I. INTRODUCTION

As the use of scientific evidence and testimony in court becomes more complex and common, trial judges, who often lack scientific backgrounds, are forced into increasingly difficult situations. To further accentuate this difficulty, the United States Supreme Court created a new standard to review the relevance and reliability of expert testimony in *Daubert v. Merrell Dow Pharmaceuticals, Inc.* Trial judges were left with the uneasy task of being the gatekeepers of increasingly complex scientific evidence and testimony. Furthermore, a new public awareness of the availability of scientific evidence has left juries with a higher expectation of the use of scientific evidence and modern technology in courtrooms. All of this leaves trial judges, who likely have little to no schooling or training...
in sciences, as the overseers of the complex merger of science and law.

To help judges navigate this uncomfortable union of law and science, the Federal Judicial Center, in conjunction with the National Research Council of the National Academies, has released the third edition of the *Reference Manual on Scientific Evidence.* 4 Already recognized as the leading manual on the growing world of scientific evidence in courtrooms, the third edition improves on what the second edition already covered and includes new chapters on emerging areas of scientific evidence. Easy to read and broad in scope, the *Reference Manual on Scientific Evidence* is useful beyond assisting the judiciary with scientific testimony—any attorney who spends time in the courtroom or a law student who seeks to learn more about the rules of evidence should highly consider a copy of this manual.

II. BACKGROUND

The use of scientific evidence in the courtroom is growing rapidly and in ways that were never expected. There is no need to look further than the use of DNA evidence. In the late 1980s, use of DNA evidence in the United States began in a rape case in the State of Florida. 5 Now, less than thirty years later, DNA evidence is widely used and almost necessary to influence a jury. 6

To make matters more difficult, in *Daubert,* the United States Supreme Court changed the way expert testimony on scientific evidence should be considered by trial judges. Effectively making trial judges gatekeepers, the *Daubert* Court found that trial judges must screen expert testimony to see if it is relevant and reliable—only then will it be considered admissible. 7 For the testimony to be relevant, the expert’s statements must correspond to the facts of the case. 8 Therefore, for relevance, the expert’s testimony must have “a

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8. *Id.*
valid scientific connection to the pertinent inquiry as a precondition to admissibility.”

For reliability, judges must determine whether the testimony or evidence is derived from the scientific method. While this determination is flexible, the Supreme Court set out a series of factors to help determine whether the testimony or evidence is scientifically reliable. The four factors described by the Daubert Court are: (1) whether the methods used can and have been tested; (2) whether the technique has been peer reviewed or published; (3) the potential rate of error of a technique; and (4) whether the technique is generally accepted by the scientific community. Clearly, these factors require at least a basic understanding of the science being used by the expert. Then, in an extension of Daubert, in Kumho Tire Co. v. Carmichael, the Supreme Court extended the “gatekeeping obligation” to all expert testimony, finding that there was no distinction between an expert based on science and one based on skill or experience.

Because of this “gatekeeping obligation,” trial judges are now placed in increasingly difficult positions when evidence or testimony that is scientific or technical is offered in their courtroom. As mentioned above, the use of science in litigation is expanding rapidly—from DNA evidence first being introduced in the United States in the late 1980s to now being almost required for a conviction in many criminal cases. Trial judges, many of whom likely have no scientific background, are forced to determine the relevance and reliability of scientific evidence and testimony that is being entered into court; and this determination, as described in Daubert, requires a certain understanding of the background of the type of science that is being used. Now, with the use of new areas of science, including neuroscience and mental health along with the growing use of statistics in the courtroom, trial judges are likely to be faced with scientific evidence or testimony that they have never seen nor studied.

9. Id. at 591–92.
10. Id. at 590.
11. Id. at 593–95.
12. Id. at 593–94.
14. See Connors et al., supra note 5, at 4–5; Shelton, supra note 3, at 34.
15. Daubert, 509 U.S. at 592–95 (describing four factors that require some knowledge of the area of science that is being used in expert testimony).
III. REFERENCE MANUAL ON SCIENTIFIC EVIDENCE—THIRD EDITION

To assist judges with this process, the Federal Judicial Center and National Research Council of the National Academies created the third edition of the Reference Manual on Scientific Evidence. The manual, comprised of multiple reference guides authored by different individuals, discusses many of the important areas of scientific evidence that judges may encounter in the courtroom. The purpose of the Reference Manual on Scientific Evidence is “to provide the tools for judges to manage cases involving complex scientific and technical evidence.”¹⁶ This manual is not the type of book that one would sit down and read from cover to cover; the ideal use for this manual is when an individual—whether a judge, attorney, or law student—facing difficult scientific evidence needs background information and a discussion on the area of evidence that is presented in an understandable manner.

As the Committee Co-Chairs point out in the preface, this manual does not describe what evidence should, or should not, be allowed in the courtroom.¹⁷ Rather, the manual should help judges understand the background of certain scientific evidence and the issues that may arise when considering that evidence.¹⁸ And the Reference Manual on Scientific Evidence, written in a non-technical manner, allows an individual with no prior knowledge in the area of science to understand the type of evidence that is discussed. Also, to further validate the fairness and accuracy of the manual, the third edition has been peer reviewed by the National Academy of Sciences.¹⁹ As basically a peer-reviewed, updated version of the second edition with new chapters on emerging areas of scientific evidence, the third edition of the Reference Manual on Scientific Evidence is an excellent reference guide that will help any individual understand the complexities of the growing use of scientific evidence and testimony in the courtroom.

IV. NEW TO THE THIRD EDITION

In the third edition, the chapters from the previous editions of the Reference Manual on Scientific Evidence have been completely

¹⁷. Id.
¹⁸. Id.
¹⁹. Id.
updated.\textsuperscript{20} Furthermore, the third edition contains chapters on four new topics: exposure science, forensic science, neuroscience, and mental health.\textsuperscript{21} These updates and additions make the third edition of the \textit{Reference Manual on Scientific Evidence} even more encompassing and helpful than previous editions and other available scientific manuals. However, one topic noticeably missing from the third edition, other than an extremely brief discussion,\textsuperscript{22} is e-discovery or computer technology. Hopefully this omission will be dealt with in subsequent editions.

\textit{A. Reference Guide on Exposure Science}

Understanding exposure science is critical to other areas of scientific evidence, including toxicology and epidemiology.\textsuperscript{23} The third edition now includes an entire reference guide on this emerging field.\textsuperscript{24} Exposure science is now used in four major areas: “(1) consumer products, (2) contaminants in the environment and in consumer products, (3) chemicals in the workplace, and (4) disease causation.”\textsuperscript{25} This chapter covers different types of chemicals, how humans are exposed to the chemicals, how exposure is quantified, and how judges should verify the quality of an exposure assessment.\textsuperscript{26} Regarding the scientific quality of an exposure assessment, the \textit{Reference Guide on Exposure Science} lists a handful of helpful questions that, at a minimum, an alleged expert who is testifying on exposure science should be able to answer.\textsuperscript{27} As the guide itself points out, exposure science is necessary to understanding other areas of scientific evidence, so this addition to the third edition is a useful and easy-to-understand introduction to an emerging area of evidence.\textsuperscript{28}

\begin{itemize}
\item \textsuperscript{20} \textit{Id.}
\item \textsuperscript{21} \textit{Id.}
\item \textsuperscript{22} \textit{Id.} at 34–35.
\item \textsuperscript{24} \textit{Id.}
\item \textsuperscript{25} \textit{Id.} at 509.
\item \textsuperscript{26} \textit{Id.} at 508–09.
\item \textsuperscript{27} \textit{Id.} at 538–39.
\item \textsuperscript{28} \textit{Id.} at 505.
\end{itemize}
B. Reference Guide on Forensic Identification Expertise

Also new to the third edition is the Reference Guide on Forensic Identification Expertise. As mentioned earlier, due to the public’s awareness of forensic science, the expectation of forensic evidence is increasing.29 Understanding the growing need for forensic identification, this chapter walks readers through specific forensic-identification processes, including: “(1) fingerprint analysis, (2) questioned document examination, (3) firearms and toolmark identification, (4) bite mark comparison, and (5) microscopic hair analysis.”30 Each process is covered in detail with a discussion on techniques, empirical studies on the processes, and case law. The detailed coverage of each process gives judges or other readers a helpful guide on the identification techniques that are becoming more relevant. Also, the chapter discusses the history of forensic identification and crime labs as well as the role of forensic identification post-Daubert.31 In total, the Reference Guide on Forensic Identification Expertise is a solid starting point on forensic identification, with helpful case law that allows readers to build off of the discussion with more research if necessary.

C. Reference Guide on Neuroscience

The introduction to the new chapter Reference Guide on Neuroscience informatively states, “Science’s understanding of the human brain is increasing exponentially. We know almost infinitely more than we did 30 years ago; however, we know almost nothing compared with what we are likely to know 30 years from now.”32 Unfortunately for trial judges, there is a chance that they will have to deal with and consider this evolving and difficult area of science. This new chapter acts mainly as a background discussion on neuroscience as well as a look at techniques and uses that judges may encounter in the courtroom. While there is a brief discussion on the different techniques of neuroscience, the section on the admissibility of

29. Shelton, supra note 4, at 23–24.
31. Id. at 57–71.
neuroscience evidence is helpful in introducing readers to some of the problems that may arise in this area. Finally, the last section of the chapter offers a quick run-through of examples of possible uses of neuroscience in court. While undoubtedly informative, this section is brief, most likely due to the lack of case law in the emerging field of neuroscience evidence. One would expect this chapter to be greatly expanded in subsequent editions of the Reference Manual on Scientific Evidence as the use of neuroscience evidence becomes more prominent.

D. Reference Guide on Mental Health Evidence

The final new addition to the manual is the Reference Guide on Mental Health Evidence. Mental health is increasingly becoming an integral part of the law, especially in criminal cases. The number of individuals in the criminal-justice system who have serious mental disabilities is enormous and only growing. Furthermore, mental health is also a concern in civil litigation areas like personal injury and contracts. The Reference Guide on Mental Health Evidence provides a comprehensive look at the use of mental-health evidence in courts. Particularly useful are the sections on evaluating evidence from an expert and a case example, which discusses a twenty-five-year-old Army veteran with mental-health issues who assaults an individual. Similar to the neuroscience chapter, one would expect this chapter to include more case law in subsequent editions as this area of scientific evidence continues to grow.

V. OTHER NOTABLE AREAS

Beyond the new chapters, the third edition of the Reference Manual on Scientific Evidence includes completely updated reference
guides on DNA identification evidence, statistics, multiple regression, survey research, estimation of economic damages, epidemiology, toxicology, medical testimony, and engineering. The manual also includes an introduction by United States Supreme Court Justice Stephen Breyer\(^40\) and background chapters on the admissibility of expert testimony\(^41\) and how science works.\(^42\)

Especially impressive is the Reference Guide on DNA Identification Expertise.\(^43\) This thorough chapter contains discussions on the history of DNA evidence, the science of DNA, and how DNA should be collected and tested.\(^44\) While many of these issues may be beyond what most judges, attorneys, or law students have studied previously, the Reference Guide on DNA Identification Expertise, like much of the rest of the manual, presents the topics in an easily readable fashion and in a way that someone with limited knowledge of DNA can at least feel reasonably comfortable with the process after one or two reviews of the chapter. This speaks to the merits of the manual because of the complexities of DNA identification.

Similarly, the Reference Guide on Statistics is thorough and, while not all-encompassing, helpful to anyone who has limited knowledge in the area of statistics. There are three main sections of this chapter: collection of the data, presentment of the data, and the inferences that can be drawn from the data.\(^45\) The chapter also includes a brief discussion of correlation and regression.\(^46\) While statistics is undoubtedly one of the more difficult areas of scientific evidence, the Reference Guide on Statistics does a nice job of providing a starting point for those who have to deal with statistics in the courtroom. The chapter is written in a nontechnical fashion, filled with well-described

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44. *Id.* at 132–56.
46. *Id.* at 260–72.
figures, and supported heavily with descriptive and useful footnotes in case the reader needs more guidance. Coupled with the *Reference Guide on Multiple Regression*, the chapters are able to cover a significant amount of the statistical issues that may arise in litigation. Obviously, all statistical issues cannot be included in a survey manual on scientific evidence like this, but the authors of the chapter (and the authors of the *Reference Guide on Multiple Regression*) do an excellent job of providing background for anyone who is forced to deal with statistic-based evidence or testimony.

VI. WHO SHOULD READ THIS BOOK

As stated above and described in the preface to the manual, the *Reference Manual on Scientific Evidence* is meant for judges. The goal of the manual is to assist judges when complex scientific evidence or testimony is used in their courtroom. Even before the third edition was released, the *Reference Manual on Scientific Evidence* was widely distributed and used by many judges. This should not change with the newly updated and peer-reviewed third edition. But beyond judges, who should use this book? Any attorney who spends time in the courtroom and believes that he or she will be involved in any difficult or complex scientific issue should obtain a copy of this book. While the manual itself states that it does not hold all information on a certain subject, an attorney who lacks knowledge in a certain area would be smart to use the *Reference Manual on Scientific Evidence* as a starting point, building off the information in the manual with more case law and research.

Beyond judges and attorneys, law students—who are usually given only a cursory review of the rules of evidence in a one-semester course—should consider obtaining a copy of the third edition of the *Reference Manual on Scientific Evidence*. While not encouraged to read the book in its entirety straight through because of its complexity and length, law students are encouraged to have a copy of this manual and at least review some of the chapters to achieve a basic

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47. *See generally id.* at 213–82.
50. *Id.*
understanding of a growing part of litigation. Areas of scientific evidence, like mental health, are becoming so crucial to criminal law that some scholars are suggesting that it now be part of the criminal-law curriculum at law schools.\textsuperscript{51} Because the \textit{Reference Manual on Scientific Evidence} provides the right amount of background information presented in an easy-to-read manner, it could be a useful part of any course on evidence or criminal law. It is not too advanced for a beginning law student to comprehend, even if the student lacks a basic scientific background.

\textbf{VII. Conclusion}

The third edition of the \textit{Reference Manual on Scientific Evidence} continues the instructive, nontechnical writing that was found in the first and second editions. Here, with new chapters and returning chapters updated, the third edition is a useful manual for anyone who may encounter scientific evidence in the courtroom. While it should not be used as the only source if one were to encounter this type of evidence or testimony, it provides sufficient background information, case law, and studies to provide a basic understanding of many different areas of science used in litigation.

Furthermore, the \textit{Reference Manual on Scientific Evidence} has use beyond assisting judges—attorneys who are involved with litigation and law students who are eager to learn more beyond their basic evidence courses should also obtain a copy. Though clearly not the type of book to sit and read in a single sitting, the third edition of the \textit{Reference Manual on Scientific Evidence} is an excellent and comprehensive discussion on the growing use of scientific evidence. The newly updated and expanded third edition continues the excellence and usefulness of the first and second editions, which means that it will likely remain the most important manual on scientific evidence currently in existence.

\textsc{Adam Dutkiewicz}\textsuperscript{*}

\textsuperscript{51} Redding, \textit{supra} note 36, at 407–08.

\textsuperscript{*} Adam Dutkiewicz graduated magna cum laude from Thomas M. Cooley Law School in 2012. He also received a Bachelor of Arts in English from Michigan State University in 2008.
DISTINGUISHED BRIEF

The Distinguished Brief Award is given in recognition of the most scholarly briefs filed before the Michigan Supreme Court, as determined by a panel of eminent jurists. Three briefs are chosen each year and printed in the Thomas M. Cooley Law Review. To preserve the author’s style, the brief has been reprinted in its entirety, exactly as submitted to the Michigan Supreme Court.

INTRODUCTION

DANIEL B. TUKE

BRANDON BRIGHTWELL, Plaintiff-Appellant,

v.

FIFTH THIRD BANK of MICHIGAN, Defendant-Appellee,

SHARON CHAMPION, Plaintiff-Appellant,

v.

FIFTH THIRD BANK of MICHIGAN, Defendant-Appellee.
The issue on appeal was the proper venue for a discrimination claim under the Elliot Civil Rights Act. The Act provides that venue is proper in the county “where the alleged violation occurred,” but does not further define what constitutes the actual violation. Defendant’s position, consistent with prior Michigan Court of Appeals decision, was alleged civil rights violation “occurs” in the county where the employment decision was made, not where the employee suffers from the effects of the alleged discrimination. Issue had not previously been considered by the Michigan Supreme Court.

BIOGRAPHICAL STATEMENT

DANIEL B. TUKE — Mr. Tukel is a shareholder in Butzel Long’s Detroit office and serves as Chair of the firm’s Labor and Employment Law Department. He has had scholarly articles on labor and employment law published in numerous publications, including the Michigan Bar Journal, the ABA Labor Lawyer, and the State Bar Labor and Employment Law Section publication Lawnotes. He has lectured on a wide range of employment and labor issues, has served on the faculty of the Institute of Continuing Legal Education, and has served as a private arbitrator and private facilitator in employment matters. He is listed in Chambers USA for Labor and Employment Law, and is named a Michigan Super Lawyer for employment litigation defense.