



CONCEPT TRAINING DOCUMENT

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1. INTRODUCTION

One of the goals of the ENFSI DNA working group is to establish forensic DNA analysis quality assurance guidelines. Training and competence of the staff is an important issue for every forensic DNA laboratory. The recommendations described below are an addition to the Quality Assurance Programme (DNA WG/QA prog).

This document is to provide recommendations concerning training and competence testing to ensure that the competence of staff is assessed using appropriate criteria to enable them to perform their roles acceptably within the DNA Units.

Of course, the implementation of these recommendations as set out in this document should be customized according to the organizational structure of the forensic DNA laboratory, which should reflect the specific procedures/tasks performed by the laboratory.

All training related activities must be documented, signed and dated by appropriate personnel.

The use of samples where expected outcome is known, is recommended for testing the competence of the staff.

2. SCOPE

All staff within the DNA units must be trained according to a specific training programme. This training programme describes all methods and documentation the trainee must be familiar with. During the training programme, the trainee will be supervised by an experienced and competent staff member. The training should be completed within a specific timeframe. Finally, the trainee will be assessed to ensure that he/she fully satisfies the competency criteria for each process to be deemed competent to perform that technique independently in casework.

- Demonstrate knowledge of the preparation of solutions used and their storage requirements.
- Demonstrate how to identify and trace individual samples within a batch.
- Demonstrate the use of relevant paperwork and computer systems.
- Explain the importance of the various check stages and demonstrate that they can perform them reliably.
- Describe or demonstrate appropriate storage of sample type.
- Describe and explain the use of the specific controls.

6. SPECIFIC METHODS

In addition to the general competencies detailed above the following competency should be shown.

6.1. Evidence examination of biological traces and performing of presumptive tests to determine the nature of the traces.

The trainee must receive and open a minimum of 5 exhibit items covering the range of items which are normally submitted to the laboratory (e.g. swabs, cigarette butts, clothing, weapons, various packaging material ...) determine and perform appropriate presumptive analyses, determine appropriate sampling strategy for the evidence and sample the evidence following the methods described in the documentation.

The trainee is deemed competent if:

- They are successful in correct exhibit handling at all times.
- They are successful in performing the presumptive tests correctly with correct results for the control samples.
- There is no evidence of contamination between samples.
- Demonstrate knowledge of chain of custody procedures.
- The theoretical knowledge is satisfactory/up to date.

The experienced member of staff supervising the trainee will decide, with the agreement of the trainee when the trainee is competent to perform this task independently.

6.2. DNA Extraction

A trainee DNA extraction analyst must perform the following competency test.

6.2.1. Extraction of reference material (blood, buccal scrapes and hairs)

6.2.1. a. Manual *extraction methods*

The trainee must extract a batch of minimum 5 blood samples, 5 buccal samples and 5 hair samples, (including controls) of known origin.

- The profiles of the test samples are correct.
- Has basic knowledge of the routine maintenance of the electrophoresis apparatus
- The theoretical knowledge (inclusive knowledge and requirements for re-electrophoresis) satisfactory/up to date.

The experienced member of staff supervising the trainee will decide, with the agreement of the trainee, when the trainee is competent to perform this task independently.

6.5. Analysis of data produced by the sequencer with regards to the kind of PCR kit

Reference and crime scene samples

The trainee must analyse a minimum of one gel/plate of samples that were previously run on an automated sequencer. (Following the interpretation rules described in the documentation).

The trainee is deemed competent if:

- The theoretical knowledge (including checking the positive and negative controls, internal standard, allelic ladder, knowledge of sample and electrophoresis problems and requirements for re-electrophoresis) is satisfactory/up to date.
- The results are correct (demonstrates the ability to distinguish true allele peaks from non-allelic or atypical peaks e.g. stutters, pull up, primer dimer etc.)

The experienced member of staff supervising the trainee will decide, with the agreement of the trainee, when the trainee is competent to perform this task independently.

6.6. Reporting results

It is advisable that the trainee has a period of practical training in all areas of the process in order to meet the requirements of the knowledge needed for the interpretation of the results.

Besides the general items described in chapter 5 the trainee must be able to demonstrate that he/she :

- Has knowledge of the search and recovery of biological traces
- Has knowledge of the different isolation, concentration, quantification, PCR, electrophoresis and data analysis/analytical techniques
- Has knowledge of the procedure of submitting data to the DNA-database(s)
- Has knowledge of the agreements between all (external) parties (police etc.)
- Has knowledge of the national legislation on genetic/DNA data.
- Is familiar with the current bibliography regarding DNA forensics.
- Has knowledge of the risks of damaging DNA traces.
- Has knowledge of the risks of damaging evidentiary material /traces.
- Has knowledge of all the aspects that can improve the results generated/obtained.

