

Qualitative Summary - NAS Ch. 5 *

Strengthening Forensic Science in the United States: A Path Forward, 2009
The National Academies

Phil Locke, May 27, 2010 Rev. 4

Statistical reliability for "class inclusion" of a suspect
Statistical reliability for "individual identification" of a suspect
Statistical reliability for "class and individual exclusion" of a suspect
Verified scientific validity with documented statistics
Clear non-ambiguous terminology related to statistical validity of results
Does not rely on competence, training, experience, or judgement of individual examiners

Forensic Technology

Nuclear DNA						
Mitochondrial DNA						
Friction Ridge Analysis (fingerprints)						
Shoe Prints & Tire Tracks						
Toolmark and Firearms ID ("ballistics")						
Gunshot Residue (* see special note below)	*	*	*	*	*	*
Hair Evidence						
Fiber Evidence						
Questioned Document Examination						
Paint & Coatings Evidence						
Explosives Evidence						
Fire Debris (arson)						
Forensic Odontology - Bite Marks						
Analysis of Controlled Substances						
Bloodstain Pattern Analysis						
Digital & Multimedia Analysis						

* Gunshot Residue (GSR)

Current analytical methods employing SEM/EDS (scanning electron microscope and energy dispersive spectroscopy) can reliably identify gunshot residue. The samples acquired from suspects should then be compared with samples from known case-specific durable items (weapon, shell casing, victim's clothing, etc.) to confirm the source. Lacking that, the question that cannot be reliably answered is - where did the GSR come from? Issues with sample collection protocols and the likelihood of contamination from law enforcement environments and environmental sources overwhelm all other factors.

	Statistically valid
	Anecdotally accepted - lacks true statistical validation
	Exercise caution and skepticism
	Questionable
	Not good
	Not appropriate for this category

* This summary is my interpretation of NAS Chapter 5. The scores in the table are my judgement based upon my study of the technologies involved and my own scientific, technical, and statistical knowledge and experience.

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