OSAC Research Needs Assessment Form

Title of research need: Bloodstain Pattern Classification

Keywords: Pattern analysis, bloodstain pattern analysis, classification, blood

Submitting subcommittee(s): Bloodstain Pattern Analysis **Date Approved:** July 26, 2019

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

Background information:

1. Description of research need:

SEE ALSO ATTACHED ADDENDUM for additional details.
Currently, classification of a pattern results in the naming of a pattern using mechanism-based terminology. The mechanism by which a pattern was made, however, is part of the reconstruction process of a BPA scene. Thus, to reduce subjectivity, research is needed in order to avoid mechanism-based terminology and to base the classification upon objective, physical characteristics. This is foundational research necessary for later studies of examiners.

2. Key bibliographic references relating to this research need:

- Arthur RM et al. A novel, element-based approach for the objective classification of bloodstain patterns. For Sci Int 2015; **257:**220.

3a. In what ways would the research results improve current laboratory capabilities?

This research will result in a method for the classification of bloodstain patterns based on physical characteristics of bloodstains. Ideally, this method will lead to an objective and consistent bloodstain pattern analysis which may decrease error and increase reliability.

3b. In what ways would the research results improve understanding of the scientific basis for the subcommittee(s)?

This research will provide the field of bloodstain pattern analysts with a theoretical foundation for the classification of bloodstain patterns necessary for later studies in the accuracy and reliability of analysts. This research will lead to a better understanding of the decision-making process. It will provide guidance to revise current methods and to better reflect the current scientific state. A list of quantifiable, measurable and objective physical characteristics resulting from this research will help the discipline to describe the basis for classifications.

3c. In what ways would the research results improve services to the criminal justice system?

A non-mechanistic pattern classification method may lead to more reproducible and reliable outcomes amongst different bloodstain pattern analysts. Thus, helping the criminal justice system understand classification decision-making processes.

4. Status assessment (I, II, III, or IV): I

	Major gap in current knowledge	**Minor** gap in current knowledge
No or limited current research is being conducted	**I**	**III**
Existing current research is being conducted	**II**	**IV**

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

Subcommittee Approval date:

(Approval is by majority vote of subcommittee. Once approved, forward to SAC.)

SAC

1. Does the SAC agree with the research need? Yes ◯ No ◯

2. Does the SAC agree with the status assessment? Yes ◯ No ◯

If no, what is the status assessment of the SAC:

Approval date:

(Approval is by majority vote of SAC. Once approved, forward to NIST for posting.)