

# Language of Forensics: Bloodstain Pattern Evidence



# LANGUAGE OF FORENSICS: BLOODSTAIN PATTERN EVIDENCE

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## Language of Forensics

Discipline-specific language skills can only be acquired through lessons of the very subject itself and not through general language courses. The Language of Forensics (LoF) resource is an open educational resource tool used to help learners acquire a level of proficiency and understanding of the vocabulary and technical language used in the forensic science field. This tool will target not only comprehension skills (e.g., glossaries, flash cards, picture games, drag-and-drop), but also pronunciation guides and audio clips so learners may practice their verbal and audial skills with the forensic language. Combinations of audio and visual learning significantly increases the success of learner comprehension, and introduce the repetition necessary for memory recall. This resource will help provide a good “baseline” for those interested or practicing in the field of forensic science.

### Warning

Forensic science is a diverse discipline that covers a range of complex themes and scenarios. Many scenarios can be emotionally challenging and distributing. Certain terms and interactive activities (e.g., graphic images) may contain potentially distributing content.

### Funding

This project is made possible with funding by the Government of Ontario and through eCampusOntario’s support of the Virtual Learning Strategy. To learn more about the Virtual Learning Strategy visit: <https://vls.ecampusontario.ca>.



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## General Terminology

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### Bloodstain Pattern Analysis (BPA)



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**here:**

**<https://ecampusontario.pressbooks.pub/lofbloodstainpatternevidence/?p=5#h5p-1>**

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The analysis of the shape, size, distribution, and location of bloodstains. Can be analyzed to give information about how the events took place that resulted in the bloodstain pattern.

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### Clotting



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As blood is allowed to sit it begins to [wp\_glossary id="59"] coagulate[/wp\_glossary] and form [wp\_glossary id="77"]gelatinous clots[/wp\_glossary] due to the [wp\_glossary id="79"]cellular material[/wp\_glossary] in blood. Results from the separation of the liquid portion of the blood from the cellular material within the bloodstain.

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### Coagulate



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Process of blood going from its fully liquid state to a partially liquid-solid state due to the [wp\_glossary id="81"]conglomeration of the cellular material[/wp\_glossary] in the blood.

**Dilution**



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When a bloodstain mixes with other materials/fluids like other bodily fluids, cleaning detergents, water, etc. it can cause the blood stain to lose its dark, rich blood like appearance and appear more dull brown.

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**Void**



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Site suspected to have been taken by the perpetrator to leave the crime scene.

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## Pattern Types

### Passive

Bloodstains created by only the force of gravity acting on the blood creating the bloodstains. The following are secondary classifications that are a subset of passive [wp\_glossary id="61"]bloodstain patterns[/wp\_glossary].

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#### Drip Stain



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Single blood drops that are relatively round with almost no satellite spatter, formed due to gravity only.

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#### Drip Pattern



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A pattern formed from a liquid dripping into another drop of liquid, where at least one of the liquids is blood.

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#### Drip-trail Pattern



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A pattern that is formed from the blood dripping off of a moving object or person onto the ground outlining the [wp\_glossary id="63"]direction of movement[/wp\_glossary].

### Flow Pattern



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<https://ecampusontario.pressbooks.pub/lofbloodstainpatternevidence/?p=25#h5p-9>

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A bloodstain pattern that forms by gravitational forces causing movement of a small or large volume of blood from the initial droplet

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### Pool Pattern



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A form of bloodstain that has no particular pattern but indicates that there was an accumulation of a large volume of blood on a specific substrate and will take its shape with no satellite spatter.

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### Satellite Spatter



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Small drops distributed around the main blood droplet. The degree of the spatter depends on nature of the surface the blood spatter is found on.

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### Saturation Pattern



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A form of bloodstain that has no particular pattern but indicates that there was an accumulation of a large

volume of blood on a porous substrate(ex. sheets, pillows, carpet) thus has been absorbed into its matrix. Once the material has maximized in absorption the blood begins to pool on the surface.

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### Splash Pattern



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A form of pattern formed from blood falling into other blood; usually larger volumes or dropping from higher heights resulting in more satellite spatters.

### Spatter

Bloodstains resulting from a blood drop encountering an external force that will cause it to break apart resulting in dispersion.

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### Cast-off Pattern



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A blood bearing object is put into motion causing the blood of the object to be released tangentially to the object's movement and landing on a nearby surface.

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### Expiration Pattern



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A bloodstain pattern made from the expulsion of blood through the mouth, nose, or respiratory system; can consist of mucus or bubbles in the blood spatter.

### Impact Pattern



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A bloodstain resulting from an object forcefully impacting a blood source. This results in the blood spraying away from the impact site.

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### Projected Pattern



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formed by the blood being propelled out of a breached vessel, often an artery.

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### Spatter from a gunshot



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A high-velocity bloodstain pattern made from a bullet impacting a blood source, results in a mist-like fine drop deposition on a surface.

## Transfer

Bloodstains resulting from the contact between two surfaces where one has blood and the other does not; sometimes can consist of friction ridge patterns.

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## Swipe Pattern



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A type of transfer pattern where a moving object with blood makes contact with a surface with no blood on it and as it moves along the surface it transfers blood onto the second surface; the [wp\_glossary id="63"]direction of movement[/wp\_glossary] can be inferred.

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## Transfer Pattern



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A surface wet with blood is brought into contact with another surface. The object that is used in the transfer can leave behind a partial or a full imprint and it may indicate the [wp\_glossary id="63"]direction of movement[/wp\_glossary] of the object.

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## Wipe Pattern



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A type of transfer pattern where a moving object with no blood makes contact with a surface with blood on it and moves along it causing the blood to move along and spread out; the [wp\_glossary id="63"]direction of movement[/wp\_glossary] can be inferred.

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## Scene Reconstruction

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### Area of Convergence



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The region in two dimensional space that is the approximate location where the bloodstains originated from. This area is determined by tracing lines through the long axis of multiple bloodstain spatters and looking at where they converge.

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### Angle of Impact



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The acute angle that forms between the surface where the blood drop is deposited and the path of the blood drop.

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### Area of Origin



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The region in three dimensional space that is the approximate location where the bloodstains originated from. This area is gauged by using the [wp\_glossary id="65"]angle of impact[/wp\_glossary] and the [wp\_glossary id="67"]area of convergence[/wp\_glossary] using the following methods : String Method and Laser Scanning.



## Directionality of Bloodstains



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The movement of the source of blood, if any, can be determined by analyzing the tail of each blood drop in a bloodstain while taking in account other factors such as gravity.

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## IR Photography



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A technique used to detect blood on substrates using IR frequency light to determine the location where blood, if any, is deposited; often used on dark substrates.

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## Interactive Activity

### A. Classifying Bloodstain Patterns



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<https://ecampusontario.pressbooks.pub/lofbloodstainpatternevidence/?p=44#h5p-28>

### B. Bloodstain Patterns



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### C. BPA Crime Scene Reconstruction



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### D. Altered BSP





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## E. Spatter BSP



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## F. Transfer BSP



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## G. Passive BSP



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This is where you can add appendices or other back matter.