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From Police Academy Training to Criminal Investigation: Strengthening Forensic Science in Policing

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ABSTRACT: Forensic science is a critical element of policing. In the past three decades, it has become one of the most important investigative tools in criminal investigations. The importance of forensic science is operationalized by linking suspects to crime scenes, exoneration of the wrongly convicted, novel forensic technologies in cold case clearances, and many other aspects. Although modern policing is equipped with forensic resources, it faces some challenges, including investigative flaws that are heavily impacted by the neglect and misuse of forensic science. With the development of forensic science, it is necessary to take advantage of technology in investigations to the maximum extent. From police academy training to criminal investigation, there are many procedures in the process that require forensic and related professionalism. In this respect, the need to strengthen forensic education, training, and practice to improve policing is urgent. This article addresses the current situation and problems of forensic science in general procedures and proposes strategies for improving forensic science in policing.

Keywords: Criminal investigation; Crime laboratory; Crime scene investigation; Forensic science; Policing

1. Introduction

There are many definitions of Forensic Science. The working definition identifies Forensic Science as the service of science in law [1]. The importance of its role in criminal investigation is operationalized in many aspects, including linking suspects to crime scenes, exoneration of the wrongly convicted and the clearance of cold cases. For example, Carl Reed was wrongfully convicted of first-degree murder as a result of false confession, perjury or false accusation, official misconduct and inadequate legal representation. In 2005, he was exonerated by applying forensic DNA in the investigation after being in jail for 17 years [2]; the most recent known case on the longest-known miscarriage of justice in British history, Peter Sullivan was convicted in 1987 for the 1986 murder of Diane Sindall and spent 38 years in prison. In May 2025, the Court of Appeal overturned his conviction through the testing of semen samples using advanced DNA techniques that hadn't existed during Sullivan's original conviction [3]. Forensic DNA has proved to be a useful tool in criminal investigations since the late 1990s. Surprisingly, this common forensic investigative application was not used in the investigation of Carl Reed's case in 2005, but resulted in the imprisonment of an innocent person for 17 years; the Peter Sullivan case could have remained unclear if advanced DNA techniques had not been used. Forensic science's power in criminal investigation can be seen in many cases like the above.

The scope of the investigation involves probing many aspects. Therefore, it is difficult to address the inclusive dimension of investigative issues to explain its importance in policing. It is recommended that a fundamental understanding of criminalistics or forensic science is often required in the investigation [4]. For example, the scene response, evidence collection, chain of custody, evidence management, laboratory examination, and courtroom testimony are all included, but are not limited to the fundamental understanding of forensic science. Although most agencies are equipped with forensic units and specialists, the other police units and personnel are not isolated from

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forensics. Forensic intelligence in crime prevention, basic forensic applications such as evidence collection and preservation when crime scene investigation (CSI) is unavailable, police testimony in court post investigation, *etc.*, are the possible responsibilities of non-forensic police personnel. From the lessons of the two cases mentioned earlier, the lack of forensic scientific awareness may lead to wrongful convictions or cold cases remaining inconclusive. Therefore, it is urgent to advocate for strengthening forensic science to improve policing. Considering the diverse scholarly background of the readers in policing, this article advocates for strengthening forensic science in general criminal investigation rather than focusing on scientific method-based forensic laboratory examination.

2. Police Use of Forensic Science

2.1. Remarkable Forensic Achievements in Police History

Forensic science studies many disciplines, and it is a worldwide achievement of the human race. The history of forensic science can be traced back to ancient times [5], and it has assisted in many criminal investigations throughout its long history. The English word *police* was adapted from the Middle French *police* with the Latin origin *politia* [6]; thus, the police use of forensic science history in this article refers to the period from when the word *police* was first applied in France and other European countries to today's policing. From the late 17th century to the early 18th century, French police and private investigation agencies started using ballistics, fingerprinting, footwear impression casting, and anthropometrics, benefiting from the innovations by Eugène François Vidocq [7]. After formal police departments were formed in England in the 19th century, forensic science became a practical part of policing. Rogues Gallery was used in 1858 instead of using posters or photos only, serving as a collection of criminal photographs used for identification; Alphonse Bertillon invented Bertillonage which utilized the body measurements for individual identification system in 1893 before fingerprinting time; the most popular practice was the fingerprint analysis method studied by pioneers, developed by Sir Edward Henry in the early 1900s and the Henry classification system is the standard for criminal fingerprint analysis in many countries until today [8]. One of the most important figures in the historic evolution of professional police, law enforcer August Vollmer, advocated using new technology for fighting crime such as fingerprinting, polygraphy, and crime laboratories in the early 1900s [4]. From the mid-1900s to 1980s, different fingerprinting techniques and fingerprint databases, blood presumptive tests, blood pattern analysis, sobriety testing, trace evidence identification, gunshot residue (GSR) detection, and drug presumptive testing were employed in the police investigation; from the mid-1980s, DNA as the most exciting innovation in the last century started playing as the most reliable scientific approach in the investigation [9]. In addition to other forensic innovations, digital forensics and forensic intelligence have been indispensable in modern policing since the Internet developed in the 1990s [10]. Law enforcement's ability to gather evidence and construct cases based on digital footprints heavily depends on the digital forensics' capacity to extract data, search for the digital device locations, recover deleted files, trace online activities, and more. Together with forensic intelligence, these two have significantly increased the capacity for investigation, particularly in a time when digital interactions are a part of daily life.

2.2. Current Status

Different from the situation where general police practiced forensic science in early times due to the police developmental stage at that time, the current status of forensic science in policing has changed dramatically in recent years.

2.2.1. CSI Units and Personnel

The most unforgettable case in recent CSI history was the murder of Nicole Brown Simpson and Ron Goldman in 1994. The suspect was not found guilty despite considerable evidence. The evidence searches, collection, and preservation errors in the CSI performance heavily impacted the trial of this case [11]. Investigators collected the evidence in this case from one of the largest police departments in the United States (US), the Los Angeles Police Department, and their roles were as detectives. The investigative failure of this case suggested significant shortcomings in the CSI process. After this incident, it was widely accepted by US police departments to form professional CSI units to undertake CSI duties. Currently, most large police departments in the US have a professional CSI unit to collect, document, and deliver crime scene evidence to the evidence unit in the department. The CSI unit within the police departments consists of sworn officer CSI investigators and/or civilian CSI investigators [12]. In the United Kingdom (UK), after the Metropolitan Police was formed, the Criminal Investigation Department (CID) became the branch of the police force with CSI functions in the UK and many Commonwealth nations. Transiting from CID officers in the

late 1960s, civilian CSIs started replacing officers' roles in the UK [13] and other police forces around UK continued this trend. In many Asian countries, the situation is different as CSI units mainly consist of officers. For example, in Japan [14], China [15], and Pakistan [16], the criminal investigation responsibility is uniquely assigned within police departments and criminal investigation sections are set up in police departments to carry out investigative duties. In Africa, it is also the police's responsibility to conduct CSI; detectives or police officers are often the professionals to handle evidence [17–19], not trained CSI investigators. In the Republic of Colombia, criminal investigations were hampered by a lack of coordination in the gathering of evidence, which led to needless duplication of investigative efforts in the past; in light of the problem, the situation drastically changed, and the technical police are now the CSI personnel in criminal investigations [20]. In Mexico, before criminal justice reforms began in 2008, only investigative police under the control of the Public Prosecutor's Office had investigative roles; the reforms granted all police at federal, state and municipal levels investigative function and also preserved the investigative powers of the Public Prosecutor's Office [21].

2.2.2. Crime Laboratory and Personnel

The crime laboratory is another essential investigative service unit in police departments. Forensic scientists who specialize in different scientific disciplines analyze the evidence collected by the CSI units and other evidence gathered during the investigation process in crime laboratories. Modern crime laboratories often house forensic biology, forensic toxicology, trace evidence, and latent fingerprint disciplines. Some larger crime laboratories also analyze firearms and tool marks, fire and explosives, and digital evidence. The size of police departments is typically correlated with the capacity of crime laboratories. Although not always, some specialized forensic fields, including forensic engineering, forensic pathology, and forensic anthropology, are frequently used outside police departments. Usually, medical examiner or coroner offices, educational institutions, or the private sector houses these specialties. In the US, crime laboratories are established at the municipal, state and federal levels. The Federal Bureau of Investigation (FBI) crime laboratory, as a federal-level law enforcement crime laboratory, is the largest and most comprehensive forensic laboratory not only in the country but also in the world [22]. Like the US, most countries have developed and maintain their crime laboratories. In the 1990s, the British government established a system of the country's crime laboratories, naming the service the Forensic Science Service (FSS) to serve the police service. FSS was assessed as no longer cost-competitive against private-sector rivals and terminated in 2012, making England and Wales the only parts of the world with a completely privatized forensic science industry [23]. In Japan [24] and Pakistan [25], the structures of criminal and death investigation systems are similar, mainly including police forensic science institutions for criminal investigation and university institutes of forensic-related disciplines; with the exception of how much private forensic laboratories have evolved after 2005, the state of crime laboratories in China is currently similar [26]. Throughout Africa, crime laboratories are mostly operated by police departments with some exceptions [27]. For example, a small number of forensic testing laboratories reside under the Department of Health in South Africa [28]. In Mexico, forensic experts with a solid knowledge of science interpret the evidence findings as assistants of the Public Prosecutor's Office [29]. In the Republic of Colombia, crime laboratories are managed by the National Institute of Legal Medicine and Forensic Sciences, which reports to the Office of the General Attorney; the institute leads education and research in forensic medicine and forensic sciences in Colombia and Latin America [30]. The US Department of State's Bureau of International Narcotics and Law Enforcement Affairs (INL) and the US Department of Justice's International Criminal Investigative Training Assistance Program (ICITAP) provide forensic training to many neighboring countries, including the above two Latin American countries.

2.2.3. Forensic Science and Other Personnel in Criminal Investigation Procedures

CSI and crime laboratories are indeed the most essential pieces in police use of forensic science. Nevertheless, the current status of forensic practice does not solely exist in traditional settings of CSI and evidence laboratory examinations.

Forensic intelligence impacts crime prevention directly. The advantage of gathering and using data earlier in the criminal inquiry phase cannot be neglected by the police. Effective crime prevention by forensic intelligence exceeds all other forensic intervention results. One of the best practices of forensic intelligence in crime prevention is Interpol, the International Criminal Police Organization, and an intergovernmental organization, as a coordinating network that provides intelligence in preventing international crimes. As an example of this network, the Interpol Face Recognition System contains thousands of criminal facial images contributed from member countries, and this system has identified over one thousand criminals, persons of interest, or missing persons so far [31]. With the development of internet

technology, the establishment of databases, the wide use of biometrics and digital surveillance, and the convenient information exchange through networking, many local police departments have developed forensic intelligence divisions to assist in crime prevention and criminal investigation.

Basic investigative techniques are used daily by police officers in screening for suspicious crimes. Body-worn cameras, license plate readers, police drones, K9s, breathalyzers, portable substance detectors and explosive screening devices are, today, common police equipment. The investigative techniques based on the policing equipment are usually performed before or at the preliminary investigation phase by officers, not necessarily carried out by CSI personnel or forensic scientists. It follows then that the proactive use of investigative science is a basic skill for police officers in their daily duties in modern policing.

Forensic communication bridges non-forensic officers and forensic service units to provide a convenient path for the investigative process, especially in follow-up investigations. After the evidence is submitted to crime laboratories, the detective must regularly follow up on the specific case. It is not uncommon that new evidence comes to investigative attention during the follow-up investigation. At this stage, normally, the CSI unit has completed its duty at the crime scene. Under these circumstances, besides evidence collection and preservation, the detective or other non-CSI/forensic officers superintend the communication with crime laboratories to get professional instruction on handling the new evidence. During the crime laboratory evidence examination, forensic scientists routinely take days or weeks to work on the evidence to provide professional opinions or issue reports. At this point, detectives actively collaborate with crime laboratories rather than passively awaiting results; they often communicate with crime laboratories and provide clues for them efficiently, using proper approaches and connecting with the network.

It is commonly believed that when the case proceeds to prosecution and trial, police are free of forensic responsibilities because the investigative results have been concluded with their efforts. In criminal justice, common sense never equals justice. CSI personnel and forensic scientists are often called in the post-investigation procedures, particularly in the trial for expert witness testimony. The testimony is not just about stating what the results of forensic analysis were, but more about explaining to the judge and jury what those results mean and how the results were concluded. Plain language is used in testimony instead of forensic professional language; sometimes demonstrative methods such as photos, whiteboard drawing, or animation reconstruction are employed together with the testimony to help audiences better understand the evidence.

3. Problems

Over the long course of history, there have been challenges to overcome in CSI and forensic science, including the constitutional rights of citizens, evidence collection, preservation, crime laboratory analysis, expert witness testimony, *etc.* As the forensic disciplines are broadened with the growth of scientific technology, the forensic responsibility of detectives and other non-forensic officers is built with the complexity of investigations, more problems such as the general forensic science education and training in policing, the inter- and intra-communication, and collaboration have arisen. The issue remains that despite overcoming these considerable challenges, forensic science's interface with policing leaves much to be desired. If forensic science is expected to make policing better by producing more valid (and more just) outcomes, but if the science is invalid, or simply produces more errors than it should, then its contribution to the policing profession is diminished.

3.1. Forensic Education and Training

CSI is the start of the application of forensic science in criminal investigations. It determines the evidence quality and integrity at the beginning of the criminal investigation process. An overview of the CSI composition in its current status varies in different police departments, with either civilian-dominated or officer-dominated units. The qualifications to be a crime scene investigator are also different in the job market. Many entry-level civilian CSI positions require a high school diploma or equivalent with one year of relevant work experience. After the civilian investigators are employed, the agency offers between one month and one year of professional training until the investigator is certified or licensed. Detectives usually fill sworn officer CSI positions. Despite that either civilian or detective investigators are trained or have work experience in the field, one concern other than training or experience is the educational background of the investigators [32]. Did they receive systematic education in CSI or general forensic science? CSI is not only collecting evidence and placing the evidence in evidence bags, but there is also a lot of scientific knowledge that needs to be understood by investigators. They could encounter numerous types of evidence, and the vigorous collection process obliges proper evidence-handling methods to avoid contamination or destruction. Every

crime scene is unique, and the CSI process is not a protocol that can be applied to all crime scenes. The best practice is to integrate field experience with a solid background of knowledge to work on complex crime scenes. CSI personnel are the first and only group of people who have direct access, closest observation and eligible right to collect evidence at crime scenes; the investigation risks dire consequences if it lacks professionalism. Furthermore, when testifying in court, investigators are expected to answer all possible questions from both parties. There is no doubt that investigators are capable of answering empirical questions based on the investigation they have performed. But without a solid knowledge foundation, they may fail to explain the scientific theory of why the evidence was handled in such a manner, eventually discrediting their professionalism.

In addition to the status of continuing education and in-service training in forensic science, which has been identified as a significant issue for many years [33], the concern of forensic scientists in forensic legal training has been paid attention to [34]. According to the position level, forensic scientist positions require solid science educational backgrounds, such as physics, biology, chemistry, and work experience. As part of the career development plan, forensic scientists are provided with professional training in their respective fields [35]. Compared with career professional training in forensic science, forensic science training in legal aspects, such as rules of evidence and criminal law procedures, lacks supporting resources and is rarely reported. It cannot be denied that through work experience, forensic scientists eventually gain knowledge and working skills in legal procedures, general training in criminal justice procedure is still needed to ensure that the crime laboratory examination and other responsibilities of forensic scientists do not disobey or violate justice rules.

In a criminal investigation, non-forensic police personnel include different roles. Since most of them are not directly working in forensic roles, their professionalism in the forensic context is often neglected in the training and practice. For example, although the criminal investigation-related course, which normally includes a limited portion of forensic science, is taught to police cadets, the forensic science introduction course, an entry-level course for police officers to gain a rudimentary knowledge of forensic science, is not included in the common police academy curriculum in some large academies [36,37]. Non-forensic police personnel usually do not have access to forensic training due to their expertise, time, departmental resource allocation, and other reasons. However, in many investigative procedures, it is the non-forensic police's responsibility to direct and coordinate the follow-up investigations. Any unprofessional direction or coordination will put the evidence on the line in the wrong forensic direction and cause unpredictable troubles. Looking back on Carl Reed's case, it was a representative case of this general problem. That being the case, the lack of forensic science education and training does not satisfy today's police academy training and police practical needs, as forensic science is of vital importance in many investigative procedures.

3.2. Funding for Forensic Science

Beyond all doubt, the major funding for CSI and crime laboratories is from the government's resource relocation. There are also other funding resources in forensic science, including opportunities and priorities for crime laboratories. For example, the US National Institute of Justice (NIJ) has funded many forensic science projects in the past years; the Paul Coverdell Forensic Science Improvement Grants Program has funded more than 100 states and 500 local government forensic services units in the past two decades. It is an ideal expectation for crime laboratories to seek and obtain funding from the government or other resources, yet there is a common phenomenon that many crime laboratories are short of funding for equipment maintenance and updates, new methods development, and training [23,25,38], a large extend due to insufficient resources and realistic demands. Increased demand for forensic services, coupled with laboratory funding problems, has resulted in an obstacle in the justice system, with laboratory backlogs increasing [39]. Along with the unbalanced financial resources and realistic demands, the shortage of staff [39] might be another reason for the funding problem in crime laboratories as the hiring of more staff requires funds, and with the caseload current staff are not motivated to seek funding as the project proposal and other application tasks are heavy add-ons to the current workload. In a most recent report published by the Westminster Commission on Forensic Science, it pointed out that in UK, the budget cuts on forensic services and increased police caseloads resulted in over 30,000 dropped prosecutions in the past three years; and the report called for the establishment of a new independent national forensic institute to restore scientific rigor, impartiality, and public confidence [40].

3.3. Communication and Collaboration

Criminal investigation is a complex process with many procedures and different investigative units participating. Communication and collaboration start as early as the preliminary investigation stage. One critical legal issue in CSI is

the citizens' constitutional rights against unlawful searches, which indicates that the lawful search of evidence is a prerequisite for conducting evidence-related activities in the investigation. As today's CSI unit is not always composed of police, communication between police and civilian investigators regarding legal search is paramount, considering civilian investigators do not have any rights to process legal search documents. Beyond the legal search issue, crime scene management requires a significant task component of investigation because the evidence in crime incidents should be handled professionally without any excessive disturbance from legal authorities present at the scene. Communication and collaboration skills have been studied by an established method, and it is suggested that they are common issues impacting the task execution of the CSI [41]. Upon the completion of CSI, evidence is subjected to the crime laboratory examination. The communication and collaboration gap between police and crime laboratories has been identified as a problem [42]. Efficient communication and collaboration between police and forensic scientists, between different agencies, are valuable in this process for avoiding and clearing dead ends in the investigation. The information and evidence collected during the follow-up investigation by police, the request for time-sensitive crime laboratory examination, the questionable evidence discovered during the examination, the evidence of connection found in other cases, the across-department forensic database information sharing, and other messages all may provide clues to find a breakthrough for the investigation through communication and collaboration. After the laboratory examination, the most common format for crime laboratories to deliver the evidence analysis results is written reports. Communication between police and forensic scientists is essential in this step because police and other legal practitioners may not have the same understanding throughout all spectra of sciences, which has been an issue in criminal justice for over a decade [43]. Forensic scientists are accountable for courtroom testimony as the consequential responsibility of laboratory examination. On the other hand, other legal personnel also participate in the forensic science communication process because they lead communication through their questions in courtroom procedures. Due to the complex nature of science, the communication of forensic science in court is not surprisingly a contemporary issue in forensic science. Over half of the hundreds of forensic practitioners and researchers surveyed worldwide agreed that forensic expert testimony has contributed to wrongful convictions due to invalidated forensic science [44]. This data is a warning sign of the communication problem regarding forensic science in courtrooms between legal personnel.

3.4. Moral Character

Police and forensic scientists are two professions with perspective powers in criminal investigation. A code of conduct in each profession explains the acceptable behavior required to adhere to ethical norms and provides a framework for rules of conduct in policing and forensic examination. With numerous wrongful convictions and cold cases, it is not the case that a code of conduct in the documented ethical rules certainly ensures that police or forensic scientists conduct objective investigations on the case. It is the high moral character of these personnel that ensures objective investigation and is most beneficial to the criminal investigation society. Poor moral character dominated police misconduct and forensic scientists fabricating evidence are etched in the public's distrust of policing. The false confession, perjury, false accusation, official misconduct, and inadequate legal performance in Carl Reed's wrongful conviction is only one of those thousands of cases led by police poor moral characters; the misconduct by forensic scientist Annie Dookhan who reported on laboratory tests that were not actually tested, caused prosecutors to drop over 20,000 drug cases [45]. High moral character is beyond work ethics, and it should be an inner sense of legal personnel who play roles in criminal investigation and forensic examination. Unfortunately, this valuable essence is not frequently assessed, and the negligence of high moral character may cause the potential risk of evidence fabrication, wrongful conviction, and other misconduct.

4. Strategies

Indeed, the problems of forensic science came to the fore as it is becoming more and more widely used in criminal investigations. Based on the root of the problems addressed above, some strategies are offered as the following to make the best use of forensic science value in criminal investigations.

4.1. Adopting the Forensic Science Introduction Level Course in the Police Academy Curriculum

This is an initiative to strengthen forensic science in policing at an early stage. Police cadets are not assigned a specific role in policing. Yet, an introductory-level course does not require a strong forensic background in previous education. Still, it provides insights to new learners and lays a foundation for forensic encounter situations in their future careers. The purpose of the police academy is to give police cadets the required education and skills to help them become

police officers. With a fundamental education in forensic science, when they encounter forensic-related tasks in their upcoming officers' roles, they will be more confident to communicate and collaborate with others or find other solutions to accomplish the tasks.

4.2. Improving Forensic Education for Crime Scene Investigators and Continuous Training for Forensic Scientists

This is a strategy to cement forensic science professionalism, and allocating funding opportunities and other financial support for CSI and forensic science units is a direct solution to improve forensic science service in policing. Although the data only included regional CSI surveys, it suggested that there were disparities in the recruitment requirement, education and consistency training among crime scene investigators [46], which concurs with what the authors observe in this field, that some position requirements of the recruitment and training process are not enough for crime scene investigators to overcome complex crime scene situations. A practical solution is to improve basic education in CSI. For example, both authors' institutions offer forensic science certificate education to criminal justice undergraduate or graduate students to help them get ready for future careers. Also, continuous training for forensic scientists should include not only professional training in laboratory examinations, which is emphasized in practice, but also legal aspects such as evidence authentication, expert testimony, criminal law procedures, and rules of evidence, which are a missing piece but vital to the criminal justice system. The legal aspects of training for forensic scientists could be provided by other legal roles in criminal justice systems, especially the legal roles in court proceedings. Financial support is the foundation to overcome the staff shortage, outdated equipment, training needs, and other internal problems. Government budget, private funding support, and funding opportunities are all possible sources to contribute to this strategy.

4.3. Granting Forensic Training Access and Encouraging Non-Forensic Police to Take the Training Opportunity

This solution is not to push non-forensic police to master specific forensic examination techniques, but to help them interact with forensic colleagues and build a network, understand disciplines, and get familiar with the current forensic methods in use. The recommendation for large departments with a crime laboratory is to have open laboratory days for non-forensic police to visit the laboratory and offer forensic lectures to them, or to have forensic scientists deliver basic forensic training to non-forensic police and the credits can be used toward annual professional development credits; for police departments without forensic resources, officers can be encouraged to take open training resource provided by professionals. For example, the NIJ Forensic Technology Center of Excellence provides forensic training to criminal justice and forensic science societies via a free online course system.

4.4. Emphasizing Communication and Collaboration Skills Development in Forensic Science

This is a strategy to improve communication and collaboration skills in crime scene investigators, forensic scientists, police officers, and other legal roles. Efficient communication directs the personnel working on forensic issues in the correct direction to facilitate the investigation. Collaboration between different units removes dead ends in the investigation process and improves the possibility of clearing the case. This strategy can be led by the chief authority of the investigation and the heads of different investigative units and briefed to each participant repeatedly throughout the investigation process. Effective communication in expert witness testimony can be coordinated by other legal roles in court proceedings to ensure the decision-making audiences in court receive and understand the subject matter.

4.5. Assessing Moral Character as Part of the Performance in CSI and Forensic Science

Good moral character is a necessary condition for crime scene investigators and forensic scientists to be impartial and objective in implementing justice. Moral character assessment is complementary to ethical training in each profession. Currently, ethical codes and training are usually provided by professional associations. Also, professional associations master the variables and parameters of the profession. It is perhaps not an unreasonable solution to suggest that those operating in the field maintain a form of accreditation through examination that meets the standards prescribed by the professional associations.

5. Conclusions

Forensic science has always been a part of policing. Overseeing the police use of forensic science history, the rapid development of science and the change of investigative view on evidence make forensic science indispensable in modern policing. Through the lessons of wrongful convictions and other misconduct incidents, some problems,

including forensic education and training, funding in forensic science, communication and collaboration, and personnel's moral character, are reflected in forensic science and policing. By addressing the underlying causes, the proposed strategies can be effectively implemented to overcome the problems. From police academy training to criminal investigation, the justice system looks forward to an all-sided effort to strengthen forensic science in policing. To support this all-sided effort, researchers, practitioners, legislators, and other stakeholders should focus on implementing the proposed strategies, with more detailed training protocols for personnel, adjustments in resource allocation, and targeted legislative initiatives.

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