

Scientific Working Group on Bloodstain Pattern Analysis: Guidelines for the Minimum Educational and Training Requirements for Bloodstain Pattern Analysts

Scientific Working Group on Bloodstain Pattern Analysis (SWGSTAIN)

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Objective

This document provides minimum pretraining educational requirements for an individual currently in, or entering into, a bloodstain pattern analyst training program and the minimum training requirements that a trainee must successfully complete prior to practicing as a bloodstain pattern analyst.

Introduction

The Scientific Working Group on Bloodstain Pattern Analysis (SWGSTAIN) comprises bloodstain pattern analysis (BPA) experts from North America, Europe, New Zealand, and Australia. SWGSTAIN serves as a professional forum in which practitioners in BPA and related fields can discuss and evaluate methods, techniques, protocols, quality assurance, education, and research. SWGSTAIN's ultimate goal is to use these professional exchanges to address substantive and operational issues within the field of BPA and to work to build consensus-based, or "best practice," guidelines for the enhancement of the discipline of BPA.

Statement of Purpose

SWGSTAIN has developed minimum educational and training requirements for bloodstain pattern analysts. As used here, the concept of a bloodstain pattern analyst training program encompasses the pretraining knowledge, skills, and abilities the prospective bloodstain pattern analyst trainee possesses as a prerequisite for training, as well as the professional instruction completed by a trainee seeking to become an active practitioner in the field of BPA. The BPA trainee must participate in a mentorship program during his or her training. It is the mentor's responsibility to evaluate the trainee's progress toward completing the required education and training objectives stated in the bloodstain pattern analyst curriculum. The trainee must successfully complete competency testing prior to becoming a qualified bloodstain pattern analyst and rendering expert opinions. The duration of the training will vary depending on the length of time required for each trainee to successfully complete the educational and training requirements.

Definitions

As used by SWGSTAIN, the following terms convey the meanings specified:

Must—Done without exception

Should—Expected to be done

Recommended—Appropriate but not mandatory

1. Minimum Pretraining Requirements for a Bloodstain Pattern Analysis Trainee

1.1. Bachelor's degree or equivalent in a field of study related to BPA from an accredited college or university.

-OR-

1.2. Associate's degree or equivalent in a field of study related to BPA from an accredited college or university and two years of job-related experience.*

-OR-

1.3. High school diploma or equivalent and four years of job-related experience.*

*Job-related experience includes, but is not limited to, experience as a:

- Crime scene technician.
- Criminalist.
- Homicide/criminal investigator.

2. Required Minimum Objectives Achieved Through Accepted Training Methods Specific to a Bloodstain Pattern Analysis Training Program

At the completion of training the student must be able to:

2.1. Demonstrate an understanding of health and safety issues associated with BPA.

2.1.1. Demonstrate an awareness of bloodborne pathogens and other related health hazards.

2.1.2. Demonstrate an awareness of biohazard safety equipment and procedures.

2.2. Demonstrate knowledge of the history of BPA.

2.3. Demonstrate an understanding of the scientific principles as they relate to BPA.

2.3.1. Demonstrate an understanding of the scientific method and its application to BPA experimentation, to include:

2.3.1.1. Problem identification.

2.3.1.2. Hypothesis.

2.3.1.3. Experimentation/data collection.

2.3.1.4. Data analysis.

2.3.1.5. Theory/conclusions.

2.3.2. Demonstrate an understanding of the principles of physics as they relate to BPA, to include:

2.3.2.1. Physical laws of motion.

2.3.2.2. Surface tension.

2.3.2.3. Viscosity.

2.3.2.4. Gravity.

2.3.2.5. Air resistance.

2.3.2.6. Velocity.

2.4. Demonstrate an understanding of bloodstain pattern principles and their application to BPA.

2.4.1. Demonstrate an understanding of blood components and related human anatomy and physiology.

2.4.2. Demonstrate an understanding of the effects of target surface characteristics on the resulting bloodstain patterns.

2.4.3. Demonstrate an understanding of the effect of environmental factors on the formation and/or drying time of bloodstain patterns, to include:

2.4.3.1. Air flow.

2.4.3.2. Humidity.

2.4.3.3. Temperature.

2.4.3.4. Substrate characteristics.

2.4.3.5. Animal/insect activity.

2.4.4. Demonstrate an understanding of the characteristics of blood in motion, to include:

2.4.4.1. Drop formation.

2.4.4.2. Oscillation.

2.4.4.3. Flight paths.

2.4.4.4. Accompanying drop.

2.4.4.5. Wave castoff.

2.4.4.6. Distribution of stains.

2.4.4.7. Kinetic energy.

2.5. Demonstrate an understanding of the mathematical principles that relate to BPA, to include knowledge of the methods used to measure bloodstains and bloodstain patterns. These include:

2.5.1. Methods for the measurement of individual bloodstains.

2.5.2. Trigonometric functions as they relate to BPA.

2.5.3. Methods for origin determination.

2.6. Demonstrate an understanding of how the physical appearance of bloodstain patterns (size, shape, distribution, and location) relates to the mechanism by which they were created.

2.6.1. Demonstrate the ability to identify bloodstain patterns.

- 2.7. Demonstrate acceptable documentation methods of bloodstain pattern evidence, including:
 - 2.7.1. Documentation techniques specific to BPA, to include:
 - 2.7.1.1. Photography.
 - 2.7.1.2. Sketching.
 - 2.7.1.3. Note taking.
- 2.8. Demonstrate an understanding of the methodologies for the preservation and collection of bloodstain pattern evidence that allow for future examination(s).
- 2.9. Demonstrate an understanding of bloodletting injuries, their locations, and their potential effects on the bloodstain pattern(s).
- 2.10. Demonstrate an understanding of searching, chemical testing, and enhancement techniques as they pertain to bloodstains.
- 2.11. Demonstrate an understanding of the limitations of BPA.
- 2.12. Demonstrate the ability to apply BPA to assist in the reconstruction of a bloodletting event(s).
- 2.13. Demonstrate the ability to communicate findings, conclusions, and opinions by written and/or verbal methods.

3. Mentorship

During the course of training, the BPA trainee and mentor must document and participate in a mentorship program. This training should include, but is not limited to, the evaluation of the required objectives, the review of completed casework, supervised BPA scene and laboratory work, and the observation of expert testimony.

4. Competency Testing

A BPA trainee must participate in and successfully complete a competency test prior to performing independent analysis and rendering expert opinion. Competency testing may be administered incrementally and/or cumulatively to allow the trainee to conduct some of the analyses independently. (For example, a mentor may allow the trainee to complete a competency test in the area of photography and then allow the trainee to photograph a scene independently.)

5. Continuing Education Requirements for a Bloodstain Pattern Analyst

- 5.1. A minimum of eight hours of training related to BPA should be completed annually. This may include, but is not limited to, attending professional conferences, seminars, and/or workshops.
- 5.2. It is recommended that one belong to a professional organization(s) related to BPA.

6. Minimum Requirements for a Bloodstain Pattern Analysis Mentor

- 6.1. A mentor must be an active practitioner in the field of BPA and should have a minimum of three years of casework experience as a qualified bloodstain pattern analyst.

6.2. A mentor should have fulfilled all previously stated requirements for a bloodstain pattern analyst.

Glossary

Active practitioner—An individual who is an analyst actively involved in bloodstain pattern training and/or BPA casework and/or performing technical reviews of BPA casework.

Bloodstain pattern analyst—An individual who has successfully completed the prescribed course of study.

Bloodstain pattern analysis mentor—An individual who is an active practitioner in the field of BPA with a minimum of three years of casework experience as a qualified bloodstain pattern analyst and having fulfilled all previously stated requirements for a bloodstain pattern analyst.

Bloodstain pattern analysis trainee—An individual who has met the pretraining minimum and is actively working toward meeting the requirements as described in the *Scientific Working Group on Bloodstain Pattern Analysis Guidelines for the Minimum Educational and Training Requirements for Bloodstain Pattern Analysts*.

Competency test—A method used to demonstrate the successful completion of a BPA trainee's course of study. The competency test(s) may be administered incrementally and/or cumulatively.

Mentorship—A program administered under the direction of a qualified bloodstain pattern analyst during the course of a BPA trainee's training. This training should include, but is not limited to, the evaluation of the required objectives, the review of completed casework files, supervised BPA scene and laboratory work, and the observation of expert testimony.

Professional organizations—Organizations recognized by the general scientific community that devote a portion of their subject matter to the science of BPA (e.g., the American Academy of Forensic Sciences [AAFS], the Canadian Society of Forensic Science [CSFS], the International Association of Bloodstain Pattern Analysts [IABPA], the International Association for Identification [IAI], and the Forensic Science Society [FSS]).