMRI are the type of novel scientific processes that were once governed by *Frye v. United States*, 293 F. 1013 (D.C.Cir.1923) and are now

governed by *People v. Shreck,* 22P.3d 68 (Colo. 2001). See also *People v. Hampton*, 746 P.2d 947, 950-951 (Colo.1987). The admission of expert testimony is governed by CRE 702 and CRE 403. *Shreck,* at 77. The Court's inquiry should focus on the reliability and the relevance of the scientific evidence, and a determination should be made as to (1) the reliability of the scientific principles; (2) the qualifications of the witness; and (3) the usefulness of the testimony to the jury. *Id*. at 78. The Court's inquiry should consider the totality of the circumstances in the case and be broad in nature. *Id*. Finally, to ensure the probative value of the evidence not be substantially outweighed by unfair prejudice, the Court should apply its discretionary authority under CRE 403. *Id*. at 79.

The court has considered two distinct questions. The first is the reliability of the 3-Tesla MRI and associated software ("the technology") in producing its results – evidence of axonal shearing, damaged or missing connective fibers, abnormal blood flow patterns and a smaller than expected hippocampus. The second is the appropriateness of using those results diagnostically.

The court finds the technology to be sufficiently reliable and scientifically accepted so as to be of benefit to the jury. Therefore the motion in limine will be denied.

3-Tesla MRI machines are powerful and expensive. The DTI and fMRI software is also expensive. This technology is not in general use, is seldom used by clinicians and is very rarely considered (because it is so rarely available) in forming a diagnosis. This court is convinced that it produces predictable, reproducible results and accurately images the portions of the brain to which it is applied. For these purposes, it is sufficiently accepted in the scientific and medical communities.[1] It has been the subject of a substantial number of published studies and articles, including peer reviewed articles.[2]

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[1] Many of the Defendants' own expert witnesses have used many of these techniques. *See* Response.

[2] There have been at least 2504 articles on hippocampal atrophy with at least 135 involving brain injury and

62 involving traumatic brain injury. *Id*. at 6. There have been at least 3393 articles on DTI with 176 articles related to DTI and traumatic brain injury and 29 articles related to DTI and mild traumatic brain injury. *Id*. at 7. A search for auditory fMRI revealed 4598 documents, and a search for fMRI and mild traumatic brain injury showed 292 documents. Id. at 9.

The qualifications of the witness do not seem to be questioned when it comes to the use of the technology. He is an expert in neuroradiology, has authored several peer reviewed articles and books, and has been practicing and researching in this area for over twenty-five years. The issue of Dr. Orrison's qualifications does not relate to the use of the technology, but rather to diagnosing mild traumatic brain injury through the use of the technology.

The court would have serious concerns about the appropriateness of diagnosing mild traumatic brain injury as the cause of abnormality *solely* from the presence of the abnormalities revealed by the technology. It is undisputed that some if not all of the abnormalities revealed by the technology can result from many causes. Among them are Multiple Sclerosis, aging, disease processes consistent with dementia, other disease processes and trauma. It is also undisputed that Dr. Orrison did not have available for comparison any MRI images, enhanced by DTI or fMRI, of the Plaintiff before the auto collisions that form the basis of this suit. While the abnormalities revealed by the technology may correlate to mild traumatic brain injury, correlation does not necessarily imply causation. Thus, if it were the intention of the Plaintiff to elicit from Dr. Orrison an opinion that the presence of these abnormalities, *without more*, is diagnostic of mild traumatic brain injury, Defendant would be permitted to renew this motion at trial and the opinion would likely be disallowed. The technology has not yet been proven to be of sufficient value as to reasonably exclude other reasonably possible causes.

But the court understands Dr. Orrison's opinion to be based upon the readings from the technology, coupled with the Plaintiff's history. This dilemma is one commonly faced by lawyers and jurors in auto accident cases. The medical professionals on the plaintiff's side regularly [1] find an injury or condition consistent with trauma, [2] accept without question the history provided by the plaintiff or his attorney, and [3] conclude that the injury or condition was caused by the auto accident. The medical professionals on the defendant's side often [1]

accept without question the history provided by the defense and [2] conclude that the injury or condition was not caused by the auto accident.

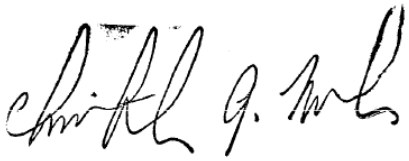
Finally, the Defendants argue that Dr. Orrison's testimony would be too unfairly prejudicial. The Court is not convinced. Many of the Defense's complaints go to the weight that the jury may afford to the evidence offered. These issues will be addressed on cross-examination and the Defendants will offer their own expert witness to point out any perceived problems with Dr. Orrison's testimony. Additionally, the Court expects the jury will be instructed that it may give as much or as little weight to expert opinions as the jurors think those opinions deserve.

The *Shreck* question presented to this court has to do with whether the images revealed by the technology properly document the condition of the tissue within the brain. The court is convinced that they do.

The issue of whether that condition was caused by mild traumatic brain injury (and, if so, as a result of one of these auto accidents) is one that the jury can reasonably determine with the help of the witnesses, the lawyers and the direct and cross examinations.

Done in Golden, Colorado this 10th day of May, 2010

BY THE COURT:



Christopher J. Munch
**District Judge**

**The moving party is ORDERED to mail a copy of this ORDER to all *pro se* parties and file a certificate of mailing with the Court within five** days.