Clerk, United States Senate Judiciary Committee, Washington, D.C., 20510 September 9, 2009

We would like the United States Senate Judiciary Committee to consider the attached testimony when they next consider the proposed legislation to create a National Institute for Forensic Sciences, and to include it in their records.

Testimony of Drs. Lyn Haber and Ralph Norman Haber
Before the United State Senate Judiciary Committee
In Support of Legislation to Create a National Institute for Forensic Science
Prepared August 28, 2009

Scientific Background of Drs. Lyn and Ralph Haber

We are two of the few research scientists who are also trained as fingerprint examiners, and who have been qualified to testify in courts as experimental scientists about the validity and reliability of fingerprint comparison methods in general, and about the application of the method in the instant case.

When we began to study fingerprint methodology, we discovered that the underlying research on the validity and reliability of the method(s) used by fingerprint examiners had never been performed. As research scientists, we simultaneously began to outline a research program to provide this evidence, we presented our analyses to the fingerprint profession, we published our findings and proposals in scientific and professional journals, we wrote a book on fingerprint comparison procedures, we visited fingerprint crime laboratories to urge them to host and collaborate in research studies, and we welcomed opportunities to testify in court when fingerprint evidence was at issue.

Ralph Haber specializes in experimental psychology and human factors as applied to forensic science. He has been a research professor for more than 40 years. He has a Ph.D. degree from Stanford University (1957) and post-doctoral training in the Medical Research Council at Cambridge, England (1970-1971). He has taught at Yale University, the University of Rochester (where he was chairman of the Department of Psychology), and the University of Illinois, where he is now an Emeritus Professor of Psychology. He has received 25 grants and contracts from the National Science Foundation, the National Institutes of Health, research branches of the military and Veterans Affairs, and from the Department of Transportation. He has reviewed research proposals for these governmental agencies, and has served on the editorial boards of a dozen scientific journals. He has published 250 articles and 9 books in experimental psychology and experimental cognition, forensic science and human factors. Nearly 100 of these published articles cover research and analyses of eyewitness testimony and fingerprint comparison methods.

Lyn Haber specializes in linguistic analyses of complex decision-making, language development, interviewing, and human factors as applied to forensic science. She has a Ph.D. from the University of California (Berkeley) in 1970 and further training and degrees at Arizona State University and the University of Illinois. She has taught at Temple University, the University of Rochester, Arizona State University, Stanford University and the University of Illinois. She has served as a reviewer for governmental

granting agencies and scientific journals. She has published 150 articles and books in experimental cognition, forensic science and human factors. Over half of these concern research and analyses of eyewitness testimony and fingerprint comparison methods.

Specifically on fingerprints, the two of us together have written a book, **Challenges to Fingerprints** (October, 2009), published 8 articles, and made 19 presentations to professional fingerprint organizations and to fingerprint examiners in crime laboratories. We have attached copies of our resumes.

In 1988 we established Human Factors Consultants, a two-partner firm providing research and consultation services to the United States government, the United States military, private US business companies, and the legal profession. With respect to the legal profession, we have been retained to consult or provide expert testimony in over 150 cases involving forensic eyewitness and fingerprint identifications. We have been retained in nearly 30 fingerprint cases (half in Federal Courts), and have testified 11 times, 6 of which have been Daubert or Frye hearings on the admissibility of fingerprint evidence.

Testimony to the US Senate Judiciary Committee

Today, a person (with only a high school degree) can be hired (without meeting any predefined qualifications for forensic comparison work) by a crime laboratory (which is not accredited by any organization), and be then trained on-the-job to carry out evidence comparisons (by another technician without certified qualifications to provide training), using local methods and procedures (lacking adoption by their profession or evidence of validity and reliability), be approved by the laboratory to perform independent forensic comparison casework (without passing any external proficiency tests), allowed to represent their profession and laboratory (without being certified by their profession), and to offer testimony in a state or federal court (qualified only on the basis of their employment in that laboratory), testimony sufficient that the jury convicts the defendant. The parenthetical limitations in this paragraph have pertained to daily occurrences in courts in the United States over the last century. Today, the majority of court testimony offered by forensic experts still suffers from these parenthetically stated limitations.

To address the quality control problems inherent in the above paragraph, The National Academy of Sciences (NAS) report on the Forensic Sciences this past spring (2009) recommends the creation of a National Institute for the Forensic Sciences (NIFS). In the remainder of our testimony, we document from evidence drawn from the forensic disciplines the urgent need to implement this NAS recommendation. We are most familiar with the fingerprint comparison discipline, so most of our examples concern fingerprints. The problems apply to all of the areas of forensic evidence.

Our testimony is divided into three parts. First, we describe the outdated and unregulated status of forensic evidence technicians and the laboratories in which they work: the absence of quality control regulations for personnel and workplace. Second, we describe the absence of documentation and research evidence that the methods employed to identify people give accurate results when used properly. Third, we describe how a new National Institute of Forensic Sciences could address these problems effectively and economically.

Part I: Absence of Quality Controls for Personnel and Laboratories

1. Personnel Quality Control: Absence of Hiring and Employment Requirements

At present, with a few exceptions (e.g., the FBI), a crime laboratory will employ anyone whom it decides can be trained to do forensic analyses of evidence. Frequently, examiners-to-be have already worked as a police officer or sheriff (positions which generally do not require a BA degree with specialty in science). Other trainees come from a variety of two and four year college programs, rarely ones with majors in criminal justice or related programs. Fewer than 10% of the evidence technicians listed in the International Association for Identification (IAI) membership have a BA or BS degree, and fewer than 1% have an advanced degree. No data are available about the working examiners who are not members of the IAI.

The IAI, though the Scientific Working Groups for each forensic discipline, as well as the American Society of Crime Laboratory Directors (ASCLD) through its accreditation procedures, lists some recommended backgrounds for examiners, including a BA or BS degree, with specialization in science. However, there is no requirement: there are no teeth in their recommendations, and no way to enforce them. The data listed above indicate there is little compliance with the recommendations.

As a consequence, new trainees differ greatly in their abilities, knowledge and skills. This complicates training curricula and mastery.

2. Personnel Quality Control: Absence of Training Requirements

Only a few crime laboratories, such as the FBI, have developed detailed training curricula, with stringent criteria for assessment. The remaining thousands of laboratories have none. At present, the majority of forensic technicians have been trained on-the-job, under the supervision and tutelage of an employee with more experience. Most laboratories do not require participation in courses offered by other laboratories, organizations or universities.

With rare exceptions, the forensic disciplines have no formal evaluations at the end of training to document that the trainee has mastered the required skills, and is now qualified to work independently. There are no standard criteria for when a trainee can begin casework or testify in court.

The IAI through its Scientific Working Groups has published recommended outlines of training programs for the different forensic areas. However, there are no requirements and no way to enforce their use.

As a consequence, examiners receive different kinds and amounts of training, and vary greatly in their methods, knowledge and skill.

3. Personnel Quality Control: Absence of Training Specialists

At present, none of the forensic areas defines a position of trainer, or specifies qualifications for a person who provides training to new employees or refresher training for more experienced technicians. These highly technical professions do not recognize that to train others is a skill in its own right that has to be acquired, mastered and evaluated. The absence of any reference to training personnel also reflects the absence of commitment to training as a significant part of the forensic disciplines.

As a consequence, the personnel who train forensic technicians vary greatly in the quality, kind and amount of training they provide.

4. Personnel Quality Control: Absence of Proficiency Testing Requirements

With rare exceptions, proficiency testing is not required for forensic technicians. The majority of examiners who belong to the IAI have never been tested for their proficiency. At present, of the 5,000 members specializing in fingerprint examinations, fewer than 10% are proficiency-tested in any given year, and the majority of the examiners taking the test are the same ones who took it in previous years. While the American Society of Crime Laboratory Directors (ASCLD) recommends annual proficiency testing for accredited laboratories, no information is available as to the number of laboratories that administer that such tests, or the number that administer in-house tests manufactured, administered and scored by the laboratory.

The profession does not require proficiency testing and there is no way to enforce a recommendation for such testing.

As a consequence, the majority of examiners cannot document either improvement in their skill or mastery in their field.

5. Personnel Quality Control: Inadequacy Proficiency Tests

The external proficiency test currently used by the IAI and by ASCLD for latent fingerprint examiners fails to meet the requirements for an adequate proficiency test (see Haber & Haber, 2009, for a detailed analysis). The latent print fingerprint proficiency test does not contain test items comparable to typical casework, it samples mainly same-donor pairs of prints (even though different donor pairs make up the majority of casework, and pertain to the protection of innocent persons), there is no measurement of the difficulty of individual items or of the entire test, there is no evidence of the reliability or the validity of the test, it is administered by mail without proctoring, it requires conclusions that are not allowed in casework, it is inappropriately scored, and it provides no guidance for remedial work needed for a low-scoring examiner. The IAI latent fingerprint test is so poorly designed, administered and scored that the results cannot be used to assess the proficiency of latent fingerprint examiners. The proficiency tests used by the IAI for other forensic disciplines are no better.

As a side note, starting in 1995, the FBI created an in-house proficiency test. This test was described in detail by an FBI examiner (Meagher, 2002) in a Daubert hearing in federal court (US v. Plaza, 2002) as an example of a good quality control procedure. Quality control experts, experts in proficiency testing, and fingerprint examiners testified in the same hearings that the FBI's test was worthless. The FBI abandoned this test immediately thereafter.

The forensic disciplines have ignored the necessity for adequate proficiency testing. As a consequence, the vast majority of examiners who testify in court have not been routinely proficiency-tested. The tests in present use fail to meet routine criteria for quality proficiency tests, so that even these few examiners who have been tested cannot offer evidence to the court of their level of skill and accuracy. The forensic disciplines allow the skill levels of their technicians to go unassessed.

6. Personnel Quality Control: Absence of Certification Requirements

Neither the IAI nor any other forensic regulatory organization requires a forensic technician to be certified in order to perform casework, including to testify in court. The IAI provides certification in eight different disciplines, but few forensic examiners are certified.

For example, only about 15% of fingerprint examiners who are members of the IAI are certified, and this number is dropping, not increasing. Since the IAI is the only

organization offering certification for fingerprint examiners, and many fingerprint examiners are not members of the IAI, even this low percentage is inflated.

Forensic technicians differ from scientific experts in other fields (such as doctors, or engineers) in that there are no standardized training, supervision and certification requirements.

7. Personnel Quality Control: Inadequate Certification Testing

The forensic professions exercise no quality control over the purposes, design, construction and scoring of their certification tests. The tests manufactured and administered by the IAI are unstandardized. There is no evidence their reliability or their validity (Haber & Haber, 2009), and most of the criticisms listed above of the IAI proficiency tests apply equally to their certification tests. The forensic sciences have ignored the necessity for adequate certification tests. As a consequence, the majority of examiners who testify in court are not certified. The tests in present use fail to meet routine criteria for quality certification tests, so that even these few examiners who have been tested cannot offer evidence to the court of their level of skill and accuracy. The forensic disciplines allow the skill levels of their technicians to go unassessed.

8. Personnel Quality Control: Absence of Requirements for Court Testimony

There are no required qualifications for the members of the various forensic disciplines to testify in court as an expert. Any fingerprint examiner is allowed by the crime laboratory to testify if he or she has the first hand knowledge of the specific case being tried. It is extremely rare that a count challenges the credentials of an employed fingerprint examiner, and we do not know of a single instance in which one was not permitted to testify. As a consequence, examiners who provide forensic evidence vary greatly in their knowledge, skill and experience.

We have reviewed the personnel areas of employment, training, proficiency, experience, certification, and access to court. The forensic disciplines do not regulate the technicians who provide forensic evidence for the criminal justice system. Recommendations are not enforced, and existing evidence shows little compliance.

9. Laboratory Quality Control: Absence of Accreditation Requirements

The IAI estimates that as many as 8,000 laboratories employ forensic technicians to examine forensic evidence for the criminal justice system (Fitzpatrick, 2008). Today, only about 330 crime laboratories performing forensic evidence analyses in the United States have met accreditation recommendations issued by ASCLD or by any other national accrediting organization, fewer than 5%. Further, accreditation recommendations are not required, and laboratories fail to comply yet can remain accredited.

Required accreditation imposes and insures quality control procedures in crime laboratories. Few laboratories, whether accredited or not, have manuals covering their basic operations and work products. These manuals serve to describe requirements for work flow through the laboratory, for supervision of all work, for random sampling of products for accuracy and compliance, and for continued protection to prevent contamination and bias in decision making.

Two examples of poor quality control concern verification of conclusions and correcting errors. Every conclusion made by a forensic examiner has consequences: an identification risks the possibility that an innocent person may be convicted, and

conclusions of exclusion, inconclusive or no value risk a guilty person remaining at large. At present, few laboratories verify these conclusions. Of those that do, nearly all laboratories use a non-blind ratification procedure, in which a second examiner is asked to look over the work of the first one and concur in the conclusion. Only a few laboratories require independent replication, in which the case is assigned to another examiner who has no knowledge that it has already been examined or that another examiner reached a conclusion, and those verifications are typically restricted to identification conclusions in high profile cases. Research has documented that non-blind verification fails to catch errors. The FBI's erroneous identification of Brandon Mayfield, in which three additional examiners ratified the identification made by the first examiner, serves as a real-life example.

Because of the seriousness of all errors, good quality control should require that a laboratory carry out an independent replication of all critical conclusions made by examiners.

Error correction is a second example involving poor quality control. When an error is detected, during replication or during review, the laboratory needs explicit policies on how to record the error, investigate its cause, work out changes to prevent such errors in the future, and whether remedial retraining is needed for the examiner(s) who made the error. Because errors are serious, and damaging to the prestige of the laboratory, laboratories have been reluctant to publicize that an error occurred, and currently have no way to learn from them. Most laboratories express this reluctance by not having published error correction procedures in place.

The absence of required accreditation and quality controls means that laboratories vary widely in the accuracy and completeness of their products.

Part II: Research Issues: Method Error and Examiner Error

A fingerprint examiner (or other forensic examiner) performs a comparison and identifies a suspect as the source of the crime scene evidence. What is the probability that he or she made a mistake? To answer this question, the accuracy of this examiner must be known in general; and how accurate the method is that was applied to make the comparison. We showed above that current proficiency and certification tests are inadequate to assess examiner accuracy in casework. In this part, we describe the absence of evidence for the accuracy of the comparison **method.**

Assessment of any method's accuracy requires experiments. The subjects for the assessment must be master examiners, with substantial experience, tested many times, so they are unlikely to make errors through lack of training, experience or carelessness. The method itself must be sufficiently described and the master examiners highly familiar with it. The examiners must make bench notes for each comparison to document that they used this method and followed it correctly. The assessment should be carried out under optimal working conditions (i.e., state of the art equipment, anonymously, without time pressure). Finally, the crime scene evidence samples must represent the full range of the quality and quantity of information found in normal casework evidence to which the method is applied. With such controls, examiner error is minimized, and the results of the comparisons represent a measure of the accuracy of the method itself over the full range of evidence to which it is applied.

No examples of this experiment have ever been run in the 100 years since the

introduction of forensic comparison evidence in the courts. The accuracy of the comparison method is untested and unknown. At present, the experiments cannot even be performed because initial research is needed to satisfy the conditions of such an experiment. No version of an ACE method has ever been described in sufficient detail to decide whether an examiner used the method correctly, and since there are several versions of ACE, it is not clear what version should be tested. No standardized formats for bench notes or reports have been approved by the profession, and no published experiment (or proficiency or certification testing) has required the examiners to provide bench notes. There is no measure of the quantity and quality of information in crime scene evidence, so latent prints cannot be selected against any standard of difficulty or provide a guarantee that they match the range found in casework.

These problems were raised in the NAS (2009) report. The report expressed the same concerns raised here: there is no research being done to demonstrate the accuracy of the methods being used by forensic examiners. We return to this concern in Part III of our testimony. Here we illustrate the consequences for the forensic disciplines of the failures to define the method, to measure the information values of crime scene evidence, and to carry out the necessary research to demonstrate the accuracy of the method.

10. Absence of a Complete Description of the ACE Method

The forensic disciplines use an Analysis-Comparison-Evaluation method (known as ACE). ACE was first described 50 years ago as a general forensic framework, and has been gradually refined, especially in its application to fingerprint comparisons. None of the forensic disciplines has offered a complete description of each of the stages and sub-steps of ACE. None of the dozen textbook descriptions is complete enough for an examiner to follow step by step. The textbooks also differ from each other in significant details, especially those involving quality controls to minimize bias. The manual on how to carry out an ACE comparison for each forensic discipline has never been written.

11: Absence of an Official Description of the ACE Method

In Frye and Daubert court challenges to forensic comparison evidence, the courts look for evidence that both the professional community **and** the scientific community accept the method in use, and agree that it meets the requirements of their respective disciplines. Because the so-called ACE method exists in multiple forms and details, and the forensic disciplines have never approved a particular version as official, the proponents of comparison methods have not able to point to a method that has been adopted by their discipline (Cole, 2006). The NAS report speaks clearly to the lack of acceptance by the scientific community of the methods used by the forensic disciplines.

12. Absence of Validation of the Standards Required By the Comparison Method

The ACE method requires three standards, one to justify the conclusion of value, one for exclusion, and one for identification. Each standard should be defined by the profession based on physical evidence uncovered during the application of the ACE method.

The **Value Standard**, which is applied at the beginning of the analysis stage of the comparison process, assesses whether the crime scene evidence sample contains

enough reliable information (quantity and quality of detail) to match it correctly to the true donor. If the information content fails to meet the value standard, the standard states that no comparisons are to be made against that crime scene sample in order to avoid potential erroneous conclusions. The value standard rests on a physical measurement of the quality and quantity of information contained in crime scene evidence. This measurement has not been defined (see paragraph 14 below). Until the amount of information in the crime scene evidence has been quantified, the value standard cannot be validated to determine the percentage of errors it avoids. In current practice, each examiner uses his or her own subjective standard of value, which means that different examiners can (and do) reach different conclusions about the value of the same crime scene sample.

The **Exclusion Standard** is applied in the comparison stage of ACE. Because there are always differences between evidence samples, an examiner must decide whether any of those differences were not caused by distortion. If a difference did not arise from distortion, then two different people must have made the two samples, and the suspect is excluded as the source of the crime scene sample. The Exclusion Standard is explicitly stated (compared to the other two standards): if even a single difference cannot be explained by distortion, terminate the comparison and conclude that the suspect is not the source of the crime scene sample. However, the sources of distortions have neither been well defined nor measured. Without these measurements, each examiner uses his or her own subjective standard of exclusion, which means that different examiners can (and do) reach different conclusions about the same two samples.

The **Sufficiency Standard** is applied in the evaluation stage of ACE to the amount of similarity found between the two samples (assuming the crime scene sample had sufficient information, and every difference observed between the two samples is attributed to distortion). If the two samples have enough similarity so that the chance that they could have come from two different people is remote, then the examiner concludes an individualization of the suspect as the source of the crime scene sample. However, none of the forensic disciplines has developed and tested a metric of similarity, or determined how much similarity is sufficient to avoid an erroneous identification. Each examiner uses his or her own subjective standard of sufficiency, which means that different examiners can (and do) reach different conclusions about the same two samples.

None of the forensic disciplines has conducted the research necessary to quantify the three standards that underlie ACE. We have described the designs for this research (e.g., Haber and Haber, 2007; 2009), and it is neither difficult nor expensive to carry out. Without it, the standards of the ACE method on which conclusions are based are undefined, and the method itself is incapable of producing valid or reliable conclusions.

13. Absence of Evidence that Examiners Employ ACE

Fingerprint examiners in current practice are not required to document their work by recording bench notes during the examination process. A typical report contains only a conclusion.

One of the major reasons why the details of the stages and sub-steps of a comparison method have to be spelled out concerns protecting the examiner from bias.

Recent research has shown that without proper sequencing, examiners are more likely to conclude what they expected to find rather than what was really there (see Haber & Haber, 2009, for examples). The Office of the Inspector General of the Department of Justice (2006) in its report on the erroneous identification by the FBI in 2004 of Brandon Mayfield as one of the Madrid terrorists, concluded that a major contributing factor was that the FBI examiners were biased, and that the FBI failed to follow the appropriate procedures to avoid bias. The NAS report (2009) reviewed other examples where examiners were exposed to bias. The lack of a fully described manual on the ACE method leaves the forensic disciplines open to more "Brandon Mayfield" erroneous identifications by otherwise well trained examiners.

The absence of a specified ACE method and of contemporaneous bench notes mean that different examiners can (and do) follow undocumented, different steps in different sequences. Until contemporaneous, adequate notes are required, no tests can be made of the accuracy of conclusions reached by the application of the ACE method.

14. Absence of an Objective Measure of the Quality and Quantity of Information in Crime Scene Evidence

Every forensic discipline works with a range of quality of crime scene evidence, from unusable for comparison to extremely clear and informative. Without a measurable scale of the amount of information in the evidence, an objective standard of value cannot be established. The forensic disciplines have not developed an objective measure of information quality and quantity.

Without a measurable scale of the amount of information in the evidence, the difficulty level of a proficiency test or a certification test cannot be determined.

15. Absence of Evidence that the ACE method is Reliable and Valid, or has a Known Error Rate

A method to compare fingerprints (or tire tracks, or DNA) can be assessed for its reliability and for its validity. A method's reliability can be demonstrated in two ways. Master examiners apply the ACE method to a variety of latent-exemplar pairs and conclude identification or exclusion. If all the examiners reach the same conclusion about each latent-exemplar pair, the method is reliable: it produces consistent results. Reliability can also be demonstrated by asking a set of examiners to re-compare latent-exemplar pairs from their distant past casework. If the examiners reach the same conclusion today, the method is reliable. Reliability is a measure of **consistency**.

In contrast, validity is a measure of accuracy. The accuracy of the ACE method can be assessed by asking well trained examiners to compare a number of latent-exemplar pairs using the ACE method, pairs for which the true donor is known (whether the donor of each pair is the same or a different person). If the examiners reach **correct conclusions** for each pair of fingerprints (identification when the donor of the two prints is the same; and exclusion when the donor of the two prints is not the same person), the method is shown to be valid.

We have already shown that the conditions required to test the accuracy of ACE have not been met. The method is not completely described, a method has not been officially adopted by the discipline, the method does not does not include validated or objective standards, and the method does not have measures for the information content of the evidence being compared.

In addition to a lack of evidence of the validity of ACE, no evidence exists as to

the probability that conclusions based on ACE will be wrong. What is the error rate for the method? Court requirements for the introduction of scientific evidence arrived at by a scientific method (e.g., Daubert) include an established error rate, yet the forensic disciplines continue to attest to conclusions, with an unknown probability of error.

16: Current Practice with ACE Fails to Benefit Society Adequately

According to evidence from research experiments, as well as from estimates provided by forensic examiners, the two kinds of erroneous conclusions possible from forensic examinations are not weighted equally by the profession and do not occur with equal frequency (see Haber & Haber, 2009 for a detailed presentation). An erroneous identification, in which an examiner concludes that the crime scene sample and the sample from the suspect match when in fact the suspect was not the source is treated as an extremely serious mistake. The likely outcome of this error is the indictment, trial and conviction of an innocent person. The number of such instances is unknown, but the data on exoneration of falsely convicted persons suggests it is far from zero. This is a quality control problem of serious consequence for society, and it is the explicit concern of the forensic professions.

An erroneous exclusion, in which an examiner concludes the suspect is not the source of the crime scene sample when in fact the suspect was the source, is not treated as a serious error by the forensic disciplines. Erroneous exclusions effectively also occur when a case is dismissed because the method used for comparison was not powerful enough, or the examiner was not skilled enough to find the similarity. Then, the likely outcome is that guilty person remains at large to commit further crimes. The exact number of these instances is also unknown, but test and research results shows it far exceeds the number of erroneously identified innocent people. In order to avoid erroneous identifications, forensic examiners increase the number of true perpetrators they fail to identify, a one-way quality control solution that greatly weakens the value of forensic evidence for solving crimes. The forensic disciplines rarely expend effort to review exclusions, determinations of evidence of no value, or review inconclusive conclusions. These reviews should be mandatory.

Part III: The Purposes of a National Institute for Forensic Science

The consumers of forensic evidence, the citizens of the United States, would directly benefit from a public safety system committed to the highest quality of processing forensic evidence. The NAS documented an absence of quality controls and adequate scientific support across the forensic disciplines. The report concluded that the highest quality forensic services would obtain if the disciplines were regulated under a single federal agency. The report discussed the use of the Department of Justice, and several other federal agencies, and rejected each of them as lacking the forensic research expertise required, and lacking sufficient independence from the forensic disciplines. The NAS report also considered some of the federal research agencies, such as the National Institutes of Health, or the National Science Foundation, but noted that these do not have expertise in the forensic disciplines. In their place, the NAS urged that a new and fully independent Institute be created.

Expertise

The NAS envisioned a new institute with primary responsibility for regulation of all of the forensic disciplines, drawing heavily on the combined expertise of examiners,

scientists, and researchers. With this expertise, the new institute would increase the quality and regulation of training, proficiency, certification and accreditation. It would develop testing programs to demonstrate the validity, reliability, and error rate of the comparison method. It would establish a better balance of potential errors. There are no human or financial resources to do this now in the forensic disciplines, in federal regulatory agencies, or in federal research agencies.

Our testimony in this document has highlighted the absence of quality controls in the disciplines and the absence of research. Until these quality controls are in place, these disciplines will continue to offer unregulated and uncontrolled evidence to their consumers.

Independence

The importance of severing regulation of the forensic disciplines from the forensic disciplines themselves is the same as for most other programs that serve the public. Whenever regulation is based on principles that sometimes or frequently conflict with self-interest, self-interest trumps what is best for the public at large. When banks are allowed to regulate themselves, self-serving is inevitable. When stock markets are allowed to regulate themselves, self-serving is inevitable. The same with large companies, mortgage lenders, credit card companies, and a host of other entities that serve the public while regulating themselves. Independent regulation increases the effectiveness and quality of product. It also insures that the needs of the consumer come first.

The 100 year history of the forensic disciplines continues to show the inadequacy of their self-regulation in their quality control and research decisions. The forensic disciplines presently lack quality control for personnel, quality control for laboratories, or research support for their methods and procedures. The NAS report attributes these failures to the lack of independence between operations of the forensic disciplines and the quality control of the forensic disciplines.

Design and Regulation of Quality Control Procedures

The NAS report strongly noted the absence of properly designed and consistently administered proficiency tests, certification tests, validated training programs, and the paucity of laboratory accreditation programs and regulation. The principles of quality control, proficiency, certification, training, and accreditation are the same for each forensic discipline. Their design and construction can be combined so that members of each discipline work together with experts in quality control, in training, and testing and assessment. NIFS can assist in the development of cross-disciplinary methods for training, proficiency testing, certification procedures, supervision, and error correction. This strategy is highly cost effective.

Identify Existing Models of Quality Controls and Research

A few states and crime laboratories have developed standardized training curricula with periodic assessment. A few laboratories have put in place rigorous work flow controls and verification procedures. NIFS does not need to start from scratch. The interaction between examiners and experts in training programs would identify the quality measures now in place. Similarly, basic research has already been performed for DNA. That could serve as a model for the research needed in the other forensic disciplines. NIFS could serve as a center to identify these models.

Identify and Facilitate Research Needs and Funding

A forensic examiner is not trained to design research or to carry it out. Empirical research requires training in research science. Scientists rarely are trained to carry out forensic comparisons. Research on forensic comparisons requires collaboration between forensic examiners working of laboratory settings and research scientists. Little of this work can be performed in university or government settings. This collaboration has not previously occurred except in isolated instances, and the NIFS is needed to bring it about. Part of that brokering includes participation in the review of research designs, reviews of research analyses and interpretations and review of research publications.

A NIFS would help find and develop resources to fund research projects. Part of that funding would be included in the NIFS budget, and part could come from existing sources or outside sources.

Other Benefits of a NIFS

A National Institute for Forensic Sciences would be a forum for exchange of ideas between technicians and researchers, especially at the level of policy making. NIFS would be a forum for exchange between the consumers (police investigators; district attorneys, defense attorneys, criminal court judges), the legal scholars and research scientists, and the forensic examiners in the different disciplines. NIFS could participate with legal scholars and judges to help perfect criteria for admission of forensic evidence in court. NIFS could facilitate development of the interoperability of databases and computer systems within and between the different forensic disciplines. It could help solve the lack of a uniform forensic language to use in court.

In conclusion, as research scientists, ones also trained in one of the forensic disciplines, we urge the Judiciary Committee to recommend passage of legislation to create a National Institute for Forensic Sciences as soon as possible.

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