



INDIANAPOLIS-MARION COUNTY FORENSIC SERVICES AGENCY

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Evidence Submission Guideline #8

EVIDENCE COLLECTION FOR DNA ANALYSIS

DNA analysis of biological evidence has the potential of eliminating possible sources of a sample, or in the case of matches, indicating what percentage of the population that has the same characteristics. The ability to successfully perform DNA analysis will often depend on how well the specimens are collected and how well they are preserved.

Potentially, DNA analysis can be performed on any human material containing cellular nuclei. The following are examples of evidence that should be considered for DNA analysis:

- A. Blood and bloodstains
- B. Semen and semen stains, used condoms, used tampons or feminine pads
- C. Saliva stains from cigarettes and chewed chewing gum
- D. Skin and other tissues, hats, eye glasses, clothing
- E. Bones, teeth
- F. Organs
- G. Plucked hair, a DNA profile will only be obtained if the root sheath is present

I. Reference Standards

- A. From living subjects for DNA analysis
 - 1) Buccal cell standard in lieu of a blood sample may be collected. Buccal cell standard collection kit including detailed information about sample collection, labeled evidence envelope, thumbprint identification card, swab carton, swab and an analysis request card is available from main office of the crime lab.
 - 2) The Indianapolis-Marion County Forensic Services Agency (IMCFSA) should be informed if the subject has received a blood transfusion within the last 120 days.
 - 3) One sample of venous blood, at least 5 ml should be collected in a purple stoppered vacutainer (EDTA tube). Blood standard collection information sheet including detailed information about sample collection, labeled evidence envelope, thumbprint identification card and an analysis request card is available from the main office of the crime lab. The purple stoppered vacutainer (EDTA tube) will be provided by the blood drawing facility.

- 4) Plucked hair with attached root sheath can also be used as a reference standard, however a sample of venous blood or buccal cell standard is preferred.

B. From deceased subjects for DNA analysis

- 1) One sample of venous blood, at least 5 ml, should be collected in a purple stoppered vacutainer (EDTA tube). When venous blood is not obtainable, blood from the heart or major internal blood vessel or organ should be collected in a purple stoppered vacutainer.
- 2) Blood samples must be refrigerated (not frozen) until transported to the laboratory.
- 3) If a blood sample is unobtainable, a bone or tissue sample should be collected. A bone sample, at least the size of a die (about 1/2 inch cubed), should be collected from any bone that is relatively dry, without pooled blood (for example a rib or leg bone). A tissue sample, at least the size of a quarter, should be collected from any muscle that is free of pooled blood. Bone and tissue samples should be packaged in a clean container without any fixatives and frozen until transported to the laboratory.
- 4) Alternately, if a blood sample is unobtainable the subject's clothing and/or blood stained evidence immediately below the body, at autopsy, may be used as a secondary standard.

II. PATERNITY TESTING ANALYSIS FOR CRIMINAL PROSECUTION

Indianapolis-Marion county Forensic Services Agency does not perform paternity testing analysis. The law enforcement agency needing paternity testing will be referred to a private laboratory.

The following pertinent information is included for required samples needed for paternity testing.

- A. Paternity analysis requires standards from the child, the mother and the alleged father. These standards can be a whole blood standard in a purple stoppered vacutainer (EDTA tube) or buccal swabs (swabbings from the inside of the cheek with sterile cotton tipped applicators, which then are allowed to air dry and packaged in paper). Liquid standards should be refrigerated. Buccal swabs should be frozen until delivered to the laboratory.
- B. In the case where there is a pregnancy that does not go to full term, the types of sample needed by the laboratory are products of conception. What exact samples are obtained is dependent on the medical facility collecting them. If there are no identifiable features in the obtained sample all or part of it should be submitted in a clean container with no fixatives or preservative. This sample should be kept frozen until it is submitted to the laboratory. If there are identifiable features, a limb from the unborn child is sufficient, placed into a clean container with no preservatives and frozen.

III. GENERAL EVIDENCE HANDLING

- A. Keep all body fluid evidence as cool as possible to minimize degradation. When the size of the item and the availability of space allows, store evidence stained with body fluids refrigerated, preferably frozen, until transported to the laboratory.
- B. Package all body fluid evidence separately in paper and label appropriately. The DNA test is very sensitive and will detect contamination of evidence packaged together. Never use plastic bags or containers to store stained articles. Be sure body fluid stains are air dried before packaging. Bacterial action is accelerated under damp conditions. Bacteria can destroy DNA and make analysis impossible.

The proper collection and preservation of biological evidence is critical for DNA analysis. If a question arises, please contact the DNA Analysis Unit of the Indianapolis-Marion County Forensic Services Agency at (317) 327-3670.

Evidence Submission Guideline #8 adapted from Indiana State Police Laboratory Physical Evidence Bulletins.

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Revised 2/2016