

# Professional Review and Commentary<sup>a</sup>

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<sup>a</sup>The views expressed are those of the authors and do not necessarily reflect the view, the position, or the policy of *Forensic Science Review* or members of its editorial board.

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*Forensic Science Review*'s Professional Review and Commentary section highlights contemporary issues and events in the profession of forensic science. To contribute updates or commentary or to recommend books for review, please contact Mike Baylor ([mbaylor@nc.rr.com](mailto:mbaylor@nc.rr.com)), Jeff Teitelbaum ([Jeff.Teitelbaum@wsp.wa.gov](mailto:Jeff.Teitelbaum@wsp.wa.gov)), or Ray Liu ([rayliu@uab.edu](mailto:rayliu@uab.edu)).

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## FORENSIC SCIENCE AROUND THE WORLD

### First Thai Forum of Forensic Science Conference (TFFS Conference) — Thailand

The Forensic Science Program of the Prince of Songkla University in Hat Yai, Songkhla, Thailand, plans to hold the first Thai Forum of Forensic Science Conference (TFFS Conference) June 23–24, 2016. The TFFS Conference will be the first to bring together both academicians and practitioners from all the major Thai forensic institutions. The conference aims to be a forum to share research and casework experience and to discuss laws and policies regarding the use of forensic science and forensic education in the country. It will cover all areas of forensic science; workshops on cutting-edge technologies, such as next-generation sequencing for forensic DNA analysis, will be offered to participants. [Source: Dr. Wongkot Phumphumirat, director of the Forensic Science Program, Prince of Songkla University]

### 2015 National Drug Threat Assessment Released — United States

The 2015 National Drug Threat Assessment (NDTA) was released in October by the US Department of Justice's Drug Enforcement Administration (DEA). It is a comprehensive assessment of the threat posed to the United States by the trafficking and use of illicit drugs. The report found that drug overdose deaths are the leading cause of injury death in the nation, ahead of deaths from motor vehicle accidents and firearms. In 2013, more than 46,000 people in the United States died from a drug overdose and more than half of those were caused by prescription painkillers and heroin. The threat level for each drug was determined by strategic analysis of the domestic drug situation during 2014, based on intelligence, law enforcement, and public health data that was available for the period.

The 2015 NDTA also found that Mexican transnational criminal organizations are the biggest criminal drug threat to the United States, and are the primary suppliers of heroin, cocaine, methamphetamine, and marijuana. These groups are responsible for much of the extreme violence seen in Mexico, as they battle for turf and attack public officials and innocent civilians. Here in the United States, affiliated and violent gangs are a significant threat to the safety and security of our communities. They profit by buying drugs from regional Mexican criminal affiliates and then supplying American communities with these dangerous drugs. Other 2015 NDTA findings:

- Heroin availability is up across the country, as are abusers, overdoses, and overdose deaths. A just-released survey by the Substance Abuse and Mental Health Services Administration (SAMHSA) showed a 51% increase between 2013 and 2014 in the number of current heroin users (people who reported using heroin within the last 30 days). Heroin seizure amounts in the United States have nearly doubled since 2010, from 2,763 kg to 5,013 kg in 2014.
- Since 2002, prescription drug deaths have outpaced those of cocaine and heroin combined. Abuse of controlled prescription drugs (CPDs) is higher than that of cocaine, methamphetamine, heroin, MDMA, and PCP combined.
- Every day in the United States, over 120 people die as a result of a drug overdose. In addition, the number of deaths attributable to CPDs has outpaced those for cocaine and heroin combined. The data show that some opioid CPD abusers appear to be initiating heroin use, which then contributes to the increased demand for and use of heroin. As a result, CPDs and heroin are ranked as the two most significant drug threats in the United States.
- Fentanyl, a synthetic opioid 25 to 40 times more potent than heroin, has caused more than 700 deaths in the United States between late 2013 and early 2015. Fentanyl is sometimes added to heroin batches, or sold by itself as heroin, unknown to the user.
- Methamphetamine distribution and abuse appear to significantly contribute to violent crime and property crime rates in the United States. In addition, the data shows that both cocaine distributors and users appear to seek out methamphetamine as an alternative when cocaine availability levels decline.
- While marijuana is the most widely available and commonly used illicit drug and remains illegal under federal law, many states have passed legislation approving the cultivation, possession, and use of the drug within their respective states. Marijuana concentrates, with potency levels far exceeding those of leaf marijuana, pose an issue of growing concern.
- Synthetic designer drugs from China continue to wreak havoc in the United States, in particular synthetic cannabinoids (e.g., "Spice", "K2") and cathinones (e.g., "bath salts", "molly").

The NDTA provides an up-to-date look at the many challenges local communities face related to drug abuse and drug trafficking. Highlights in the report include drug abuse and trafficking trends for drugs such as heroin, prescription drugs, and the hundreds of synthetic drugs manufactured outside the United States and imported into this country.

The assessment factors in information from a host of data sources such as drug arrests, drug purity, laboratory analyses, information on the involvement of organized criminal groups, and survey data provided to DEA by 1,105 state and local law enforcement agencies across the country. The NDTA document can be downloaded at: [www.dea.gov](http://www.dea.gov). [Source: DEA Public Affairs News Release]

### Fingertip-sweat Analyzer May Yield Evidence on Cause of Death – *United Kingdom*

Discussions to extend the pilot launch of a new mobile drug-screening technology pioneered by British company Intelligent Fingerprinting to nine coroners' areas are under way following presentation of evaluation data to the recent Coroner's Society of England and Wales Annual Conference. The trial is validating a new noninvasive drug-screening technique that could help coroners prioritize when costly postmortems are needed and enable earlier release of the deceased for burial.

Last year 223,841 deaths were reported to coroners in England and Wales. Of these, 40% required a full postmortem examination to assist in determining the cause of death. A postmortem often includes toxicology tests to determine the presence of any drugs that might provide an insight into the cause of death. Intelligent Fingerprinting's drug-screening device collects and analyzes sweat from a person's fingertip to provide information on recent drug use, with results in under 10 minutes. It could potentially be used within mortuaries to provide early evidence of drug use. The cutting-edge technology detects the metabolites within a person's fingertip sweat. Metabolites can be detected in sweat for many hours after the initial substance was ingested, providing a valuable insight into the drugs that may have been used immediately prior to death.

The Coroner's Society Conference was shown data from a pilot program being conducted by Intelligent Fingerprinting and the Sheffield Legal-Medico Centre. This trial, funded by the government agency Innovate UK, is testing potential use of the drug-screening device by coroners and mortuary staff to gather early evidence on cause of death.

With the relatives' consent, 180 fingertip-sweat samples collected from the Sheffield mortuary—representing a wide range of categories of death and preservation of bodies—were tested in Intelligent Fingerprinting's laboratory for the presence of opiates. A correlation of over 90% was achieved in samples analyzed using Intelligent Fingerprinting's technology compared with postmortem toxicology results. Samples are now being tested in real time in the mortuary using the company's portable drug-screening device; first results show a similar correlation to conventional postmortem toxicology results for opiates and cocaine. [Sources: *Coroners Statistics 2014 England and Wales*. Ministry of Justice Statistics bulletin, 14 May 2015, and *Intelligent Fingerprinting Press Release*]

## COMMENTARY/UPDATE

### Organization of Scientific Area Committees for Forensic Science (OSAC) News

*Sharon Nakich*

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The July 2015 issue of *Forensic Science Review* detailed the origin of the Organization of Scientific Area Committees for Forensic Science (OSAC). To summarize, in 2013 the US National Institute for Standards and Technology (NIST) and the US Department of Justice (DOJ) signed a memorandum of understanding for a new initiative to strengthen the practice of forensic science. OSAC, which is administered by NIST, fosters the development and promotion of technically sound, consensus-based documentary standards and guidelines that can be used to strengthen the practice of forensic science. The OSAC consists of a Forensic Science Standards Board (FSSB), three resource committees, five scientific area committees, and 24 subcommittees (**Figure 1**), and has a total of 542 members from various disciplines and organizations including federal, state, and local government, private sector, and academia.

#### Standards and Guidelines Projects

In early 2015, OSAC published priority action reports generated from each of the 24 subcommittees. In sum, the priority reports referenced 364 separate standards projects that the OSAC intends to tackle, within each discipline and SAC (**Table 1**). While it may take some time to funnel these through the voluntary consensus standards process, the hope is that many of these standards projects will ultimately reach their intended destination — publishing by a standards development organization (SDO) and placement on the *OSAC Registry of Approved Standards* and the *OSAC Registry of Approved Guidelines*.

Once populated, the *OSAC Registry of Approved Standards* and the *OSAC Registry of Approved Guidelines* will offer forensic science service providers access to a uniform set of standards that support scientifically sound and statistically valid test results, laboratory reports, and courtroom testimony. The consensus-based standards and guidelines that will be approved for posting online should be considered by crime laboratories and forensic science service providers, accrediting bodies offering accreditation services to the forensic science industry, and officers of the court when evaluating processes employed and testimony from forensic scientists.

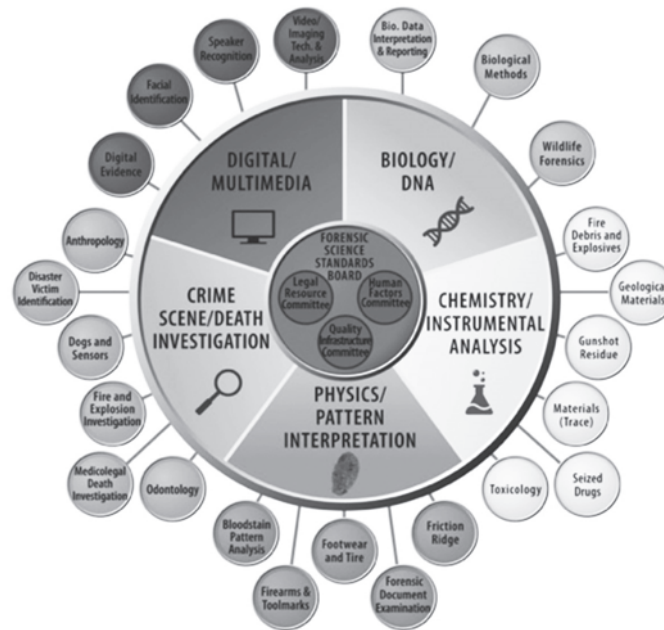


Figure 1. Organization of Scientific Area Committees (OSAC) units.

Table 1. Pending Standards Projects per Scientific Area Committee

Scientific area committee	Projects
Digital/Multimedia	80
Crime Scene/Death Investigation	51
Chemistry/Instrumental Analysis	88
Biology/DNA	51
Physics/Pattern Interpretation	94

The Materials (Trace) Subcommittee, the Seized Drugs Subcommittee, and the Fire Debris and Explosives Subcommittee have already proposed the initial standards they would like to route through the *OSAC Standards/Guidelines Registry Approval Process*, which is the process through which existing published standards (not standards under development) are routed through the OSAC for review of its members and by the public. Five standards were made available for open comment for 30 days (public comment period closed in September 2015) to solicit comments on whether the standard or guideline should be included on the OSAC Registry. Following subcommittee comment adjudication and deliberation of these comments, the Chemistry/Instrumental Analysis SAC (the unit that oversees those subcommittees) and the Forensic Science Standards Board (FSSB) will also weigh in. Once populated, the OSAC registries will be located at: <http://www.nist.gov/forensics/osac/osac-registries.cfm>.

### Identifying and Publishing Research and Development Needs

The FSSB recently announced that the OSAC will document practitioner feedback that arises during standards gaps analysis, particularly regarding research and development needs. The OSAC will publicly share those research gaps with the broader community to help inform the forensic science community on where additional scientific inquiry is warranted. This research gap list will encompass inputs from all of the 24 subcommittees and 5 SACs.

### OSAC Momentum

While OSAC does face some challenges, including facilitating progress in a mostly virtual environment, OSAC members are energized, and excited to be working among peers who are “uniformly dedicated to the mission, and working towards that goal with enthusiasm” (OSAC member quote).

OSAC will pick up further momentum at the second full OSAC meeting on January 25–29, 2016, and continue that momentum at the public reporting meeting February 22–23, 2016, at the American Academy of Forensic Sciences meeting. All 29 presentations and questions from the audience will be webcast live, and archived for future viewing. The OSAC invites all to attend and participate.

Continued feedback and willingness to collaborate will be critical to achieving OSAC’s mission. Please contact [forensics@nist.gov](mailto:forensics@nist.gov) with program questions or to provide feedback.





**Figure 2.** Forensic Science Standards Board meeting (Dec. 3, 2015) at the DEA Special Testing and Research Laboratory.

### **International Symposium on Forensic Science Error Management — Detection, Measurement, and Mitigation**

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United States of America*

On July 21, 2015, Dr. Willie E. May, Under Secretary of Commerce for Standards and Technology and director of the National Institute for Standards and Technology (NIST), welcomed forensic science experts from all over the world to the International Symposium on Forensic Science Error Management — Detection, Measurement, and Mitigation. He charged the attendees to discuss collective efforts to strengthen the science behind the evidence used in our criminal justice systems. Dr. May emphasized the critical importance of these conference discussions for citizens, and said that “confidence in the collection, review, and analysis of evidence by our law enforcement, and the ability of courts to fairly judge the strength of that evidence, is the bedrock of any civilized society.”

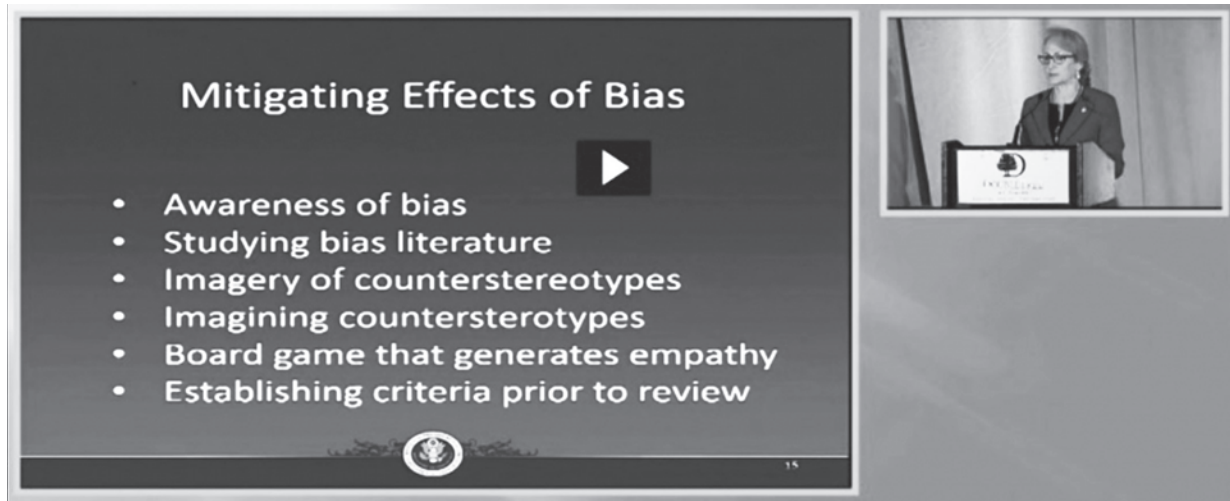
Dr. May referenced recent headlines that enforce the importance of this priority issue and validate assertions made in the 2009 National Academies of Sciences (NAS) *Strengthening Forensic Science in the United States: A Path Forward* report that forensic science lacks strong standards and protocols. He said that the large symposium attendance (and significant participation in other activities) demonstrated there is now a clearer community understanding of the need for substantial research to validate the basic premises and techniques of forensic science, assess limitations, and discern sources and magnitude of error. Dr.

May described some of the efforts under way, including the National Commission on Forensic Science (NCFS), the NIST Center of Excellence to Improve Statistical Analysis of Forensic Evidence, and the Organization of Scientific Area Committees for Forensic Science (OSAC).

The International Symposium took place July 20-24, 2015, in Arlington, VA. It consisted of eight panels, 106 individual speakers, and 19 posters that addressed ways to tackle the three stated error management challenges. The conference facilitated critical dialogue on taboo topics, candidly addressing the root causes of forensic science errors and using this knowledge to develop solutions to help identify and reduce them. The program contained eight tracks: death investigation, crime scene, human factors, digital evidence, legal factors, quality assurance, laboratory management, and criminalistics.

During the July 21 plenary, Dr. Jo Handelsman, associate director for science of the White House Office of Science and Technology Policy (OSTP), told the audience that it is her office’s goal to use the power of the White House, President Obama’s voice, and the administration’s support to help bring about a positive revolution in forensic science (**Figure 3**). She said that it would be unacceptable not to do so. She told the symposium attendees that they are part of “the future of justice in this country ... [who] play a role in assuring that the future is on a solid, fair, equitable, and scientific footing.”

Dr. Handelsman discussed various cases and studies in forensic science that illuminate the need for scrutiny of consistent data and methods, and a high degree of certainty in results. She also highlighted the need to move to an era where judges are supportive of evidence that is submitted — not because of precedence, but because the



**Figure 3.** Dr. Jo Handelsman discusses bias in forensic science.

techniques used to collect and analyze that evidence were reliable, established, and based in science.

Dr. Handelsman also addressed the issue of bias, and the need to quantitatively reduce bias in this field. Among the methods she outlined for doing this were: generating awareness of the issue, exposing practitioners to the bias literature, and establishing criteria prior to review.

Dr. Handelsman concluded her talk by echoing Dr. May's statements that it is critical for the forensic science community to rectify the problems facing it. For example, she hopes that many conference attendees are already engaging in the processes managed by the OSAC, because they "collectively will lead to true standards in forensic science, new methods in forensic science that meet these standards, and will ultimately bring an entirely new look to forensic science in the court. The White House and I, imagine all of you here, believe that the cost of not doing so is simply too high."

Following Dr. Handelsman, Brandon Mayfield (**Figure 4**), who was mistakenly identified through an inaccurate fingerprint analysis as the 2004 Madrid, Spain, train bomber, and Steven Wax, the attorney who represented him, provided the keynote address. Chronicling Mr. Mayfield's ordeal, the speakers said it began when three senior examiners, each with 30 years of experience, analyzed Mr. Mayfield's fingerprint against the print found at the scene of the bombing, identified 15 points, and indicated it was a 100% match. When the print later underwent a second independent review, that practitioner also declared that it was a conclusive match.

Mr. Mayfield said that during his detainment, he feared that this terrible mistake could lead to his being sentenced to death, a lifetime in prison, or threats to his family. Ulti-



**Figure 4.** Brandon Mayfield, left, and Steven Wax address the conference during their keynote speech.

mately, more accurate analysis of the bombing-scene print allowed the Spanish government to correctly identify an Algerian national, Ouhmane Daoud, as the culprit. Subsequently, Brandon Mayfield was released from prison and his case dismissed. The errors that led to Mr. Mayfield's harrowing experience, the speakers concluded, were totally avoidable.

Videos of each of the keynote and plenary sessions as well as copies of the presentations can be found at [www.nist.gov/director/international\\_forensics\\_home.cfm](http://www.nist.gov/director/international_forensics_home.cfm).

The next symposium is scheduled for May 2017. Watch for a "Save the Date" announcement coming in December on the NIST forensic website, [www.nist.gov/forensics](http://www.nist.gov/forensics).

### **53rd Annual Meeting of The International Association of Forensic Toxicologists (TIAFT)**

*M. A. LeBeau\**  
*U.S. Federal Bureau of Investigation*  
*Laboratory Division*  
*Quantico, Virginia*  
*United States of America*

The 53rd annual meeting of The International Association of Forensic Toxicologists (TIAFT) was held from August 30 to September 4 in Florence, Italy. Nearly 700 delegates representing 63 countries attended the scientific conference. Of those, 53 delegates from developing countries were able to attend, in part due to the gracious sponsorship of the organizers and the TIAFT organization.

The organizers of the 2015 meeting were Elisabetta Bertol from the University of Florence and Donata Favretto from the University of Padova. They and their team of over 30 volunteers ensured that the scientific program was of the highest quality, the social program offered ample networking opportunities, and that all attendees had a memorable visit to the birthplace of the Renaissance.

The meeting was held at the Palazzo dei Congressi, an 18th-century villa built by the Stozzi family that has been beautifully restored to comfortably host a conference of this size. The villa is surrounded by a centuries-old garden and was easily accessible from the heart of the city.

The six-day agenda began with an opening ceremony in the Salone dei Cinquecento of the Palazzo Vecchio, the town hall of Florence. Built in 1494, the Salone dei Cinquecento is a beautiful chamber that features works of many famous Italian artists, including Michelangelo and Leonardo da Vinci. The highlight of the opening ceremony was a lecture by former TIAFT President Marilyn Huestis, National Institute on Drug Abuse in the United States, where she assumed the role of Lucrezia Borgia, one of the most infamous women in Italian history. The ceremony was followed by a Renaissance Show on the Piazza della Signoria in front of the Palazzo Vecchio. Then attendees were treated to a welcoming reception at the Palazzo Borghese.

The scientific session began with a fascinating lecture by Giovanni Serpelloni, University of Florence, who spoke on the neuroscience behind addiction and the important role that forensic toxicology plays in our understanding of the topic. Over the following days, scientific sessions continued and focused on topics such as toxicokinetics, alcohol-use markers, new psychoactive substances, driving under the influence, antidoping, poisoning case reports, *in vivo* forensic toxicology, hair analysis, new technologies,

\* President-elect of TIAFT.

and postmortem forensic toxicology. At the midway point of the meeting, a half-day excursion allowed attendees to experience the Italian countryside in the Chianti Hills with dinner served in Badia a Passignano, an 11th-century abbey in the town of Tavarnelle Val di Pesa.

The closing lecture was by Steven Karch of Berkeley, CA. Dr. Karch discussed the events surrounding Hurricane Katrina, which hit New Orleans in late August 2005. Following the TIAFT Business Meeting, the conference concluded back at the Salone dei Cinquecento with a remarkable social dinner and musical entertainment. A number of awards were also presented during the evening, including three Young Scientist Committee Awards: Best Oral Presentation, Brigitte Desharnais (Canada); Best Poster, Verena Angerer (Germany), and Best Published Paper, Michael Poetzsch (Switzerland). Further, the 2015 TIAFT Achievement Award went to Markus Meyer of Germany and the Alan Curry Award was presented to Pascal Kintz of France. All attendees had a magnificent, rewarding week in Florence and look forward to next year's meeting in Brisbane, Australia, from August 28 to September 1.

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### **The 2015 Impression, Pattern, and Trace Evidence Symposium (IPTES)**

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*Center for Forensic Sciences*  
*RTI International*  
*Research Triangle Park, North Carolina*  
*United States of America*

RTI International, the National Institute of Justice (NIJ), and the Forensic Technology Center of Excellence (FTCoE) sponsored and hosted the 2015 Impression, Pattern, and Trace Evidence Symposium (IPTES) August 25–27 in San Antonio, TX. This was the first joint symposium to promote collaboration and enhance knowledge transfer for the impression, pattern, and trace evidence forensic science communities.

The IPTES was designed to bring together practitioners, academicians, and researchers to enhance information sharing and promote collaboration among the impression, pattern, and trace evidence professionals in both the law enforcement and legal communities. An audience of approximately 600 attended the event both onsite and online, which featured presentations from leading experts in their respective fields. Participants were recognized from 22 different countries (17 countries represented for



onsite participants; 16 countries represented for online participants): Australia, Brazil, Canada, France, Greece, India, Israel, Liberia, Malaysia, Mexico, Nigeria, Pakistan, Philippines, Portugal, Singapore, Switzerland, Taiwan, Trinidad and Tobago, Turkey, the United Arab Emirates, the United Kingdom, and the United States, including Puerto Rico and Washington, DC.

The IPTES included 9 half- and full-day workshops on the first day, followed by two additional days during which there were 2 keynote addresses, 4 plenary sessions, 36 posters, and 52 oral presentations. The IPTES, with over 100 presenters, was a unique forum that combined onsite participation with an online, interactive presence during many of the sessions. The workshops and posters were available only to those participants attending onsite. The FTCoE continues to provide access to the keynote, plenary, and oral presentations through archived recordings available at <https://forensiccoe.org/Community-Involvement/NIJ-IPTES-Symposium-2015>. The presentations represented

topics that included the latest developments and novel approaches to the analyses of biometrics; bloodstain patterns; digital photography; firearms and toolmarks; fingerprints, shoeprint and tire tread evidence; questioned documents; and trace evidence such as fibers, paint, and tapes. Error rates, testimony, interpretation/reporting, case studies, and technology applications were also discussed in some detail.

The success of the 2015 IPTES was due to the strong support of the volunteer steering committee. Their dedication and teamwork with peer-reviewing the abstracts, setting the agenda, and ensuring the scientific integrity of this symposium contributed to a solid program of innovative science and best practices that represents a valuable resource to the forensic science and criminal justice communities. The proceedings of the IPTES were published in December 2015 and are available at <http://www.rti.org/publications/rtipress.cfm>.

## FORENSIC SCIENCE EDUCATIONAL PROGRAMS — Asian Pacific Region

*Y. J. Yao*  
*Analytical Toxicology Laboratory*  
*Applied Sciences Group*  
*Health Sciences Authority*  
*Singapore*

The popularity of television series with fascinating crime investigation stories has attracted increasing interest in forensic science and the attention of higher educational institutions worldwide to offer forensic knowledge at various levels. Some nature science faculties/departments in universities may offer forensic courses as a minor, while others may offer structured programs for bachelor's, master's, and even doctoral degrees in forensic science. This report attempts to list some of the available forensic courses surveyed from the Internet in some Asian Pacific countries. Only those graduate or postgraduate forensic science programs with sufficient information in English are listed. Most of the institutions that offer a bachelor's degree in forensic science also have related postgraduate courses.

**Table 1.** Forensic science university courses in Asian Pacific region

Institute/program's housing unit/ mailing address//website	Degree & course title	Course language
<i>Australia</i>		
<b>Deakin University</b> Geelong Waurn Ponds 75 Pigdons Road Geelong, Victoria 3216 <a href="http://www.deakin.edu.au/course/bachelor-of-forensic-science">http://www.deakin.edu.au/course/bachelor-of-forensic-science</a>	B. Forensic Sci.	English
<b>Griffith University</b> School of Natural Sciences 170 Kessels Road Nathan, Queensland 4111 <a href="https://www.griffith.edu.au/science-aviation/forensic-science">https://www.griffith.edu.au/science-aviation/forensic-science</a>	B. Forensic Sci. (Hons)	English



**Table 1.** (Continued)

<b>Institute/program's housing unit/ mailing address//website</b>	<b>Degree &amp; course title</b>	<b>Course language</b>
<b>Murdoch University, Perth</b> School of Veterinary and Life Sciences South Street Campus, 90 South Street Murdoch, Western Australia 6150 <a href="http://www.murdoch.edu.au/School-of-Veterinary-and-Life-Sciences/Our-courses/Forensic-Science/">http://www.murdoch.edu.au/School-of-Veterinary-and-Life-Sciences/Our-courses/Forensic-Science/</a>	B. Forensic Biology & Toxicology Postgraduate Studies in Forensic Sci.	English English
<b>University of Canberra</b> Faculty of Education, Science, Technology & Maths Bruce Campus (online), University Drive Bruce, Australia Capital Territory 2617 <a href="http://www.canberra.edu.au/coursesandunits/course?course_cd=142JA">http://www.canberra.edu.au/coursesandunits/course?course_cd=142JA</a> <a href="http://www.canberra.edu.au/coursesandunits/course?course_cd=884AA">http://www.canberra.edu.au/coursesandunits/course?course_cd=884AA</a>	B. Applied Sci. in Forensic Studies M. Forensic Studies in Forensic Sci.	English English
<b>University of Technology, Sydney</b> 15 Broadway, Ultimo Sydney, New South Wales 2007 <a href="http://www.uts.edu.au/future-students/science/forensics">http://www.uts.edu.au/future-students/science/forensics</a>	B. Forensic Biology in Biomedical Sci. B. Forensic Sci. in Applied Chem. B. Forensic Sci. (Hons) in Applied Chem.	English English English
<b>The University of Western Australia</b> Centre for Forensic Science Crawley, Perth, Western Australia 6009 <a href="http://www.forensicscience.uwa.edu.au/courses">http://www.forensicscience.uwa.edu.au/courses</a>	Graduate Certificate in Forensic Sci. Graduate Diplomain in Forensic Sci. M. Forensic Sci.	English English English
<b>Western Sydney University</b> School of Science and Health Hawkesbury Campus, Science Road Richmond, New South Wales 2753 <a href="http://www.westernsydney.edu.au/future/future_students_home/ug/sciences/bachelor_of_science_forensic_science">http://www.westernsydney.edu.au/future/future_students_home/ug/sciences/bachelor_of_science_forensic_science</a>	B.Sc. (Forensic Sci.)	English
<b>China</b>		
<b>People's Public Security University of China</b> Muxudi, Xicheng District Beijing 100038 <a href="http://www.cpps.edu.cn/index.html">http://www.cpps.edu.cn/index.html</a>	B., M. & Ph.D. in Engineering, with major in criminal science and technology	Chinese (simplified)
<b>India</b>		
<b>Amity University</b> Amity Institute of Forensic Sciences Sector 125 Noida, Uttar Pradesh 201313 <a href="http://www.amity.edu/aifs/Programmes.asp">http://www.amity.edu/aifs/Programmes.asp</a>	B.Sc. (Hons) & M.Sc. in Forensic Sci.	English
<b>Bundelkhand University</b> Institute of Forensic Science & Criminology Kanpur Road Jhansi, Uttar Pradesh 284128 <a href="https://www.bujhansi.org/frmviewdepartmentprofile.aspx?collegecode=128">https://www.bujhansi.org/frmviewdepartmentprofile.aspx?collegecode=128</a>	B.Sc. (Hons) & M.Sc. in Forensic Sci.	English
<b>Dr. B. R. Ambedkar University</b> Institute of Basic Science Paliwal Park Agra, Uttar Pradesh 282004 <a href="http://www.dbrau.ac.in/departments.html">http://www.dbrau.ac.in/departments.html</a>	M.Sc. (Forensic Sci.)	English
<b>Dr. Hari Singh Gour University</b> Department of Criminology and Forensic Science Sagar, Madhya Pradesh 470003 <a href="http://www.dhsgsu.ac.in/departwebpages.php?depart=69">http://www.dhsgsu.ac.in/departwebpages.php?depart=69</a>	B.Sc. (with Forensic Sci.) B.A. (with Criminology) M.Sc. & Ph.D. in Forensic Sci. M.A. & Ph.D. in Criminology	English

**Table 1.** (Continued)

<b>Institute/program's housing unit/ mailing address//website</b>	<b>Degree &amp; course title</b>	<b>Course language</b>
<b>Gujarat Forensic Sciences University</b> Institute of Forensic Science Nr. DFS Headquarters, Sector 9 Gandhinagar, Gujarat 382007 <a href="http://www.gfsu.edu.in/institutes/institute-of-forensic-science/programs">http://www.gfsu.edu.in/institutes/institute-of-forensic-science/programs</a>	M.Sc. (Forensic Sci.) M.Sc. (Forensic Odontology) M.S. (Digital Forensics & Information Assurance)	English
<b>Kurukshetra University</b> Faculty of Life Sciences, Department of Zoology Kurukshetra, Haryana 136119 <a href="http://www.kuk.ac.in/information.php?m=Yg==&amp;L01_id=OA==&amp;L01_direction=H&amp;L02_id=Mzg=">http://www.kuk.ac.in/information.php?m=Yg==&amp;L01_id=OA==&amp;L01_direction=H&amp;L02_id=Mzg=</a>	M.Sc. (Forensic Sci.)	English
<b>L. N. J. N. National Institute of Criminology &amp; Forensic Science</b> Rohini Sector-3 Outer Ring Road, Delhi 110085 <a href="http://www.nicfs.nic.in/teaching.htm">http://www.nicfs.nic.in/teaching.htm</a>	M.Sc. (Forensic Sci.) M.A. (Criminology)	English
<b>Osmania University, Hyderabad</b> Department of Biochemistry Hyderabad, Telangana State 500007 <a href="http://www.osmania.ac.in/Science%20College/Forensic-Science1.htm">http://www.osmania.ac.in/Science%20College/Forensic-Science1.htm</a>	M.Sc. (Forensic Sci.)	English
<b>Panit Ravishankar Shukla University</b> School of Studies in Anthropology Amanaka G. E. Road Raipur (Chhatisgarh) 492010 <a href="http://www.prsu.ac.in/departments/anthropology/Anthropology1.html">http://www.prsu.ac.in/departments/anthropology/Anthropology1.html</a>	M.Sc. & Ph.D. in Forensic Sci. Postgraduate Diploma (Criminology & Forensic Sci.)	English
<b>Panjab University</b> Institute of Forensic Science & Criminology (U.I.E.A.S.T.) 1st Floor, Old Biomedical Sciences Block, Sector 14 Chandigarh, Union Territory 160014 <a href="http://ifsc.puchd.ac.in/show-courses.php">http://ifsc.puchd.ac.in/show-courses.php</a>	M.Sc & Ph.D. in Forensic Sci. & Criminology	English
Punjabi University Department of Forensic Science Patiala, Punjab, Pin 147002 <a href="http://punjabiversity.ac.in/pbiuniweb/pages/departments/newforensic%20science.html#coursesoffered">http://punjabiversity.ac.in/pbiuniweb/pages/departments/newforensic%20science.html#coursesoffered</a>	M.Sc. (Forensic Sci.)	English
<b>Malaysia</b>		
<b>Universiti Kebangsaan Malaysia</b> Faculty of Health Science School of Diagnostic & Applied Health Sciences Jalan Raja Muda Abd Aziz 50300 Kuala Lumpur <a href="http://www.ukm.my/fsk/future-students/undergraduate/degree-offered/bachelor-of-forensic-science-with-honours/">http://www.ukm.my/fsk/future-students/undergraduate/degree-offered/bachelor-of-forensic-science-with-honours/</a>	B. Forensic Sci. (Hons)	Malay
<b>Universiti Sains Malaysia</b> School of Health Sciences 16150 Kubang Kerian, Kelantan <a href="http://www.ppsk.usm.my/index.php/en/about-forensic/intro-forensic">http://www.ppsk.usm.my/index.php/en/about-forensic/intro-forensic</a>	B. Health Sci. (Hons) (Forensic Sci.) M.Sc. (Forensic Sci.) M.Sc. (Forensic Sci.)	Malay/English Malay/English Malay
<b>Universiti Teknologi Malaysia (UTM)</b> Faculty of Science, Chemistry Department 81310 Skudai, Johor <a href="http://www.fs.utm.my/~webfs/index.php?option=com_content&amp;view=article&amp;id=709&amp;Itemid=151">http://www.fs.utm.my/~webfs/index.php?option=com_content&amp;view=article&amp;id=709&amp;Itemid=151</a>		

Table 1. (Continued)

Institute/program's housing unit/ mailing address//website	Degree & course title	Course language
<i>New Zealand</i>		
<b>The University of Auckland</b> School of Chemical Sciences Science Centre, Building 301 23 Symonds Street Auckland Central, Private Bag 92019 Auckland 1142 <a href="http://www.science.auckland.ac.nz/en/about/subjects-and-specialisations/subjects-and-specialisations-at-postgraduate-level/forensic-science.html">http://www.science.auckland.ac.nz/en/about/subjects-and-specialisations/subjects-and-specialisations-at-postgraduate-level/forensic-science.html</a>	Postgraduate Diploma in Forensic Sci. M.Sc. with Forensic Sci. Major	English English
<b>University of Otago</b> Divisions of Science Clocktower Building 362 Leith Street Dunedin 9016 <a href="http://www.otago.ac.nz/courses/subjects/fors.html">http://www.otago.ac.nz/courses/subjects/fors.html</a>	B. Applied Sci. (Hons) in Forensic Analytical Sci.	English
<i>Singapore</i>		
<b>National University of Singapore</b> Department of Chemistry Faculty of Science 3 Science Drive 3 Singapore 117543 <a href="https://www.chemistry.nus.edu.sg/education/undergrads/Minor/forensic.htm">https://www.chemistry.nus.edu.sg/education/undergrads/Minor/forensic.htm</a>	B.Sc. with minor in Forensic Sci.	English
<i>South Korea</i>		
<b>Soonchunhyang University</b> Graduate School of Forensic Science 646 EuPnae-ri Sinchang-myeon Asan, 336-745, Chungcheongnam-do <a href="https://homepage.sch.ac.kr/egradu/02/04.jsp">https://homepage.sch.ac.kr/egradu/02/04.jsp</a>	M. in Forensic Sci. M. in Crime Scene Sci.	Korea Korea
<i>Taiwan</i>		
Central Police University Department of Forensic Science 56 Shujen Road, Takang, Kueishan District Taoyuan City 33304 <a href="http://efs.cpu.edu.tw/files/15-1067-12446,c932-1.php">http://efs.cpu.edu.tw/files/15-1067-12446,c932-1.php</a>	B., M., & Ph.D. in Forensic Sci.	Chinese (traditional)
<i>Thailand (Much information was provided by Dr. W. Phuphumirat of Prince of Songkla University)</i>		
<b>Kasetsart University</b> Faculty of Liberal Arts and Science 1 Moo 6, Kamphaeng Saen District Nakorn Pathom 73140 <a href="http://www.ku.ac.th/web2012/index.php?c=adms&amp;m=selcon_eng&amp;time=20150128150125">http://www.ku.ac.th/web2012/index.php?c=adms&amp;m=selcon_eng&amp;time=20150128150125</a>	M.Sc. (Forensic Sci.)	Thai/English
<b>Mahidol University</b> Faculty of Science 272 Rama VI Road Ratchathewi District Bangkok 10400 <a href="http://forensic.sc.mahidol.ac.th/index.php">http://forensic.sc.mahidol.ac.th/index.php</a>	M.Sc. in Forensic Sci. (International program)	English
<b>Prince of Songkla University</b> Faculty of Science 15 Karnjanavanich Road Hat Yai District Songkhla 90110 <a href="http://www.sc.psu.ac.th/New56/En/DeptDetail.asp?DEPT_ID=318">http://www.sc.psu.ac.th/New56/En/DeptDetail.asp?DEPT_ID=318</a>	M.Sc. (Forensic Sci.)	Thai/English

## UPCOMING EVENTS

**American Academy of Forensic Sciences (AAFS) — Annual Meeting**

February 22–27, 2016; Rio Las Vegas Hotel  
Las Vegas, NV, US

**PITTCON Conference and Expo**

March 6–10, 2016; Georgia World Congress Center  
Atlanta, GA, US

**The National Commission on Forensic Science — NCFS Meeting 9**

March 21–22, 2016; TBD  
Washington, DC, US

**International Association for Chemical Testing**

April 3–8, 2016; Caribe Royal Hotel  
Orlando, FL, US

**American Society of Crime Laboratory Directors — Annual Symposium**

April 23–28, 2016; Hyatt Regency Bellevue  
Bellevue, WA, US

**California Association of Criminalists (CAC) — Spring Conference 2016**

(Hosted by LA Police Department Crime Laboratory)  
May 2–6, 2016; The Garland  
North Hollywood, CA, US

**Mid-Atlantic Association of Forensic Scientists (MAAFS) — Annual Conference**

May 17–20, 2016; Richmond Marriott  
Richmond, VA, US

**The Association of Firearm and Tool Mark Examiners (AFTME)**

May 28–June 3, 2016  
New Orleans, LA, US

**The National Commission on Forensic Science — NCFS Meeting 10**

June 20–21, 2016; TBD  
Washington, DC, US

**International Association for Identification (IAI) — International Educational Conference**

August 7–13, 2016; TBD  
Cincinnati, OH, US

**International Forum on Drug & Alcohol Testing (IFDAT) — 2016 Annual Conference**

August 24–25, 2016; Radisson Blu Atlantic Hotel  
Stavanger, Norway

**54th Annual Meeting of the International Association of Forensic Toxicologists (TIAFT) —**

Joint meeting of TIAFT & Forensic and Clinical Toxicology Association of Australasia  
August 28–September 1, 2016; Brisbane Convention & Exhibition Centre  
Brisbane, Queensland, Australia

**The National Commission on Forensic Science—NCFS Meeting 11**

September 12–13, 2016; TBD  
Washington, DC, US

**International Symposium on the Forensic Sciences**

September 18–23, 2016  
Auckland, New Zealand

**Southwestern Association of Forensic Scientists (SWAFS) — Annual Meeting**

September 25–29, 2016, Tremont House, a Wyndham Grand Hotel  
Galveston, TX, US

**Northwest Association of Forensic Scientists (NWAFFS) — Annual Meeting**

September 26–30, 2016; TBD  
Boise, ID, US

**Southern Association of Forensic Scientists (SAFS) — 50th Anniversary Meeting**

September 26–30, 2016; TBD  
Sarasota, FL, US

**Midwestern Association of Forensic Scientists (MAFS) — Annual Meeting**

October 3–7, 2016; TBD  
Branson, MO, US

**Northeastern Association of Forensic Scientists (NEAFS) — Annual Meeting**

October 12–15, 2016; Harrah's Resort and Casino  
Atlantic City, NJ, US

**Society of Forensic Toxicologists (SOFT) — Annual Meeting**

October 16–21, 2016; Sheraton Dallas Hotel  
Dallas, TX, US

**Forensics@NIST2016 Symposium**

November 8–9, 2016; NIST Campus  
Gaithersburg, MD, US

**5th International Conference on Forensic Research & Technology**

November 17–19, 2016  
San Francisco, CA, US

**The National Commission on Forensic Science — NCFS Meeting 12**

January 9–10, 2017; TBD  
Washington, DC, US

**American Academy of Forensic Sciences (AAFS) — Annual Meeting**

February 13–18, 2017; Hyatt Regency New Orleans  
New Orleans, LA, US



## NEW FORENSIC SCIENCE BOOKS/CD-ROMS

***A Companion to Forensic Anthropology***  
D. Dirkmaat (Ed)  
Wiley-Blackwell: Somerset, NJ, US; 2015

***A Comprehensive Look at Fraud Identification and Prevention***  
J. R. Youngblood  
CRC Press: Boca Raton, FL, US; 2015

***Anabolic Steroid Abuse in Public Safety Personnel, A Forensic Manual***  
B. Turvey, S. Crowder  
Academic Press/Elsevier; Waltham, MA, US; 2015

***Carrion Ecology, Evolution, and Their Applications***  
M. E. Benbow, J. K. Tomberlin, A. M. Tarone  
CRC Press: Boca Raton, FL, US; 2015

***Complete Crime Scene Investigation Handbook***  
E. Baxter Jr.  
CRC Press: Boca Raton, FL, US; 2015

***Complete Crime Scene Investigation Workbook***  
E. Baxter Jr.  
CRC Press: Boca Raton, FL, US; 2015

***Crime Scene Staging Dynamics in Homicide Cases***  
L. G. Pettler  
CRC Press: Boca Raton, FL, US; 2015

***Data Mining and Crime Analysis in Financial Markets***  
M. Frunza  
Academic Press/Elsevier; Waltham, MA, US; 2015

***Face Detection and Recognition: Theory and Practice***  
A. K. Datta, M. Datta, P. K. Banerjee  
CRC Press: Boca Raton, FL, US; 2015

***Forensic Analysis of Tattoos and Tattoo Inks***  
M. D. Miranda  
CRC Press: Boca Raton, FL, US; 2015

***Forensic Archaeology: A Global Perspective***  
W. J. M. Groen, N. Marquez-Grant, R. Janaway  
Wiley-Blackwell: Somerset, NJ, US; 2015

***Forensic Entomology: International Dimensions and Frontiers***  
J. K. Tomberlin, M. E. Benbow  
CRC Press: Boca Raton, FL, US; 2015

***Forensic Evidence Field Guide, A Collection of Best Practices***  
P. Pfefferli  
Academic Press/Elsevier; Waltham, MA, US; 2015

***Foundations of Forensic Document Analysis: Theory and Practice***  
M. J. Allen  
Wiley-Blackwell: Somerset, NJ, US; 2015

***Fundamentals of Forensic Science***, 3rd ed  
M. Houck, J. Siegel  
Academic Press/Elsevier; Waltham, MA, US; 2015

***Gunshot Wounds: Practical Aspects of Firearms, Ballistics, and Forensic Techniques***, 3rd ed  
V. J. M. DiMaio  
CRC Press: Boca Raton, FL, US; 2015

***Hair Analysis in Clinical and Forensic Toxicology***  
P. Kintz, A. Salomone, M. Vincenti  
Academic Press/Elsevier; Waltham, MA, US; 2015

***Ketamine: Use and Abuse***  
D. T. Yew  
CRC Press: Boca Raton, FL, US; 2015

***Principles of Toxicology***, 3rd ed  
K. E. Stine, T. M. Brown  
CRC Press: Boca Raton, FL, US; 2015

***Professional Issues in Forensic Science***  
M. Houck (Ed)  
Academic Press/Elsevier; Waltham, MA, US; 2015

***Skeletal Trauma Analysis: Case Studies in Context***  
N. V. Passalacqua, C. W. Rainwater (Eds)  
Wiley-Blackwell: Somerset, NJ, US; 2015

***The Analysis of Burned Human Remains***, 2nd ed  
C. W. Schmidt, S. A. Symes (Eds)  
Academic Press/Elsevier; Waltham, MA, US; 2015

***The Basics of Investigating Forensic Science: A Laboratory Manual***  
K. Mirakovits, G. Londino  
CRC Press: Boca Raton, FL, US; 2015

***Weight of Evidence for Forensic DNA Profiles***, 2nd ed  
D. J. Balding, C. D. Steele  
Wiley-Blackwell: Somerset, NJ, US; 2015

## BOOK REVIEWS

### ***A Hands-On Introduction to Forensic Science, Cracking the Case***

*M. M. Okuda and F. H. Stephenson  
CRC Press: Boca Raton, FL, US; 2015*

Reviewed by: *L.N. Ferrara, Forensic Science and Law,  
Duquesne University, Pittsburgh, PA, US*

Mark M. Okuda and Frank H. Stephenson present core forensic science concepts in a unique method by detailing a fictional case throughout the entire book. Each chapter begins with the narrative written as a dramatic murder mystery with relevant information for a missing person case. Next, general forensic science information for a topic is provided. The information is followed by a series of hands-on activities, which includes a materials list and detailed protocol in each chapter. Additionally, questions specific to the case narrative as well as review questions pertaining to the forensic content are covered in each chapter. Chapters conclude with a list of further reading.

Mr. Okuda's high school teaching experience and Dr. Stephenson's research and teaching in molecular biology meld to create a textbook best suited for a hands-on forensic science course at the high school level. This is an easy textbook for new forensic science teachers to adopt based on the readability of the text and the amount of word space dedicated to the activity sections in comparison to overall content. The entire book is 493 pages, comprised of 15 chapters and four appendices. Approximately half of the book is dedicated to the hands-on activities.

In the first chapter, readers are introduced to the main characters, Lieutenant Robert Jenkins and his rookie partner Helen Chang, a molecular biologist and recent graduate. Jenkins and Chang are sent to investigate an impounded vehicle that may be related to a missing person case. The vehicle belongs to Erica Holmes, who was reported missing the day after her car was towed. This chapter goes on to discuss crime scene investigation by giving a core overview of scene documentation and evidence collection. The activities listed include interpreting physical evidence, sketching a crime scene, reconstructing a crime scene, and documenting the objects at a scene. The further readings offer references specific to evaluating the crime scene and profiling.

Chapter two provides an overview of fingerprint processing including dusting, fuming, and photographing. The activities explain how to make a set of inked reference prints, dusting for prints, superglue fuming, and stain-

ing prints. In chapter three, trace evidence is discussed by explaining how microscopy is the primary form of analysis especially for hair and fibers. Next, the protocol for estimating the height of the last person to drive Erica Holmes' vehicle is explained. The further reading section for this chapter appears disjointed and includes references to DNA articles.

The next chapter discusses the analysis of blood evidence. Hemastix, Luminol, and Bluestar are introduced as possible presumptive tests for blood. Also, the testing to ensure it is human blood and the determination of blood type is briefly explained. Blood spatter is described with many pictures. The activities include using Hemastix, characterizing blood drops, and examining transfer stains and blood spatter. This chapter concludes with an overview of the blood evidence in the Holmes case, where students are tasked with calculating the volume of blood left at the scene.

Chapter five provides an overview of DNA isolation and quantification. Extraction techniques briefly covered include chelex, phenol-chloroform, and differential. The real-time PCR is describe for DNA quantitation. The lab activities involve extracting DNA from strawberries, isolating buccal cells using a chelex extraction, and determining concentrations using a spectrophotometer. In reference to the Holmes' case, the results from the DNA evidence processed using the real-time PCR are given to the students, along with directions for determining concentrations based on the standard curve and cycle threshold values.

Chapter six proceeds to talk about expert witnesses, but the chapter specifically points out only the medical examiner, forensic odontologist, forensic entomologist, forensic botanist, toxicologist, and computer forensic examiner as expert witnesses. The lab activities include determining a solution's alcohol content, using chromatography to separate food coloring components and to identify drugs, creating bitemark impressions, collecting and studying local insects, as well as categorizing plants and pollen.

The seventh chapter is titled "Lies?" and discusses the fallibility of eyewitness testimony. Additionally, many indicators of someone lying during an interview are listed. The use of a polygraph is discussed as well as profiling and sketch artists. The activities describe how to make a lie detector machine and create a portrait sketch.

The next chapter very briefly discusses ballistics and explains activities to determine scale and use calipers to define a bullet's caliber. Chapter nine proceeds to explain histology by defining many types of tissue samples commonly examined using a compound microscope. Students can estimate the diameter of a cheek cell's nucleus and estimate the scale of the human genome.

The forensic anthropology chapter provides an overview of determining a victim's age and sex based on skeletal remains. Activities involve determining anatomical directions and planes, predicting stature using hand length, and identifying sexual dimorphism.

Chapters 11 through 13 return to content about DNA analysis. Chapter 11 specifically focuses on mitochondrial DNA (mtDNA) sequencing. Then chapter 12 explains using short tandem repeats (STRs) for DNA analysis. The authors use abbreviations as chapter titles, which may be confusing for beginners who cannot identify what these acronyms stand for nor know that they are related to DNA analysis. Chapter 13 finishes the DNA material with a short discussion about population statistics. This chapter only describes the Hardy-Weinberg equilibrium and that the product rule can be used to determine the genotype frequency across the entire profile.

Chapter 14 returns to fingerprints, by explaining the fingerprint details that are used for comparison. Students perform lab activities comparing fingerprints from reference prints they made previously as well as perform comparisons based on the evidence in the missing person case. Chapter 15 concludes with a brief description of courtroom procedures and explains how to conduct a mock trial, including full script.

The book concludes with a few appendices. One appendix lists all the evidence from the Erica Holmes Missing Persons Case, another has a blank evidence report, and the final appendices are a glossary of terms found throughout the book as well as terms commonly heard in the courtroom.

While there are narrative components that may detract from student learning, the detailed information for the numerous hands-on activities makes this book appealing to teachers. Although the forensic areas appear to be isolated, the narrative helps to provide a framework for understanding. It is important to note that some of the primary forensic disciplines are discussed in a very limited manner, while other areas such as profiling and interrogation are discussed even though they do not fall within the traditional forensic science field.

### *Advanced Crime Scene Photography*

*C. Duncan*

*CRC Press: Boca Raton, FL, US, 2015*

Reviewed by: *B. Kohlhepp, Detective Division/Forensic Investigative Unit, Ross Township Police Department, Pittsburgh, PA, and Adjunct Faculty at Duquesne University (PA), John Jay College (NY), California University of PA (PA), US*

We live in a show-me world. With the advancement of digital technology, children have grown up not just hearing about the past and current events, but also seeing footage and in many cases live coverage of these times. In an age that has cameras in most businesses, street corners, and attached to every cellular phone, society has come to expect a visual tour of the information being presented to them. This evolution of society has made the job of a crime scene photographer crucial to the end goal of most criminal investigations—a successful prosecution.

These facts add to the stresses of the crime scene photographer to successfully document scenes, as well as the location and sometimes the collection of evidence. The advent of the digital age has been a double-edged sword to the world of forensic photography. This has provided a more useful and manageable tool to the crime scene photographer. But to many who do not fully understand the intricate nuance to photography in general—and crime scene photography in specific—it has made everyone a photographer. However, those who are tasked with this duty and understand its importance are constantly striving to develop and hone their skills. There is a lack of resource materials to take a photographer to the next level, especially when it comes to difficult scenes, shots, and rare situations. This text helps to bridge that gap and the author does an excellent job in covering the technical skills as well as the creativity and improvising that a crime scene photographer is often found doing.

In *Advanced Crime Scene Photography*, Christopher Duncan assumes a basic understanding of photography as a whole and the specific differences to crime scene photography. However, the author still does an admirable job of reiterating and explaining the important fundamentals necessary for crime scene photography. In this he covers foundational concepts including equipment and techniques (such as bracketing) as well as a basic guide to scene work. After the first few chapters in order to insure that the reader is on solid footing, the text extends to a higher level of detail that includes specialized work and the advanced concepts one would expect in this text.

On this path the author does an exceptional job by devoting a chapter to explain the basics of the digital

image capture process as it affects the types of images. This achieves the goal of capturing examination quality photographs. Many crime scene photographers are unfamiliar with these specifics especially in reference to how a chip size affects the captured image. Since one of the main functions of crime scene photography is to recover evidence through photography, it is time well spent. The readers who are familiar with these concepts will gain a better understanding, while those who have limited knowledge will gain valuable information about how the camera mechanics affect this process. In addition, some of the often overlooked or undervalued aspects such as quality scales and photographic planes are covered and explained very well.

Many crimes often occur at night, due to the nature of crime and the anonymity sometimes provided by nighttime conditions. Thus, this is the environment a crime scene photographer finds themselves operating in. The author does well to spend specific time dedicated to photography in these conditions. The low-light photography chapter gives way to additional techniques to use in these settings. The next chapter covers both the basic and advanced techniques of using a flash both on and off camera. The author discusses the benefits and detriments of using a flash. Anyone who has done crime scene photography has found the flash to be both a positive and a negative, but may not always understand why and how to overcome this. There is also a chapter dedicated to the technique of painting with light. This is an important tool that seems to have been more popular in the days of film photography and unfortunately appears to have been somewhat left behind by many crime scene investigators in the digital age. This is still a valid tool and the author does an excellent job explaining why as well as several techniques and tools to accomplish this effect.

After developing this solid foundation, the text moves on to cover photography components that an advanced crime scene photographer should have in his or her arsenal. It covers techniques such as UV and IR photography, as well as photographing chemiluminescent blood reagents. What was most valuable was time spent on specific scenes that require a more precise and deliberate approach to photography. This includes scenes such as fire and shooting scenes where documentation can be more difficult, and also task specific to the evidence found at these particular scenes, which is generally different from that at other types of crimes scenes. Also, an entire chapter is dedicated to bloodstain pattern photography. This falls into a category similar to fire and shooting scenes, as the documentation and evidence recovery is scene-specific. However, as a bloodstain pattern analyst (BPA) as well, it was refreshing to see a thorough review of photographing these scenes. It carries a greater importance as a BPA cannot always come to the scene, and one may often base one's opinions on photographs alone. Even if BPA-trained individuals are able to assess the actual scene, they rely on photographs to make and/or support their conclusions. Furthermore, these conclusions are often reviewed by a separate and often defense-hired BPA, who is almost always restricted to only photographs.

This text highlights the important basics as well as covers the advanced topics one would expect to find here. The text is a hybrid of both technical photography and crime scene photography, which makes it a valuable resource for crime scene investigators. As such it serves to improve one's skills in technical ability as well as the process of photographing specific crimes scenes and documentation/evidence capture in general.