



### **B7 A DNA Paternity Case Involving a Two-Week Old Fetus**

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The goal of this presentation is to present the techniques utilized in the preservation, preparation, and DNA analysis of a two-week old aborted fetus.

A woman was raped on July 5, 2001, which resulted in pregnancy. The pregnancy was verified through an ultrasound, and was terminated via a vacuum dilatation and curettage (D&C) on August 1, 2001. The product of conception specimen was collected and shipped through overnight delivery on ice, along with whole blood specimens from the mother and alleged rape suspect. All samples arrived at the laboratory eight days after the D&C procedure was performed on the victim.

The product of conception sample consisted of several pieces of tissue surrounded by a piece of gauze placed in a specimen container. Upon arrival, the sample was immediately examined visually. Segments of tissue were placed into four paraffin block cassettes and immersed in formalin to initiate the tissue fixing process. The four tissue cassettes were soaked in formalin for eight days and then were embedded into four corresponding paraffin blocks. A slide corresponding to each paraffin block was cut and stained for microscopic examination. A specialist in the field of Prenatal, Perinatal and Placental Pathology with the Armed Forces Institute of Pathology examined each of the four slides for the presence of fetal and placental cells (chorionic villi), which contain the same genetic profile of the fetus. Areas consistent with fetal tissue and/or placental tissue were marked on each slide. The marked areas on the slides were associated to their corresponding paraffin blocks, and these areas were targeted for DNA extraction.

A chelex extraction was performed on one of the slides that microscopically demonstrated the presence of fetal cells. STR analysis using AB's Profiler Plus system was performed, and limited data containing a mixture of the mother and the fetus was obtained. An organic extraction of the tissue in the corresponding paraffin block was performed, and a full STR profile containing a mixture of the mother and the fetus was obtained. The mixture results obtained from the product of conception contained half allele share with the alleged suspect in all nine loci analyzed. The suspect could not be excluded as the father of the product of conception, with a probability of paternity of 99.99%.

The opinions and assertions expressed herein are solely those of the authors and are not to be construed as official or as the views of the U.S. Department of Defense or the U.S. States Department of the Army.

#### **Paraffin Blocks, Product of Conception, Probability of Paternity**