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American Academy of Forensic Sciences
Las Vegas, NV (February 22, 2016)



Other Activities Regarding Forensic Literature: AAAS, NCFS, OSAC

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Topics to Cover

- Review Articles & Literature Listings:
 - *Analytical Chemistry* Application Review Articles by Tom Brettell and colleagues (1983-2011)
 - Interpol Literature Reviews (only 2013 is online)
 - SWG Bibliographies Provided to SoFS
- NCFS Views Document on Scientific Literature
- AAAS Forensic Science Literature Evaluation
- OSAC Activities in Literature/Research

Application Reviews on Forensic Science

appeared every other year in June 15 issue of *Analytical Chemistry* from 1983 to 2011

Anal. Chem. 2005, 77, 3839–3860

Forensic Science

T. A. Brettell*

Office of Forensic
1200 Negron Road

J. M. Butler

National Institute of Standards and Technology

R. Saferstein

Box 1334, Mount Airy, NC

Anal. Chem. 2007, 79, 4365–4384

Forensic Science

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Biochemical Science Division

J. R. Almirall

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Anal. Chem. 2009, 81, 4695–4711

Forensic Science

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These reviews are **methods-focused with brief descriptions provided of hundreds of forensic science publications from the two previous years.** No attempt is made to prioritize the publications listed or to assess the quality of the work.

Anal. Chem. 2011, 83, 4539–4556

**analytical
chemistry**

REVIEW

pubs.acs.org/ac

Forensic Science

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Application Reviews on Forensic Science published in the journal *Analytical Chemistry*

- 15 review articles by Tom Brettell, Rich Saferstein, and other co-authors
- Provides a brief description of 9263 articles spanning 30 years of publications

Focus areas:

- (1) drugs & poisons,
- (2) forensic DNA & biochemistry, and
- (3) trace evidence

Year Published	Years Covered	# Articles Reviewed	# DNA Articles Reviewed	% DNA
1983	1981 & 1982	490	0	0.0%
1985	1983 & 1984	536	0	0.0%
1987	1985 & 1986	496	6	1.2%
1989	1987 & 1988	602	18	3.0%
1991	1989 & 1990	691	48	6.9%
1993	1991 & 1992	824	102	12.4%
1995	1993 & 1994	843	146	17.3%
1997	1995 & 1996	811	152	18.7%
1999	1997 & 1998	782	138	17.6%
2001	1999 & 2000	243	91	37.4%
2003	2001 & 2002	469	148	31.6%
2005	2003 & 2004	789	250	31.7%
2007	2005 & 2006	560	181	32.3%
2009	2007 & 2008	552	163	29.5%
2011	2009 & 2010	575	122	21.2%
	TOTAL	9263	1565	16.9%

Interpol Literature Summaries



**928 page pdf file
available for download**

17th Interpol International
Forensic Science
Managers Symposium,
Lyon

8th - 10th October 2013

Review Papers

Edited by Prof. Niamh Nic Daéid

Centre for Forensic Science, University of Strathclyde,
Glasgow, UK

- Interpol holds a forensic science symposium **every three years** that involves a review of literature in multiple forensic disciplines
- With the last cycle of reviews in 2013, 18 topics are reviewed by **authors from countries around the world** that cover a total of 4968 reference citations
- A 928 page pdf file is available at <http://www.interpol.int/content/download/21910/%20206602/version/1/file/IFSMSReviewPapers2013.pdf>

A summary of information reviewed as part of the most recent Interpol tri-annual International Forensic Science Managers Symposium covering literature and activities from 2010 to 2013

Firearms	Erwin J.A.T. Mattijseen (Netherlands Forensic Institute)	159
Gun Shot Residue	Sébastien Charles and Bart Nys (INCC-NICC Brussels, Belgium)	49
Toolmarks	Nadav Levin (Israel National Police)	189
Paint	Laetitia Heudt, Marc Lannoy, Gilbert De Roy, Laurent Kohler (INCC-NICC Brussels, Belgium)	201
Fibers and Textiles	Ray Palmer (Northumbria University, UK)	68
Forensic Geology	Ritsuko Sugita, Hiromi Itamiya, Hirofumi Fukushima (National Research Institute of Police Science, Japan)	221 cited but only 102 references listed
Arson & Fire Debris Analysis	Niina Viitala and Mika Hyyppä (National Bureau of Investigation, Finland)	157 cited but only 140 references listed
Explosives & Explosive Residues	Douglas J. Klapec and Greg Czarnopys (Bureau of Alcohol, Tobacco, Firearms and Explosives, USA)	1341
Drug Evidence	Jeffrey H. Comparin and Robert F.X. Klein (Drug Enforcement Administration, USA)	668
Toxicology	Wai-ming Tam, Lai-chu Chim, Wing-sum Chan, Tai-wai Wong, Kit-mai Fung, Wing-cheong Wong, Wai-kit Lee, Wing-sze Lee, Kit-man Fan (Hong Kong Government Laboratory)	324
Forensic Audio Analysis	Catalin Grigoras, Jeff M. Smith, Geoffrey Stewart Morrison, Ewald Enzinger (University of Colorado-Denver, USA and University of New South Wales, Australia)	133
Forensic Video Analysis	Matthew E. Graves (United States Army Criminal Investigation Laboratory)	31
Imaging	Arnout Ruifrok, Zeno Geradts, Jerrien Bijhold (Netherlands Forensic Institute)	256
Digital Evidence	Paul Reedy and Jaime Buzzeo (Department of Forensic Science, District of Columbia and A.I. Solutions at NASA Headquarters, USA)	190
Fingermarks and Other Impressions	Nicole Egli, Sébastien Moret, Andy Bécue, Christophe Champod (University of Lausanne, Switzerland)	472
Body Fluid Identification and DNA Typing in Forensic Biology	Christine Jolicoeur (Ministry of Public Security, Québec, Canada)	114
Questioned Documents	Franck Partouche (IRCGN, Rosny Sous Bois, France)	275
Forensic Science Management	Max M. Houck, Melissa Porter, Bronwen Davies (Department of Forensic Sciences and George Washington University, Washington, DC, USA)	120

SWG Annotated Bibliographies

- During its operation from 2009-2012, the White House **Subcommittee on Forensic Science (SoFS) requested annotated bibliographies** from the then appropriate Scientific Working Groups (SWGs) or other professional organizations
- Responses from **10 forensic disciplines** were submitted to address specific questions raised by SoFS
- SoFS was disbanded before these bibliographies were reviewed or analyzed – **AAAS plans to do this function**
- The original bibliographies are available at <http://www.nist.gov/forensics/workgroups.cfm#B>

SWG Foundational Forensic Annotated Bibliographies

originally provided to the White House Subcommittee on Forensic Science (SoFS) by Scientific Working Groups (SWGs)

Files available at <http://www.nist.gov/forensics/workgroups.cfm#B>

Forensic Discipline	# Articles or Information Provided	Submitter	Received by SoFS
Firearms & Toolmarks	24 primary references (94 pages of material covering 25 questions)	Association of Firearm and Tool Mark Examiners (AFTE) and SWGGUN	June 14, 2011
Bloodstain Pattern Analysis	39 pages 19 questions	SWGSTAIN	Sept 29, 2011
Bitemark Analysis	62 pages 18 questions	American Board of Forensic Odontology (ABFO)	Oct 2, 2011
Fiber Analysis	32 pages 18 questions	SWGEMAT	Oct 18, 2011
Shoeprint & Tire Tread	38 pages 14 questions	SWGTTREAD	Nov 16, 2011
Latent Print Analysis	63 pages	SWGFAST	Nov 17, 2011
Arson Investigation & Burn Pattern Analysis	32 pages 16 questions	T/SWGFEX	Dec 12, 2011
Digital Evidence	11 pages 18 questions	SWGDE	Jan 17, 2012
Hair Analysis	21 pages 20 questions	SWGEMAT	Sept 21, 2012
Paint & Other Coatings	29 pages 19 questions	SWGEMAT	Sept 21, 2012

National Commission on Forensic Science (NCFS) Activities Regarding Forensic Literature

- **NCFS Scientific Inquiry & Research Subcommittee has been discussing issues with the forensic science literature**

“A cursory review of the literature citations raised concerns within the NCFS that extend beyond these specific [SWG] bibliographies [provided to the SoFS]:

“1. In some cases, it was unclear which literature citations are crucial to support the foundation of a particular forensic science discipline.

“2. Some of the cited literature had not undergone a rigorous peer-review process.”



NATIONAL COMMISSION ON FORENSIC SCIENCE

NIST
National Institute of
Standards and Technology
U.S. Department of Commerce

Scientific Literature in Support of Forensic Science and Practice

Commission Action:

On January 30, 2015, the Commission voted unanimously to adopt this work product.

Type of Work Product:

Views Document issued by the Scientific Inquiry and Research Subcommittee

- “The NCFS believes that **a comprehensive evaluation of the scientific literature is critical** for the advancement of forensic science policy and practice in the United States.”

It is the position of the NCFS that **foundational, scientific literature supportive of forensic practice should meet criteria** such as the following:

- **Peer-reviewed** in the form of original research, substantive reviews of the original research, clinical trial reports, or reports of consensus development conferences
- **Published in a journal or book** that has an **International Standard Number** (ISSN for journals; ISBN for books) and **recognized expert(s) as authors** (for books) or on its Editorial Board (for journals)
- Published in a journal that maintains a clear and publicly available statement of purpose that **encourages ethical conduct such as disclosure of potential conflicts of interest** integral to the peer review process
- Published in a journal that **utilizes rigorous peer review with independent external reviewers** to validate the accuracy in its publications and their overall consistency with scientific norms of practice
- Published in a journal that is **searchable using free, publicly available search engines** (e.g. PubMed, Google Scholar, National Criminal Justice Reference Service) that search major databases of scientific literature (e.g. Medline, National Criminal Justice Reference Service Abstracts Database, and Xplore)
- Published in a journal that is **indexed in databases that are available through academic libraries and other services** (e.g. JSTOR, Web of Science, Academic Search Complete, and SciFinder Scholar)

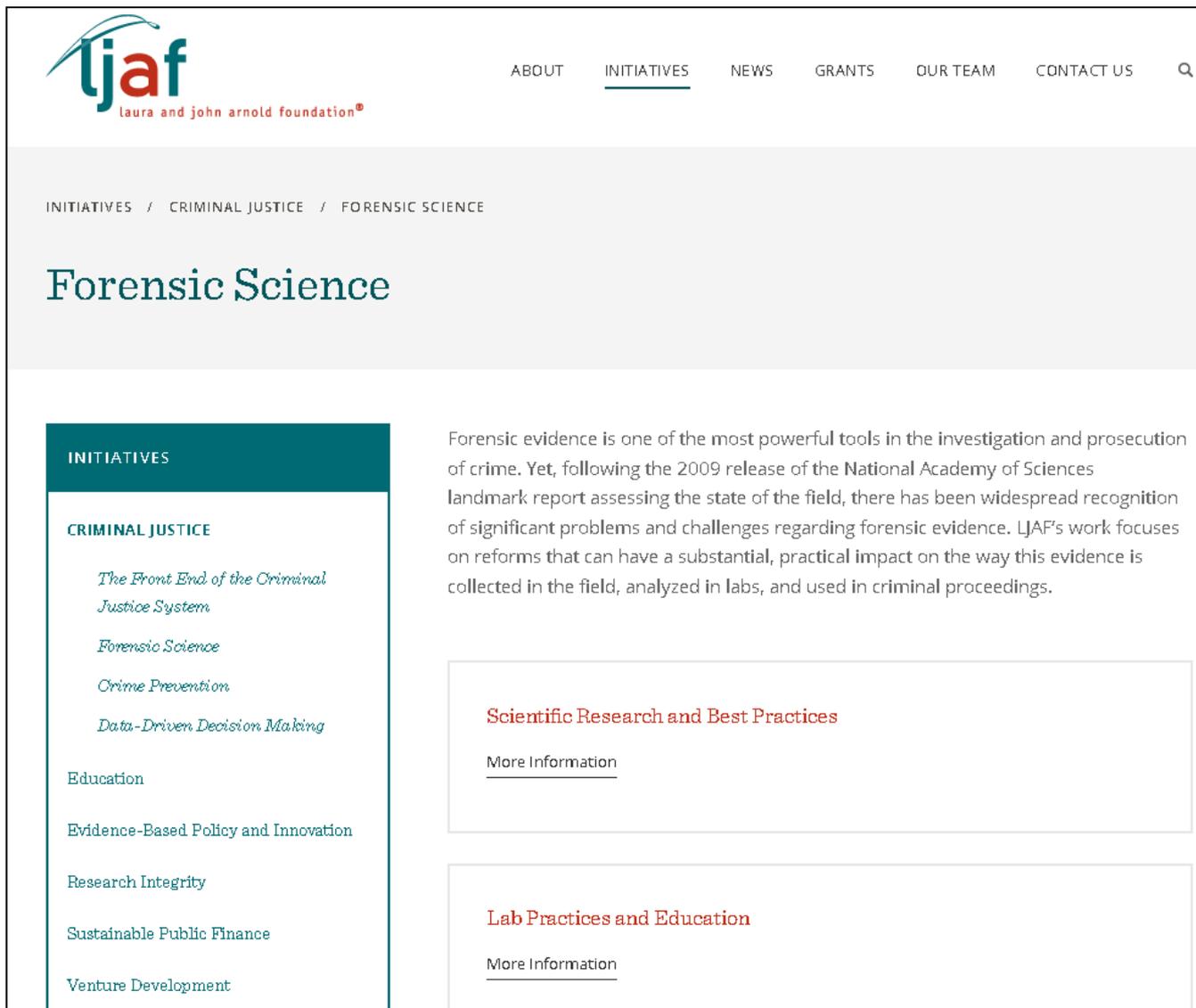
AAAS Forensic Science Assessments



The American Association for the Advancement of Science
<http://www.aaas.org>

- With funding from the [Laura and John Arnold Foundation](#), AAAS plans to conduct an analysis of the underlying scientific bases for the forensic tools and methods currently used in the criminal justice system
- This project will **evaluate the quality of the studies the forensic community relies on to support its practices** and, where the scientific underpinning of these practices falls short, recommend a research agenda for the field

The Laura and John Arnold Foundation



The screenshot shows the website for the Laura and John Arnold Foundation (LJAF). The top navigation bar includes links for ABOUT, INITIATIVES (which is underlined), NEWS, GRANTS, OUR TEAM, and CONTACT US, along with a search icon. The breadcrumb trail reads: INITIATIVES / CRIMINAL JUSTICE / FORENSIC SCIENCE. The main heading is "Forensic Science".

INITIATIVES

- CRIMINAL JUSTICE**
 - The Front End of the Criminal Justice System*
 - Forensic Science*
 - Crime Prevention*
 - Data-Driven Decision Making*
- Education
- Evidence-Based Policy and Innovation
- Research Integrity
- Sustainable Public Finance
- Venture Development

Forensic evidence is one of the most powerful tools in the investigation and prosecution of crime. Yet, following the 2009 release of the National Academy of Sciences landmark report assessing the state of the field, there has been widespread recognition of significant problems and challenges regarding forensic evidence. LJAF's work focuses on reforms that can have a substantial, practical impact on the way this evidence is collected in the field, analyzed in labs, and used in criminal proceedings.

Scientific Research and Best Practices

[More Information](#)

Lab Practices and Education

[More Information](#)

<http://www.arnoldfoundation.org/initiative/criminal-justice/forensic-science/>

AAAS Update Provided to NCFS in Dec 2015

Forensic Science Assessments A Quality and Gap Analysis

National Commission on Forensic Science
Washington, DC
December 8, 2015

AAAS Project Staff

Mark S. Frankel, Project Director
Deborah Runkle, Project Manager
Michelle Barretta, Project Assistant

AAAS Project Staff

Mark S. Frankel, Deborah Runkle, Michelle Barretta

Scientific Responsibility, Human Rights and Law Program
American Association for the Advancement of Science



The AAAS Project is supported by a grant from the
Laura and John Arnold Foundation

Forensic Disciplines

Planned for Evaluation by AAAS

1. **Latent Fingerprints** -- [Working Group \(WG\) members](#)
(meeting date: July 09, 2015)
2. **Fire Investigation** -- [WG members](#)
(meeting date: July 20, 2015)
3. **Firearms and Toolmarks/Ballistics** -- [WG members](#)
(meeting date: August 20, 2015)
4. Bloodstain Pattern Analysis
5. Digital Evidence
6. Footwear and Tire Tracks
7. Forensic Odontology- Bitemark Analysis
8. Trace Evidence- Fibers
9. Trace Evidence- Hair
10. Trace Evidence- Paint & Other coatings

Advisory Committee to AAAS Assessment

- **Martha Bashford**, JD
Chief, Sex Crimes Unit
New York County District Attorney
 - **Shari Seidman Diamond**, JD, PhD
Professor of Law and Psychology
Northwestern University School of Law
Research Professor, American Bar Foundation
 - **Gilbert S. Omenn**, MD, PhD
Director, Center for Computational Medicine
and Bioinformatics
University of Michigan
 - **Hal Stern**, PhD
Professor of Statistics
University of California, Irvine
- **Jeff Salyards**, PhD, MFS
Director, Defense Forensic Science Center
Defense Forensics & Biometrics Agency
 - **Barbara Hervey**, JD
Judge, Texas Court of Criminal Appeals
 - **Jules Epstein**, JD
Professor of Law
Temple University School of Law
 - **Itiel Dror**, PhD
University College of London & Cognitive
Consultants International Ltd.

**NCFS Commissioners or
Subcommittee Members**

Latent Fingerprint Analysis Working Group

- **William Thompson**, J.D., Ph.D. (Chair)
 - (Human Factors) University of California, Irvine
- **Anil Jain**, Ph.D.
 - (Biometric Engineering) Michigan State University
- **Jay Kadane**, Ph.D.
 - (Statistics) Carnegie Mellon University
- **John Black**
 - (**Forensic Science**) Black & White Forensics, LLC.

Fire Investigations Working Group

- **Jose Almirall**, Ph.D. (Chair)
 - (Chemistry) Florida International University
- **Hal Arkes**, Ph.D.
 - (Cognitive Psychology/Human Factors) Ohio State University
- **Frederick Mowrer**, Ph.D.
 - (Fire Protection Engineering/Fire Science) Cal Poly State University
- **Janusz Pawliszyn**, Ph.D.
 - (Analytical Chemistry) University of Waterloo
- **John Lentini**, CFI, D-ABC
 - (**Forensic Science**) Scientific Fire Analysis, LLC.

Firearms and Tool Marks Working Group

- **Tom Busey**, Ph.D. (Chair)
 - (Cognitive Psychology/Human Factors) Indiana University
- **Bruce Craig**, Ph.D.
 - (Statistics) Purdue University
- **Chittaranj Sahay**, Ph.D.
 - (Manufacturing Engineering/Metrology) University of Hartford
- **Christopher Schuh**, Ph.D.
 - (Materials Engineering) MIT
- **Robert Thompson**
 - (Forensic Science) NIST

AAAS Reports to Be Issued Soon...

Slide from AAAS presentation to NCFS on December 8, 2015

Forensic Science Assessments: A Quality and Gap Analysis



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 - Working Group Bios
 - Methods in Detail
 - Bibliography
 - Working Group Questions that framed the Report
 - Project Advisory Committee and Staff

**First reports
expected in
early 2016**

Recent NSF/NIJ-Funded Workshop

- Meeting was held at the AAAS headquarters (Washington, DC) on May 26-27, 2015;
proceedings are forthcoming
- Some relevant articles:
 - “Impact of forensic literature on the admissibility process” (Michael T. Ambrosino)
 - “Policy implications of inadequate literature” (Ronald N. Kostoff)
 - “A quality and gap analysis: an AAAS forensic science literature project” (Deborah Runkle)
 - “How do we trust the scientific literature?” (Simon A. Cole)



Forensic Science Research Evaluation

Edward G. Bartick and McKenzie Floyd, Eds.

Organization of Scientific Area Committees (OSAC) Activities

- OSAC is focused on aiding development of standards and best practices for the forensic science community and **is not currently planning on performing evaluation of scientific literature**
- However, practitioner feedback that arises during research gap analysis as part of the OSAC standards development activities will be documented, consolidated, and shared with the broader community. This research list will encompass inputs from the all of the 24 subcommittees and five Scientific Area Committees (SACs).
- For more information, see <http://www.nist.gov/forensics/osac/osac-research-needs-assessments.cfm>

Thank you for your attention!

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