

MITOCHONDRIAL DNA Analysis



...premium technology for challenging samples

The Technology

Mitochondrial DNA (mtDNA) is present in the mitochondria of nearly every cell in all living organisms. Mitochondria produce energy and are present in large quantities in a cell - this is in comparison to the nucleus of a cell, which is present only once in most cells, and not at all in other cells. Therefore, even if nuclear DNA in a biological sample is degraded due to age or exposure to environmental conditions, it is possible that mtDNA can still be successfully analyzed. Mitochondrial DNA has the additional advantage of being present in some biological materials where the amount of nuclear DNA is minimal or highly degraded, such as hair shafts and ancient bones.

Inherited along the maternal line, mtDNA will be the same in any individual descended from the same maternal line. It is important to note that a daughter and son of the same woman will have the same mtDNA profile. Therefore, a maternal relative of a suspect or victim could be tested in lieu of the person of interest.

The Applications

Mitochondrial DNA analysis is suited to small, old or degraded samples likely to be from a single source. Examples of the types of cases which are amenable to mtDNA analysis are outlined below:

- Cold cases – old or degraded evidence or single hairs without roots
- Unidentified human remains – evidence comes from badly decomposed bodies and is limited to bones or teeth
- Current homicide cases – evidence consists of single hairs without roots
- Post-conviction cases – evidence is old, degraded or limited to single hairs without roots
- Kinship cases – testing of two alleged maternal relatives

Suitable Sample Types

- Shed hairs
- Cut hairs on microscopic slides from previous hair analysis
- Aged or degraded tissue, bones, or teeth
- Minute quantities of blood or other bodily fluids

Orchid Cellmark welcomes case consultations and would be happy to discuss the specifics of your case with you. Information on Pricing, Evidence Handling and Case Submission is available through the forensic link of our website.

For more information, please call or click:
1-800-USA-LABS (872-5227) in the US
1-866-TEST-DNA (837-8362) in Canada
www.orchidcellmark.com