

**SCENT IDENTIFICATION PROCEDURES IN THE U.S. HAVE  
DIFFERENT HISTORY AND DIFFERENT PROCEDURES  
FROM THOSE CONDUCTED IN EUROPE**

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**ABSTRACT**

Scent lineups, designed to use a dog's behavior to establish that two scents, one from a crime scene and one from a suspect, derive from the same person, have been conducted in radically different ways in the U.S. and Europe. In the U.S., scent lineups are often performed outdoors, in fields or parking lots, while in Europe they have for decades only been conducted indoors, often in canine forensic laboratories. In the U.S., lineups of individuals, as opposed to scents taken from individuals, have been part of standard practice in some jurisdictions until recently, but this has not been done in Europe for decades. Tracking of a suspect through a police station has been accepted as a formal identification procedure in the U.S., but not in Europe. In the U.S., scent lineups are conducted by individual handlers, whereas in Europe they are conducted by teams that consist of a handler, an experimenter, and often other technicians. In the U.S. the handler calls the alert, a behavioral response that may not be evident to other observers, while in Europe the experimenter generally calls the alert and it the dog's alerting behavior must be evident to any observer. In the U.S., scents may be placed in stations that may be paint cans or other containers that are not or cannot be cleaned between trials, while in Europe stations are glass containers or metal tubes that are cleaned or replaced between trials. The position of the target scent (that of the suspect) must be moved randomly between trials in Europe, but not the U.S. In Europe, scents of decoys (foils) must be collected near the same time as the target scent is collected, but many handlers in the U.S. use decoy scents they have been preserved for years, which are often used against crime-scene scents that are only days or weeks old. In Europe, there must generally be from three to five identification trials before positive alerts can be introduced in a criminal prosecution, whereas in the U.S., the results of a single trial have often been introduced in evidence. Treats as rewards are never given in official identification trials in Europe, but sometimes are in the U.S. Most U.S. scent identification dogs have been bloodhounds, while in Europe German shepherds and other shepherd types are preferred. Centralized European canine forensic laboratories where scent lineups are performed often conduct research in collaboration with forensic scientists, whereas U.S. handlers have not been participants in, or subjects of, research efforts. Considerable data on the practices of U.S. handlers can be obtained from opinions issued by judges in criminal proceedings, and expert witnesses in those proceedings have come from canine specialists at the FBI and from American scientists who have conducted research on scent identification (both in support of and in opposition to the introduction of such evidence). In both Europe and the U.S., however, use of the scent lineup to produce forensic evidence is in decline, and it may have come to an end in the U.S.

## **SCENT IDENTIFICATION PROCEDURES IN THE U.S. HAVE DIFFERENT HISTORY AND DIFFERENT PROCEDURES FROM THOSE CONDUCTED IN EUROPE**

A recent study published in the journal, *Forensic Science International* (FSI), compared scent lineups as they are presently being, or in the last decade have been, conducted in 11 European countries and the United States. The author of this note was a co-author of that paper, “Scent Lineups Compared Across Eleven Countries: Looking for the Future of a Controversial Forensic Technique,” (vol. 302, September 2019). As the four initial authors (Tadeusz Jezierski of Poland, Barbara Ferry of France, John Ensminger of the U.S., and Adee Schoon of The Netherlands) received data from participants from other countries, it soon became apparent that a significant divide existed between practices in the U.S. and in the participating European countries (Belgium, Czech Republic, Finland, France, Germany, Hungary, Lithuania, The Netherlands, Poland, and Russia). Part of this divide could be explained by the fact that, in all the European countries, scent lineups are or were conducted by centralized canine forensic facilities, of which most countries had only one, though some had more than one such facility (e.g., France, Poland). In the U.S., in contrast, scent lineups were conducted by individual handlers, generally front-line police officers or contractors, none of whom had laboratories associated with their work.

Most lineups in Europe were performed under the direction of forensic scientists (often called “experimenters” or “osmology experts”), with the role of the handler defined by the protocols established in such facilities. In the U.S., in contrast, almost all procedures were designed and conducted by handlers, either working individually or in pairs, with the occasional help of police officers or FBI agents, who might be present while the lineup was conducted. Some U.S. handlers were aware of various research strands regarding scent lineups (particularly the papers published by Adee Schoon, one of the co-authors of the FSI paper). Most U.S. handlers, however, had developed their procedures based originally on canine identification practices used by bloodhound handlers who had tracked fugitives to locations where more than one individual was found and where the handler wanted to be able to say which of the individuals present was the one whose scent the dog had been tracking. Thus, if the dog had been scented at a crime scene by an object (say a knife) that the perpetrator had likely handled, but the dog led the handler to a location where five individuals were in a house, the handler might ask the five individuals to stand in a line outside the house and lead the dog past each of them, hoping for an alert to one of the individuals.

Tracking skills did not initially need to be coupled with an identification when dogs were used to trail escaped slaves prior to the American Civil War, nor after that war when the same bloodhounds began to be used to track escaped convicts. (See *Goodwin v. The State*, 1 Mississippi State Cases 257 (1844), describing a slave hunter who owned 12 to 15 dogs “and used to run negroes with them...”.) This case also refers to the slave hunter sometimes hunting white persons, presumably criminals. The distinction between using dogs to find individuals who could be identified as escapees vs. using dogs to identify persons at the end of a trail as perpetrators of crimes was realized by Judge Guffy, concurring in part and dissenting in part in *Pedigo v. Commonwealth*, 103 Ky. 41 (1898):

If the dog in fact took up and followed the trail of a fugitive, and found him, or aided his pursuers to find him, the object was accomplished, and there could be no mistake as to whether he was the party sought or not; his guilt and right of capture having been

theretofore established, and in fact being unquestioned. If the hound took the wrong trail, and brought to bay the wrong party, that fact would be ascertained so soon as the pursuers reached the party, and the utility of the hound in that regard then ceased. It is now proposed to use the hound, not to capture a fugitive, but to ascertain or furnish evidence to convict some citizen of crime. It seems to me that this new use of the bloodhound is a radical departure from the former purposes for which they were used....

Nevertheless, case law soon allowed alerts by dogs at the end of trails as adequate for identification. (See Ensminger (2012). *Police and Military Dogs*, p. 81, “Alert as Identification.”) Research has confirmed that dogs can be more accurate in following a trail than they are in making a choice between individuals at the end of the trail. (See Curran et al. 2010).

Scent lineups in Europe, on the other hand, although rather informally conducted as early as 1903, were not components of tracking work (Kaldenbach. (1998). *K9 Scent Identification*, p. 89). With the extensive research of Adee Schoon beginning in the 1990s, an increasing number of European countries developed canine identification programs following the procedures developed by Schoon. (See Schoon and Haak (2002).) Nevertheless, European programs suffered from certain problems that also affected American programs, particularly excessive claims of handlers as to the perfection of their dogs (Ferry et al., 2019).

Another distinction between the statistics that could be gathered regarding American and European practices can be attributed to the kinds of recordkeeping required in common law countries (the U.S.) and civil code countries (Europe), where U.S. judges record information concerning cases in decisions on the issues presented by those cases. Those decisions can be accessed through formal reporting systems controlled by or for courts, as well as legal databases (Westlaw, Lexis-Nexis). European rulings, in contrast, are much less frequently published in any easily accessible format. Consequently, information concerning European countries has to be based on records and experience of individuals who supervised or participated in scent lineup procedures conducted by centralized police authorities.

The purpose of this note is to elaborate on the data that was collected by the author concerning U.S. cases that involved scent lineups or related identification procedures. Because this purpose required gathering as much information on actual practices as possible, both formally reported and informally published cases and orders are included in the data. The purpose of this summary is not to create a document restricted to case law that can be cited as precedent. Attorneys with cases involving issues regarding scent identification should check on the precedential value of informally published cases accessed from Westlaw and Lexis-Nexis, such as a significant number of cases from California.

It is to be noted that scent identification evidence is generally introduced by the prosecution, but this is not always true. There were instances in the U.S. where an investigation produced scent identification evidence implicating someone other than the defendant, so that the defendant sought to introduce the scent evidence as exonerating [23]. In one curious case, defense lawyers sought to exclude scent evidence despite the lack of a match, making the evidence potentially exonerating [65]. (Bolded numbers correlate with a Table 1 in the Case Appendix to this note.)

### **U.S. Scent Identification Data**

Generally, statistics are based on cases involving scent identification procedures. The number of procedures within some opinions is difficult to determine precisely, but at least 140 and perhaps as many as 170 procedures have been referred to in the case law. Some cases involve more than one opinion, which may consist of several appellate levels, and possibly a decision on a habeas petition in a federal court. Sometimes the number of procedures is impossible to specify because only a plural form, such as “scent lineups,” is provided in a decision.

In this analysis, scent tracking evidence is not considered an identification for purposes of the data collected unless the dog, having completed tracking, was given a choice of alerting to more than one individual in a specified location. This could happen, for instance, if the dog tracked to a house and the individuals in the house were removed to a back yard or a garage and the dog was allowed to sniff these individuals and alerted to only one of them. Station identifications, where the dog tracked from outside or just inside a police station to a particular suspect in a room somewhere in the station are included even if the suspect was relatively isolated provided the dog’s path to that individual crossed places where scents of other individuals were likely present, or there were other individuals at the terminal location.

The headings below and their associated numerals (e.g., §1.1) duplicate the tables in the FSI article (Ferry et al.). Bold numbers in brackets in the following discussion (e.g., [2; 6]) refer to cases identified by number in Table 1 in the Case Appendix. Under each discussion heading, a general statement of the findings in Ferry et al. is followed by the U.S. response as given in the tables of that paper and then by the present author’s elaboration of that response for this article.

It is to be noted that SWGDOG SC 9 provides “recommended best practice general guidelines for training, certification, and documentation pertaining to canines trained in conducting scent identification lineups.” Documentation involves desired records for training, certification, and proficiency assessment. Thus, SWGDOG does not have requirements on scent identification dogs in investigations, though general guidelines are provided for all police dogs in SWGDOG SC 6: Presentation of Evidence in Court. An appendix to SWGDOG SC 6: Presentation of Evidence in Court, *Compilation of state and federal human scent cases*, summarizes many earlier tracking cases and a few of the scent lineup cases included in this analysis, but does not evaluate the methods used by the trainers who produced scent identification evidence. While these guidelines have been referred to in courtroom testimony (e.g. U.S. v. Adelo-Marquez, 2017 WL 5514359 (U.S. D. Ariz. 2017)), they have only been sporadically implemented by working handlers. Thus, such guidelines remain largely theoretical as to U.S. practice.

### **1.1: Materials That May Hold Scent of Suspect and Decoys**

Central laboratories where scent lineups are conducted in European countries use various materials for holding scent, particularly special cloth swabs or steel tubes. In the U.S., materials for holding scent are chosen by handlers.

**U.S. entry for 1.1: *Scent lineups have often used objects collected at the crime scene, but also footprints, sometimes transferred to scent pads by scent transfer units (STU 100).***

Many U.S. opinions describe dogs being scented directly (as opposed to through a scent transfer unit) on crime scene objects (knives, tools, etc.) that the perpetrators were thought to have handled. [See 4 (pillowcase found at scene of crime used to scent bloodhound); 5 (dog scented

on underwear taken from defendant, went to towel found in woods; dog scented on towel in parking lot, dog went to car used by defendant); **6** (dog smelled sandal put in vault 8 months before lineup, went to suspect in lineup of individuals); **7** (dog named Sniffer scented to ski cap left at crime scene, led to corn knife in garden); **8** (dog scented to sock worn by suspect, smelled lineup of tools, picked out bag containing bolt cutters); **9** (dog scented on paper towels used by suspect, picked victim's sheet in lineup of sheets); **10** (dog scented to victim's clothing, picked suspect's car in lineup of 5 cars); **12a,b** (dog scented to suspect's cigarette pack, walked lineup of shirts, then knives); **13** (dog scented to abandoned automobile used in crime, stopped when he came to suspect and nosed him "like a vacuum cleaner"); **29** (shirt in open plastic bag used to scent dog before lineup); **67** (clothing taken for unspecified scent identification procedure)]. Also, see also *New York v. Shulman*, 843 N.E.2d 125 (2005) where cadaver dog led past 11 cars and identified one (but not a structured lineup). SWGDOG SC 9: Human Scent Dogs ¶ 2.3.1.3 provides of pre-scenting using crime-scene objects.

Several opinions describe scents as being taken from footprints or a trail without mention of a specific object [**1**; **2**; **3**; **9**; **13**; **14**; **57**].

Scent pads, sometimes created by use of a scent transfer unit (STU 100), have been referred to in numerous U.S. opinions. It is sometimes unclear if the pad was rubbed directly on an object or if a transfer unit was used. [See **15** (lineup of scent pads including one from suspect, dog scented on scent pad from object moved at crime scene); **16** (STU used to take samples from seats of van, dog led in sequence to suspects' cells); **18** (STU used to get scent from victim's shirt, shell casings); **19** (dog scented to scent pad obtained from shirt, trailed to houses and suspect while encountering other individuals in street); **20** (dog scented to scent pads made with STU from outdoor sinks with blood and alerted to pad with suspect's scent); **21** (4 clothing scent pads, dog scented to scent pad from seat of car); **22** (dog scented to pads made from seats of car with STU, went to house where suspects were found, also identified respective suspects in station identification); **23** (dog given scent taken from cap by STU, failed to alert to places suspect had been but did alert to his cell); **24** (scent pads made from items found near taxi, including purse, knit cap, glove, hair extension, and matchbook, interest in locations and station identification of suspect from matchbook scent); **25** (knife via STU, station identification; extensive expert testimony); **28** (scent pad put in plastic bag with cocaine bricks (no STU), then lineup of black suspect and 5 white police officers); **29** (dog apparently scented to scent pad created by contact with suspect, alerted to wallet and electrical cord known handled by perpetrator); **30** (shell casings used for scent pad via STU; scent pad of suspect in lineup but decoys and numbers not described); **31** (scent pads created by STU from shell casings 10 months after crime, used in station identification); **32** (scent pads put with items from crime including gun for 5 minutes; matched to scent from victim's coat); **33** (dog scented to rope found on victim's body, presumably murder weapon, used in lineup of cans containing bags with scent pads including suspect's scent from document, but no information on "filler scents"); **34** (gauze pads rubbed over several areas in victim's house, then placed in bags; scent of suspects and decoy black males put in 6 "quart-size canisters" and match obtained); **35** (victim's clothing put in contact with scent pad); **36** (shell casings by wrapping gauze around them); **37** (cash found on suspect matched to victim's scent); **38** (scent pads obtained from car keys handled by perpetrator, patio door handle, and suspect); **39** (scents from burglarized stores, weeks or months after burglaries and from murder scene (but samples more than 1 year old when used for lineup) and lineups of scents of individuals); **40** (scent pads rubbed on car seats (testimony said "to collect dead skin cells from various locations") and used to match suspect from scent lineup using cans holding scent pads); ; **41** (scent pads from shell casings); **42** (seats of car, T shirt, .357 firearm but "Pikett could not recall whether the dogs were scented off of

the firearm itself or a scent pad collected from the firearm”); **43** (9 mm handgun via STU); **44** (scent from shell casings and T-shirt found matched to suspect’s scent obtained by gauze pad); **45** (STU used to get scent from crime scene from shirt and shell casing, used with station identification); **46** (gauze pad rubbed against victim’s clothes; scent from suspects by rubbing gauze pad against skin); **47** (gauze pads rubbed against items from crime scene, including cell phone, pillow cases, gun casing; matched to scent on pads from suspect and others placed in coffee cans); **48** (bicycle scent by pad but not from STU, smelled persons in lineup and alerted to suspect); **49** (STU used on knife to scent dog for trailing, then in diamond shaped line-up of scent pads where dog alerted to suspect’s scent); **50** [also **64**] (scent pad created from suspect’s shirt matched to scent from pocket of murder victim that perpetrator had turned inside out; lineup involved decoys of 3 hispanic men unconnected with crime); **51** (scent from shell casings from murder scene, dog alerted to can containing suspect’s scent); **52** (STU used to get scent from sets of car, used in station identification); **53** (sterile gauze pads placed on top of shirt for “several minutes”, led to suspect’s car, identified suspect from group); **56** (STU scents from suspect used to scent dogs at locations where suspect may have taken abducted victim); **57** (STU used on shoe print outside victim’s home and envelope found at crime scene, used for trailing and station identification); **58** (STU used on glove left at murder scene matched to suspect by scent from suspect’s jail clothing); **59** (STU used on beanie and hand-gun, scented for station identification); **60** (cartridges and gun); **61** (STU used on shell casings and hand-gun, pads then used in station identification); **62** (STU used on shell casings matched scent pad made from shirt of suspect made “a few weeks earlier”); **65** (scent from shell casings used to scent dog for lineup of scent pads); **73** (scent from shell casings and shirt found at crime scene, matches made to scents of suspects).] Note from the preceding that the STU 100 is particularly common in California cases.

SWGDOG SC 9: Human Scent Dogs ¶¶ 2.3.1.3, 2.3.2.3, and 2.3.3.3 provide for the use of “objects that have been in direct contact with the people,” and specify that “[a]t least four different kinds of objects for pre-scenting (with respect to type of material) shall be used,” which could include objects such as “screwdrivers, crowbars, hammers, gloves, caps.” Further, “[i]f pre-scenting is done on an object that has been in direct contact with a person, this object shall not be identical to the material used in the lineup.” SWGDOG SC 9: Human Scent Dogs ¶¶ 2.3.1.3.2, 2.3.2.3.2, and 2.3.3.3.3 provide for the use of scent pads in the preparation of “pre-scenting materials,” but do not specify the use of scent transfer units.

Some cases involved decoys who were actual persons (along with a suspect). **1**; **2** (persons walked past stationary dogs); **3** (dogs brought to police station and began following trail to cell where suspect was being held “with another”); **6** (“room where lineup had been assembled”); **7** (amidst “group of police officers”; lineup procedure described by court as “novel” but admitted); **13** (“sniffed several of the people present”); **14** (suspect and police officers in garage); **19** (dog stopped trailing at individual standing beside policeman); **24** (station identification where dog sat in lap of suspect in presence of 5 deputies); **25** (several officers in room and suspect not in handcuffs); **26** (suspect only person in handcuffs); **27** (suspect and 3 deputies); **28** (suspect was only person in lineup who was not white and who was wearing handcuffs); **42** (6 black individuals standing 25-30 ft. apart); **48** (dog followed path from stolen bicycle to “group of men outside the apartment”); **53** (dog sniffed everyone in lobby); **57** (station identification in locker room with suspect and officers)].

Some cases involved so little description that the characteristics of the lineup cannot be stated. [See **17** (defendant told scent lineup had identified her as negotiation ploy); **60** (unexplained reference to dog-scent evidence); **63** (reference only to introduction of evidence by handler

Pikett); **67** (item of clothing taken from suspect for scent ID procedure but procedure not described in federal §1983 claim); **69** (scent lineup mentioned in habeas petition but not described, other than to say counsel not present during procedure, and found “inconsequential” in light of substantial other evidence).]

### **1.2: Storage of Crime Scene Scent Samples**

Most European countries store materials in glass jars, though plastic bags are used in Belgium, sometimes in Finland, The Netherlands, and Russia.

**U.S. entry:** *No specified requirements or materials but samples often collected on gauze pads with scent transfer units (STU 100)* [endnote to **31**].

In the U.S., Ziploc® bags were often used for storage of samples [**15; 18; 19; 25; 35; 39; 40; 43; 46; 47; 53; 62; 57** (double Ziploc® and placed in freezer)]; two cases only mention “bags” [**7; 8**] and one [**6**] involved placing an item in a vault. Use of a manilla envelope was infrequent [**36; 62**]. See also testimony of Dr. Lawrence Myers regarding storage practices [**57**].

### **1.3: Time Restrictions as to How Long After Crime Scent Lineup May be Conducted**

Most European countries have either specified limits or standardly restrict scent lineups to periods ranging from a month to two years.

**U.S. entry:** *No specified requirements but courts have considered storage and contamination issues, such as where all decoy scents were stored in same duffel bag in Ziploc® bags* [endnote to **33**]; *FBI uses glass containers (testimony of Dr. Kenneth Furton in [47]*).

Some cases indicate that handlers would keep scent pads from prior cases as decoys [**40; 41; 62**]. Since some of these instances involved cases worked by the most prolific dog-scent-identification handler in U.S. legal history (Pikett), a significant proportion of decoy scent pads in U.S. decisions were probably prepared earlier than the scent pad of a suspect. In one case involving this handler [**46**], decoy scents were from one to two years old, while the crime scene scents were 17 days old at the time of the lineup. Also, since some of these pads may have been from prior investigations, some of them may have contained scents the dogs had previously encountered, perhaps numerous times.

### **1.4: Time Restrictions as to Taking of Scents of Suspect and Decoys and Use in Lineup.**

European countries often limit taking of scents to a short period, often 48 hours or even less.

**U.S. entry:** *Not prescribed judicially and seldom mentioned, but cases state testing may follow sampling in hours up to 3 years in one procedure.*

U.S. scent identification decisions only occasionally mention the interval between sampling and use, though this could vary from as little as a matter of hours to years. [See **4** (24-48 hrs.); **5** (13-14 days); **6** (6-8 mos.); **8** (21 months, crime scene items used in bags); **9** (more than three months” after crime); **15** (<24 hrs.); **16** (minutes); **20** (19 days and 41 days); **22** (405 hrs.); **25**

(6-7 hrs.); 27 (hrs.); 31 (8-10 mos.); 35 (2<sup>nd</sup> set of lineups 3 yrs. after 1st); 41 (5 mos.); 45 (2days); 46 (17 days); 47 (5 days); 48 (1 hr.); 50 (1 hr.); 53 (2 mos.); 57 (40 days, 3 yrs.)]

### **1.5: Are Stations in the Lineup Cleaned or Replaced Between Trials or for Consecutive Dogs?**

Most European countries clean or replace stations between trials.

**U.S. entry:** *There is no such requirement and some cases indicate stations were not changed or moved between successive runs or different dogs.*

No case mentions cleaning of stations, though rearrangement of the location of stations was standard with some handlers (Pikett) and replacement may have sometimes occurred [33]. It is worth noting that U.S. scent lineups often occurred outside in fields and parking lots where antiseptic measures would be difficult to implement. [See 5; 6; 7; 10; 13; 14 (garage); 33 (Victoria Police Dept. parking lot);34; 35.] Only a few lineups were clearly inside [7; 8; 9; 10], though this is standard with station identifications.

### **2.1: Requirements on Use of Decoy Scents in Lineup.**

Most European countries have standard practices of using four decoys or more, often many more such as in Poland and Russia.

**U.S. entry:** *No standard practice though of 59 cases mentioning decoys, 22 were used in lineups of persons, 11 in lineups with crime scene objects, and 26 in lineups using scent pads.*

In all U.S. lineups of individuals and objects, no stations were without scent, though it is possible that in some scent-pad lineups there were on occasion unscented pads [34]. Thus, most commonly those stations not holding scent of the suspect were holding decoy scents. In at least one case, a lineup may have included scent pads from 2 suspects and 4 decoys [35]. For discussion of the number of stations in trials, see §4.1 below.

SWGDOG SC 9: Human Scent Dogs ¶ 2.3.2.5.2 provides for a lineup protocol using two six-position lineups consisting of odors from 12 different people.

### **2.2: Whether Decoy Scents Must Be Taken from Individuals Similar to the Suspect in Sex, Age, Occupation, or Other Specified Criteria.**

Some European countries have identity requirements or practices, and many require that the scents be collected at the same time as those of suspects.

**U.S. entry:** *No judicial requirement; 13 cases mention that the handler used decoys of the same race or ethnicity, and 14 mention decoys of same gender; most cases give no indication.*

No court specifically required that decoys be similar to a suspect, though some opinions [15 (same race and gender, but 4 scent pads from single decoy); 34 (same race and gender); 35 (race and gender, but scents were kept in one duffel bag and “were anywhere from one to two years old); 41; 42; 46; 47 (same race and gender); 48; 50; 54; 61; 64] indicated that decoys (whether individuals or scents) were of the same race, ethnicity, or gender, and often all three. The same



foil scents were sometimes used in the same lineups. In Ramos [12], four shirts were supplied by the same individual and three knives were from a local diner.

### **2.3: Can Decoys Be Police Officers?**

Most European countries allow using police officers for scents but require that they not be involved in the investigation of the crime involved.

**U.S. entry:** *Decoys were specified as officers in 10 cases, including police officers in uniform in lineups of persons; many other procedures probably used scents of police officers as decoys.*

Decoys were often police officers in individual lineups and likely in scent pad lineups. [See 7 (“group of police officers”);12; 14 (“several police officers”);18 (3 police officers’ chairs provided scents for scent pad lineups using STU); 23; 25 (police in station room); 26 (officers that handled cocaine in case not used, but others were); 27; 28; 33; 57; 62 (inmate trustees)] The statement of 10 cases involving police officers is likely considerably below the actual number, but such information is often not detailed in decisions.

### **2.4: Is There a Requirement that All Scents, including Decoys, Be Novel (Unfamiliar) to Dogs during Training or Testing (Certification) Stages, or in Actual Judicial Trials?**

Many European countries require the use of scents that will be unfamiliar to dogs in lineups or use novel scents as a matter of practice.

**U.S. entry:** *Training: No requirement, and decoys frequently re-used. Certification (generally tracking dog certifications): sometimes re-used. Judicial trials: No requirement, decoys frequently re-used.*

In many opinions, dogs performed both tracking and identification functions in the same investigation (see discussion under §4.3 below) and thus may have been familiar with a suspect’s scent before an identification procedure. This may have been true in some decisions where it was not explicitly stated because one of the procedures did not produce evidence the prosecution sought to introduce at trial. For a discussion of the problems associated with a failure to use novel scents, see Hale 2017. (Where a dog only worked a scent lineup, this cannot be taken to mean that there was any strict separation of functions, but rather may indicate that the dog was not needed in an investigation until a scent lineup was conducted, perhaps as a matter of the interval between the crime and the identification of any suspect. In not all cases did the proffer of identification evidence come from the prosecution.)

### **3.1: Number of Disqualifying Control Trials.**

Most European countries require disqualifying control trials.

**U.S. entry:** *No statutory or judicial control-trial requirement, though some handlers run proofing trials.*

No U.S. case specified a control-trial requirement, though occasionally a procedure was run a second time to see if a clearer response could be obtained [9; 46]. One case described a proofing

step where, prior to the scent lineup using the crime scene and suspect scents, the dog worked a lineup where the scenting item and one of the scents in the lineup were from an individual not involved in the case [62]. In one case [31], the defense argued that the absence of a “negative response test just prior to conducting dog-scent identification” was a defect, but the conviction as affirmed on other grounds.

### **3.2: Negative Check (Zero) Trial Requirement (as Control or within Identification Trials).**

Zero trials are often used in Europe, but seldom required.

**U.S. entry:** *No requirement, though sometimes used by specific handlers.*

In no reported case was there a zero-trial requirement, though some handlers testified to having performed zero trials in training or in other investigations [25; 57]. Testifying as an expert in a 2011 Texas case (involving a 2008 procedure), Dr. I. Lehr Brisbin criticized the handler for not using “negatives runs in his lineups, in which the suspects’ scent is left out completely,” saying that the absence of such procedures was important to determine whether an alert is accurate [47]. This and other criticisms resulted in a Texas trial court, and subsequently an appellate court, excluding the evidence. Dr. Kenneth Furton, a prosecution expert in the case, had also criticized some of the handler’s procedures but ultimately declared that the handler’s methodology was reliable, though he also said that for scent lineups there was a “limitation as to their reliability.” The handler in the case (Pikett) was the most prolific of all handlers working in scent identification in the U.S., at least as described in the case law where he produced evidence in at least 16 published opinions. The second most prolific handler (Hamm) was described in a 2005 case (involving a 2003 procedure), as using “negative checks” [25]. That this handler did not always run negative trials is indicated by a 2008 California appellate decision in which his procedures were criticized by FBI Special Agent Stockham for not including a “negative test” [31]. The court said that such a test was not required during an actual investigation, saying that “as we read Stockham’s testimony, he was speaking of the need for testing the dog periodically, not every time the dog works.” In a 2016 California case (involving a 2001) procedure, it was stated that a different handler (Webb) did use negative runs in training [57]. It can be concluded that U.S. courts have generally ignored or been unconcerned with the absence of zero trials in investigations, and though some handlers used such trials, most did not do so regularly.

SWGDOG SC 9: Human Scent Dogs ¶ 2.3.2 provides that, in a comprehensive assessment involving six runs, two of the runs require that the “canine team has to conclude the *absence of a matching lineup odor* to the odor sample presented.” (emphasis in original). A comprehensive assessment, which can result in certification, requires only that “the canine shall conduct 75% of the runs successfully” but cannot make a false alert. A miss, however, is permissible. (¶ 2.3.2.6)

### **3.3: Time Intervals between Trials.**

European practice often limits the number of trials per day to something less than 8.

**U.S. entry:** *Generally runs follow closely on one another, though one case indicated a 10-min gap between a proofing procedure and a lineup.*

Although not specifically stated, most descriptions of lineups indicate that procedures followed one another closely, probably generally only a matter of minutes. In one case it was specified there were 10 minutes between a proofing procedure and the actual lineup [62]. Since handlers were often working on contracts with law enforcement agencies, there were economic reasons for limiting the time that procedures could take.

#### **4.1: Number of Stations in a Trial.**

European countries generally have 7 stations in a trial, though less or occasionally more are used.

**U.S. entry: *Highly variable; often not specified, but in 1 case there were only 2 stations, 1 case had 3, 7 cases had 4, 12 cases had 5, 15 cases had 6, and 1 case had 7.***

In one case [3], the dog could only choose between 2 individuals, and in another only 3 choices were offered [25]. In probably 8 opinions, 4 choices were offered [12; 26; 36; 49; 50 (diamond shape); 54; 62 (preceded by proofing lineup); 64], in 8 opinions 5 choices [7; 9; 10; 12; 15; 16; 21; 42], and in at least 12 lineups opinions there were 6 choices [2; 5; 18 (2 of target); 24; 34; 35; 38; 40; 41; 46; 47; 73], making this the most common number of stations. In one case there appear to have been 7 choices [48], though perhaps only 6. The number of stations was a matter of preference for the handlers and was not seen as a requirement by any U.S. court. In lineups of individuals, the number of individuals the dog could choose from was a matter of how many people were available for such a lineup or simply the number who were near a suspect, particularly in station identifications.

SWGDOG SC 9: Human Scent Dogs ¶ 2.31.4 provides for assessment of a scent-lineup team with two six-position lineups (with a comprehensive assessment involving six runs performed on three lineups with odors of 18 different people).

In station identifications, where a dog is scented to an item, such as an object from a crime scene, then asked to find a match in a police station, it is assumed that the dog is trailing and, if successful, identifying an individual in the station. It is also assumed that the dog has choices on the trail and often in the room where the suspect is supposedly identified. [See 1; 2 (but multiple persons walked past dogs so also lineup-like); 3; 4; 5; 11 (went in house and alerted to defendant with others present); 16 (5 separate station IDs to different cells in police station where driver and different passengers were under arrest); 19 (not in station but during trailing); 20 (dog scented by pad from crime scene and alerted to suspect in station); 22; 23; 24 (but several police in room and defendant not in handcuffs so also lineup of individuals); 31 (dog scented on STU scent pad of shell casings; but Hamm's Knight gave "ambiguous alert"); 43; 45; 52 (2 separate defendants in station); 53 ("more like a hybrid trailing/lineup"); 57; 59 (defendant moved between station IDs); 61; 70 (after tracking, dog given choice of 2 men in car); 71 (tracking from defendant's car into police station); 72 (after tracking, dog alerted to suspects on patrol boat; 75.]

Although the term "scent lineup" might suggest the objects or individuals are to be in a line, this is only occasionally specified or implied. [7 (line, all others police officers); 9; 10; 15; 19; 34; 35; 38 (order not changed between dogs); 39; 40; 41; 42; 48 ("shoulder to shoulder")]. A diamond pattern is sometimes referred to when there are four stations [27 (4 people equidistant

from central point); **36; 49; 61; 62**]. The vague phrase, “specific formation,” sometimes appears without further elaboration [e.g., **50; 58**].

#### **4.2: Number of Trials before an Identification Can Be Used as Evidence in a Criminal Prosecution.**

European countries general require from 3 to 5 identification trials before evidence can be introduced in a prosecution.

**U.S. entry: *Most judicial cases found a single run with an alert sufficient for admission of evidence; 60% of cases involved 1 dog, 20% involved 2 dogs, and 30% involved 3 dogs.***

In almost all U.S. cases, a single trial with a positive indication by a dog was sufficient for the evidence to be proffered and accepted. Some handlers regularly used more than a single dog for identification procedures and, in such instances, the same lineup of individuals, objects or stations might be run by two or three dogs.

#### **4.3: Number of Dogs Used in an Official Identification.**

European countries generally accept that one or two dogs can provide an official identification, but some specify a minimum of 3 (Germany, Russia).

**U.S. entry: *No specified number, and dogs could perform more than 1 function (in 20 cases, dogs were used for more than one function, usually tracking in the initial part of the investigation, then for a scent lineup once a suspect was apprehended),***

Most opinions involved use of only one dog [see **4; 5; 6; 7; 8; 9; 10; 14; 15; 16; 18; 20; 21; 23; 24; 25; 26; 27; 28; 31; 36; 45; 48; 49; 50; 52; 53; 57; 58; 61; 75**]. Some involved two dogs [see **2; 3; 22; 32; 33; 35; 38; 46; 52; 59; 63**], and some three [see **29; 34; 35; 40; 41; 42; 44; 47; 56** (2 FBI bloodhounds plus one brought by a separate handler); **62; 73**]. Some cases, e.g. [**1**], refer to “dogs” in the plural without specifying a number. Only when a handler had more than one dog was the same test repeated with a different dog.

Dogs were used for more than one function in at least 20 opinions. Cases involving dogs performing both tracking and identification procedures are common [See **1; 2; 3; 4; 5; 7; 14; 19; 20; 22; 23; 24; 25; 33** (including tracking individual in car); **34; 35; 40; 48; 52; 57**]. In three opinions, different dogs were used for tracking and for scent lineup work [**17; 32; 62**]. Bloodhounds were particularly likely to have two functions.

#### **5.1: Who Calls Alert?**

In Europe, Belgium, Finland, The Netherlands, and Nordrhein-Westfalen sometimes allow handlers to call alerts, but most countries require that an experimenter call the alert. Most specify that an alert must be clearly described and obvious to any observer.

**U.S. entry: *Handler.***

In all cases where the issue arose, the handler called an indication/alert, and it was sometimes stated that others were unable to tell when the dog had made an indication/alert [**47** (where

handler (Pikett) testified his dogs did not always have consistent alerts)]. In some decisions the handler called an alert despite the fact that the dog did not give its standard response [24 (dog sat on suspect's lap rather than jumping up and putting paws on suspect as per dog's standard alert according to handler); 31]. The number of passes a handler would standardly make in a lineup was generally only one, but when there was no indication on a first pass there might be a second before an alert could be called [48].

SWGDOG SC 9: Human Scent Dogs ¶¶ 2.3.1.5 and 2.3.2.5 provide that the “handler shall inform the assessor [experimenter] of the canine’s final response prior to the test,” but the “handler interprets the canine response and communicates this outcome to the assessor.”

### **5.2: Requirement that All Stations Be Sniffed.**

Most European countries do not require that all stations be sniffed after a correct indication, but the Czech Republic and Russia do.

**U.S. entry:** *No judicial requirement, but procedures of some handlers require all stations be sniffed.*

In no U.S. case was a requirement stated that all stations had to be sniffed, or that sniffing had to continue once a positive identification was made. Some cases indicate that all stations were sniffed. [9; 12 (because 2 passes and dog licked target knife); 15 (dog told to “check” at each station); 27 (all 4 individuals sniffed); 38 (because handler went down line twice); 47 (expert testified that all 3 dogs failed to alert during 1<sup>st</sup> 3 runs but in 4<sup>th</sup> all 3 alerted (!), yet expert “testified that Deputy Pikett’s methodology was reliable” though the expert “could not tell that the dogs were alerting”); 48]

### **5.3: Is Video-Recording of Official Trials Required or Standard?**

Some European countries—Germany, Poland, and Russia—require videotaping of procedures, particularly for more serious crimes.

**U.S. entry:** *No judicial requirement but occasionally done.*

Videotaping has never been a U.S. legal requirement. Courts sometimes mention that a procedure was videotaped [16; 33; 35; 38; 46], but in other cases where a videotape was not mentioned there may still have been one made as part of a handler’s or a prosecutor’s standard practice. One case [47] specifically mentions the procedure was not recorded.

### **6.1: Degree of blindness Required as to the Placement of the Target Scent.**

Most European countries require at least single-blind procedures (re handler), and some double-blind (Finland, The Netherlands, Poland, and Russia).

**U.S. entry:** *Handler was stated to be blind in 13 cases and not to be blind in 4; double-blindness seldom mentioned.*

In no case was there a requirement that a procedure be double-blind, though in many opinions the handler was said to be blind [see 1; 8; 9; 10; 15; 16; 25 (expert, Myers, testified procedure

should have been double-blind); 26; 42; 44; 47; 48; 53 (FBI use of handler); 56; 62]. In other cases, the handler was specifically stated to know where a target sample was in a lineup [see 5; 7; 18; 27 (lack of blindness inferred from fact 3 out of 4 individuals in lineup were officers); 33 (even if handler was blind, officers present knew where target scent was after rearrangement, as was also true in 35; 36; 42 (cueing argument)); 46 (expert Nicely testified handler could see cans being rearranged)]. In one case, the handler was blind and those who set up the lineup were not present during the lineup [62]. In one case, the court explicitly noted that a procedure was not double-blind [47]. Courts stating that the handler was blind were often accepting without further analysis a handler's testimony that he did not know where the target scent had been placed. Sometimes the handler's lack of blindness was not specified but rather indicated by the fact that he set up the lineup of items or knew the other foils (particularly if they were fellow officers). One case described a dog as having been trained in tracking with double-blind trials [57].

It can be assumed that in many lineups of individuals it was obvious who the suspect was, and in lineups of objects and scent pads in containers, the handler was either involved in placing the objects in the lineup or was within sight of those who positioned the items while conducting the lineup with the dog [46].

### **6.2: Must an Experimenter Who is Aware of the Position of the Target Sample Be Totally Isolated from Any Contact with the Handler and Dog?**

Some European countries require such isolation (Finland, The Netherlands, Poland, and Russia).

**U.S. entry:** *Generally no such separation of function in judicial cases though double-blindness as to observers mentioned in 1 case.*

The term "experimenter" does not appear in U.S. scent identification cases. In some decisions, it is specifically mentioned that another individual than the handler determined the position of a suspect's sample in a lineup [18; 35; 46]. That second individual can be generally assumed to have remained present during the handler's running of the dog since neither police nor courts acknowledged any reason for that individual not to be present, though in the one specifically identified double-blind case, the individuals setting up the stations were not present for the lineup [62]. The issue was raised in a 2011 Texas case [47], where the scent identification evidence was not admitted for various deficiencies.

SWGDOG SC 9: Human Scent Dogs uses the term "assessor." In a "comprehensive assessment," which may be taken by an agency as a certification test, the assessor may know the position in the lineup of the target odor (§ 2.3.1.5.6). If, however, a double-blind assessment is part of the certification procedure, "[n]o one present in the room ... shall know the correct outcome of the lineup."

### **6.3: Means by Which Observers and Handlers Communicate, including Visual or Acoustic Signals, a Clicker, etc.**

Various communication approaches are used in Europe, including clickers, colored lights, and voice.

**U.S. entry:** *Judicially described procedures with handler blindness sometimes indicate a second officer verbally notified the handler when the dog alerted correctly.*

Such a separation of functions has never been part of U.S. practice from cases producing judicial rulings or decisions.

### **7.1: Rewards that May Be Used for the Dog, in Control Trials including Treats, Toys, etc.**

European countries do not use treats during actual trials that may produce judicial evidence.

**U.S. entry:** *Nothing judicially specified, but handlers regularly use treats, praise and petting.*

Rewards were only occasionally mentioned in U.S. cases, but consisted of treats [14; 19] and praise and petting [38].

### **7.2: Timing of Rewards.**

European countries often require that rewards be given immediately after a correct indication in training and control trials.

**U.S. entry:** *Generally not indicated but assumed to be after a trial is completed.*

No timing was indicated in U.S. cases where rewards were mentioned but it may be assumed that rewards were given once a trial was completed (even if all stations were not sniffed).

### **8.1: Breed Preferences for Scent Lineups.**

European countries often prefer German shepherds, or other breeds of shepherd dogs, though in Poland Labrador retrievers and other breeds are sometimes used.

**U.S. entry:** *Bloodhounds used in more than half of published cases, though German shepherds and Labrador retrievers occasionally used.*

In U.S. scent identification cases, by far the most common breed used was the bloodhound [see 1; 2 ;3; 4; 6; 7; 11; 13; 14; 15; 16; 19; 20; 22; 23; 24; 25; 26; 27; 28; 29; 31; 32; 33; 34; 35; 37; 39; 40; 41; 42; 44; 45; 46; 47; 48; 51; 52; 53; 56; 57; 59; 61; 62; 63; 69 (? because tracking dog was bloodhound and same dog may have been used in lineup); 70; 71; 72; 73; 75], a total of at least 51 cases. A Bluetick coonhound was used in one case [43], German shepherds in four [5; 8; 9; 10], and Labrador retrievers in five [18; 19 (two dogs used, the Labrador being a cadaver dog); 21; 36; 58]. The bias towards bloodhounds reflects the fact that U.S. scent identification procedures grew out of the tracking function and has never fully separated from that function either in police practice or in the understanding of most judges.

### **8.2: Age Requirements for Dogs Performing Scent Lineups.**

Some European countries automatically retire dogs at 9 to 10 years.

**U.S. entry:** *No age requirements have been specified by courts; age of dogs were occasionally given, ranging from 2 years old to 11, with an average age of 6 years.*

An age limit or range was never found by a U.S. court to be a requirement. Age was given as two years in four cases [7; 29; 33; 34], three years in two cases [34; 48], four years in one case [19], five years in three cases [2; 22; 53], seven years in one [25], eight years in seven [8; 9; 10a,b,c; 15; 29], nine years in three [18; 28; 31], ten years in one [33], and eleven in one [34].

Generally, retirement of police dogs in the U.S. occurs upon failing performance records or decisions as to the physical capabilities of specific dogs.

### **8.3: Period of Training before Dogs Can Make an Official Identification or Certification Requirement.**

European countries often specify training periods, being from 3 months up to 1 year.

***U.S. entry: No requirement, but individual handlers select dogs for training at about 1 year; period of training highly variable; training as a tracking dog was sufficient for a dog to participate in a scent lineup in a number of judicial decisions.***

No system is in place requiring either tracking or scent-identification dogs to receive a specific period of training, though kennels and individuals may have programs that involve programs of several months up to more than a year.

There is no national U.S. system for certification of dogs for scent lineup work [18; 53], though recommendations in that direction have been made by various organizations, such as SWGDOG. Some teams were certified for search and rescue work [18 (California Rescue Dog Association); 25 (“Los Angeles Sheriff’s Department has certification requirements for trailing dogs that pass the Bloodhound Coalition Standards.”); 19 (“essentially the same as the statewide California Rescue Dogs Association”); 36; 62 (Los Angeles Sheriff’s Dept. scent comparison work); 66 (North American Search Dog Network, Lone Star Search and Rescue Dog Association)].

Courts have frequently been satisfied that a dog certified by a tracking organization is used for a scent lineup [1; 3; 4; 5; 6 (with Judge Cornelia Kennedy dissenting); 7; 11; 13; 14; 15; 16; 20; 32; 48 (dog tracked to group of men and selected defendant, but court saw the case as only involving tracking); 52; 57 (station ID is not like scent lineup so only tracking foundation required); 67 (lineup of cars sniffed by cadaver dog, originally trained in tracking, procedure analyzed as tracking)], though sometimes acknowledging there might be some differences between the two functions [6; 10]. In a 1984 Arizona case [10], the court stated that when a tracking dog follows a trail over an area where other humans have walked, it is “essentially dealing with a line-up case.” This was stated despite the fact the lineup occurred 21 months after the crime. In a 2003 California case [20], the court stated that “we cannot ascertain why scent-discrimination evidence is distinguishable from dog scent-tracking evidence....” In a separate 2003 case in California, however, scent discrimination was distinguished from tracking [see 18].

The first case where a court appeared to specifically determine that scent lineups are not the same as tracking cases, and therefore need a different foundation occurred in 1986 [12; see also 21 (“of questionable probity”); 28 (Texas appellate court saw difference but handler had to be trained in lineup); 35 (discussion distinguishes tracking and scent lineups)].



SWGDOG SC 9: Human Scent Dogs ¶ 3.2.3 provides that certification is to involve a “comprehensive assessment which incorporates odor recognition to such an extent that a separate odor recognition test is not necessary.” This assessment may be combined with a double-blind assessment but need not be. In a comprehensive assessment, the “assessor shall know the position of the matching odor in each run.” In a double-blind assessment, “No one present in the room, including the dog and handler shall know the correct outcome of the lineup.” Thus, a dog can be assessed, and certified, with only a single-blind procedure under SWGDOG’s recommendations.

### **9.1: Qualification Requirements for Handlers.**

European countries often require testing and certification of handlers by central police authorities.

***U.S. entry: None judicially required and many are self-taught; some have military training in working with dogs.***

Just as there is no specific scent-lineup qualification system for a dog in the U.S., neither is there such a system for a handler of such dogs. Where cases reviewed the background of handlers, the primary concern was that the individual had experience working with dogs in tracking and other functions and had a record of producing evidence for previous investigations and trials. Handlers were often self-taught, though some had received military training (e.g., Preston, see [6]).

Although not all cases referring to scent identifications named the handler involved, when handlers have been named, a relatively small number were specified:

1. *Crawford*: [32]
2. *D’Allura*: [18; 58 (Reilly “100 percent accurate when making these kind of lineup identifications”); 21; 36; 49; 62; 65]
3. *Gardiner*: [56 (two FBI bloodhounds also used but handler not named)]
4. *Gavin*: [53]
5. *Hamm*: [18; 19 (Hamm “could not say that he was ‘endorsed by the FBI.’ Scarlett has been used as an example in training with the FBI and other law enforcement agencies”); 20; 22; 24 (though not named); 31; 43; 52; 58; 59; 61; 62 (two handlers); 75]
6. *Harvey (Dr.)*: [57b]
7. *Oglesby*: [26; 28 (Pikett given as example of good handler because he had been used by FBI and ATF.)]
8. *Pikett*: [15; 29 (worked for FBI, U.S. Marshall’s office, Texas Rangers, ATF); 33; 34; 35; 37; 38; 39; 40; 41; 42; 44; 46 (overlap with [35] in that this was Winfrey’s children & daughter’s boyfriend, who were also suspects); 47; 51; 63; 73]
9. *Preston*: [5; 8 (handled dogs “for lineup purposes since 1976”); 9; 10]
10. *Reyburn*: [45]
11. *Rivera*: [48]
12. *Semprini*: [11]
13. *Slavin*: [16; 23; 3 6].

### **9.2: Can Handlers Have More than One Dog?**

European handlers are sometimes restricted to 2 dogs, though both may be used in scent identification work.

**U.S. entry:** *No limit, though many have 3 or even more.*

See discussion under §4.3 above, giving numbers of dogs used in U.S. cases. Often all the dogs in the case had the same handler. Cases often contain information about how many cases handlers have worked with their dogs, though the information is often from the testimony of the handlers themselves and is seldom verified or investigated. [See **5** (150 criminal cases/Preston & Harrass II); **8** (“1000 lineup situations” by 1983, Harrass II); **14** (390 by Yogi); **15** (Pikett bloodhound had been doing scent lineups for 7 years by 2002); **18** (Reilly had worked 200 training lineups and 100 lineups of actual suspects, either individuals or scent pads); **19** (400 by Scarlett); **26** (Lucy used in 74 scent lineups and “never misidentified anyone after receiving the scent article”); **28** (Oglesby said Lucy had participated in 74 lineups and identified suspect in 63); **29** (Quincy had worked 760 scent lineups, Jag 335 lineups, and James Bond 230 lineups); **31** (Hamm has participated in 1,700 to 1,800 investigations); **34** (Quincy 1,740 cases, James Bond 1,160 cases, Clue 564 cases); **35** (Quincy had worked 1,483 scent pad cases; James Bond 964, and Clue 564;41 (one of Pikett’s dogs up to 2,334 cases with only 2 errors); **42** (records found incomplete as to incorrect IDs); **43** (Bojangles worked 300 criminal investigation and proved correct in 30; habeas: “Hamm admitted to working on two cases in which the suspects were later exonerated”); **45** (by time of trial, bloodhound, “Enya had worked between 120 and 130 scent discrimination cases”); **62** (Cooper worked 272 scent lineups and D’Allura unaware of any incorrect identification)].

### **9.3: Frequency and Length of Training Sessions after Teams Begin Performing Scent Lineups.**

European programs often require specific amounts of training after certification for scent lineup teams.

**U.S. entry:** *No specified requirement, highly variable in cases, but some U.S.-based police dog organizations recommend 4 h per week.*

Some U.S. courts appear to assume that once a dog is trained it will remain capable of performing its functions. In only a few cases was any information about maintenance training indicated [**18** (scent lineups performed on weekly basis); **19** (formally trained twice a month), **25** (dog continues to be trained); **31** (at least once a week); **43** (id.); **48** (16 hours/month); **57** (approximately 15 hours/week)]. Many U.S. police dog training organizations recommend that handlers train their dogs a minimum of 4 hours/week.

### **10.1: Must the Probability of a Correct Indication by Chance be Estimated, or Such an Estimate Standard?**

Finland and The Netherlands require calculating correct indication by chance, and Russia does so in practice.

**U.S. entry:** *No, though one 2011 Texas case criticized a handler for not calculating a rate of error.*

In no U.S. scent identification case did a court impose a requirement that probability of identification by chance be estimated. In a 2011 Texas case, however, an appellate court criticized a handler (Pikett) performing a scent lineup of individuals for not having calculated any rate of error [42]. The court listed 16 flaws in the procedure used in that case.

### **10.2: Have Experimental Studies Been Undertaken by Independent Scientific Institutions to Assess Validity of Scent Lineup Identifications?**

Many European countries have undertaken scientific research inside of their centralized police canine facilities.

***U.S. entry: Not as to procedures used by police and contract handlers; research has been done by U.S. researchers on identification issues.***

Forensic and scientific experts have appeared in U.S. cases for the prosecution [9 (defense expert's rejection by trial court was reason for reversal, but conviction followed second trial, then exoneration); 14 (*Daubert* not applicable to experience-based dog tracking; handler could be expert); 18 (*Kelly/Frye* should have been applied and failure to do so was reversible error); 19 (Vanness H. Bogardus III, found reversible error to exclude this expert proffered by defendant); 25 (Furton, Eckenrode, Stockham of FBI for prosecution; Myers for defense; court did own research of literature); 31 (Furton, Eckenrode, Stockham, "currently the Human Scent Evidence Team coordinator for the FBI" and "has used the team over eight hundred times since 2000..."); 35 (Stockham 2004 cited); 36 (Myers citing work of Schoon; *Kelly/Frye* hearing held at trial); 46 (Nicely, same as facts of [35]); 47 (Furton, Brisbin); 53 (Myers); 57 (Myers, Lisa Harvey)].

In the vast majority of prosecutions, the only witness regarding canine evidence was the handler. Some cases indicated an understanding that there had been research concerning the performance of scent lineups, though the emphasis in the opinions was generally on the question of whether individual humans have unique scents that a dog could distinguish in either tracking or identifying an individual [15; 36; 62 (though handler claimed to be following practices established in research of Schoon)].

Far more than citing scientific articles, courts have often cited the 1990 law review article of Andrew Taslitz, "The Unscientific Myth of the Dog Scent Lineup" [18; 19; 42; 44; 46; 47; 57], which argued that scent lineups as they had evolved in the U.S. should not be allowed as testimony in criminal prosecutions. Although frequently quoting Taslitz, courts have, until recently, generally dismissed his criticisms of U.S. lineups and allowed the testimony of handlers on the record. It is to be noted that shortly before his untimely death, Professor Taslitz published an article, citing articles by Schoon, Jezierski, and Ensminger, and acknowledging that scent lineups, if conducted under protocols being developed in Europe, might be able to produce valid evidence in prosecutions (Taslitz 2013).

### **10.3: Are Scent Lineup Identifications Currently Performed by Police as Evidence for Courts (or Specify Periods when Such Were Performed)?**

Most European countries except Germany and The Netherlands, have active programs, though there has been a decline in the use of the technique in some.

**U.S. entry: *No reported uses for 8 years but some states have not judicially precluded uses of scent lineups.***

The Texas legislature and courts in Texas have in recent years disapproved of the use of scent lineups as evidence in criminal prosecutions, though cases where the canine evidence was only part of the evidence against the defendant are not generally being disturbed retroactively. California courts, while still accepting scent identification evidence in principle, have not been receiving new prosecutions with scent identification evidence because of successful objections in a number of cases have made further use of scent lineups economically difficult. Since Texas and California account for more than half of scent lineups and the vast majority of scent identifications in the U.S., it can be safely stated that few if any such procedures are currently being performed.

It is worth noting that a high proportion of U.S. scent identification cases, particularly station identifications and scent lineups, do not appear in the formal case reporters of the U.S. legal system. The fact that many cases involving such canine evidence are only found in unofficial reporters (Westlaw and Lexis-Nexis) suggests that courts have long been concerned with the value of this evidence, and many judges have perhaps been wary of procedures that lack significant scientific support.

Recently, the U.S. Fifth Circuit Court of appeals [46] referred to a scent lineup procedure as “a peculiar line-up indeed,” and described the handler’s dogs as “pet bloodhounds.” This court dismissed the appeal of the handler, who was being sued by the suspect who was prosecuted and initially convicted “in no small part on the scent-lineup evidence.” This tacit disapproval by a major U.S. appellate court likely means that prosecutors in the three states within the court’s jurisdiction—Texas, Louisiana, and Mississippi—would be reluctant to use or even introduce evidence of a scent lineup.

Historically, it is to be noted that in most cases where scent identification procedures were contested, the courts have admitted the evidence [see 1; 3; 4; 5; 6; 7; 8; 10; 11; 13; 14; 15; 16; 18; 20; 22; 24; 25; 26; 27; 28; 29; 31; 32; 33; 34; 36; 37; 38; 40; 41; 43; 44; 45; 48; 49; 50; 51; 52; 53; 54; 56; 57; 58; 59; 60; 61; 62; 63; 65]. Such evidence has occasionally been rejected [see 2 (Iowa); 9 (Florida, but only because reversed on other grounds, but there was a reconviction and then later exoneration on DNA); 12 (Florida, noting scent discrimination lineup not same as tracking); 17 (reference to scent lineup evidence but it was not proffered by prosecution); 19 (but because defense expert not being allowed by trial court to testify was reversible error); 21 (on federal habeas, failure to disclose dog’s history of false IDs required granting petition); 23 (reversal on other grounds so dog ID not addressed); 24 (but excluded by agreement of parties in exchange for defense not attempting to exclude tracking evidence); 30 (defense sought scent ID evidence as exculpatory but court insisted under *Kelly/Frye* that expert scientist be provided, which was not done, so evidence not admitted); 35 (affirmed in 2009 but reversed in 2010 because scent lineup alone could not support conviction when only other evidence was defendant’s statement to jailhouse snitch that he was prime suspect); 42 (excluded at trial); 46 (1983 action against Pikett withstood Pikett’s motion to dismiss); 47 (affirming trial court exclusion of Pikett’s evidence as supported by Furton)]. In 2010 [33], a court allowed a suit for wrongful arrest to go forward.

It is perhaps worth noting that the case law on scent identifications is rather restricted. In the following list, items in italics are station identifications, whereas Roman-type items are lineups:

1. **Arizona:** [10 (object lineups)]
2. *Arkansas:* [1 (station ID)]
3. **California:** [16 (5 station IDs);18 (not admitted);19;20;21;22 (3 station IDs);23; 24; 25 (station ID); 27 (court questioned validity of dog lineup but substantial other evidence so affirmed);30; 31; 36 (affirmed by state court in 2009, habeas recommended denied in 2011);43 (affirmed & habeas);45 (station IDs);45 (appeal & habeas on scent lineup rejected); 48; 49 (appeal & habeas unsuccessful);50;57;58 (harmless error because of “overwhelming circumstantial evidence”); 60; 61; 62; 65; 75 (handler testimony perhaps erroneous but harmless)]
4. **Colorado:** [14]
5. **Florida:** [9 (after reversal on other grounds);12 (scent lineup rejected because not same as tracking),71 (federal, 11<sup>th</sup> Cir.)]
6. *Georgia:* [70]
7. *Iowa:* [2; 56]
8. **Maryland:** [7]
9. **Michigan:** [32 (scent pad lineup)]
10. *Mississippi:* [3 (station ID)]
11. *New Hampshire:* [11 (ID in house after tracking)]
12. **New York:** [8 (federal DC; object lineup); 71]
13. **North Dakota:** [4 (object lineups and station ID)]
14. **Ohio:** [6 (federal with appeal to 6<sup>th</sup> Cir.)]
15. *Pennsylvania:* [13 (at end of tracking)]
16. **Texas:** [15; 17 (defendant told scent lineup had ID’d her as ploy); 26; 28; 29; 33 (but later suit for wrongful arrest to go forward after another individual confessed to crime); 34; 35 (but see 1983 action of Winfrey’s children declining to dismiss suit against Pikett); 37; 38; 39 (though only because sufficient corroboration to dismiss 1983 action); 40; 41; 42; 44; 46; 47; 51 (federal habeas); 63; 73 (Pikett’s reliability called into question; testimony may have been erroneous but deemed not material)]
17. *Virginia:* [5]

Thus, 16 states have scent identification decisions, while only 10 have scent lineup decisions. This means that courts in most of the states in the U.S. have not issued opinions on such matters.

### Discussion

There is no standard practice for scent identification in the United States, or even in any individual state, though certain handlers who have specialized in scent-identification work have preferred practices. Nor is there any U.S. organization with the authority to standardize such procedures for investigations or prosecutions, though certain organizations have recommended procedures and standards that are available to trainers and handlers (Ensminger 2012, at 103, 110). The only system by which canine scent identification work is evaluated for use as evidence against a defendant who is being prosecuted is, and in the U.S. always has been, the courts. Thus, the history of scent identification evidence must be drawn from the American judicial system.

Scent lineups in the U.S. grew out of tracking cases where the trail the dog had followed from the scene of the crime led to, say, a house with several people in it. The people were taken out

of the house to see which one the dog would go to (*West Virginia v. McKinney*, 88 W.Va. 400, 106 S.E. 894 (1921)). In a 1917 Arkansas tracking case, the tracking had been unsuccessful and the bloodhounds returned to the police station where they unexpectedly picked up the scent again, leading into the station to a room where a suspect, found by other officers, was being questioned [1]. Although the identification in the station was initially a spontaneous event, handlers began to supplement a dog's work on a trail by purposefully structuring the possibility of a tracking and identification inside a police station or at another location (garage, jail, etc.) where other officers had taken the suspect. Thus, the handler and dog would come to the entrance of the station to see if the dog would pick up the scent again and lead to the room or cell in which the suspect was being held. In other cases, a lineup was put together at the end of the track in the field, often placing the suspect in a line with police officers, as was done in a 1999 Colorado case [14]. Such station identifications and lineups of individuals never ceased to be part of U.S. scent identification procedures and continued to be performed until recently. This close connection in U.S. law between tracking and scent identifications explains why bloodhounds are so much more common in scent lineups in the U.S. than is the case in European procedures.

There was no complete break from of scent lineup procedures from tracking, and the same handlers and dogs continued to fill both functions often in the same investigations, sometimes consecutively on the same day. U.S. courts have generally accepted that a dog capable of tracking was also a dog capable of scent identification, even if the identification was conducted as a lineup without a trail to follow to a particular station. In proffering scent identification evidence at trial, in numerous cases, the prosecution needed only establish a "tracking foundation," which often meant that the dog was, in fact, trained and experienced in tracking humans [3; 4; 5; 6; 10; 11; 14; 15; 16; 48; 52; 57].

Unfortunately for the gathering of data regarding U.S. scent-identification procedures, the vast majority of prosecutions in which such procedures were introduced as evidence did not lead to judicial opinions from which data regarding the conduct of procedures can be gathered. The summary information in the tables below thus comes from 81 opinions, some of which were different levels of appellate review in the same case, or habeas petitions following conviction in a prior trial.

Scent identification work is not performed uniformly over the U.S., and many states do not have handlers who specialize in this type of work or are even trained to perform it, though tracking dogs remain a fixture of U.S. law enforcement (Ensminger 2012, Chapter 5). Some handlers performed scent work in more than one state, and one handler, for instance, in the 1980s worked in Virginia [5], New York [8], Florida [9], and Arizona [10]. It is to be noted that, as indicated in Table 1 below, no cases concern procedures that were performed after 2011. In Texas, scent identification procedures have been increasingly regarded with skepticism by courts and legislatures [21 (2013 9<sup>th</sup> Circuit decision); 55 (referring to Texas legislation labeling scent lineups as "junk science"; see Ensminger 2016, 308-309)].

In general, U.S. courts have long held that any canine evidence in a criminal prosecution cannot be the sole basis of conviction (Ensminger 2012, 39-40, 94). In some recent decisions, courts have recognized that despite lip service to the corroboration requirement, individuals were convicted largely on canine evidence [35, 2010 decision; see 55 on junk science].

In Europe, scent lineups have been regarded as forensic procedures capable of scientific refinement for nearly a century, though research of a rigorous scientific nature dates from the

early work of Adee Schoon in the 1990s. Although research on scent identification has been conducted in the U.S., this has generally reached the attention of courts only when expert witnesses involved in such research have testified in cases where scent identification procedures have produced evidence. Even here, however, the expert witnesses were testifying for one side or the other and sometimes evaluated as reliable for legal purposes procedures that they likely would have found highly deficient for any scientific purpose. The FBI, which has been reported to conduct lineups of a scientifically rigorous nature has generally been reluctant to rely on, or very often even mention, such results. (But see Stockham et al. 2004.) Personnel in the FBI has occasionally spoken or written about ideal procedures, but even this has had little influence on American practice of scent identification with dogs.

One purpose of the authors of the 2019 FSI paper was to provide a basis by which the countries of the world that use scent identification might come together to establish the validity of this forensic technique and allow for forensic research that would lead to greater uniformity of practice across the world. It is apparent, however, that such a development will require greater alteration in the U.S. than anywhere else.

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## Case Appendix

U.S. case information is summarized from published opinions (whether officially reported or not). Table 1 lists the opinions of U.S. courts where sufficient information regarding a case was provided to include some data in Table 2. The cases summarized for the U.S. include cases from the two largest databases of U.S. case law (Westlaw and Lexis-Nexis). All cases with the terms “scent lineup”, “scent identification”, and “scent + dog + identification” were included. Some of the earlier cases that involved tracking dogs choosing from two or more individuals were not found by these searches but are known to the author (JE) from prior research into the history of U.S. tracking law. In such cases the term “lineup” does not appear, and a form of the verb “identify” may appear, though “identification” may not.

Some cases indicate the number of procedures that a dog has performed with a handler, and some estimates may be made about how many procedures some handlers were performing annually. For instance, by 1980, John Preston had conducted about 150 procedures with Harass II (the dog’s name spelled different ways by different courts). By 1982, this number had increased to about 1,000. This indicates he may have been performing over 400 tracking and identification procedures annually in that period. In a 1983 case, Preston testified that he had performed 77 scent lineups, which would indicate that the bulk of his work consisted of deploying tracking dogs and not performing lineups.

In Table 1, the canine procedure is deemed admitted or not admitted depending on the ruling of the highest or last court to rule on the matter. Some trial courts had admitted canine evidence but were overruled by appellate courts. In a number of instances, appellate courts did not approve a trial court’s admission of scent identification evidence or expressed doubt as to the value of the evidence [18; 24; 27; 38; 43; 51; 52; 54; 56], but nevertheless did not reverse based upon a conclusion that there was sufficient other non-canine evidence to convict the defendant and the trial court’s conviction did not need to be disturbed. In some cases, failure of defense counsel to object to canine evidence at trial meant that the issue was not preserved for appeal and, even if the canine evidence was defective, the appellate court would not consider the issue of the admissibility of the evidence [e.g., 40; 49]. In one case [58], in a pre-trial deal between the lawyers for each side, the prosecution agreed not to introduce the results of a scent lineup in exchange for which the defense agreed not to object to the prosecution’s introduction of tracking evidence that implicated the defendant.

<b>Table 1: U.S. Scent Identification Opinions. Some cases involved multiple lineups and it is not always possible to state precisely how many in every case.</b>			
<b>Reference Number for Discussion</b>	<b>Case</b>	<b>Date of Procedure</b>	<b>Admitted/ Not Admitted</b>
[1]	<b>Cranford v. Arkansas</b> 197 SW 19 (Ark. Sup. Ct. 1917)	1916	A
[2]	<b>Iowa v. Grba</b> 194 NW 250	1920	NA

	(Iowa Sup. Ct. 1923)		
[3]	<b>Hinton v. Mississippi</b> 166 So. 762 (Miss. Sup. Ct. 1936)	1935	A
[4]	<b>North Dakota v. Iverson</b> 187NW2d 1 (ND Sup. Ct. 1971)	1968	A
[5a (towels),b (cars),c (individuals)]	<b>Virginia v. Epperly</b> 294 SE2d 882 (Va. Sup. Ct. 1982)	1980	A
[6]	<b>U.S. v. Gates</b> 680 F.2d 1117 (6 <sup>th</sup> Cir. 1982) (Ohio)	1979	A
[70]	<b>O'Quinn v. Georgia</b> 153 Ga.App. 467 (1980)	1979	
[7a,b]	<b>Roberts v. Maryland</b> 452 A.2d 1271 (Ct. of Spec. App. 1982) 469 A.2d 442 (Ct. App. 1983)	1981	A
[8]	<b>U.S. v. McNiece</b> 558 F.Supp. 612 (ED NY 1983)	Not stated (but procedure 21 months after robbery)	A
[9]	<b>Dedge v. Florida</b> 442 So.2d 429 (Fla. Ct. App. 1983)	Not stated	A (reversed on other grounds, retrial led to conviction, later exonerated on DNA)
[10a,b,c,d]* *10b was identification of locations rather than lineup	<b>Arizona v. Roscoe</b> 700 P.2d 1312 (Az. Sup. Ct. 1984)	1982	A
[67]	<b>Anderson v. Thomas</b> 585 F.Supp. 570 (1984)	1982	?
[72]	<b>U.S. v. Lavado</b> 750 F.2d 1527 (11 <sup>th</sup> Cir. 1985)	(not specified in case)	
[11]	<b>New Hampshire v. Taylor</b> 395 A.2d 505 (NH Sup. Ct. 1978)	1976	A
[12a,b]	<b>Ramos v. Florida</b> 496 So.2d 121 (Fla. Sup. Ct. 1986)	1982	NA
[13]	<b>Pennsylvania v. Michaux</b> 520 A.2d 1177	1984	A

	(Penn. Super.Ct. 1987)		
[71]	<b>New York v. Gangler</b> 227 A.D.2d 946, 643 N.Y.S.2d 839 (N.Y. App. Div. 1996)	(not specified in case)	
[14]	<b>Brooks v. Colorado</b> 975 P.2d 1105 (Colo. Sup.Ct. 1999)	1993	A
[15]	<b>Winston v. Texas</b> 78 S.W.3d 522 (14 <sup>th</sup> Dist. Ct. App. 2002)	1999	A
[16a,b,c,d,e]	<b>California v. Sandoval</b> 2002 WL 519848 (Cal. App. , 2d dist. 2002)	1998	A
[17]	<b>Drake v. Texas</b> 123 SW3d 596 (Ct. App. Houston, 14 <sup>th</sup> dist. 2003)	2002 (probably)	NA
[18a,b,c,d,e,f, g,h,i]* later case, <i>Oudin</i> , also says there were 9 lineups here	<b>California v. Mitchell</b> 2 Cal. Rptr.3d 49 (Ct. App. 2d dist., div. 1 2003)	1999	A * failure to hold <i>Kelly/Frye</i> hearing was harmless error
[19]	<b>California v. DeSantiago</b> 2003 WL 21753766 (Cal. App. 2d dist. 2003)	1997	NA (because refusal to allow defense expert to testify was reversible error
[20a,b]	<b>California v. Demirdjian</b> 2003 WL 19632404 (Cal. App. 2d dist. 2003) <b>Demirdjian v. Sullivan</b> 2009 WL 2767673 (C.D. Cal.) (habeas dismissed)	2000	A
[58]	<b>California v. Hackett</b> 2003 WL 463976 (Ct. App. 2d dist., div. 2 2003)	2001	A
[21]	<b>California v. Aguilar</b> 2004 WL 2051385 (Cal. App. 2d dist. 2004) 725 F.3d 970 (9 <sup>th</sup> Cir. 2013)	2001	NA
[22a,b,c]* more station	<b>California v. Chavez</b> 2004 WL 1173075	2001	A

IDs with 2 persons not charged	(Cal.App.2 dist. 2004)		
[23]	<b>California v. Robinson</b> 2004 WL 2418068 (Cal. App. 2d dist. 2004)	1998	NA
[68] * cadaver dog with lineup of cars	<b>California v. King</b> 2004 WL 2019243 (Ct.App. 4 <sup>th</sup> dist. 2004)	1999	A
[58]	<b>California v. Rivera</b> 2004 WL 2601335 (Cal. App. 2d dist. 2004)	2000	A
[24]	<b>California v. Willis</b> 9 Cal.Rptr.3d 235 (Ct. App. 2004)	2000	NA *excluded as evidence by agreement of parties with admission of tracking evidence
[69]	<b>Abdul-Malik v. Evans</b> 2011 WL 4899917 (CD Cal. 2011)	2000	A
[25]	<b>California v. Salcido</b> GA052057 (LA Super. Ct. 2005)	2003	A
[26a,b]*lineup used with both defendant and co-defendant	<b>Martinez v. Texas</b> 2006 WL 3720136 (Ct. App. Houston, 14 dist. 2006)	2001	A
[27]	<b>California v. Schoppe-Rico</b> 140 Cal.App.4 <sup>th</sup> 1370 (Contra Costa Super Ct. 2006)	2000	A
[28]	<b>Risher v. Texas</b> 227 S.W.3d 133 (Ct. App. 2006)	2004	A
[29a,b,c] * at least 3 lineups but perhaps 6 with all 3 dogs and all 3 crime scene scents	<b>Robinson v. Texas</b> 2006 WL 3438076 (Ct. App. 2006)	2004	A
[30]	<b>California v. Melara</b> 2006 WL 164989 (Cal. App. 2d dist. 2006)	2003	NA
[66]*extensive analysis of difference	<b>Trejos v. Texas</b> 243 S.W.3d 30 (Ct. App. Houston (1 <sup>st</sup> Dist. 2007)	2007	

between cadaver dogs and scent ID dogs; none of latter used here			
[31]	<b>California v. Alonzo</b> 2008 WL 2248628 (Cal. App. 2d dist. 2008)	2005	A
[32]	<b>Michigan v. Giles</b> 2008 WL 2436529 (Mich. App. 2008)	2006	A
[33a,b]*had to involve at least 2 lineups because 2 scenting items	<b>Buchanek v. City of Victoria</b> 2009 WL 500564 (S.D. Tex. 2009) 2010 WL 1268069 (S.D. Tex. 2010)	2006	A
[34a,b,c]* using 3 dogs	<b>Perkins v. Texas</b> 2009 WL 2837356 (Ct. App. 1 <sup>st</sup> dist. 2009)	2007	A
[35a,b,c,d in 2004 & e,f,g in 2006]* 4 suspects so probably actually 12 lineups in 2004 because 3 dogs ran each	<b>Winfrey v. Texas</b> 291 S.W.3d 68 (Ct. App. 2009) 323 S.W.3d 875 (Ct. Crim. App. 2010)	2004 2007	NA
[36]	<b>California v. White</b> 2009 WL 3111677 (Ct. App. 2d dist. 2009); 2011 U.S. Dist. LEXIS 74879 (C.D. Cal.)	2006	A
[37a,b,c]*Pickett used 3 dogs	<b>Thomas v. Texas</b> 297 W.W.3d 458 (Ct. App. 14 <sup>th</sup> dist. 2009)	2007	A
[38a,b,c]	<b>Jennings v. Texas</b> 2009 WL 167858 (Ct. App. 14 <sup>th</sup> dist. (Houston) 2010)	2007	A
[39a,b,c (Curtis) & d,e (Johnson & co-conspirator)] *defendant's scent compared to	<b>Curtis v. City of Houston</b> 2010 WL 538031 (S.D. Texas) 710 F.3d 587 (5 <sup>th</sup> Cir.)* federal 1983 involved 2 different plaintiffs claiming wrongful detentions	2007	A

scents from 3 burglarized stores			
[40a,b (individual) & c (passenger seat)]* but probably 9 because 3 bloodhounds for each lineup	<b>Isler v. Texas</b> 2010 WL 723172 (Ct. App. 14 <sup>th</sup> dist. (Houston) 2010)	Not stated	A
[41a (shell casings) & b (shirt)]*3 dogs for each so 6 lineups; but shirt lineups apparently involved 3 suspects with perhaps separate lineups so perhaps as many as 12	<b>Pate v. Texas</b> 2010 WL 3341853 Ct. App. Corpus Christi 2010 WL 3921177 (Ct. App. 2010)	2008	A
[42a,b,c]*1 <sup>st</sup> appeal refers to 2 dogs, but 2 <sup>nd</sup> to 3; at least 4 other lineups were conducted but not described	<b>Texas v. Smith</b> 335 S.W.3d 706 (Ct. App. 2011) (2014 Tex. App. LEXIS 5717 Ct. App. 2014)	2005	NA
[43]	<b>California v. Smith</b> 2011 WL 1350762 (Ct. App. 2011); <b>Smith v. Uribe</b> 2016 WL 1165822 (C.D. Cal.)	2007	A
[44]	<b>Powell v. Texas</b> 2011 WL 1579734 C(t. App. 2011)	2008	A
[45a,b]* 2 station IDs but same dog, suspect having been moved to	<b>California v. Watts</b> 2011 WL 2150147 (Ct. App. 2011) 2013 WL 5933918 (C.D. Cal. 2013)	2006	A

different room between trials			
[46]	<b>Winfrey v. Texas</b> 338 S.W.3d 687 (Ct. App. 2011) PD-0943-11 (Ct. Crim. App. 2013); 872 F.3d 640 (5 <sup>th</sup> Cir. 2017)	2004 2007	NA
[47a,b,c]	<b>Texas v. Dominguez</b> 425 S.W.3d 411 (Ct. App. 2011)	2008	NA
[48]	<b>California v. Stanford</b> 2012 WL 1365774 (Ct. App. 2012)	2008	A
[49]	<b>California v. Fernandez</b> 2012 WL 2025616 (Ct. App. 2012); <b>Fernandez v. Romero</b> 2015 WL 300493 (C.D. Cal.)	2006	A
[50] * see [64] re brother	<b>California v. Pietro</b> 2012 WL 5990325 (Ct. App. 2012)	2009	A
[73a,b,c] * 3 suspects and 3 bloodhounds in each lineup; scenting item was shell casings and then shirt found at crime scene, so perhaps 6 lineups for each dog	<b>Hall v. Thaler</b> 2012 WL 4718443 (S.D. Tex. 2012) <b>No. C-12-93</b> (S.D. Texas 2012, adopting magistrate's recommendations)	2008	
[51]	<b>Leonard v. Thaler</b> 2013 WL 3280216 (S.D. Tex. 2013)	Not stated	A
[62a,b]	<b>California v. Childs</b> 2013 WL 4034206 (Ct. App. 2d dist., div. 4 2013)	2006	A
[59a,b]	<b>California v. Reynolds</b> 2013 WL 604188 (Ct. App. 2013)	2007	A
[61]	<b>Ruiz v. Barnes</b>	2007	A

	2013 U.S. Dist LEXIS 185771 (C.D. Cal. 2013)		
[52a,b]	<b>Trigueros v. Adams</b> 2013 WL 3157518 (C.D. Cal. 2013)	2011	A
[60]	<b>Elias v. Diaz</b> 2013 U.S. Dist LEXIS 185704 (C.D. Cal. 2013)	Not stated	A
[53]	<b>California v. Oudin</b> 2015 WL 3645861 (Ct. App. 2015)	2011	A
[54] * only for cross- reference to Prieto	<b>Robles v. Lewis</b> 2015 U.S. Dist. LEXIS 164439 (C.D. Cal. 2015)	2009	A
[64]* petitioner brother of Jose Prieto in [50] and same lineup	<b>Prieto v. Foulk</b> 2015 WL 11790066 (C.D. Cal. 2015)	2009	A
[63]	<b>Cockerham v. Director</b> 2015 U.S. Dist. LEXIS 177272 (E.D. Texas 2015)	Before 2011	A
[55] no lineup but relevant for dictum of “discredited dog-scent lineups”	<b>Ex parte Robbins</b> 478 S.W.3d 678 (Ct. App. 2016)	Before 2002	Not applicable (dictum referring to scent lineups as “junk science”)
[56]	<b>Iowa v. Frederiksen</b> 2016 WL 4051655 (Ct. App. 2016)	2005	A
[57a,b] *2 station IDs	<b>California v. Jackson</b> 1 Cal.5th 269 (Cal Sup. Ct. 2016)	2011	A
[65]	<b>Gwin v. Martel</b> 2016 WL 8223274 (C.D. Cal. 2007)	2007	A * but results inconclusive
[74]	<b>California v. Barajas</b> 2019 WL 2281266 (Ct.App. 2019)	2008	

The issues that were important to all scent lineup programs are described in the September 2019 FSI paper. In gathering information from U.S. case law, however, some issues had to be addressed that were unique to U.S. jurisdictions.



