

Docket No. 102372.

**IN THE
SUPREME COURT
OF
THE STATE OF ILLINOIS**

THE PEOPLE OF THE STATE OF ILLINOIS, Appellee, v.
JOANNE McKOWN, Appellant.

Opinion filed September 20, 2007.

JUSTICE BURKE delivered the judgment of the court, with opinion.

Chief Justice Thomas and Justices Freeman, Fitzgerald, Kilbride, Garman, and Karmeier concurred in the judgment and opinion.

OPINION

At issue in this case is whether the trial court properly admitted testimony regarding the results of a Horizontal Gaze Nystagmus (HGN) test¹ at defendant Joanne McKown's trial for driving under the influence of alcohol. Over objection, the trial court admitted the testimony of the arresting officer regarding the administration and results of an HGN test performed on defendant without first holding an evidentiary hearing pursuant to *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923) (a "*Frye* hearing") to determine whether HGN

¹All references to the HGN test in this opinion refer not to the procedure performed in a laboratory or other controlled setting, but to that administered by law enforcement officers to individuals suspected of driving under the influence of alcohol.

testing had been generally accepted as a reliable indicator of alcohol impairment.²

The trial court admitted the testimony by taking judicial notice of the general acceptance of the reliability of the HGN test as an indicator of alcohol impairment based on previous Illinois opinions. The appellate court affirmed the trial court, agreeing that a *Frye* hearing was not necessary. No. 3–04–0433 (unpublished order under Supreme Court Rule 23).

For the reasons that follow, we hold that the trial court and the appellate court erred in taking judicial notice of the general acceptance of the reliability of the HGN test as an indicator of alcohol impairment. We remand this cause to the trial court with instructions to conduct a *Frye* hearing.

BACKGROUND

After a bench trial, defendant was found guilty of two counts of aggravated driving under the influence of alcohol (625 ILCS 5/11–501(d)(1)(C) (West 2006)), two counts of aggravated reckless driving (625 ILCS 5/11–503(c) (West 2006)), one count of reckless driving (625 ILCS 5/11–503(a) (West 2006)), and one count of driving under the influence of alcohol (625 ILCS 5/11–501(a)(2) (West 2006)). The evidence against her consisted of three witness accounts and the observations and opinion of a police officer who administered an HGN test to her.

The HGN test purportedly measures nystagmus, which has been defined as an abnormal and involuntary rapid movement of the eyeballs up and down, or more commonly, side to side. 2 Schmidt's Attorney's Dictionary of Medicine 61 (1978). Many people will exhibit some nystagmus, or jerking, as their eyes track to the extreme side. However, with an intoxicated person, the onset of the nystagmus, or jerking of the eyeball, occurs after fewer degrees of lateral deviation from center, and the jerking is more pronounced at

²The parties have not argued, and we have not considered, the adoption of the evidentiary standard set forth in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 125 L. Ed. 2d 469, 113 S. Ct. 2786 (1993). We will not raise the issue *sua sponte*.

extreme angles. While nystagmus is an indication of alcoholic consumption, it is also a symptom of many other ailments. N. Miller & N. Newman, Walsh & Hoyt's Clinical Neuro-Ophthalmology 1142 (6th ed. 2005).

Because alcohol consumption can cause nystagmus, police officers have been trained to check a person's eye movements when attempting to determine if a driver has been driving while impaired by alcohol. The National Highway Traffic Safety Association's (NHTSA) DWI Detection and Standardized Field Sobriety Testing Instructor Manual sets forth the procedure for administering an HGN test in the field. First, the officer is required to ask the subject if he or she wears contact lenses or has any medical impairment that would affect the test results or prohibit the subject from taking the test. If the subject claims to wear hard contacts, or have natural nystagmus or any other condition that may affect the test results, the officer should note the condition but still administer the test if possible. NHTSA DWI Detection and Standardized Field Sobriety Testing Instructor Manual, ch. VIII, at 6-18 (2002).

After these preliminary questions, the officer asks the subject to focus on an object, such as a pen, held just above eye level, about 12 to 15 inches from the subject's nose, and to follow the object as the officer gradually moves it from side to side.

While conducting the test, the officer looks for six nystagmus "clues," three in each eye, that, according to the NHTSA Manual, indicate impairment. If four or more clues are present, the subject is determined to have failed the test and be impaired. The clues are (1) lack of smooth pursuit; (2) distinct nystagmus at maximum deviation, meaning any nystagmus exhibited when the eyeball is looking as far to the side as possible; and (3) angle of onset of nystagmus prior to 45 degrees, meaning any nystagmus that occurs before the object reaches a point that the officer determines to be 45 degrees from the center of the suspect's face. No measuring apparatus is used in the 45-degree test. The officer is then instructed to have the subject perform the walk-and-turn field-sobriety test and the one-leg-stand field-sobriety test, compile the results of the three tests, and then make the decision whether to arrest the subject. NHTSA DWI Detection and Standardized Field Sobriety Testing Instructor Manual, ch. VIII, at 6-18 (2002).

At a bench trial, witnesses testified that, sometime before 11:30 a.m. on the morning of June 8, 2002, defendant was driving her car at a high rate of speed along Maher Road in Peoria County when she veered into oncoming traffic, causing at least three motorcycle riders who were traveling in the opposite direction to strike her vehicle and be thrown from their motorcycles. Two riders, Sharon and Alan Anderson, suffered severe injuries. Another rider, Robert Stanley, was thrown from his motorcycle but escaped relatively unharmed.

Local resident Randall Retherford testified that he was driving his truck on Maher Road around 11:30 a.m. on June 8, 2002. While idling at the intersection of Maher Road and Frye Road, waiting for a group of motorcycles to pass so he could make a left turn onto Frye, he looked into his rearview mirror and saw defendant's car approaching. Retherford stated that he drove his truck onto the shoulder of the road upon seeing defendant's car because he felt it was approaching at a high rate of speed. Retherford then described the accident: "I seen [*sic*] the vehicle apparently lock up its wheels, veer to the left, and I seen [*sic*] motorcycles hitting it."

Retherford's testimony was corroborated by Stanley, who also testified that, following the accident, defendant came over to him as he lay on the ground and offered to help him remove his motorcycle helmet. Stanley testified that, during the approximately 45 seconds defendant was speaking to him, he smelled beer on her breath.

A third witness, Chad Morris, testified that he had been riding a motorcycle behind the Andersons and Stanley, when he saw Retherford "getting off the side of the road because he had seen, um, a car coming up fast on his tail." Morris testified that he heard squealing tires and witnessed defendant's car veering into his lane and sliding sideways into the oncoming motorcycles. Morris stated that he was able to stop his motorcycle in time to avoid contact with defendant's car.

The arresting officer, Deputy Martin Klatt of the Peoria County sheriff's department, testified that he arrived at the scene of the accident shortly after 11:30 a.m. and found a partially full can of beer in defendant's car while searching for her registration and proof of insurance. Apparently, defendant had been taken to St. Francis Hospital before Klatt arrived at the accident scene. Klatt testified that he went to the hospital and advised defendant of her *Miranda* rights around 1 p.m. According to Klatt, when he saw defendant, she was

slurring her speech, and had bloodshot eyes and a strong odor of beer on her breath. Klatt testified that defendant told him that she had not been drinking that day, and that she felt that the motorcycles came into her lane, causing the accident.

When Klatt told defendant that he had found an open can of beer in her car, she admitted that she had consumed two cans of beer before leaving her house, another can while driving, and had opened a fourth can just prior to the accident. Klatt then advised her that the skidmarks on the road indicated that she swerved out of her lane and into the oncoming motorcycles. Upon hearing this, defendant stated that she had no explanation for what happened. Klatt testified that defendant stated that she worked the night shift at a chemical plant and had only slept for four hours the previous night.

Klatt then testified that he administered an HGN test to defendant while she sat in her hospital bed. Defendant objected to Klatt's testimony, arguing that HGN test results are scientific evidence that has not been found to satisfy *Frye* in Illinois. After a discussion with counsel, the trial court took judicial notice of the plurality opinion in *People v. Basler*, 193 Ill. 2d 545 (2000) (plurality op.), and held that the HGN test met the *Frye* standard.

Klatt described the HGN test to the court, stating that it was "an eye test and it uses the involuntary flutter of your eye, and it's been shown that certain—that when you're under impairment of alcohol, and some drugs, that your—when your eye is moving a certain way that it will involuntarily shutter, or shake, or jerk." Klatt explained that he had been trained in performing the HGN test, and that he had administered the HGN test "hundreds of times" in the field. Klatt did not provide any details regarding his training.

Klatt testified that, while he was performing the test on defendant, he "observed that she had no smooth pursuit with either eye[,] *** nystagmus on maximum deviation with both eyes" and nystagmus in both eyes during the third part of the test. Klatt testified that these results led him to conclude that defendant had failed the HGN test and was impaired by alcohol. Klatt did not have defendant perform any other field-sobriety tests due to the fact that she had a broken toe. On cross-examination, Klatt conceded that he was aware that defendant had been given medication at the hospital before he administered the HGN test, which could have affected her results.

After Klatt concluded that defendant had failed her HGN test, he placed her under arrest and directed her to submit to chemical testing to determine her blood-alcohol content. Defendant refused to comply with efforts to conduct the chemical tests upon her. However, she subsequently submitted to the tests when the police obtained a search warrant several hours later.

At trial, the parties stipulated that if Dareea Paiva, a forensic specialist with the Illinois State Crime Laboratory in Springfield, were to testify, she would state that she received a kit from the Peoria County sheriff's department containing two tubes of blood taken from defendant around 6 p.m. on June 8, 2002. The parties further stipulated that Paiva would testify that studies on the blood samples taken from defendant that evening did not reveal the presence of ethanol, methanol, acetone, isopropanol, toluene, or other volatiles.

The trial court found defendant guilty of all six counts against her. Defendant filed a motion for a new trial, arguing that Klatt's testimony regarding her HGN test results was improperly admitted without a *Frye* hearing. The trial court denied the motion and sentenced defendant to two years' imprisonment for her convictions of aggravated driving under the influence.

On appeal, defendant argued, *inter alia*, that the trial court improperly allowed Klatt's testimony regarding her HGN test results. The appellate court affirmed, ruling that the trial court properly admitted Klatt's testimony. The appellate court held that it was not necessary for the trial court to conduct a *Frye* hearing before admitting defendant's test results. Taking judicial notice of *People v. Wiebler*, 266 Ill. App. 3d 336 (1994) and the plurality opinion in *Basler*, the appellate court concluded that HGN testing is generally accepted in the scientific community as a reliable indicator of alcohol impairment. No. 3-04-0433 (unpublished order under Supreme Court Rule 23). We granted defendant's petition for leave to appeal. 210 Ill. 2d R. 315.

ANALYSIS

Here, as in the appellate court, defendant argues that she was denied a fair trial because the trial court allowed her HGN test results to be admitted as scientific evidence without first holding a *Frye* hearing to determine whether the HGN test had been generally

accepted as a reliable indicator of alcohol impairment by the relevant scientific community. In Illinois, scientific evidence is admissible at trial only if it meets the standard expressed in *Frye*, which dictates that “scientific evidence is admissible at trial only if the methodology or scientific principle upon which the opinion is based is ‘sufficiently established to have gained general acceptance in the particular field in which it belongs.’ ” *In re Commitment of Simons*, 213 Ill. 2d 523, 529-30 (2004), quoting *Frye*, 293 F. at 1014. A court may determine the general acceptance of a scientific principle or methodology in either of two ways: (1) based on the results of a *Frye* hearing; or (2) by taking judicial notice of unequivocal and undisputed prior judicial decisions or technical writings on the subject. K. Broun, McCormick on Evidence §203, at 828-39 (6th ed. 2006). See also *Jones v. United States*, 548 A.2d 35 (D.C. App. 1988). At issue here is whether it was proper for the trial court to forgo a *Frye* hearing and determine the general acceptance of the reliability of the HGN test as an indicator of alcohol impairment by taking judicial notice of prior decisions. Our review is *de novo*. *In re Commitment of Simons*, 213 Ill. 2d at 531.

I. HGN Testing Is Scientific

Because *Frye* applies only to scientific evidence, we first must determine whether the results of HGN testing are scientific evidence subject to the *Frye* standard. Scientific evidence is the product of scientific tests or studies. Evidence labeled “scientific” carries a greater weight in the eyes of the jury, which may accord it undue significance because “science” is equated with truth. M. Udall & J. Livermore, *Law of Evidence* §102 (2d ed. 1982). For this reason, Illinois courts require any evidence which is “scientific evidence” to meet the *Frye* standard.

Initially, we note that the matter at issue is not the scientific principle underlying the HGN test, but rather the test itself. Defendant concedes the general acceptance of the scientific principle that alcohol consumption can cause nystagmus. What defendant challenges is the use of the HGN test as the methodology employed to generate the conclusion that a defendant is impaired by alcohol. See *Donaldson v. Central Illinois Public Service Co.*, 199 Ill. 2d 63, 77 (2002) (the proper focus in *Frye* hearings is on the methodology that was used to generate a proffered conclusion).

Some jurisdictions have held that HGN testing is not scientific, and therefore the evidence the HGN test produces does not need to meet any of the *Frye* requirements for admission. See *State v. Bresson*, 51 Ohio St. 3d 123, 129, 554 N.E.2d 1330, 1336 (1990) (“HGN test cannot be compared to other scientific tests such as a polygraph examination, since no special equipment is required in its administration”); *State v. Murphy*, 451 N.W.2d 154, 156 (Iowa 1990) (because the test may be easily administered and its results objectively recorded by a properly trained officer, it is unnecessary to establish the foundation for such evidence through scientific testimony). Several other states have also concluded that HGN testing does not produce scientific evidence. See *Whitson v. State*, 314 Ark. 458, 863 S.W.2d 794 (1993); *City of Fargo v. McLaughlin*, 512 N.W.2d 700 (N.D. 1994); *State v. Sullivan*, 310 S.C. 311, 426 S.E.2d 766 (1993).

The majority of jurisdictions that have addressed the issue, however, have held HGN testing to be scientific because it is based on a scientific principle that is not common knowledge, *i.e.*, consumption of alcohol causes the type of nystagmus measured by the HGN test. See *State v. Reed*, 83 Or. App. 451, 454-55, 732 P.2d 66, 68 (1987) (certain reactions to alcohol are so commonly known that they are not considered scientific evidence, but nystagmus does not fall into this category); *State v. Witte*, 251 Kan. 313, 321, 836 P.2d 1110, 1115 (1992) (HGN test differs from other field-sobriety tests in that science, rather than common knowledge, provides the legitimacy for HGN testing); *State v. O’Key*, 321 Or. 285, 296-97, 899 P.2d 663, 675 (1995) (“The relationship between the effects of alcohol on the *** HGN test is not within the realm of common knowledge of the average person”); and *State v. Murphy*, 953 S.W.2d 200, 203 (Tenn. 1997) (HGN testing is scientific because the underlying basis of the test has to be explained in order for the testimony to make sense to the average juror). See also *Ex parte Malone*, 575 So. 2d 106 (Ala. 1990); *People v. Leahy*, 8 Cal. 4th 587, 882 P.2d 321, 34 Cal. Rptr. 2d 663 (1994); *State v. Merritt*, 36 Conn. App. 76, 647 A.2d 1021 (1994); *State v. Meador*, 674 So. 2d 826 (Fla. App. 1996); *State v. Witte*, 251 Kan. 313, 836 P.2d 1110 (1992); *Commonwealth v. Sands*, 424 Mass. 184, 675 N.E.2d 370 (1997); *People v. Berger*, 217 Mich. App. 213, 551 N.W.2d 421 (1996); *State v. Wheeler*, 764 S.W.2d 523 (Mo. App. 1989); *Hulse v. State*, 289 Mont. 1, 961 P.2d 75 (1998);

State v. Borchardt, 224 Neb. 47, 395 N.W.2d 551 (1986); *State v. Duffy*, 146 N.H. 648, 778 A.2d 415 (2001); *State v. Torres*, 127 N.M. 20, 976 P.2d 20 (1999); *People v. Heidelberg*, 214 A.D.2d 767, 624 N.Y.S.2d 656 (1995), *appeal denied*, 85 N.Y.2d 973, 653 N.E.2d 629 (1995); *State v. Helms*, 348 N.C. 578, 504 S.E.2d 293 (1998); *Yell v. State*, 856 P.2d 996 (Okla. Crim. App. 1993); *State v. O'Key*, 321 Or. 285, 899 P.2d 663 (1995); *State v. Murphy*, 953 S.W.2d 200 (Tenn. 1997); *State v. Barker*, 179 W. Va. 194, 366 S.E.2d 642 (1988), overruled on other grounds, *Wilt v. Buracker*, 191 W. Va. 39, 443 S.E.2d 196 (1993) (adopting the *Daubert* standard over the *Frye* standard).

We agree with those jurisdictions that hold HGN testing to be scientific. The average person understands the effect that alcohol has on a person's balance and motor skills. For this reason, the average person can draw his own conclusion from the results of field-sobriety tests such as the walk-and-turn and the stand-on-one-leg. As such, the results of those tests are not deemed scientific evidence. In contrast, the results of an HGN test are meaningless to an average person unless accompanied by expert testimony about what those results mean and what conclusion may be drawn from them. This expert testimony comes from police officers, who must be trained to administer and interpret the HGN test. Because the results of an HGN test require expert interpretation, we join the majority of courts and hold that the results of HGN testing are scientific evidence.

II. HGN Evidence Is Novel for Purposes of *Frye* Testing

In Illinois, the application of the *Frye* standard is limited to scientific methodology that is considered "new" or "novel." Defendant contends that the HGN test is a novel technique, despite the fact that it has been used by police officers for many years, because no *Frye* hearing has ever been held in Illinois to determine if the HGN test has achieved general acceptance as a reliable indicator of alcohol impairment. We agree.

In *Leahy*, the California Supreme Court held,

"HGN testing has been repeatedly challenged in court, with varying degrees of success, in this and other states, and

accordingly its courtroom use cannot fairly be characterized as ‘routine’ or settled in law. [Citation.] ***.

Given the recent history of legal challenges to the admissibility of HGN test evidence in this and other states, it seems appropriate that we deem the technique ‘new’ or ‘novel.’” (Emphasis omitted.) *Leahy*, 8 Cal. 4th at 606, 882 P.2d at 332, 34 Cal. Rptr. 2d at 674.

Since *Leahy* was published in 1994, the general acceptance of HGN testing has been repeatedly challenged in courts around the nation, and the issue remains unsettled. As discussed below, our own appellate court has issued divergent opinions on the topic, with *People v. Wiebler*, 266 Ill. App. 3d 336 (3d Dist. 1994), and *People v. Buening*, 229 Ill. App. 3d 538 (5th Dist. 1992), taking judicial notice of the general acceptance of the reliability of the HGN test as an indicator of alcohol impairment, and *People v. Kirk*, 289 Ill. App. 3d 326 (4th Dist. 1997), declining to determine general acceptance based on judicial notice alone. As also discussed below, many states have addressed the issue of whether HGN testing satisfies *Frye* since *Leahy* was published in 1994, with the same “varying degrees of success” mentioned in *Leahy*. Other states have also held that the question of novelty alone should not prevent a court from considering the larger issues involved in a *Frye* hearing. See, e.g., *Emerson v. State*, 880 S.W.2d 759 (Tex. Crim. App. 1994) (HGN testing considered novel because Texas courts had not determined if the technique it was based upon was reliable).

Given the history of legal challenges to the admissibility of HGN test evidence, and the fact that a *Frye* hearing has never been held in Illinois on this matter, we conclude that the methodology of HGN testing is novel for purposes of *Frye*.

Having concluded that HGN testing is a novel scientific methodology, we find that the trial and appellate courts did not err in determining that HGN testing must meet the *Frye* standard before defendant’s HGN test results were admitted as evidence. The ultimate issue to be determined, however, is whether the lower courts employed the proper method in determining that the HGN test had been generally accepted as a reliable indicator of alcohol impairment by the scientific community.

III. Determining General Acceptance

In considering whether the trial court and the appellate court erred in taking judicial notice of the general acceptance of the reliability of the HGN test as an indicator of alcohol impairment, we look not only to the opinions of *Basler* and *Wiebler*, but also to other cases from Illinois and around the nation, as well as the technical writings proffered by each party. See *In re Commitment of Simons*, 213 Ill. 2d at 531 (in reviewing a lower court's *Frye* analysis, we may consider sources outside the record, including court opinions from other jurisdictions, as well as legal and scientific articles).

A. Prior Judicial Decisions

In the instant case, the appellate court took judicial notice of the general acceptance of the reliability of the HGN test as an indicator of alcohol impairment based on *Basler* and *Wiebler*. No. 3–04–0433 (unpublished order under Supreme Court Rule 23). Defendant argues that the appellate court erred by taking judicial notice of prior judicial decisions, rather than on the results of a *Frye* hearing, in making its determination. Defendant maintains that a *Frye* hearing is necessary because the matter has not been adequately litigated in Illinois, nor was it adequately litigated in the cases from other jurisdictions that Illinois cases have relied on, notably *State v. Superior Court [Blake]*, 149 Ariz. 269, 718 P.2d 171 (1986).³

The appellate court below relied on *Wiebler*, in which the Third District held that HGN test results are admissible in a prosecution for driving under the influence of alcohol, but are not conclusive evidence of intoxication. *Wiebler*, 266 Ill. App. 3d at 339. *Wiebler*, however, merely reaffirmed *Buening*, which was the first Illinois case hold that the HGN test was generally accepted as a reliable indicator of alcohol impairment.

In *Buening*, the Fifth District held that HGN test results are admissible to prove that the defendant is impaired by alcohol, in violation of section 11–501(a)(2), provided a proper foundation has

³This case has been referred to in various Illinois opinions as *State v. Superior Court, County of Cochise*, and *Blake*. For clarity it shall be referred to as *Blake* in this opinion

been laid. *Buening*, 229 Ill. App. 3d at 541-46. *Buening* held that a proper foundation should consist of describing the education and experience of the officer who administered the test and by a showing that the procedure was properly administered. *Buening*, 229 Ill. App. 3d at 546.

Buening described how HGN testing is treated by numerous foreign jurisdictions, but did not analyze any of the foreign cases or apply their reasoning to its facts. *Buening*, 229 Ill. App. 3d at 541-45. Instead, the *Buening* court based its holding of general acceptance on three reasons: (1) the fact that the United States Department of Transportation Test Manual called the HGN test “the single most accurate field test used in determining whether a person is alcohol impaired”; (2) the NHTSA found that an officer’s ability to detect whether a driver is under the influence of alcohol improves when the HGN test is used in conjunction with the walk-and-turn field-sobriety test (NHTSA, Improved Sobriety Testing (1984)); and (3) the reasoning set forth in *Blake*, which *Buening* called “one of the more extensively researched and well-reasoned decisions on the subject.” *Buening*, 229 Ill. App. 3d at 541.

In *Blake*, the State of Arizona presented testimony at a *Frye* hearing regarding the principles and use of HGN testing from three police officers and Dr. Marcelline Burns, a research psychologist who studied the effect of alcohol on behavior. *Blake*, 149 Ariz. at 271, 718 P.2d at 173. Dr. Burns was identified as the Director of the Southern California Research Institute (SCRI), which had received research contracts from NHTSA to develop the best possible field-sobriety tests. *Blake*, 149 Ariz. at 271, 718 P.2d at 173. The result of the SCRI’s research was a three-test battery which included the walk-and-turn test, the one-leg-stand test, and the HGN test. *Blake*, 149 Ariz. at 271, 718 P.2d at 173.

Dr. Burns explained that the HGN test is based on the known principle that alcohol, among other things, can cause nystagmus. *Blake*, 149 Ariz. at 271, 718 P.2d at 173. The SCRI study found the HGN test to be “the best single index of intoxication,” because the jerking movements of the eye are involuntary. *Blake*, 149 Ariz. at 271, 718 P.2d at 173. Dr. Burns then testified that the HGN test had been accepted as valid by the NHTSA, Finnish researchers, numerous city

agencies, and the highway patrols of California, Washington, and Arizona. *Blake*, 149 Ariz. at 272, 718 P.2d at 174.

Sergeant Richard Studdard, a supervisor in charge of DUI enforcement for the City of Los Angeles and a consultant to NHTSA on field-sobriety testing, then testified that, based on his field work administering the HGN test and his participation in studies at the institute, the accuracy rate of the HGN test in determining if a person's blood-alcohol content is over 0.10% is between 80% and 90%. *Blake*, 149 Ariz. at 272, 718 P.2d at 174.

Sergeant Jeffrey Raynor, who administered the HGN training program for Arizona, testified about the usefulness of the HGN test and the "rigor and requirements of the Arizona training and certification program." *Blake*, 149 Ariz. at 272, 718 P.2d at 174. While no details of the actual training program were presented in the opinion, it was explained that an HGN training manual developed by NHTSA for its nationwide training program was entered into evidence. *Blake*, 149 Ariz. at 272, 718 P.2d at 174. This manual, and the training program, were based on the SCRI's studies. *Blake*, 149 Ariz. at 272, 718 P.2d at 174. The opinion states that Officer Robert Hohn, who administered the HGN test to the defendant, also testified for the State, but does not elaborate on his testimony. *Blake*, 149 Ariz. at 271, 718 P.2d at 173. The defendant did not present any evidence.

At the close of the hearing, the trial court found that HGN testing was a new scientific principle and thus subject to the *Frye* standard of admissibility, but that it did not satisfy *Frye* and could not form the basis of probable cause to arrest. *Blake*, 149 Ariz. at 272, 718 P.2d at 174. The court of appeals vacated the trial court's order, noting that the *Frye* standard applies only to the admissibility of evidence at trial, not to probable cause for arrest. *Blake*, 149 Ariz. at 272, 718 P.2d at 174. The court of appeals then held that the HGN test satisfied *Frye* and would be admissible, except that there was insufficient foundation in the underlying case as to the arresting officer's proficiency in administering the test. *Blake*, 149 Ariz. at 273, 718 P.2d at 174-75.

The Arizona Supreme Court affirmed the court of appeals. *Blake*, 149 Ariz. at 279, 718 P.2d at 181. In analyzing the HGN test under *Frye*, the *Blake* court first set out to "identify the appropriate

scientific community whose acceptance of the nystagmus principles and validity of the HGN test is required.” *Blake*, 149 Ariz. at 277, 718 P.2d at 179. In doing so, *Blake* stated,

“[I]t stands to reason that experimental psychologists in the area of behavioral psychology would be interested in verifying the validity of the HGN test and should be included in the relevant scientific community. Similarly, the problem of alcohol’s effect on driving ability is a major concern to scientists in the area of highway safety and they, too, should be included.” *Blake*, 149 Ariz. at 278, 718 P.2d at 180.

Having identified the scientific community it felt was appropriate, the *Blake* court then turned to the question of whether that community had generally accepted the HGN test as a reliable indicator of blood-alcohol content and alcohol impairment. *Blake*, 149 Ariz. at 278, 718 P.2d at 180. In its analysis, the *Blake* court considered the testimony of Burns and the police officers, as well as the content of 29 scientific publications and reports of research on nystagmus and HGN testing. *Blake*, 149 Ariz. at 278, 718 P.2d at 180. The *Blake* court noted that the publications it considered “have been before the relevant communities a considerable period of time for any opposing views to have surfaced.” *Blake*, 149 Ariz. at 279, 718 P.2d at 181. *Blake* concluded, “[t]he literature demonstrates to our satisfaction that those professionals who have investigated the subject do not dispute the strong correlation between BAC and the different types of nystagmus.” *Blake*, 149 Ariz. at 278-79, 718 P.2d at 180-81.

Blake then held that “with proper foundation as to the techniques used and the officer’s ability to use it [citations], testimony of defendant’s nystagmus is admissible on the issue of a defendant’s blood alcohol level as would be other field sobriety test results on the question of the accuracy of the chemical analysis.” *Blake*, 149 Ariz. at 279, 718 P.2d at 181. *Blake* also held that HGN test results were admissible as evidence that a defendant was driving while “under the influence of alcohol.” *Blake*, 149 Ariz. at 280, 718 P.2d at 182.

The reasoning presented in *Blake* has been followed by many jurisdictions, as will be discussed below. However, the Fourth District of our appellate court questioned the *Blake* analysis in *Kirk*. In *Kirk*, a case involving the admission of HGN test results in a prosecution for

driving under the influence of alcohol, the trial court admitted HGN test results as scientific evidence without any *Frye* hearing taking place. *Kirk*, 289 Ill. App. 3d at 327. In its analysis, the *Kirk* court examined *Buening*, and in particular, its reliance on *Blake* and the opinions of other courts. *Kirk*, 289 Ill. App. 3d at 333. In examining *Blake*, which it deemed “questionable authority,” the *Kirk* court was troubled by the fact that no defense evidence was presented, and that the trial court, which heard the testimony firsthand, was reversed by the reviewing courts, which relied on their own research of relevant articles. *Kirk*, 289 Ill. App. 3d at 332, 333. The *Kirk* court was also troubled by *Blake*’s reliance on the testimony of the prosecution’s expert. The *Kirk* court stated:

“The expert retained by the prosecution in *Blake*, Dr. Burns, was the individual who conducted the study that led to the NHTSA’s adoption of the HGN test. Police departments, in turn, have adopted the NHTSA’s recommendations. In *Blake*, Dr. Burns supported the proposition that the HGN test is accepted and reliable, in part, by relying upon the NHTSA’s manual and the fact that the test is used by different police departments. By doing so, however, she in essence referred back to her own conclusions, magnifying the opportunity for error. We do not say that Dr. Burns’ conclusions on the subject are flawed, only that the issue has not been fully and thoroughly litigated. The proper place for this litigation is in the trial court, and it was error to admit the HGN test evidence without a proper *Frye* hearing.” *Kirk*, 289 Ill. App. 3d at 333-34.

The *Kirk* court then examined the cases from other states that *Buening* relied upon and found that four of them deemed HGN test results to be nonscientific evidence that did not need to satisfy the *Frye* standard. *Kirk*, 289 Ill. App. 3d at 333. The *Kirk* court found that, “[o]f the remaining cases, none of the appellate courts had the benefit of a *Frye* hearing. Rather, those courts concluded that the *Frye* standard had been met due to the *Blake* court’s conclusion.” (Emphasis omitted.) *Kirk*, 289 Ill. App. 3d at 333. The *Kirk* court did not approve of *Buening*’s reliance on these cases, and held that relying exclusively upon prior judicial decisions to establish general scientific

acceptance can be a “hollow ritual” if the underlying issue of scientific acceptance has not been adequately litigated. *Kirk*, 289 Ill. App. 3d at 333, quoting 1 J. Strong, *McCormick on Evidence* §203, at 870 n.20 (4th ed. 1992).

The *Kirk* court then held that it was error to have admitted the HGN test results “without a proper *Frye* hearing.” *Kirk*, 289 Ill. App. 3d at 334. The error was deemed harmless, however, because there was sufficient non-HGN evidence to establish that the defendant was impaired by alcohol while operating his vehicle. *Kirk*, 289 Ill. App. 3d at 334.

The disparity in how HGN evidence has been treated by the districts of the appellate court was discussed, but not resolved, by this court in *Basler*. In *Basler*, a jury found the defendant guilty of driving under the influence of alcohol. *Basler*, 193 Ill. 2d at 546 (plurality op.). The appellate court reversed and remanded, holding that the trial court committed reversible error by, among other things, rejecting the defendant’s motion for a continuance. *Basler*, 193 Ill. 2d at 547 (plurality op.). In the defendant’s petition for rehearing, she challenged the admissibility of the testimony regarding her HGN test results for the first time. *Basler*, 193 Ill. 2d at 547 (plurality op.). Upon rehearing, the appellate court issued a modified opinion, which again reversed and remanded the cause, but added a discussion of the HGN testing issue. *Basler*, 193 Ill. 2d at 548 (plurality op.). The State appealed to this court.

We affirmed the appellate court’s decision to reverse and remand, but held that the HGN issue had been waived by the defendant. *Basler*, 193 Ill. 2d at 549 (plurality op.). We stated, “The problem with undertaking such an expansive analysis is that validity of the HGN test was never challenged in the trial court” or in the defendant’s posttrial motion. *Basler*, 193 Ill. 2d at 549 (plurality op.). Although we held the HGN issue waived, a plurality chose to address the issue on the merits, and held that HGN testing met the *Frye* standard. *Basler*, 193 Ill. 2d at 551 (plurality op.). Two justices dissented. *Basler*, 193 Ill. 2d at 552-60 (McMorrow, J., dissenting, joined by Freeman, J.). Two other justices concurred only with the result of the case, and not the plurality’s statements on HGN test results, which they held to be *dicta*. *Basler*, 193 Ill. 2d at 552 (Heiple, J., specially

concurring, joined by Bilandic, J.). As such, *Basler* provides no guidance.⁴

A review of other *Frye* states reveals that the general acceptance of HGN testing is not a settled issue. Our research indicates that, in the first five years after 1986, when *Blake* was published, several courts took judicial notice of the general acceptance of the reliability of the HGN test as an indicator of alcohol impairment, based on *Blake*, and for that reason held that no *Frye* hearing was needed before admitting HGN evidence. *Malone v. City of Silverhill*, 575 So. 2d 101 (Ala. Crim. App. 1989), *rev'd on other grounds, Ex parte Malone*, 575 So. 2d 106 (Ala. 1990); *State v. Garrett*, 119 Idaho 878, 811 P.2d 488 (1991); *State v. Armstrong*, 561 So. 2d 883 (La. App. 1990). In May 1992, *Buening* likewise relied on *Blake* in determining that no *Frye* hearing was necessary before admitting HGN test results in the Fifth District. *Buening*, 229 Ill. App. 3d at 542.

However, 1992 marked a change in the way many courts chose to resolve the HGN test issue. In January 1992, a Pennsylvania superior court declined to consider any foreign cases and instead relied solely on the evidence presented at a *Frye* hearing in a lower court to determine if any testimony related to the administration of the HGN test was admissible. *Commonwealth v. Apollo*, 412 Pa. Super. 453, 455, 603 A.2d 1023, 1025 (1992). In *Apollo*, the prosecution presented testimony from an optometrist who conducted his own study of the incidence of HGN in sober persons, and stated that he was “aware of no studies evaluating the reliability of the HGN test that have reached any conclusion other than that it is the most accurate field sobriety test available.” *Apollo*, 412 Pa. Super. at 460, 603 A.2d at 1027. The defense countered this testimony with technical writings that criticized the HGN test and concluded that “the reliability of the Horizontal Gaze Nystagmus test is not a settled proposition within the scientific community.” *Apollo*, 412 Pa. Super. at 461, 603

⁴The issue came before us once again in *People v. Robinson*, 223 Ill. 2d 165 (2006), but we declined to resolve the HGN issue, holding that the question was waived because it “was not raised in [the defendant’s] posttrial motion, his appeal before the appellate court, or his petition for leave to appeal to this court.” *Robinson*, 223 Ill. 2d at 173-74.

A.2d at 1027. The lower court then concluded that the HGN test was an appropriate field test for sobriety, but that the general acceptance of the HGN test was not sufficiently established. *Apollo*, 412 Pa. Super. at 461, 603 A.2d at 1027. The *Apollo* court affirmed the lower court's preclusion of the HGN evidence, holding that the optometrist's testimony "fell short of establishing the 'general acceptance in the scientific community standard' " because it "was largely based on his own personal views and observations." *Apollo*, 412 Pa. Super. at 461, 603 A.2d at 1028.

In July 1992, the Kansas Supreme Court issued *Witte*, the leading case against admitting the evidence produced by HGN testing without a *Frye* hearing. After examining the holding in *Blake*, which was relied upon by the prosecution, the *Witte* court presented its own research:

"Our research indicates that the reaction within the scientific community is mixed. Some articles endorse the HGN testing and its accuracy. See, e.g., Good & Augsburg, *Use of Horizontal Gaze Nystagmus as a Part of Roadside Sobriety Testing*, 63 Am. J. of Optometry & Physiological Optics 467 (1986). Other articles discuss concerns with the HGN test. See, e.g., Carper & McCamey, 77 Ill. B.J. at 149; Halperin & Yolton, *Is the Driver Drunk? Oculomotor Sobriety Testing*, 57 J. of the Am. Optometric A. 654, 657 (1986). Several commentators disagree with the Arizona Supreme Court's conclusions, insisting the HGN test has not been accepted generally within the scientific community and questioning the methodology of the NHTSA's research. See, e.g., Cowan & Jaffee, *Proof and Disproof of Alcohol-Induced Driving Impairment Through Evidence of Observable Intoxication and Coordination Testing*, 9 Am. Jur. Proof of Facts 3d 459 §12 (1990); Pangman, *Horizontal Gaze Nystagmus: Voodoo Science*, 2 DWI Journal 1, 3-4 (1987); Rouleau, *Unreliability of the Horizontal Gaze Nystagmus Test*, 4 Am. Jur. Proof of Facts 3d 439 §7, p. 452 (1989); 1 Erwin, *Defense of Drunk Driving Cases* §§ 8A:06, 8A:08 (3d ed. 1992); 2 Nichols, *Drinking/Driving Litigation* §26:01 (1991 & 1992 Supp.). These articles or the particular sections cited are not listed in the Arizona opinion's appendices. Most of these articles were

published after the Arizona opinion was issued April 7, 1986.”
Witte, 251 Kan. at 326-27, 836 P.2d at 1119.

The *Witte* court then noted that there was disagreement in the scientific community about the correlation between the blood-alcohol level and the angle of onset at which nystagmus occurs, that the NHTSA has admitted that the 45-degree angle test is wrong 22% of the time, and that the NHTSA study has been criticized for deliberately screening out people at high risk for being classified as false positives. *Witte*, 251 Kan. at 327-28, 836 P.2d at 1119, citing Pangman, 2 *DWI Journal*, at 2 (citing J. Toglia, *Electronystagmography: Technical Aspects and Atlas* (1976); Aschan, *Different Types of Alcohol Nystagmus*, *Acta Oto-Laryngologica Supp.* 140:69 (1957); Aschan, Bergstedt, Goldberg & Laurell, *Positional Nystagmus in Man During and After Alcohol Intoxication*, 17 *Q.J. of Studies on Alcohol* 381 (1956); Lehti, *The Effect of Blood Alcohol Concentration on the Onset of Gaze Nystagmus*, 13 *Blutalkohol* 411 (1976)). See M. Rouleau, 4 *Am. Jur. Proof of Facts* 3d 439 §§7, 8 (1989); 2 *D. Nichols, Drinking/Driving Litigation* §26:01 (1989).

The *Witte* court continued,

“In addition to intoxication, many other factors can cause nystagmus. ‘Nystagmus can be caused by problems in an individual’s inner ear labyrinth. In fact, irrigating the ears with warm or cold water, not a far-fetched scenario under particular weather conditions, is a source of error. Physiological problems such as certain kinds of diseases may also result in gaze nystagmus. Influenza, streptococcus infections, vertigo, measles, syphilis, arteriosclerosis, muscular dystrophy, multiple sclerosis, Korsakoff’s Syndrome, brain hemorrhage, epilepsy, and other psychogenic disorders all have been shown to cause nystagmus. Furthermore, conditions such as hypertension, motion sickness, sunstroke, eyestrain, eye muscle fatigue, glaucoma, and changes in atmospheric pressure may result in gaze nystagmus. The consumption of common substances such as caffeine, nicotine, or aspirin also lead to nystagmus almost identical to that caused by alcohol

consumption.’ Pangman, 2 DWI Journal at 3.” *Witte*, 251 Kan. at 328, 836 P.2d at 1120.

Witte cited more criticism of the studies that lauded the HGN test and concluded,

“If the Arizona Supreme Court had had this evidence before it, it may not have held that HGN evidence satisfies the *Frye* admissibility requirements. The reliability of the HGN test is not currently a settled proposition in the scientific community. This court holds that HGN evidence requires a *Frye* foundation for admissibility. If the *Frye* foundation is established to this court’s satisfaction, HGN evidence will be admitted in other cases without the need to satisfy the *Frye* test each time. Before this court rules on whether HGN evidence satisfies the *Frye* admissibility requirements, a trial court first should have an opportunity to examine, weigh, and decide disputed facts to determine whether the test is sufficiently reliable to be admissible for any purpose in Kansas.” *Witte*, 251 Kan. at 329-30, 836 P.2d at 1121.

After publication of *Witte* in 1992, courts have been reluctant to take judicial notice of the general acceptance of the reliability of the HGN test as an indicator of alcohol impairment based on the reasoning of prior judicial decisions. In fact, a majority of courts since 1992 have resolved the HGN evidence issue only after at least a partial *Frye* hearing occurred in their jurisdiction. As discussed above, *Kirk* joined with this majority in 1997 and called for a full *Frye* hearing in Illinois to decide the matter.

Five states have conducted full *Frye* hearings on HGN testing since 1992, with varying results. *Ballard v. State*, 955 P.2d 931 (Alaska App. 1998) (HGN test results admissible only to show that person has consumed alcohol and is potentially impaired)⁵; *People v. Joehnk*, 35 Cal. App. 4th 1488, 1507-08, 42 Cal. Rptr. 2d 6, 17 (1995) (HGN test is generally accepted as a useful tool “when combined with other tests and observations in reaching an opinion whether a defendant was intoxicated”), *State v. Chastain*, 265 Kan.

⁵Alaska has since abandoned *Frye* and adopted *Daubert*.

16, 960 P.2d 756 (1998) (HGN testing has not been generally accepted within the scientific community); *State v. Klawitter*, 518 N.W.2d 577 (Minn. 1994) (HGN testing satisfies *Frye*); *State v. Baity*, 140 Wash. 2d 1, 991 P.2d 1151 (2000) (the forensic application of HGN to determining intoxication satisfies *Frye*).

In four other states, the type of hearing on the HGN issue was similar to that which occurred in *Blake*. In these states, the trial court heard testimony from only the prosecutor before finding that HGN evidence satisfied *Frye*. *State v. Hill*, 865 S.W.2d 702 (Mo. App. 1993) (when properly administered by adequately trained personnel, the HGN test is admissible as evidence of intoxication), overruled on other grounds, *State v. Carson*, 941 S.W.2d 518 (Mo. 1997); *State v. Baue*, 258 Neb. 968, 607 N.W.2d 191 (2000) (HGN test results are “admissible for the limited purpose of establishing that a person has an impairment which may be caused by alcohol”); *People v. Vanderlofske*, 186 Misc. 2d 182, 717 N.Y.S.2d 450 (Co. Ct. 2000) (HGN test results are generally accepted in the scientific community as a reliable indicator of intoxication)⁶; *Yell*, 856 P.2d at 999 (HGN evidence is subject to *Frye* testing, but testimony from an arresting officer alone is insufficient to establish general acceptance).⁷

Since 1992, only five states have made their determinations regarding the admissibility of HGN evidence without the benefit of a *Frye* hearing. Three of these states took judicial notice of the general acceptance of HGN evidence, based primarily on the reasoning presented in *Blake*. See *Hawkins v. State*, 223 Ga. App. 34, 476 S.E.2d 803 (1996); *Schultz v. State*, 106 Md. App. 145, 664 A.2d 60 (1995); *Berger* (all finding that HGN evidence satisfies the *Frye* standard). The other two states, however, declined to take judicial notice of the general acceptance of HGN evidence, and consequently ruled it inadmissible.

⁶Dr. Burns testified for the prosecution in six of the seven cases just mentioned.

⁷Oklahoma has since abandoned *Frye* and adopted *Daubert*.

In *Young v. City of Brookhaven*, 693 So. 2d 1355 (Miss. 1997), the Mississippi Supreme Court held, without elaboration, that the HGN test is not generally accepted within the scientific community and its results cannot be used as scientific evidence to prove intoxication or as a mere showing of impairment. *Young*, 693 So. 2d at 1360-61. In *State v. Doriguzzi*, 334 N.J. Super. 530, 760 A.2d 336 (2000), the most recent appellate case on the matter, the Superior Court of New Jersey held that it would not determine the general acceptance of HGN evidence based upon its independent review of authoritative, scientific and legal writings as well as opinions from foreign jurisdictions. *Doriguzzi*, 334 N.J. Super. at 533, 760 A.2d at 337. The *Doriguzzi* court expressed its reasoning as follows,

“While it may very well be that HGN testing can meet the *Frye* test, we believe that the case which decides the issue for all other cases in New Jersey should be grounded in sufficient expert testimony to assure defendants and the State alike that a conviction for driving under the influence, when based in part on HGN testing, is a conviction grounded in reliable scientific data.” *Doriguzzi*, 334 N.J. Super. at 540, 760 A.2d at 342.

As our research indicates, determinations on HGN testing are as varied as the states that have made them. These disparate opinions provide insight as to how HGN testing has been addressed, but do not present the kind of unequivocal or undisputed viewpoint on the issue upon which a court can take judicial notice. As such, we cannot take judicial notice of the general acceptance of HGN test results based on prior judicial decisions.

B. *Technical Writings*

The State contends that, even if we decline to take judicial notice of the general acceptance of the HGN test as a reliable indicator of alcohol impairment based on the reasoning of prior judicial decisions, we should do so based on the technical writings on the subject. The State makes this argument in light of our ruling on the standard of review of *Frye* cases in *In re Commitment of Simons*, wherein we held that, in reviewing a trial court’s *Frye* analysis, we may consider not

only the record, but also “sources outside the record, including legal and scientific articles, as well as court opinions from other jurisdictions.” *In re Commitment of Simons*, 213 Ill. 2d at 531.

The State supports its argument with a battery of materials endorsing the use of HGN testing as a reliable indicator of alcohol impairment, including a 1993 resolution of the American Optometric Association that declared the HGN test “to be a scientifically valid and reliable tool for trained police officers to use in field sobriety testing.” A sampling of the other articles presented by the State includes G. Good & A. Augsberger, *Use of Horizontal Gaze Nystagmus As a Part of Roadside Sobriety Testing*, 63 Am. J. of Optometry & Physiological Optics 467 (1986); E. Halperin & R. Yolton, *Is the Driver Drunk? Oculomotor Sobriety Testing*, 57 J. Am. Optometric Ass’n 654 (September 1986); *Horizontal Gaze Nystagmus: The Science and the Law*, American Prosecutors Research Institute, National Traffic Law Center (1999).

Many of the articles offered by the State merely acknowledge the accepted theory that there is a causal connection between HGN and alcohol consumption, which defendant concedes. Several articles do conclude that HGN test results are reliable indicators of alcohol impairment, but at least one of the sources the State provides in the appendix to its brief actually denounces the use of HGN testing for roadside sobriety tests:

“Unfortunately, that alcohol can produce horizontal gaze-evoked nystagmus has led to a ‘roadside sobriety’ test conducted by law-enforcement officers. Nystagmus as an indicator of alcohol intoxication is fraught with extraordinary pitfalls: many normal individuals have physiologic end-point nystagmus; small doses of tranquilizers that wouldn’t interfere with driving ability can also produce nystagmus; nystagmus may be congenital or consequent to structural neurologic disease, and often a neuro-ophthalmologist or sophisticated oculographer is required to determine whether nystagmus is pathologic. Such judgments are difficult for experts to make under the best conditions and impossible to make accurately under roadside conditions. It is unreasonable to have cursorily trained law officers using the test, no matter how intelligent,

perceptive, and well meaning they might be.” L. Dell’Osso & R. Daroff, *Nystagmus and Saccadic Intrusions and Oscillations*, at 26-27, in 2 Duane’s *Clinical Ophthalmology*, ch. 11 (2005).

In support of her argument, defendant presents an extensive list of articles that condemn the reliability of HGN testing. The gist of most of these writings is that the HGN test is too delicate a test to be administered and interpreted accurately by police officers outside of a laboratory, and that positive test results can be caused by many other factors besides alcohol. See, e.g., W. Pangman, *Horizontal Gaze Nystagmus: Voodoo Science*, 2 DWI J. 1 (1987); N. Willey, *Feature: Should HGN in OUI by DOA?*, 13 Me. B.J. 60 (1998); J. Booker, *End-position Nystagmus as an Indicator of Ethanol Intoxication*, 41 Science & Justice 113 (2001); J. Mancke, *DUI Field Sobriety Tests: Have the Courts Missed a Step?*, 73 Pa. B. Ass’n Q. 117 (2002); S. Rubenzer, *The Psychometrics and Science of the Standardized Field Sobriety Tests*, 27 The Champion 40 (June 2003); J. Booker, *The Horizontal Gaze Nystagmus Test: Fraudulent Science in the American Courts*, 44 Science & Justice 133 (2004); M. Coffey, *DWI—Modern Day Salem Witch Hunts*, The Champion, 51 (November 2004).

Defendant also argues that the HGN test was not developed to measure whether a subject was impaired, and that it is being improperly used for that purpose today. Defendant maintains that, during an evidentiary hearing in New Mexico, Dr. Burns, who has testified at almost every *Frye* hearing on HGN testing around the nation, has referred to “the incorrect assumption that field sobriety tests are designed to measure driving impairment,” and that, when developing the HGN test, the NHTSA “pursued the development of tests that would provide statistically valid and reliable indications of a driver’s BAC, rather than indications of driving impairment.” (Emphasis omitted.) *State v. Lasworth*, 131 N.M. 739, 742-43, 42 P.3d 844, 847 (2001). Defendant also contends that Dr. Burns has written that “[t]he only appropriate criterion measure to assess the accuracy of the SFSTs (standard field-sobriety tests) is BAC. Measures of impairment are irrelevant because performance of the SFSTs must be correlated with BAC level, rather than driving

performance.” *Lasworth*, 131 N.M. at 742, 42 P.3d at 847, quoting J. Stuster & M. Burns, *Validation of the Standardized Field Sobriety Test Battery of BAC’s below 0.10 Percent, Final Report, Submitted to the US Dept. of Transportation, NHTSA*, at 10 (1998).

The fact that the HGN test was developed to measure blood-alcohol content, but is not used for that purpose but, rather, used as an indicator of impairment, has led one commentator to note, “This leads to an apparent contradiction, in that the courts will not accept the SFSTs for the purpose for which they were developed and the method by which they were validated, but will accept them for purposes for which they have not been directly studied or validated.” H. Cohen, 10 *Defense of Drunk Driving Cases: Criminal, Civil* §10.09, at 6 (2006). Defendant argues that such a contradiction calls into serious question the conclusions reached in *Blake*, and relied upon by *Buening* and *Wiebler*.

As illustrated by these conflicting materials, HGN testing appears to have as many critics as it does champions. The technical writings above reveal a dichotomy in the scientific community, rather than the unequivocal or undisputed viewpoint necessary for us to take judicial notice. As such, we cannot take judicial notice of the general acceptance of the HGN test as a reliable indicator of alcohol impairment based on these technical writings.

Our holding today does not purport to decide whether the HGN test has been generally accepted as a reliable indicator of alcohol impairment. Rather, we find that this issue cannot be resolved in Illinois on judicial notice alone. In light of the disparate resolutions of the issue in foreign jurisdictions, the varying opinions expressed in articles on the subject, the fact that a *Frye* hearing has never been held on the matter in Illinois, and the fact that, as far as we are aware, the last *Frye* hearing held on this controversial methodology was held in Washington in 2000, we hold that a *Frye* hearing must be held to determine if the HGN test has been generally accepted as a reliable indicator of alcohol impairment.

IV. Harmless Error

The State argues that, even if the trial court erroneously admitted the HGN test results, the additional evidence against defendant renders any such error harmless. Defendant maintains that the admission of the HGN test results was not harmless because there was no witness testimony that she was actually speeding or driving erratically prior to the accident; no other field-sobriety tests were conducted upon her; the chemical samples collected from her were negative; the odor of beer on her breath indicated only consumption of alcohol, and not impairment; and that the appearance of her eyes could be attributed to her recent overnight shift in a chemical plant.

When a defendant challenges the admission of evidence, we may hold the admission to be harmless “[w]hen the competent evidence in the record establishes the defendant’s guilt beyond a reasonable doubt and it can be concluded that retrial without the erroneous admission of the challenged evidence would produce no different result.” *People v. Arman*, 131 Ill. 2d 115, 124 (1989). Given the fact that defendant’s blood-alcohol content was not verified by any chemical test, and no other field-sobriety tests were given, it is reasonable to conclude that the trial court relied heavily on the improperly admitted HGN test results. Therefore, we cannot say that “retrial without the erroneous admission of the challenged evidence would produce no different result.” For this reason we hold that the admission of the HGN test results was not a harmless error.

CONCLUSION

For the foregoing reasons, we retain jurisdiction and remand this cause to the circuit court of Peoria County for a *Frye* hearing to determine whether the HGN test has been generally accepted as a reliable indicator of alcohol impairment. See *People v. Wheeler*, 334 Ill. App. 3d 273, 283 (2002) (a reviewing court retains jurisdiction of any cause remanded to the circuit court for a *Frye* hearing). The circuit court is directed to make appropriate findings of fact and conclusions of law as to this question. The circuit court’s decision, together with a record of the proceedings on remand, shall be filed

with the clerk of this court within 90 days of the date that this decision becomes final.

Cause remanded with directions.