Procedure for DNA Database Training for PowerPlex® Y23

1.0 Purpose – To provide a training program for DNA Database analysis using the PowerPlex Y23 amplification chemistry.

2.0 Scope – The training program in this document applies to Forensic Scientists in the DNA Database Section at the State Crime Laboratory who have previously trained in a Polymerase Chain Reaction (PCR)-based technology at the State Crime Laboratory.

3.0 Definitions – See Section Definitions List

4.0 Equipment – Database samples (both blood and buccal) with known profiles.

5.0 Procedure

5.1 Responsibilities

5.1.1 DNA Database Forensic Scientist Trainee

5.1.1.1 The trainee is required to keep files on all work completed. These files may include, but are not limited to, the following.

5.1.1.1.1 FA Records

5.1.1.1.2 DNA Database PowerPlex® Y23 Training Log

5.1.1.2 Prior to beginning independent analysis, Forensic Scientists shall complete a written exam and a competency test (known samples).

5.1.1.3 The trainee is required to maintain documentation for all technical or administrative reviews completed during training. These files may include, but are not limited to, the following.

5.1.1.3.1 DNA Database PowerPlex® Y23 Training Log

5.1.2 DNA Database Training Coordinator

5.1.2.1 It is the responsibility of the Database Training Coordinator to provide an outline for the training program, provide the required training samples to the Database Training Officer for assignment and analysis, and work closely with the Database Training Officer, the Technical Leader and Section supervisors to assist and monitor the trainee's progress.

5.1.3 DNA Database Training Officer

5.1.3.1 It is the responsibility of the Database Training Officer to instruct and monitor the trainee, to assign required readings (e.g., scientific literature and technical manuals), and to ensure the trainee has an understanding of required concepts and procedures. It is also the responsibility of the Database Training Officer to maintain continual, open communication between the Database Training

Coordinator, the Technical Leader and Section supervisors regarding the trainee's progress.

5.1.3.2 The files listed in the DNA Database Forensic Scientist Trainee section of this procedure require review by the Database Training Officer and/or Forensic Scientist Manager, as well as review/approval by the Technical Leader.

5.1.4 **DNA Database Forensic Scientist Manager** – It is the responsibility of the Forensic Scientist Manager to assign a Database Training Officer to a trainee and to monitor training progress.

5.1.5 **Safety Officer** – It is the responsibility of the Safety Officer to provide laboratory safety training to the trainee prior to commencement of training.

5.1.6 **Technical Leader** – It is the responsibility of the Technical Leader to review training materials and release the trainee to do independent Database analysis. It is also the responsibility of the Technical Leader to release the trainee to perform reviews of Database files. In the event a Forensic Scientist with previous training and/or experience in forensic DNA analysis is hired, the DNA Technical Leader shall assess and document the previous training of the analyst. The Forensic Scientist's training program may be expedited or modified based on the DNA Technical Leader's assessment.

5.2 Y-STR Analysis

5.2.1 Read and understand the following DNA Database procedures.

5.2.1.1 Procedure for DNA Reagent Quality Control

5.2.1.2 Procedure for PCR Amplification with PowerPlex® Y23

5.2.1.3 Procedure for Use of the 3500xL Genetic Analyzer

5.2.2 The trainee shall read and comprehend the SDS for each chemical used in the procedure to understand the hazards associated with all the chemicals used in the procedure including 1) methods and observations that may be used to detect the presence or release of a hazardous chemical, 2) the physical, health, and other associated hazards of a hazardous chemical, and 3) measures employees can take to protect themselves and others from these hazards, including environmental and administrative controls, emergency procedures, and personal protective equipment to be used.

5.2.3 Attend an in-house lecture on Y-STR analysis, including validation overview and interpretation, given by the Database Training Coordinator or designee.

5.2.4 The training officer shall demonstrate the amplification and capillary electrophoresis of samples to include proper documentation.

5.2.5 The trainee shall successfully amplify and process a minimum of 2 plates with at least 5 samples (not including controls) on each plate and provide proper documentation.

5.3 Y-STR Interpretation

5.3.1 Read and understand the Procedure for GeneMapper® ID-X and STR Interpretation with PowerPlex® Y23.

5.3.2 The training officer shall demonstrate analysis and interpretation of samples to include proper documentation.

5.3.3 The trainee shall analyze and interpret generated profiles and provide proper documentation. The trainee shall successfully report allelic calls for all samples analyzed.

5.3.4 The trainee shall pass a written exam on Y-STR analysis and interpretation.

5.3.5 The trainee shall successfully complete a Y-STR competency test consisting of both Database sample types.

5.4 Y-STR Review Training – If an analyst will only be performing Y-STR reviews and will not be performing Y-STR analysis, the DNA Technical Leader shall assess the knowledge and abilities of the analyst prior to review training. The DNA Technical Leader shall document an approval of an individual for review only training based on this assessment. At a minimum, Y-STR Interpretation and Y-STR Review Training must be completed.

5.4.1 Read and understand the DNA Database Section Procedure for Samples Analyzed In-House.

5.4.2 Observe a minimum of one Y-STR in-house run technical review performed by the Database Training Officer.

5.4.3 Successfully complete a minimum of two technical reviews of Y-STR in-house run files that are also technically reviewed by the Database Training Officer with agreed findings.

5.4.4 Complete the DNA Database PowerPlex® Y23 Training Log.

6.0 Safety – This document provides an overview to procedures that are written in additional detail in specific DNA Database documents. To see safety hazards for particular procedures, reference the appropriate document listed in the references section.

7.0 References

DNA Database Administrative Policy and Procedure

DNA Database Administrative Policy and Procedure for Safety and Hazardous Waste Disposal

DNA Database Section Procedure for DNA Reagent Quality Control

DNA Database Section Procedure for GeneMapper® ID-X and STR Interpretation with PowerPlex® Y23

DNA Database Section Procedure for Instrument and Equipment Quality Control

DNA Database Section Procedure for PCR Amplification with PowerPlex® Y23

DNA Database Section Procedure for Sample Processing Quality Control

DNA Database Section Procedure for Samples Analyzed In-House

DNA Database Section Procedure for Use of the 3500xL Genetic Analyzer

Quality Assurance Standards for DNA Databasing Laboratories

State Crime Laboratory Quality Manual

Laboratory Safety Manual- Chemical Hygiene Plan and Hazardous Communication Program

8.0 Records

- FA Records
- Y-STR DNA Database Written Exam
- Y-STR DNA Database Competency Test Paperwork
- DNA Database PowerPlex® Y23 Training Log

9.0 Attachments - N/A

Revision History		
Effective Date	Version Number	Reason
07/01/2020	2	5.1.5, 5.2.2- added safety requirements, 5.3- Added section on interpretation from 5.2, 5.4-Added statement outlining workflow