

Forensic Science in the Criminal Courts: Ensuring Scientific Validity Of Feature-Comparison Methods



PCAST Report

**Started Sept 2015; approved Sept 1, 2016; released Sept 20, 2016; 125 drafts
173 pages, 399 footnotes, 2100 scientific papers, 70 lengthy public comments,**

PCAST Report

**Started Sept 2015; approved Sept 1, 2016; released Sept 20, 2016; 125 drafts
173 pages, 399 footnotes, 2100 scientific papers, 70 lengthy public comments,**

Thank you:

Tania Simoncelli

Kristen Zarrelli

Diana Pankevich

PCAST Report

Started Sept 2015; approved Sept 1 2016; released Sept 20, 2016

173 pages, 399 footnotes, 2100 scientific papers, 70 lengthy public comments

Tweet version:

“For a forensic feature-comparison method to be foundationally valid, there needs to be actual empirical evidence of its reliability and estimates of its accuracy”

“For a number of current methods, there is little or no actual empirical evidence of reliability or accuracy”

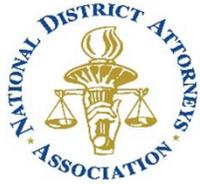
“Some in the forensic-science and law-enforcement community see no need for empirical evidence”

PCAST Recommendations

- 1. NIST should perform ongoing evaluations** of validity and reliability of forensic science methods.
- 2. NIST should help move methods from subjective to objective** (fingerprints, firearms, complex DNA).
- 3. NIST should improve OSAC standards-development process** (forensic working groups) by adding a committee of independent scientists and statisticians.
- 4. OSTP should lead development of a national research strategy.**
- 5. FBI should undertake various scientific studies and receive increased funding.**
- 6. Attorney General should ensure that DOJ uses scientifically valid evidence.**
- 7. DOJ should withdraw and reissue its guidelines on testimony** (which forbid examiners from providing empirical evidence about accuracy).
- 8. Judges should “take account” of the scientific criteria for scientific validity.**

PCAST Scientific Findings

- 1. Scientific validity**
- 2. DNA analysis of single-source and simple-mixture samples**
- 3. DNA analysis of complex-mixture samples**
- 4. Bitemarks**
- 5. Latent fingerprints**
- 6. Firearms identification**
- 7. Footwear analysis**
- 8. Hair analysis**



National District Attorneys Association

Adopting **any** of [PCAST's] recommendations would have a devastating effect on the ability of law enforcement, prosecutors and the defense bar, to fully investigate their cases, exclude innocent suspects, implicate the guilty, and achieve true justice at trial.



Department of Justice

“The report does not mention numerous published research studies which seem to meet PCAST’s criteria for appropriately designed studies providing support for foundational validity.”



Department of Justice

“The report does not mention numerous published research studies which seem to meet PCAST’s criteria for appropriately designed studies providing support for foundational validity.”

PCAST Forensics Study, Phase 2: RFI (through mid-October)

For each forensic feature-comparison method the PCAST report found not yet to be foundationally valid, PCAST invites the community to identify published, appropriately designed research studies, not mentioned in the report, that provide empirical evidence of the foundational validity of the method by examining the reliability and estimating the accuracy of the method as currently practiced.

DNA (beyond stated limits—e.g., >3 contributors)

Bite marks

Firearms (individualizing characteristics)

Footwear (individualizing characteristics)

also . . . Hair analysis