One of the most common problems encountered by forensic scientists in the lab is poor collection, preservation and transport of evidence. With today’s emphasis on DNA, the presence of biological evidence at a crime scene is often the most incriminating and valuable source. Within most of the 50 states in the United States of America, Forensic Scientist rarely leave the lab and therefore the collection of evidence is done by police personnel, investigators or a special crime unit. Some states however have developed special crime scene investigation units to aid in the collection and perseveration of evidence but this is rarely the case. At a crime scene the most common types of biological evidence found are:

- Blood
- Semen
- Saliva
- Hair
- Teeth
- Tissue
- Bone
- Urine

These are not the only items found at a crime scene but account for majority of the evidence found. There are different standards and protocols that vary between departments but these are some common protocols for the collection and preservation of evidence. There are many different techniques than are used by forensic scientist and where possible items should be left in its original state and sent to the laboratory for the DNA collection.

Note ** Before any item of physical evidence is collected it must be properly photographed and fully documented. You must also have the required search and seizure documents. After collection each item should be carefully labeled and sealed so as to establish a chain of custody**
Collection of Blood Evidence:

Blood is commonly found at crime scenes and is the major contributor to DNA profiles. DNA is found within the nucleus of the white blood cells. The white blood cells are in much fewer numbers compared to the red blood cells which have no nucleus and DNA. However, most blood samples once taken properly yield good results when DNA is extracted.

**Wet Blood samples:**

A wet blood sample should be collected using a sterile swab passed over the stained area. The swab should then be allowed to dry completely before being packaged.

**Dry Blood samples:**

For the collection of a dried blood stain a sterile swab should be slightly moisten with distilled water and the area swabbed. Like the wet sample it is important that the swab is allowed to dry.

If the sample is packaged wet then it may promote the growth of mold and bacteria and degrade the DNA within the sample. All blood samples should be packaged in paper or cardboard but never in plastic. If the sample collected is not going to be analyzed within a short time frame it should be refrigerated to help preserve the DNA for later analysis. A reference sample must also be collected where possible.

Note** In some cases it may be more important to preserve the blood splatter pattern than to collect and interfere with the evidence.

[Picture of Sterile swab used for collection of blood evidence and DNA](http://www.evidencemagazine.com/issues/feb04/FDCW.htm)

[Picture of a DNA collection kit](http://www.evidentcrimescene.com/cata/kits/kit4085.jpg)
Collection of Semen Evidence:

Semen is another common source of evidence especially in rape cases and can often be observed without the use of any enhancements. Semen can be located by a dry crusty white stain. The use of an alternate light source may also be use to aid in location as semen fluoresces at a certain wavelength when viewed with goggles.

*Semen samples:*

A semen stain would be collected in the same manner as a blood sample mentioned before. When possible the entire item containing the semen sample should be collected and sent to the lab as there are often trace evidence as well.

In the majority of cases semen is collected from sexually assaulted victims and bed linens.

Note** A rape kit should be conducted by the hospital with dialogue from the evidence collector.
Collection of Saliva Evidence:

Saliva samples are not as commonly used as blood and semen however in some cases it may be critical evidence. Saliva samples are usually collected from items such as cigarette butts, chewing gum, soda cans, envelopes, stamps and bite marks.

Saliva Samples:

A saliva stain would be collected in the same manner as blood using a sterile swab. The sample must then be allowed to dry and packaged in a paper envelope or cardboard swab box.

Common items from which salvia may be collected from at a crime scene. Envelope, cigarette butts, soda cans and bite marks.

Collection of Hair Evidence:

Even though hair is considered as trace evidence a forensic biologist may be required to collect such a sample. While it is possible to extract DNA from hair sample it often requires a hair sample that has its root intact. Hair of the suspect may be removed during the struggling of a victim and suspect during the commission of a crime and thus proves to be valuable evidence. Hair can be found anywhere as it is not easily seen and may be moved within a crime scene. Special precautions must be taken as not to overlook and destroy hair samples.

Hair Samples:

Hair samples should be collected with a tweezers and placed in a druggist fold or paper envelope. Each piece of hair should be separately packaged as to avoid any cross contamination.

To the left: Collection of some hair samples.

Below:
Diagram on how to make a druggist fold for hair collection

Making a Druggist Fold
Collection of Tissue, Bone and Teeth Evidence:

The use of Tissue, Bone and Teeth evidence are more commonly associated with identification of a victim rather than obtaining evidence from a suspect. There are specialized fields in forensics that deal with these items of evidence most evidently such as forensic Odontologist, Forensic Anthropologists and Forensic Toxicologist.

Teeth, Tissue, Bone and Urine Samples:

These samples are not as commonly used and will not be discussed here however note that they are special procedures for the collection and preservation of these types of samples which may prove to be valuable evidence from case to case.

This is an image of the remaining skeletal from a human skull that could be analysis
http://www.nlm.nih.gov/visibleproofs/media/detailed/iii_d_115.jp

This image show a piece of brain tissue that may be use for many different analysis especially in the field of toxicology
http://media.kansan.com/img/photos/2005/03/10/br