IN THE SUPREME COURT OF CALIFORNIA

THE PEOPLE OF THE STATE OF CALIFORNIA,

Plaintiff and Appellant,

v.

TERRY VANGELDER,

Defendant and Respondent.

Case No. S195423

APPELLANT'S OPENING BRIEF ON THE MERITS

Fourth Appellate District, Division One, Case No. D059012
San Diego County Superior Court, Case No. M039138
The Honorable Gregory W. Pollack, Judge

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ISSUE PRESENTED

In a prosecution under Vehicle Code section 23152(b) seeking to prove the defendant's blood alcohol level was .08 percent or above based upon grams of alcohol per 210 liters of breath, if an expert testifies that (1) the deep lung breath sample measured by breath testing devices is affected by physiological factors in the airway and (2) that sample is therefore unreliable, is that testimony inadmissible because it violates the prohibition against partition ratio testimony established in *People v. Bransford*, 8 Cal. 4th 885 (1994)?

STATEMENT OF THE CASE/CASE HISTORY

On December 22, 2009, Sergeant Berg of the California Highway Patrol at approximately 2:45 a.m. observed Respondent traveling at over 125 miles per hour on Highway 15. (Transcript of Trial [TR.] TR. at 87–88, 93.) Sergeant Berg was an experienced officer with over 26 years experience as a peace officer with the California Highway Patrol and over 500 arrests and 1000 investigations for driving under the influence. (TR. at 84–86.) The sergeant was able to pull Respondent over after about six and a half miles. (TR. at 93, 102, 115, 117 and 119.) The sergeant observed that

Respondent displayed objective symptoms of intoxication. Respondent had the odor of an alcoholic beverage coming from him and red, watery eyes. (TR. at 105–106.) When asked how much he had to drink that evening, Respondent responded that he had two glasses of wine that evening. (TR. at 107.) The sergeant decided to detain Respondent and have him evaluated by another officer for driving under the influence of alcohol. (TR. at 107, lines 11–21.)

Officer Guzman performed the driving under the influence (DUI) evaluation. Respondent told the officer he had three glasses of wine that evening and he started drinking at 8:00 p.m. and stopped drinking at 9:00 p.m. (TR. at 189.) Respondent took a preliminary alcohol screening (PAS) test which revealed his blood alcohol level was .095 and .086 at 3:09 a.m. and 3:11 a.m. respectively. (TR. at 199–200, 252.) Based upon Respondent's performance on the field sobriety tests Respondent was arrested for driving under the influence of alcohol. (TR. at 205.)

Respondent submitted to a breath test which showed his breath alcohol level to be .08 and .08 at 3:37 a.m. and 3:39 a.m. respectively. (TR. at 207, 262–263.) Respondent also submitted a blood sample at 3:53 a.m. which tested at a blood alcohol level of .088 and .087. (TR. at 208, 296, 302.)

The People's expert witness testified that she estimated Respondent's blood alcohol level to be .09 at the time of driving based upon the test results, the body's processing of alcohol, and the timing of the events. (TR. at 302–304.)

Respondent and his son testified that Respondent had three glasses of wine between 7:00 p.m. and 10:00 p.m., then went hiking and returned home where Respondent had one beer around 2:00-2:15 a.m. (TR. 388, 389, 393–394.)

Respondent objected to the admission of the PAS test result to the third decimal place. (TR. at 32.) The court found that such evidence while in conflict with California Code of Regulations, Title 17, based upon case law and the truth in evidence provisions of the California Constitution, Article I, section 28(d) (Proposition 8) the result was admissible to the third decimal point. (TR. at 51.)

Respondent's expert witness, Professor Hlastala, attempted to introduce evidence that the concentration of alcohol in the breath is affected by temperature in the lungs and the airway, alcohol in the throat (or bronchial vessels), the manner of breathing, and other factors as the breath leaves the body and the trial court excluded this testimony on the basis that it was partition ratio evidence and irrelevant. (TR. at 351–57.) Professor Hlastala began testifying regarding the pathway and physical variables that occur inherent to breath tests as follows:

> And we have, in the airway, a lot of mucus and water and that mucus lining in the airway plays an important role in protecting us from particles and things we inhale goes on to this mucus, then comes out to the mouth. And it mostly—it would get those things we swallow and goes into the digestive system. But if we have alcohol, there are little blood vessels that come along here, and these blood vessels, those are called "bronchial vessels." And so they bring alcohol so there's a lot of alcohol if you have alcohol in your bloodstream. Now, what happens is if we inhale and we pick up alcohol from this mucus and by the time we pick it up here, and by the time we get down to this air sack, it's already filled up and saturated.

(TR. at 328, lines 3–18.)

The People objected at this point and a hearing pursuant to Evidence Code section 403 was conducted outside the jury's presence to determine if the expert's testimony concerned partition ratio. At the Section 403 hearing Professor Hlastala initially testified as to four factors which cause a breath

test to not be scientifically accurate. These four factors were: breathing pattern, body temperature, hematocrit (or percent of red blood cells), and breath temperature. (TR. at 349, line 16 through 350, line 2.) Professor Hlastala testified that these factors were not directly related to partition ratio because partition ratio applies to a state of equilibrium in a closed container which is not representative of how the human body processes alcohol. (TR. at 350, lines 5–25.)

The court then inquired as to two additional factors, gender and medical conditions, and whether Professor Hlastala thought they were also factors which affected the scientific reliability of breath tests which could be added to the list previously discussed. (TR. at 355, line 17 through 355, line 9.) Professor Hlastala testified that these two factors also affect the scientific reliability of breath tests. (TR. at 355, line 17 through 355, line 9.)

The court's attempt to clarify Professor Hlastala's opinion on partition ratio was not particularly successful. Professor Hlastala responded to the court's question by answering that he did not like the term "partition ratio" because he thought it did not accurately reflect the processes that were occurring. (TR. at 356, line 22 through 357, line 5.) Additionally Professor Hlastala acknowledged that the factors he mentioned as affecting the accuracy of the breath test result in people having different partition ratios than the standard partition ratio used by California law. (TR. at 357, lines 6–12.)

After Respondent's conviction was affirmed in the Appellate Division of the San Diego Superior Court, he petitioned the Fourth District Court of Appeal, Division One, for review, arguing that the "entire premise of the [breath] machine is that only alveolar (deep lung) air is measured by the machine," and the prohibition against partition ratio evidence should apply only to evidence of processes at the alveolar level. (Petitioner's

Petition for Transfer for Review in the Court of Appeal, Fourth Appellate District, Division One, at 1.)

After hearing oral argument, the Court of Appeal reversed the conviction. The Court of Appeal adopted the assumption that "such devices only measure alveolar (deep lung) air." *People v. Vangelder*, 197 Cal. App. 4th 1, 2 (2011). According to the Court of Appeal, the defense expert sought not to testify about variations in hypothetical ratios at the alveolar level, but rather about "problems in obtaining pure data about blood alcohol from the intake of air" utilized in breath testing devices. *Id.* at 4. That is, a measurement of alcohol concentration in the air at the alveolar level is affected by the journey of the air in through the mouth and down the trachea to the lungs and back the other way. Because the defense expert limited his testimony to the effects on air at the non-alveolar level, the defense argued, and the Court of Appeal agreed, that this was not partition ratio testimony.

SUMMARY OF ARGUMENT

In this drunk driving prosecution the defense sought to attack the blood alcohol level reported by the breath testing device. Although *People v. Bransford*, 8 Cal. 4th 885 (1994), prohibits the admission of evidence regarding the correlation between blood and breath (partition ratio), the defense sought to introduce expert testimony that the result of the breath test does not accurately reflect the subject's blood alcohol level.

The defense rationale for introducing this evidence was their argument that *Bransford* only prohibits evidence regarding variations to the blood-breath conversion at the alveolar level, and the expert's testimony concerned variations caused by physiological factors in the upper lungs and throat.

This evidence was partition-ratio evidence in disguise. The factors cited by the expert that affect the breath test—temperature in the airway, alcohol in the throat, the manner of breathing, hematocrit et al.—have long been recognized by experts and courts as factors that affect partition ratio. Under *Bransford*, such evidence is irrelevant and prohibited. Accordingly, the trial court properly ruled that the evidence was inadmissible, and the Court of Appeal's holding reversing the conviction must be reversed.

ARGUMENT

I

BACKGROUND

A. THE SCIENCE OF ALCOHOL BREATH TESTING

Alcohol in the carotid arteries travels to the brain and causes intoxication. *People v. McNeal*, 46 Cal. 4th 1183, 1190 (2009). However, as a practical matter it is impossible to measure alcohol in a person's carotid arteries or brain. *Id.* at 1191. Most experts agree measuring alcohol in venous blood or breath provided a good indication of the amount of alcohol in the brain. *Id.*

Breath machines are based on the scientific principle of Henry's Law, which states the concentration of a volatile substance (alcohol) dissolved in a liquid (blood) is directly proportional to the concentration of that substance in the air next to that liquid. Annot. 90 A.L.R. 4th 155, 160 (1991). It is this principle of direct proportionality between the amount of a dissolved substance in a liquid and the amount of that same substance in the air above that liquid that is the basis for the breath machine conversion of blood alcohol result (alcohol concentration in a liquid solution) based upon a breath alcohol sample (alcohol concentration in the air). *Defense of Drunk Driving Cases*, Volume 2, section 18.01 (2) (3d ed. 1996). Henry's Law assumes a state of equilibrium where factors such as pressure and

temperature are fixed. Under such conditions the direct proportionality can be numerically determined as a specific ratio known as Henry's coefficient. *Id.* Because the ratio can change depending upon factors such as pressure and temperature it is referred to as a coefficient, rather than a constant.

In the human body gases in the blood and airway are exchanged deep within the lungs at alveoli, which are the tiny air sacs at the end of the bronchioles. Harvey M. Cohen and Joseph B. Green, *Apprehending and Prosecuting the Drunk Driver*, section 7.04[1] (Matthew Bender ed. 2002).These air sacs are in close proximity to the capillary blood of the lungs and are separated only by very thin membranes. *Id.* In this area free movement of alcohol from the blood to the breath occurs across these membranes. *Id.* This free-movement area is known as the alveolar air space. Alcohol in the blood diffuses into alveolar air space in the lungs and is exhaled in the breath. *McNeal*, 46 Cal. 4th at 1190–91.

It is in this area that the scientific principle of Henry's Law is applied to calculate blood alcohol readings based upon the ratio that quantifies the concentration of alcohol in the blood relative to the concentration of alcohol in the alveolar air space. *McNeal*, 46 Cal. 4th at 1191. Testing alveolar air cannot be done directly, at its location deep within the lung, because such testing would be extremely invasive and the air space involved is so small. Harvey M. Cohen and Joseph B. Green, *Apprehending and Prosecuting the Drunk Driver*, section 7.04[1]. Instead, this testing is accomplished by having a person give a breath sample by providing a prolonged exhalation; an analysis is then conducted on the last portion of the breath under the theory that it approximates the alveolar air space where the gas exchange is occurring under principles of Henry's Law. *Defense of Drunk Driving Cases*, Volume 2, section 18.01(2) (3d ed. 1996). However, the lungs in a living human do not exist in a fixed state

free of pressure, volume and temperature, and therefore application of the scientific principle of Henry's Law and its assumption of a state of equilibrium conflicts with the those variable conditions. Thus, factors of temperature, method of breathing, and water content of the blood (hematocrit level) have long been known to affect the blood/breath ratio. 90 A.L.R. 4th at 160. Given these variable factors, a blood/breath ratio is not a constant for all people or for the same person under different conditions. *People v. Lepine*, 215 Cal. App. 3d 91, 100 (1989).

A "black box" method was used to empirically determine whether the variation associated with breath testing was acceptable. This was done by conducting correlation studies wherein blood samples drawn from an individual's arm were compared to breath samples taken from that individual at the same time. *People v. Ireland*, 33 Cal. App. 4th 686 (1995); *see also State v. Hanks*, 172 Vt. 93, 95 (Vt. 2001) ("a conversion rate of 2100:1 as an assumed blood-breath ratio, which represents the relationship between the number of alcohol molecules in the bloodstream to the number present in the breath when both substances are tested simultaneously.").

Because the standard was set by looking at numerous individuals in various correlation studies, the amount of overall variance between the blood and breath alcohol results was known. However, because of the black box nature of this method an awareness of every factor affecting such variability and what particular contribution each factor made to the variability was not known or required.

While most studies found average partition ratios were around 2300:1, the ratio chosen for the conversion was set at a lower than average level of 2100:1, to give the benefit of the doubt to the subject in most instances. *State v. Downie*, 117 N.J. 450, 460 (N.J. 1990); *see also McNeal*, 4 Cal. 4th at 1192 ("[d]espite this recognized variability, most scientists

agree that the 2,100-to-1 ratio roughly approximates or even underestimates the ratio of most people).

B. THE LAW OF DUI BREATH TESTING VIS-À-VIS PARTITION RATIO

In *Burg v. Municipal Court*, 35 Cal. 3d. 257 (1983), the court upheld the first California statute to criminalize driving with a specified percentage of alcohol in the blood. *Bransford*, 8 Cal. 4th at 888. At that time Vehicle Code section 23152(b) defined the offense solely in terms of "grams of alcohol per 100 milliliters of blood" but allowed a conversion for alcohol in breath using the standard partition ratio, treating the amount of alcohol in 2,100 milliliters of breath as equivalent to the amount of alcohol in 1 milliliter of blood. *Id.* at 888–89. *See also* Cal. Code Regulation, Title 17, section 1220.4 sub. (f). It was scientifically accepted at this time that many variables including body temperature, atmospheric pressure, the individual's hematocrit level, and speed and depth of breathing pattern could affect the actual ratio of an individual's breath-alcohol concentration to blood-alcohol concentrations. *Bransford*, 8 Cal. 4th at 889; *see also Ireland*, 33 Cal. App. 4th at 689. Accordingly, courts allowed defendants to attack the accuracy of the breath test on the basis of this variability, first as it concerned a defendant's personal partition ratio, and later on the basis that the standard partition ratio is merely an approximation which differs among individuals. *Bransford*, 8 Cal. 4th at 889.

In 1990 the Legislature amended Vehicle Code section 23152(b), effective in 1991, by changing the type of prohibited alcohol level to include breath. While the offense was formerly defined solely in terms of "grams of alcohol per 100 milliliters of blood," the amendment now defined prohibited alcohol level in terms of "grams of alcohol per 100 milliliters of blood or grams of alcohol per 210 liters of breath." Thus the

amendment criminalized the act of driving either with the specified blood-alcohol level or with the specified breath-alcohol level. *Id.* at 890.

The legislative history of this amendment indicated the Legislature thought partition ratio evidence was unnecessarily complicated, expensive and time consuming for the courts, and that it did not promote but instead undermined successful enforcement of the legislative scheme. *Ireland*, 33 Cal. App. 4th at 689; *Bransford*, 8 Cal. 4th at 891. When the Legislature made this change it was aware of the complexities of converting breath-alcohol values to blood-alcohol values and did so only after considering the opinions of experts on the subject. *Ireland*, 33 Cal. App. 4th at 690, 693. In defining this per se DUI crime by using the standard partition ratio the Legislature necessarily accepted the variability that existed between breath-alcohol and blood-alcohol values.

In *Bransford* this Court ruled that such a legislative determination made any evidence as to the factors of that partition ratio variability is irrelevant. "Where scientific opinions conflict on a particular point, the Legislature is free to adopt the opinion it chooses, and the court will not substitute its judgment for that of the Legislature." *Ireland*, 33 Cal. App. 4th at 693 (quoting *State v. Brayman*, 110 Wn.2d 183, 193 (1988)).

Bransford held that evidence concerning the variability of the partition ratio was properly excluded because that crime was defined by the prohibited breath-alcohol level and codified the standard partition ratio as part of the offense, and therefore such evidence was irrelevant as to the per se DUI. *McNeal*, 46 Cal. 4th at 1196 (citing *Bransford*, 8 Cal. 4th at 890-92). In contrast, the generic DUI, is defined only as driving under the influence of alcohol pursuant to Vehicle Code section 23152(a), and not by a prohibited breath alcohol level. *McNeal*, 46 Cal. 4th at 1183.

The generic DUI charge is also distinguished from the per se DUI charge because it carries a rebuttable presumption which allows the jury to presume the defendant is under the influence if they find the defendant has a blood-alcohol level of .08 or more. Vehicle Code section 23610; *see also* CALJIC No. 12.61; CALCRIM No. 2110. This presumption, unlike the per se DUI, is defined only in terms of a blood alcohol level and not a breath alcohol level. *McNeal*, 46 Cal. 4th at 1196–97. While the same conversion factor of 2,100 to 1 (the standard partition ratio) can be used to convert breath alcohol results to a blood-alcohol level, that conversion factor is not a part of the definition of the generic DUI offense presumption. *Id.* This Court in *McNeal* therefore held that while evidence of partition ratio variability is relevant to rebut that presumption for the generic DUI charge, it is irrelevant as to the per se DUI charge. *Id.* at 1196, *Bransford*, 8 Cal. 4th at 885; *Lepine*, 215 Cal. App. 3d at 91.

II

THE TRIAL COURT PROPERLY EXERCISED ITS DISCRETION TO EXCLUDE RESPONDENT'S EXPERT'S TESTIMONY BECAUSE IT WAS IRRELEVANT TO THE PER SE DUI CHARGE PURSUANT TO VEHICLE CODE SECTION 23152(B)

At trial the defense sought to introduce testimony concerning the correlation between alcohol in the breath and alcohol in the blood. The defense position was that "partition ratio" evidence, which is prohibited under *Bransford*, is evidence concerning alcohol and the blood-breath exchange in the alveolar space. The defense expert sought to testify concerning the affect on breath alcohol concentration from other areas of the airway, such as the bronchioles, upper lung, and throat. Despite the defense protestations, this testimony was nothing but partition ratio testimony in disguise.

A. THE BREATH TEST RELIABILITY IS NOT BASED UPON MEASURING ONLY ALVEOLAR AIR

The statutes regarding breath-alcohol testing and the per se DUI charge affirmatively indicate that such a sample is not required to be pure alveolar air. The per se DUI charge of Vehicle Code section 23152(b) prohibits a person from driving while having a breath alcohol level of .08 percent or more "per 210 liters of breath." Vehicle Code section 23152(b) does not even refer to alveolar air, let alone require the sample to be composed of only alveolar air. Thus, the Vehicle Code only concerns itself with the general term of breath.

The manner of collecting breath alcohol samples and analysis of such is addressed in California Code of Regulations. Pursuant to California Code of Regulations, Title 17, section 1219, breath-alcohol samples are required to be taken in accordance with regulations adopted by the State Department of Health. California Code of Regulations, Title 17, section 1219.3, requires that breath samples "be expired breath which is ***essentially*** alveolar in composition." (Emphasis added.) The use of the word "essentially" clearly indicates an acknowledgement that such a sample is not composed of only alveolar air.

Moreover, breath-alcohol samples have never been pure alveolar samples (and as a practical matter cannot be). It would be too invasive to insert a tube into a live person's lungs to attempt to extract pure alveolar air, and the alveolar space is extremely small. Defense of Drunk Driving Cases, Volume 2, section 18.01(2) (3d ed. 1996). Rather, the breath-alcohol samples from their inception have always been essentially alveolar samples that begin with an inhalation of outside air which travels down the airway to the deep lungs and back up the airway and out of the body through the

mouth. Obviously that airway has always had blood vessels next to it and any affect from such blood vessels occurs in all breath testing.

The defense expert's premise that testing samples of essentially alveolar air, which are affected to some degree by the exit from the body, produces unreliable results, is fallacious. The fallaciousness of the premise has been demonstrated by the accuracy and consistency of the breath test results as an acceptable means of determining alcohol content when correlated with blood test results. If the breath test was fundamentally dependent upon the necessity of pure alveolar air, which the breath machines from their inception over sixty years ago have never provided, then the breath results would have obviously varied greatly from corresponding blood samples and the method would never have achieved acceptance, let alone the uniformity of application that it has.

In *Downie*, 117 N.J. at 450, the Supreme Court of New Jersey rejected a challenge to the accuracy of breathalyzer test results based upon the variability caused by factors such as mouth/body temperature, hematocrit, and gender, finding them "insignificant." *Id.* at 463. The *Downie* Court noted that in the paired blood and breath study by the most impressive expert witness, the partition ration of 2100 to 1 underestimates the blood alcohol level in 86 percent of the cases, in 2.3 percent it exactly estimates it, in 9.4 percent it overestimates only at the third decimal where it has no effect of the subjects breathalyzer (because that third digit is not reported), and only in only 2.3 percent of the cases does it overestimate the blood alcohol level. *Id.* at 462.

B. THE RESPONDENT'S EXPERT'S TESTIMONY CONCERNED THE NARROW SCIENTIFIC MEANING OF PARTITION RATIO AND NOT THE BROAD LEGAL MEANING OF PARTITION RATIO

Under *Bransford* "partition ratio" evidence is not admissible in a Vehicle Code section 23152(b) prosecution. But what is meant by the term "partition ratio"? The term has both a narrow scientific meaning and a broad legal meaning.

The narrow scientific meaning of partition ratio concerns Henry's Law, a principle of science which holds that the concentration of a volatile substance (in this case alcohol) dissolved in a liquid (in this case blood) is directly proportional to the concentration of that substance in the air next to that liquid. 90 A.L.R. 4th at 160. Henry's Law assumes a state of equilibrium, where factors such as pressure and temperature are fixed, and under such conditions the direct proportionality can be numerically determined as a specific ratio known as Henry's coefficient. *Defense of Drunk Driving Cases*, Volume 2, section 18.01(2) (3d ed. 1996). *See also Downie*, 117 N.J. at 459. Thus it is this specific ratio of Henry's coefficient that is the narrow scientific meaning of "partition ratio."

However, the term "partition ratio" has a much broader legal meaning. In the legal context of DUI prosecution the term "partition ratio" means a conversion factor from a breath alcohol sample to a breath alcohol result. In *Bransford,* this Court referred to partition ration as a personal ratio of breath-alcohol concentration to a blood-alcohol concentration and discussed the standard partition ratio as the ratio the breath-test machines use to convert breath-alcohol readings into blood-alcohol equivalents. *Bransford*, 8 Cal. 4th at 888. In *McNeal*, 46 Cal. 4th at 1188, the court stated,

> Whereas a blood test directly measures the subject's blood-alcohol level, a breath sample must be converted to derive a blood-alcohol percentage. The conversion factor, known as a "partition ratio," reflects the relationship between alcohol measured in a person's breath and alcohol in the blood. Breath-testing machines in California incorporate a partition ratio of 2,100 to 1, which means the amount of alcohol in 2,100 milliliters of breath is considered equivalent to the amount of alcohol in 1 milliliter of blood.

Thus, this broader meaning of partition ratio as used in the legal context for forensic breath testing is related to Henry's coefficient for alcohol in blood and air in a state of equilibrium and to the hypothetical ratio of alcohol in blood and alcohol in the alveolar area of the lungs of a living human, but it is not limited to either of those definitions. Instead, in the context of driving under the influence prosecutions the term "partition ratio" means, as it has always meant in this context, the conversion factor that breath test machines use to determine a breath alcohol result from a breath sample amount which includes the assumption that the amount of alcohol in 2,100 milliliters of breath is equivalent to the amount of alcohol in 1 milliliter of blood.

A review of the Respondent's expert's testimony makes clear that the expert sought to introduce testimony only regarding the narrow scientific meaning of partition ration and not the broad legal meaning of partition ratio. Respondent's expert testified that the physical factors of breathing pattern, body temperature, and hematocrit affect the accuracy of a breath test but stated they were not directly related to "partition ratio." According to the expert, "partition ratio" applies to a state of equilibrium in a closed container and because the human body is never in such a state of equilibrium the term partition ratio is not appropriate. (TR. at 350:5-25.)

When the trial court inquired about the standard partition ratio, the expert responded to the court's question by answering that he did not like the term "partition ratio" because he thought it did not accurately reflect the processes that were occurring. (TR. at 356:22–357:5.) Finally, the expert stated that the physical factors he was discussing were not partition ratio because he was not talking about comparing it to blood, but that various factors affect the breath alcohol sample. (TR. at 357:17-358:3.)

Respondent's expert clearly and repeatedly conveyed that in his thinking partition ratio did not even apply to the process of breath testing. According to his view that term only applied when liquid and air were in a state of equilibrium. Thus, while the Respondent's expert was correct in the narrow scientific sense that he was not talking about partition ratio, it is undeniable that in the broad legal meaning he was talking about partition ratio.

C. ANY BRONCHIAL ALCOHOL EFFECT IS PART AND PARCEL OF THE PARTITION RATIO

One factor identified by the defense expert as affecting the reliability of the breath test, but that allegedly did not involve partition ratio evidence, was alcohol entering the breath from bronchial blood vessels. The expert testified that the mucus lining in the airway contains bronchiole blood vessels, and that as air travels down into the lung, and back out, it can pick up alcohol from those bronchiole vessels and affect the alcohol concentration in that air. According to the defense, alcohol from bronchiole vessels does not come from the alveolar space and therefore does not involve the "partition ratio."

However, the "alcohol from bronchial vessels" factor is part and parcel of every person's physiology and therefore necessarily included in the broad legal meaning of partition ratio. Breath test devices used in drunk

driving cases measure the alcohol in breath exhaled through the mouth. The process of breathing involves air being drawn in through the mouth and brought down to the alveoli of the lungs, where oxygen is transferred into the blood and carbon dioxide is transferred out of the blood. If there is alcohol in the blood, alcohol is also transferred to the air. The air (breath) then travels back out, through the upper lungs, trachea, throat, and mouth. Along this journey the alcohol content of the air can be affected by temperature in the lungs and the airway, the manner of breathing, and other factors. One of these additional factors could be alcohol from the bronchial vessels, because blood is always being processed by the body and breath is always passing by any such bronchial blood vessels.

When a person inhales and exhales as part of any breath test, air is transported past the bronchial blood vessels, so "alcohol from bronchial vessels" has always been a factor of every subject's breath test. The method used to correlate breath alcohol concentration to blood alcohol concentration was empirically derived by comparing breath and blood samples taken at the same time. Therefore, to the extent it causes any effect on a breath sample, that effect is incorporated in the conversion from a breath alcohol sample to a breath alcohol result by breath machines which incorporate the 2,100 to 1 conversion factor that the Legislature set.

This "alcohol from bronchial vessels" effect is just one of several factors that could affect the conversion factor used in breath testing. Other such factors include temperature, breathing pattern, and hematocrit levels. *See Lepine*, 215 Cal. App. 3d at 94; *McNeal*, 46 Cal. 4th at 1191; 90 A.L.R. 4th at 160; *Bransford*, 8 Cal. 4th at 885; *see also State v. Brayman*, 751 P.2d 294, 297 (Wash. 1988). The legislature has determined that such evidence is irrelevant and the courts have upheld that determination. *See Ireland*, 33 Cal. App. 4th at 689-92; and *Bransford*, 8 Cal. 4th at 885.

If the Court agrees with Respondent that a breath sample is inaccurate because it involves air that can theoretically be affected by blood vessels in the airway, then the Court is not just calling into question Respondent's sample, but is calling into question the propriety of all breath-alcohol testing. This is despite the fact that over thirty-five years ago in *People v. Adams*, 59 Cal. App. 3d 559, 561 (1976), the court noted "[b]reath tests to determine blood alcohol concentration have long been recognized by decisional law as scientifically valid in this state and elsewhere."

D. THERE WAS NO EVIDENCE ESTABLISHING BRONCHIAL ALCOHOL HAS ANY RELEVANT EFFECT ON BREATH TESTING RELIABILITY

The defense expert testified that the content of the alveolar breath was affected by a person's physiology, including the presence of alcohol in bronchial vessels. Specifically, he testified:

> And we have, in the airway, a lot of mucus and water and that mucus lining in the airway plays an important role in protecting us from particles and things we inhale goes on to this mucus, then comes out to the mouth. And it mostly—it would get those things we swallow and goes into the digestive system. But if we have alcohol, there are little blood vessels that come along here, and these blood vessels, those are called "bronchial vessels." And so they bring alcohol so there's a lot of alcohol if you have alcohol in your bloodstream. Now, what happens is if we inhale and we pick up alcohol from this mucus and by the time we pick it up here, and by the time we get down to this air sack, it's already filled up and saturated.

(TR. 328:3-18.)

At that point the prosecutor objected and the trial court conducted a hearing outside the jury's presence to determine if the expert's testimony involved the prohibited subject matter of partition ratio.

When questioned how the effect from alcohol in bronchial vessels was distinct from partition ratio variability, the expert discussed the usual factors that can affect partition ratio, namely, breathing pattern, body temperature, hematocrit, and breath temperature. *See Lepine*, 215 Cal. App. 3d at 94 (the physical factors of temperature, mucus in the lungs, and an individual's hematocrit all affected the partition ratio.); *see also McNeal*, 46 Cal. 4th at 1191; 90 A.L.R. 4th at 160 (despite the standard 2,100 to 1 partition ratio, a host of factors, such as body temperature, sex, menstrual cycle, hematocrit levels, and medical conditions, may affect the ratio between blood-alcohol levels and breath-alcohol levels); *Bransford*, 8 Cal. 4th at 885; *see also Brayman*, 751 P.2d at 297.

But the expert did not testify to any other affects (apart from those factors well known to be associated with partition ratio) from bronchial vessels. Those known affects, such as body temperature and hematocrit, have been determined by statute and case law to be irrelevant. The expert specified only these factors in support of his testimony, and therefore offered no relevant evidence to show bronchial alcohol affects breath test reliability.

Perhaps the failure to offer relevant evidence that breath test reliability is affected is a result of the absence of such evidence. This possibility is reinforced by *Downie*, 117 N.J. at 454, 462-63, where the court noted that the experts (Professor Hlastala included) failed to establish that the theoretical effects of the physical factors of mouth temperature, gender, body temperature and hematocrit were sufficiently concrete as to be significant.

III

THE EXCLUSION OF PORTIONS OF RESPONDENT'S EXPERT'S TESTIMONY WAS NOT A MISCARRIAGE OF JUSTICE

The trial court found that the proposed defense evidence involved partition ratio and therefore the court properly excluded the evidence as irrelevant. But even if the evidence did not involve partition ratio, any error was harmless.

California Constitution, Article VI, section 13, sets out the standard of review for reversible error:

> No judgment shall be set aside, or new trial granted, in any cause, on the ground of misdirection of the jury, or of the improper admission or rejection of evidence, or for any error to any matter of pleading, or for any error as to any matter or procedure, unless, after an examination of the entire cause, including the evidence, the court shall be of the opinion that the error complained of has resulted in a miscarriage of justice.

Therefore, Respondent must show that it is reasonably probable that a miscarriage of justice occurred in order to overturn the judgment in this case. *People v. Watson*, 46 Cal. 2d 818, 836 (1956). That is, the reviewing court must be of the opinion that it is reasonably probable that a result more favorable to the appealing party would have been reached in the absence of the error. *Id.*

The question for the jury in this per se DUI charge was whether Respondent's breath alcohol level or his blood alcohol level was over .08 percent at the time he was driving. Here there was an overwhelming amount of evidence demonstrating that Respondent was at or over the legal limit of .08. The PAS test showed a breath alcohol level of .095 and .086 just eleven to fifteen minutes after driving. Twenty-eight minutes after the PAS test the two breath test results both showed a breath alcohol level of

.08. Fourteen minutes later the blood sample showed a blood alcohol level of .088. All the evidence is consistent with Respondent's guilt and there is nothing to the contrary except speculation.

In addition, Respondent could only have been driving with a blood alcohol level that was under .08 percent if he had a rising blood alcohol level. That is, his blood alcohol level was under .08 percent at the time of driving and then rose to the .087/.088 percent level it was later found to be. However, there was no evidence to support the claim of a rising blood alcohol level.

The only potential evidence to support the rising defense was Respondent's self-reported drinking history. Respondent told the sergeant who first stopped him that he only had two glasses of wine, he told the officer who evaluated him that he had three glasses of wine, and he gave a third story to the jury that he had three glasses of wine and one beer. Respondent told one officer that he started drinking at 8:00 p.m. and stopped drinking at 9:00 p.m., but then told the jury that he had three drinks between 7:00 p.m. and 10:00 p.m. and one drink around 2:00 a.m. However, even this revised drinking history was completely refuted by the People's expert witness and Respondent's blood alcohol results. According to the only evidence presented on this topic each standard drink would raise Respondent's blood alcohol level by .017 and would be burned off at the rate of .015 per hour. (T at 273-276.) Thus, at the time of driving (2:45 a.m.), four and a three quarter hours after 10:00 p.m., Respondent's blood alcohol level would show no alcohol in his system from these first three drinks. Furthermore, the one other drink that he testified to having around 2:00 a.m. would also be completely eliminated from his system by the time of the blood test at 3:53 a.m., almost two hours later. However it was

uncontradicted that his blood test showed a blood alcohol level of .088 at 3:53 a.m.

Without credible testimony to support a rising blood alcohol level defense, there is no reasonable probability that the jury would have reached a different result if the expert had been allowed to testify further. The expert did not and could not quantify the alleged effect on the breath test from bronchial vessels and other factors, or even if the effect would have resulted in a higher or lower result. Accordingly, there was no miscarriage of justice.

CONCLUSION

Breath samples have always been essentially alveolar samples that have journeyed from the deep lung out of the body and are affected by the physiology of the body. The term "partition ratio," which has been scientifically measured, legislatively agreed upon, and upheld by the courts necessarily incorporate the factors that Respondent's expert proposed to testify about. The expert tried to disguise those factors as non-partition ratio evidence, but the factors are, and always have been, considered to be part of the broad definition of "partition ratio." Therefore, under *Bransford* the evidence was irrelevant and properly excluded. Accordingly, Appellant respectfully requests that this Court reverse the judgment of the Court of Appeal.

Dated: November 17, 2011

JAN I. GOLDSMITH, City Attorney

By _____
Jonathan I. Lapin
Deputy City Attorney

Attorneys for Plaintiff/Appellant

CERTIFICATE OF COMPLIANCE
[CRC 8.204(c)(1)]

Pursuant to California Rule of Court, Rule 8.204(c)(1), I certify that this Appellants Opening Brief on the Merits contains 6,480 words and is printed in a 13-point typeface.

Dated: November 17, 2011

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IN THE SUPREME COURT OF CALIFORNIA

DECLARATION OF SERVICE BY MAIL	Supreme Court No. S195423 Court of Appeal No. D059012 Case No. M039138 *People v. Terry Vangelder*

I, Janette Myers, declare that I am, and was at the time of service of the papers herein referred to, over the age of eighteen years and not a party to the action; and I am employed in the County of San Diego, California, in which county the within-mentioned mailing occurred. My business address is 1200 Third Avenue, Suite 700, San Diego, California, 92101-4103. I served the following document(s): **APPELLANT'S OPENING BRIEF ON THE MERITS,** by placing a copy thereof in a separate envelope for each addressee named hereafter, addressed to each such addressee respectively as follows:

Charles M. Sevilla
1010 Second Avenue, Suite 1825
San Diego, CA 92101

The Honorable Gregory W. Pollack
Judge of the Superior Court
220 West Broadway
San Diego, CA 92101

San Diego Superior Court
Clerk of the Appellate Division
220 West Broadway
San Diego, CA 92101

Court of Appeal State of California
Fourth Appellate District, Division One
750 B Street, Suite 300
San Diego, CA 92101-8196

Office of the Attorney General
110 West "A" Street, Suite 1100
San Diego, CA 92101

I then sealed each envelope and with the postage thereon fully prepaid, deposited each in the United States mail at San Diego, California on Nov. 18, 2011.

I declare under penalty of perjury that the foregoing is true and correct. Executed on Nov. 18, 2011, at San Diego, California.

Janette A. Myers
Janette Myers

PROOF OF SERVICE BY MAIL
C.C.P. §§ 1013(a); 2015.5