Catalyst:
• Write some examples of how you think that blood can provide evidence at a crime scene.

Objectives:
I will:
• Define serology
• Discuss ABO blood typing
• Do the pre-lab

Forensic Serology

Forensic serology is the application of the study of blood, semen, saliva and other body fluids, to legal matters.

Add to “Glossary” in your composition book

The serology section of a forensic laboratory may deal with any or all of the following:
• blood typing **what we will start with**
• characterization of unknown blood
• blood spatter analysis for crime reconstruction (BPA)
• paternity testing
• semen identification in rape cases
• DNA used for identification

What is a “blood type?”

• What are the 4 basic blood types?

• How can blood types be helpful in forensic science?

How do we get our blood type?

How is our blood type inherited?
How common are the four blood types?

<table>
<thead>
<tr>
<th>TYPE</th>
<th>DISTRIBUTION</th>
<th>RATIOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>O +</td>
<td>1 person in 3</td>
<td>38.4%</td>
</tr>
<tr>
<td>O -</td>
<td>1 person in 15</td>
<td>7.7%</td>
</tr>
<tr>
<td>A +</td>
<td>1 person in 3</td>
<td>32.3%</td>
</tr>
<tr>
<td>A -</td>
<td>1 person in 16</td>
<td>6.5%</td>
</tr>
<tr>
<td>B +</td>
<td>1 person in 12</td>
<td>9.4%</td>
</tr>
<tr>
<td>B -</td>
<td>1 person in 67</td>
<td>1.7%</td>
</tr>
<tr>
<td>AB +</td>
<td>1 person in 29</td>
<td>3.2%</td>
</tr>
<tr>
<td>AB -</td>
<td>1 person in 167</td>
<td>0.7%</td>
</tr>
</tbody>
</table>

46.1%
38.8%
11.1%
3.9%

Common blood type by nationality:

Lab:

“Are all of Mr. Johnson’s children his biological offspring?”

- **Pre-Lab:** (highlight the answers to these questions and write the number of the question next to each answer)
  1. Who identified the ABO blood group?
  2. What causes the differences in blood types?
  3. What are antigens?
  4. What are antibodies?
  5. How many alleles are associated with the ABO blood group gene?
  6. Explain why the US Justice system does not recognize ABO blood typing as an acceptable “paternity test” but why it is still a useful test in these cases anyway.
  7. What is the guiding question for this investigation? (write this in your comp book)

Getting Started:

- Test a known sample of blood
  - **Materials handler:** get a known blood sample from Mrs. Frazier
  - Follow the procedures
  - **Reader:** read the instructions to your group
  - **Recorder:** record the results (draw and describe) on the whiteboard, be **prepared to share your results with the class**

Laboratory Investigation Proposal

- Work together as a group to prepare an investigation proposal
  - **All** should fill one out
  - The recorder’s paper should be the one which is **signed** by Mrs. Frazier
  - [ADI Laboratory Investigation Proposal](#)

Closing Question

- How can blood typing be a useful forensic tool?