

THE EFFICACY OF FLUORESCENCE IN SITU HYBRIDIZATION (FISH) TECHNIQUE TO DETERMINE SEX FROM HUMAN HAIR

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While the gross autopsy has always been and will continue to be the cornerstone of forensic science, the modern forensic pathologist must be prepared to employ all the resources of anatomic and clinical pathology, in order to solve the medicolegal cases presented to him. Diagnosing the sex of biological evidence can provide important information in a forensic investigation. Identification of the gender of hair represents relevant medicolegal evidence in criminal cases.

In Situ Hybridization (ISH) is a molecular biology method for sexing human cells from different intact tissues and biological fluid cells. It allows detection and morphological demonstration of nucleic acid sequences either RNA or DNA: in tissue sections, single cells, or chromosome preparations. Nucleic acid sequences are directly hybridized to their complementary DNA (in situ).

In situ hybridization was introduced in 1969 and has been used primarily for the localization of DNA sequences. Because of its high specificity ISH became increasingly important in several areas of biomedical research including developmental biology, cell biology, genetics and forensic pathology. Sex determination, whether in interphase nuclei or metaphase spreads in fetal and adult cells was one of the first applications of ISH.

The aim of the present work was to study the efficacy of Fluorescence In Situ Hybridization (FISH) as a forensic laboratory technique to determine its ability to identify correctly the gender of hair. Male and female hair samples were collected from randomly chosen individuals present in different departments of Alexandria Main University Hospital.

In this study we used in-situ hybridization technique for sexing human hair randomly collected and blindly tested. The hybridization signals were compared by testing the probes on fresh blood smears and male metaphase spread. Results of the present study will be discussed in detail.

