Standard for Validation Studies of DNA Mixtures, and Development and Verification of a Laboratory's Mixture Interpretation Protocol

WHAT IS AN AAFS STANDARD FACTSHEET?

The AAFS produces clear, concise, and easy-to-understand factsheets to summarize the contents of technical and professional forensic science standards on the OSAC Registry. They are not intended to provide an interpretation for any portion of a published standard.

WHAT IS THE PURPOSE OF THIS STANDARD?

Testing of evidence containing DNA (e.g., blood, semen, saliva, tissue) is routinely performed to exclude or potentially link an individual to a crime scene.

Accurate and consistent evaluation of DNA test results requires the forensic science service provider (FSSP) performing DNA testing to 1) conduct sufficient validation studies, 2) develop documented procedures (i.e., protocol) for the evaluation of the DNA data, and to 3) verify the accuracy of and consistent use of the protocol by DNA analysts within the FSSP.

This document establishes requirements for achieving 1) and 3), and portions of 2) in conjunction with ANSI/ASB 040, 1st Ed., 2019.

WHY IS THIS STANDARD IMPORTANT? WHAT ARE ITS BENEFITS?

This standard provides requirements for the reliable and consistent evaluation of DNA test results.

This is achieved through the use of written protocols directly based upon appropriate foundational experiments (termed validation studies) conducted on various DNA samples containing mixtures of DNA from several individuals, and formal verification of the use of the protocol within the FFSP.

FSSPs performing forensic DNA testing are encouraged to meet this standard.

HOW IS THIS STANDARD USED, AND WHAT ARE ITS KEY ELEMENTS?

The standard provides direction for conducting the necessary foundational validation studies required for developing the protocol to be used by analysts when evaluating, reporting, and testifying to DNA test results. It also provides direction for verifying that the protocol is used appropriately and consistently by analysts generating accurate conclusions from DNA results obtained in forensic casework.

The specific detailed requirements assist the analyst in interpreting the DNA test results obtained from items of evidence and then comparing those results to the results obtained from known individuals who may be associated with a crime. This standard is to be used in conjunction with ANSI/ASB 040, 1st Ed., 2019 and ANSI/ASB 018, 1st Ed., 2020 if probabilistic genotyping software is used.

This is a standard of practice. Additional tests beyond those required in the standard may be necessary depending on the testing assays used and the types of evidence tested by the FSSP.