OSAC RESEARCH NEEDS ASSESSMENT FORM

Title of research need:	Bias Mitigation in Bloodstain Pattern Analysis
Keywords:	Bias, BPA

R&D Need Rank: Low, Medium, High	Medium	**SAC Approved Date:**	9/2/2025

Submitting subcommittee(s): Bloodstain Pattern Analysis

(If SAC review identifies additional subcommittees, add them to the box above.)

Research Need Summary:

The purpose of these research needs is to build a stronger scientific foundation for forensic science standards. The information provided herein will help to evaluate and strengthen existing standards, and/or fill any standards related gaps. In the space below, please provide a brief narrative of the need to be addressed. This should include:

- The identity of any specific standards that would be affected/improved/evaluated
- A discussion on gaps that exist within the standards or standards related gaps that need to be filled
- How this work would fill those gaps
- An overview of any current or past research efforts that may be relevant to this effort
- A discussion regarding how this research might improve current laboratory capabilities and/or forensic services within the criminal justice system
- Any relevant references

Cognitive bias refers to the unintentional influence that contextual information, expectations, or prior knowledge can have on an analyst's observations, interpretations, and conclusions. These biases can affect decision-making at various stages of analysis. Researching the effects of cognitive bias specifically within the realm of BPA is critical to mitigating its effects. While there has been much study on bias in forensic science, there has been limited research specific to BPA.

Dror, I.E. (2018). Biases in forensic experts. Science, 360(6386), 243. https://doi.org/10.1126/science.aat8443

Itiel E. Dror, (2025) Bloodstain Pattern Analysis (BPA): Validity, reliability, cognitive bias, and error rate, Science & Justice 65 (2025) 101245 https://doi.org/10.1016/j.scijus.2025.02.002

Itiel E. Dror, Jeff Kukucka, (2021) Linear Sequential Unmasking–Expanded (LSU-E): A general approach for improving decision making as well as minimizing noise and bias, Forensic Science International: Synergy, Volume 3, 2021, 100161 https://doi.org/10.1016/j.fsisyn.2021.100161

Nikola K.P. Osborne, Michael C. Taylor, Rachel Zajac,* (2016) Exploring the role of contextual information in bloodstain pattern analysis: A qualitative approach, Forensic Science International 260 (2016) 1–8 https://doi.org/10.1016/j.forsciint.2015.12.039

Nikola K.P. Osborne, Michael C. Taylor, MatthewHealey, Rachel Zajac , (2016) Bloodstain pattern classification: Accuracy, effect of contextual information and the role of analyst characteristics, SCIJUS-00568; No of Pages 6 (Article in Press no link)

Michael C. Taylor Ph.D., Terry L. Laber B.Sc., Paul E. Kish M.Sc., Glynn Owens Ph.D., Nikola K. P. Osborne Ph.D., First published: 19 September 2016, The Reliability of Pattern Classification in Bloodstain Pattern Analysis—PART 2: Bloodstain Patterns on Fabric Surfaces, https://doi.org/10.1111/1556-4029.13191

Zajac, Rachel, Osborne, Niki, Singley, LeeAnn, Taylor, Michael, (2015), /09/07, Contextual bias: What bloodstain pattern analysts need to know, Volume 31, Journal of Bloodstain Pattern Analysis, page 7 – 16, https://iabpa.org/docs/September_2015_JBPA.pdf

Moa Lidén, (2023), Confirmation Bias in Criminal Cases, Online ISBN: 9780191959745, Print ISBN: 9780192867643, Publisher: Oxford University Press, https://academic.oup.com/book/46127#:~:text=https%3A//doi.org/10.1093/oso/9780192867643.001.0001

This research need has been identified by one or more subcommittees of OSAC and is being provided as an informational resource to the community.