

ISFG Pre-congress workshop

Mixture interpretation: Basic and/ or advanced use of the software EuroForMix and DNASTatistX

Monday September 9th 2024

This workshop consist of a basic (morning session) and an advanced part (afternoon session). Participants can subscribe to one or both workshops. It is not mandatory to follow the basic course to sign up for the advanced course.

As the workshops include hands-on exercises, it is required that participants bring their own laptops on which the software is installed. Instruction will be provided prior to the workshop. Data for the practical exercises will be provided, however, participants are also encouraged to bring their own data.

Mixture interpretation: Basic use of the software EuroForMix and DNASTatistX

Description of the basic mixture interpretation workshop

This workshop includes an introduction to the interpretation of DNA mixtures and explanation of likelihood ratio calculations using EuroForMix/DNASTatistX. Hands-on exercises will be performed using the latest versions of the software using provided exercises. To facilitate, we will provide instructions to enable users to download the freely available software onto their laptops beforehand. How to interpret the results as well as how to report the results will be discussed. The aim of the workshop is to provide sufficient information and support so that users will be able to run EuroForMix and DNASTatistX software and to understand and report the results.

Intended audience

- Anyone interested in probabilistic genotyping software to aid in the evaluation of mixed DNA profiles can attend, including DNA reporting officers, DNA scientists, DNA analysts, DNA technical leaders, laboratory directors, attorneys and consultants.
- The workshop is aimed toward an audience familiar with the issues surrounding complex DNA mixture interpretation and having some experience with statistical calculations.

Learning outcome

- Understanding of likelihood ratio principles and application to autosomal capillary electrophoresis generated mixture profiles.
- Hands-on experience using EuroForMix and DNASTatistX for weight of evidence calculations.
- Knowledge on how to report the results to court.

Preliminary workshop program:

Time schedule (CEST)		Subject
5min	09:00-09:05h	Welcome and introduction to the course.
20min	09:05-09:25h	Introduction to the interpretation of DNA mixtures.
60min	09:25-10:25h	Likelihood ratio calculations using EuroForMix/ DNASTatistX.
15min	10.25-10.40h	Break
50min	10:40-11:20h	Hands-on exercise using EuroForMix.
50min	11:20-12:10h	Hands-on exercise using DNASTatistX. <ul style="list-style-type: none">• Getting familiar with the software and how to perform model selection• Model validation passed/ failed• Application to a different kit and the use of different settings (participants are encouraged to bring their own data)
20min	12:10-12:30h	How to write a statement & evaluation of evidence.
20min	12:30-12:50h	Software validation & expected trends.
10min	12.50-13.00h	Wrap up and evaluation.

Mixture interpretation: Advanced use of the software EuroForMix and DNASTatistX

Description of the advanced mixture interpretation workshop

The advanced course is intended for case-work scientists who have experience with mixture analysis and interpretation. Some experience (theory and hands-on) with EuroForMix and/or DNASTatistX will be required. Prior to the workshop, instructions will be provided to enable users to download the latest versions of the freely available software onto their laptops and to run a pre-course exercise to make sure the software is installed correctly.

During the workshop challenging situations will be discussed, such as:

- The reference profile has many mismatches in comparison to the trace profile.
- Model validation failures.
- PCR replicates from the same STR typing kit and replicates obtained using different STR typing kits.
- Missing loci in reference profiles in comparison to the trace profile.
- Possible relatedness.
- Multiple persons of interest.

Expected trends will be discussed and hands-on exercises will be performed for some of the challenging situations. Furthermore, calibration of models as well report writing will be discussed.

Intended audience

- This workshop is aimed toward an audience familiar with probabilistic genotyping.
- Some experience (theory/ hands-on) with EuroForMix and/or DNASTatistX is required.

Learning outcome

- Insight in functionalities of the various software (including DNASTatistX, EuroForMix, EFMrep, EFMex).
- Insight in expected trends for EuroForMix/ DNASTatistX.
- Hands-on experience with the software in complex casework-like situations.

Preliminary workshop program:

Time schedule (CEST)		Subject
5min	14:00-14:05h	Welcome and introduction to the course
15min	14:05-14:20h	Overview and functionalities of software
60min	14:20-15:20h	Hands-on exercises using DNASTatistX, including discussion on expected trends, such as: <ul style="list-style-type: none">- Model validation failures and troubleshooting- Effect of conditioning- Use of the stutter model- Use of PCR replicates- Run to run variation?
20min	15:20-15:40h	Calibration and discrimination performance
15min	15.40-15.55h	Break
50min	15:55-16:45h	Hands-on exercises and discussion using EuroForMix: <ul style="list-style-type: none">- Multiple persons of interest- Possible relatedness
20min	16:45-17:05h	Introduction to EFMrep using replicates from different STR typing kits
30min	17:05-17:35h	Hands-on session using participants own data, or additional exercises supplied
20min	17:35-17:55h	Advanced report writing
10min	17:55-18:05h	Discussion on future functionalities
10min	18.05-18.15h	Wrap up and evaluation