

Forensic Biology Training Manual

Trainee: _____

Training Plan Approvals: _____

Start Date: _____

Completion Date: _____

Completion Approval: _____

Forensic Biology Lead: _____

Assistant Director: _____

Deputy Director: _____

PURPOSE

To provide a comprehensive training program for Forensic Biology Examiners (however titled) new to DSS or the FB Unit. Upon successful completion, this program will allow employees to conduct casework independently.

OVERVIEW

1. The Forensic Biology Lead will determine the appropriate training plan. The Assistant Director, Deputy Director and/or Director will approve the training plan.
2. Training may be conducted in stages. Trainees may complete competencies and work on casework for specific procedures prior to completing training in its entirety. Training for additional procedures may subsequently be conducted.
3. The amount of time necessary to achieve competency in a given procedure may be dependent on the trainee's previous experience. With proper approval, training may be modified to account for prior training and experience. Independent procedure practice(s) may be utilized, with Lead approval.
4. Supervised and independent practices will be conducted using mock evidence samples.
5. GL-14.3 will be completed prior to competency approval. Competencies will comprise of a practical and a written and/or oral component. Competencies may also include a mock court assessment. Written/oral assessments should cover court-type questions when no mock court is utilized.
 - a. Practical: Trainees must obtain intended results. If a report component is included, the report will include appropriate result conveyance.
 - b. Written/Oral: Achieve a grade of 80% or higher.
 - c. Mock Court: Give acceptable, clear testimony. A single formal mock court may be conducted, encompassing multiple modules.
 - d. Upon successful completion, the Lead will notify the Quality Manager, Assistant Director and Deputy Directory via memo of recommended authorization.
6. Literature readings, supplemental references (Appendix 4) and validation summaries are available for trainee review.
7. In the event that an examiner requires retraining, the area of retraining will be identified. The retraining will be provided and a competency / evaluation period will be initiated as determined by the Deputy Director, along with the Unit Lead, Quality Section and Director. Refer to GL-14 (General Training) and GL-1 (Quality Manual) for further guidance.

FB SOP-26 Training Manual and Checklist*Approved by Director: Dr. Guy Vallaro*

Document ID: 2286

Revision: 10

Effective Date: 08/24/2023

Status: Published

Page 3 of 16

8. Since not all case scenarios are captured in training modules, examiners will observe various types of casework evidence upon availability. Examples include, but are not limited to, sexual assault secondary evidence and fingernail samples. Observations of more complex evidence should be formally documented within the training binder. Examiners will be assigned increasingly complex casework based on experience and Unit Lead evaluation.

9. Module Completion Expectations:

- a. Modules 1-5: ~4-5 weeks
- b. Modules 6-9: ~6-8 weeks

RESPONSIBILITY

Section Lead and/or designee of the Forensic Biology Unit (however titled) will provide training.

SAFETY

Use appropriate measures for the proper handling of physical evidence, biological materials and chemicals according to GL-2 (Safety Manual) Safety Data Sheets.

Module 1: General Introduction

Trainee:

Module Completion Date:

Goal(s): The trainee will become familiar with the general DSS operations, general Forensic Biology Unit operations and individual responsibilities.

*No assessment is required for this module.

Task	Trainee Initials/Date	Trainer Initials/Date
<input type="checkbox"/> Complete Laboratory Tour		
<input type="checkbox"/> Orientation to FB Unit		
<input type="checkbox"/> Read all General Laboratory Standard Operating Procedures (GL/SOP)		
<input type="checkbox"/> Complete GL 2.2		
<input type="checkbox"/> Complete GL 14.1		

FB SOP-26 Training Manual and Checklist*Approved by Director: Dr. Guy Vallaro*

Document ID: 2286

Revision: 10

Effective Date: 08/24/2023

Status: Published

Page 4 of 16

Module 2: General Evidence Handling

Trainee:

Module Completion Date:

Goal(s): The trainee will learn to properly handle physical evidence, preserve evidence for future testing, operate the LIMS system, and demonstrate the basic tasks necessary to complete evidence documentation and handling.

Reference(s): GL-4 (LIMS), GL-12 (Evidence Receiving), GL-13 (General Evidence Handling), FB SOP-01 (Evidence Examination and Sample Collection Guidelines), FB SOP-19 (Trace/HLF Examination) pages 1-2 through section 19.5.E.

Task	Trainee Initials/Date	Trainer Initials/Date
<input type="checkbox"/> Orientation to Evidence Receiving (ER) Unit		
<input type="checkbox"/> Learn laboratory case acceptance policies by reading relevant ER SOPs ER SOP -01, -1.1, -02, -04, -09, -17		
<input type="checkbox"/> Successfully complete aseptic training administered by DNA personnel		
<input type="checkbox"/> Orientation to physical storage locations and associated LIMS designations for FB casework		
<input type="checkbox"/> Orientation to personal protective equipment (PPE) storage locations and proper usage		
<input type="checkbox"/> Learn to demonstrate the procedures for receipt, transfer, storage and return of evidence using LIMS, while maintaining proper chain of custody		
<input type="checkbox"/> Learn to demonstrate how and when to create sub-items for evidence using LIMS		
<input type="checkbox"/> Learn to recognize proper evidence packaging and documentation		
<input type="checkbox"/> Learn to recognize physical evidence that requires other examination methods (i.e. trace, latent prints, footwear impression, etc.) Trainer to review LIMS and QR documentation		
Competency –		
<input type="checkbox"/> Practical – LIMS focused exercise		
<input type="checkbox"/> Written / Oral (circle applicable)		

FB SOP-26 Training Manual and Checklist

Document ID: 2286

Revision: 10

Effective Date: 08/24/2023

Status: Published

Page 5 of 16

*Approved by Director: Dr. Guy Vallaro***Module 3: Legal Training**

Trainee:

Module Completion Date:

Goal(s): The trainee will become familiar with the legal requirements of testimony in Connecticut and receive an overview of expert witness testimony responsibilities.

References(s): GL 1.4 (ANAB Guiding Principles), GL 5 (Ethics), GL 15 (Professional Development), GL 17 (Court Monitoring)

***Module 3 assessment will occur during mock court(s) completed within other modules.**

Task	Trainee Initials/Date	Trainer Initials/Date
<input type="checkbox"/> Receive guidance on examiner qualifications (voir dire), courtroom appearance, court structure and pertinent rules of courtroom		
<input type="checkbox"/> Prepare a curriculum vitae Upon review, load to Qualtrax		
<input type="checkbox"/> Read DOJ Code of Professional Responsibility for the Practice of Forensic Science		
<input type="checkbox"/> Read transcripts of previous FB testimony		
<input type="checkbox"/> Review discovery and admissibility rules - <i>Daubert v Merrell Dow Pharmaceuticals</i> - <i>Frye v US</i> - <i>State v Porter</i>		

FB SOP-26 Training Manual and Checklist

Document ID: 2286

Revision: 10

Effective Date: 08/24/2023

Status: Published

Page 6 of 16

*Approved by Director: Dr. Guy Vallaro***Module 4: Swab and Small Evidence Case Examinations**

Trainee:

Module Completion Date:

Goal(s): Trainee will learn to examine swabs and small items requiring touch and/or wearer DNA collection. Trainee will demonstrate appropriate sample collection methods and be able to recognize appropriate collection areas.

Reference(s): FB SOP-01 (Evidence Examination and Sample Collection Guidelines)

Task	Trainee Initials/Date	Trainer Initials/Date
*Observations and supervised practice will include documentation in LIMS and on relevant FB QRs		
<input type="checkbox"/> Review (2) completed swab only cases 1. DSS- 2. DSS-		
<input type="checkbox"/> Review (3) completed small item cases 1. DSS- 2. DSS- 3. DSS-		
<input type="checkbox"/> Observe trainer conduct a minimum of (2) swab exams		
<input type="checkbox"/> Supervised practice of a minimum of (2) swabs		
<input type="checkbox"/> Observe trainer conduct a minimum of (3) small evidence exams		
<input type="checkbox"/> Supervised practice of a minimum of (3) small evidence		
<input type="checkbox"/> Trainer will review and/or demonstrate how to identify potential damage, or other areas of interest for sample collection		
<input type="checkbox"/> Read literature: - "Touch DNA Analysis: Using the Literature to Help Answer Some Common Questions" – Suzanne Ryan - "DNA Transfer in Forensic Science: A Review" – Roland A.H. van Oosscht et al		
Competency – circle appropriate Swab Examination / Small Evidence / Both		
<input type="checkbox"/> Practical		
<input type="checkbox"/> Written / Oral (circle applicable)		
<input type="checkbox"/> Mock Court		

Post-Competency: New examiners must have a minimum of first (5) case jackets reviewed by a unit supervisor.

- 1.
- 2.
- 3.
- 4.
- 5.

FB SOP-26 Training Manual and Checklist

Document ID: 2286

Revision: 10

Effective Date: 08/24/2023

Status: Published

Page 7 of 16

*Approved by Director: Dr. Guy Vallaro***Module 5: Blood Testing**

Trainee:

Module Completion Date:

Goal(s): Trainee will receive practical instruction on blood testing.**Reference(s):** FB SOP-08 (Screening Tests for Blood), SOP-11 (RIAs for Blood), FB SOP-28 (ML2-IR Crime-Lite)**5A - Blood Screening: Kastle-Meyer (KM) and o-Tolidine (oTol)** – oTol training should be completed in conjunction to, or after KM training.

Task	Trainee Initials/Date	Trainer Initials/Date
*Observations and supervised practice will include documentation in LIMS (or photo documentation for ML2-IR) and on relevant FB QRs		
<input type="checkbox"/> Read validation summaries for ML2-IR		
<input type="checkbox"/> Review (3) completed cases with KM testing 1. DSS- 2. DSS- 3. DSS-		
<input type="checkbox"/> Review (2) completed cases with oTol testing 1. DSS- 2. DSS-		
<input type="checkbox"/> Observe trainer conduct a minimum of (3) KM tests		
<input type="checkbox"/> Observe trainer demonstrate proper use of ML2-IR		
<input type="checkbox"/> Supervised practice of a minimum of (3) KM tests		
<input type="checkbox"/> Observe trainer conduct a minimum of (1) oTol test		
<input type="checkbox"/> Supervised practice of a minimum of (1) oTol test		
<input type="checkbox"/> Trainer will demonstrate report writing and appropriate result conveyance		
<input type="checkbox"/> Supervised practice of report writing		
Competency – KM / oTol / Both		
<input type="checkbox"/> Practical: Part A - KM/OT (with report / no report)		
<input type="checkbox"/> Part B - ML2-IR (no report)		
<input type="checkbox"/> Written / Oral (circle applicable): Part A - KM/OT		
<input type="checkbox"/> Written / Oral (circle applicable): Part B - ML2-IR		
<input type="checkbox"/> Mock Court		

FB SOP-26 Training Manual and Checklist*Approved by Director: Dr. Guy Vallaro*

Document ID: 2286

Revision: 10

Effective Date: 08/24/2023

Status: Published

Page 8 of 16

5B - Blood Rapid Immunoassays: RSID-Blood (RSID) and ABACard Hematrace (HT)

Task	Trainee Initials/Date	Trainer Initials/Date
*Observations and supervised practice will include documentation in LIMS and on relevant FB QRs		
<input type="checkbox"/> Read validation summaries for each RSID and HT		
<input type="checkbox"/> Review (3) completed cases with RSID testing 1. DSS- 2. DSS- 3. DSS-		
<input type="checkbox"/> Review (3) completed cases with HT testing 1. DSS- 2. DSS- 3. DSS-		
<input type="checkbox"/> Observe trainer conduct a minimum of (2) RSID tests. Trainee must observe a minimum of (1) sample extraction		
<input type="checkbox"/> Supervised practice of a minimum of (2) RSID tests, including sample extraction		
<input type="checkbox"/> Observe trainer conduct a minimum of (2) HT tests. Trainee must observe a minimum of (1) sample extraction.		
<input type="checkbox"/> Supervised practice of a minimum of (2) HT tests, including sample extraction		
<input type="checkbox"/> Trainer will demonstrate report writing and appropriate result conveyance		
<input type="checkbox"/> Supervised practice of report writing		
Competency – RSID-Blood / HT / Both		
<input type="checkbox"/> Practical with report writing		
<input type="checkbox"/> Written / Oral (circle applicable)		
<input type="checkbox"/> Mock Court		

FB SOP-26 Training Manual and Checklist

Document ID: 2286

Revision: 10

Effective Date: 08/24/2023

Status: Published

Page 9 of 16

*Approved by Director: Dr. Guy Vallaro***Module 6: Body Fluid Testing**

Trainee:

Module Completion Date:

Goal(s): Trainee will receive practical instruction on body fluid testing.**Reference(s):** FB SOP-12 (Screening Test for Semen), SOP-13 (Extraction of Samples for Semen), SOP-15 (RIA for Semen), SOP-16 (Test for Amylase), SOP-17 (RIA for Urine), SOP-18 (Test for Fecal Material), SOP-28 (ML2-IR Crime-Lite).**6A – Acid Phosphatase and p30**

Task	Trainee Initials/Date	Trainer Initials/Date
*Observations and supervised practice will include documentation in LIMS and on relevant FB QRs		
<input type="checkbox"/> Read validation summaries for each AP and p30		
<input type="checkbox"/> Review (3) completed cases with AP and p30 testing 1. DSS- 2. DSS- 3. DSS-		
<input type="checkbox"/> Observe Brentamine Test Reagent preparation		
<input type="checkbox"/> Observe trainer conduct a minimum of (3) AP tests including direct and indirect methods		
<input type="checkbox"/> Observe trainer demonstrate proper use of ALS		
<input type="checkbox"/> Supervised practice of a minimum of (3) AP tests, including direct and indirect methods		
<input type="checkbox"/> Observe trainer conduct a minimum of (3) p30 tests. Trainee must observe a minimum of (1) sample extraction.		
<input type="checkbox"/> Supervised practice of a minimum of (3) p30 tests, including sample extraction.		
<input type="checkbox"/> Trainer will demonstrate report writing and appropriate result conveyance		
<input type="checkbox"/> Supervised practice of report writing		
Competency – AP / p30 / Both		
<input type="checkbox"/> Practical (with report / no report) to include ALS		
<input type="checkbox"/> Written / Oral (circle applicable) to include ALS		
<input type="checkbox"/> Mock Court		

FB SOP-26 Training Manual and Checklist*Approved by Director: Dr. Guy Vallaro*

Document ID: 2286

Revision: 10

Effective Date: 08/24/2023

Status: Published

Page 10 of 16

6B – Amylase

Task	Trainee Initials/Date	Trainer Initials/Date
*Observations and supervised practice will include documentation in LIMS and on relevant FB QRs		
<input type="checkbox"/> Read validation summaries		
<input type="checkbox"/> Review (3) completed cases 1. DSS- 2. DSS- 3. DSS-		
<input type="checkbox"/> Observe trainer conduct a minimum of (3) amylase tests. Trainee must observe a minimum of (1) test directly from an extract		
<input type="checkbox"/> Observe trainer demonstrate proper use of ALS		
<input type="checkbox"/> Supervised practice of a minimum of (2) amylase tests		
<input type="checkbox"/> Trainer will demonstrate report writing and appropriate result conveyance		
<input type="checkbox"/> Supervised practice of report writing		
Competency –		
<input type="checkbox"/> Practical (with report / no report) to include ALS		
<input type="checkbox"/> Written / Oral (circle applicable) to include ALS		
<input type="checkbox"/> Mock Court		

FB SOP-26 Training Manual and Checklist*Approved by Director: Dr. Guy Vallaro*

Document ID: 2286

Revision: 10

Effective Date: 08/24/2023

Status: Published

Page 11 of 16

6C – RSID-Urine

Task	Trainee Initials/Date	Trainer Initials/Date
*Observations and supervised practice will include documentation in LIMS and on relevant FB QRs		
<input type="checkbox"/> Read validation summaries		
<input type="checkbox"/> Review (3) completed cases 1. DSS- 2. DSS- 3. DSS-		
<input type="checkbox"/> Observe trainer conduct a minimum of (2) RSID-Urine tests. Trainee must observe a minimum of (1) extraction		
<input type="checkbox"/> Observe trainer demonstrate proper use of ALS		
<input type="checkbox"/> Supervised practice of a minimum of (2) RSID-Urine tests		
<input type="checkbox"/> Trainer will demonstrate report writing and appropriate result conveyance		
<input type="checkbox"/> Supervised practice of report writing		
Competency –		
<input type="checkbox"/> Practical (with report writing) to include ALS		
<input type="checkbox"/> Written / Oral (circle applicable) to include ALS		
<input type="checkbox"/> Mock Court		

6D – Fecal material

Task	Trainee Initials/Date	Trainer Initials/Date
*Observations and supervised practice will include documentation in LIMS and on relevant FB QRs		
<input type="checkbox"/> Review (3) completed cases 1. DSS- 2. DSS- 3. DSS-		
<input type="checkbox"/> Observe trainer conduct a minimum of (2) tests		
<input type="checkbox"/> Supervised practice of a minimum of (2) tests		
<input type="checkbox"/> Trainer will demonstrate report writing and appropriate result conveyance		
<input type="checkbox"/> Supervised practice of report writing		
Competency –		
<input type="checkbox"/> Practical (with report writing)		
<input type="checkbox"/> Written / Oral (circle applicable)		

FB SOP-26 Training Manual and Checklist*Approved by Director: Dr. Guy Vallaro*

Document ID: 2286

Revision: 10

Effective Date: 08/24/2023

Status: Published

Page 12 of 16

☐ Mock Court**Module 7: Sexual Assault Kit Examination – Male Screen and Body Fluid Testing**

Trainee:

Module Completion Date:

Goal(s): Trainee will receive practical instruction on sexual assault kit examination, encompassing both male screen prep and body fluid testing workflows.

Reference(s): FB SOP-02 (SAECK Exam), SOP-07 (Whole Blood Sample Preservation), SOP-14 (Identification of Spermatozoa), Axio Scope.A1 Operating Manual, DNA SOP-34 (Male Screen Procedure)

7A – Sexual Assault Evidence Collection Kit Examination

Task	Trainee Initials/Date	Trainer Initials/Date
*Observations and supervised practice will include documentation in LIMS and on relevant FB QRs		
<input type="checkbox"/> Read Public Act 15-207 and Public Act 18-83		
<input type="checkbox"/> Review (3) completed cases of SAKs with male screen prep <ol style="list-style-type: none">1. DSS-2. DSS-3. DSS-		
<input type="checkbox"/> Review (3) completed cases of SAKs with body fluid testing <ol style="list-style-type: none">1. DSS-2. DSS-3. DSS-		
<input type="checkbox"/> Observe trainer conduct a minimum of (3) SAK examinations. Trainee must observe at least (1) of each - male screen prep and body fluid testing. The demo body fluid case(s) should aim to cover all of the below: <ul style="list-style-type: none">• Whole blood preparation• Unstained smear search, red blood cells, SH, CT• AP/p30• Amylase		
<input type="checkbox"/> Supervised practice of a minimum of (2) SAK examinations		
<input type="checkbox"/> Complete practice workflow packet		
<input type="checkbox"/> Observe report writing from SAK body fluid testing		

FB SOP-26 Training Manual and Checklist

Document ID: 2286

Revision: 10

Effective Date: 08/24/2023

Status: Published

Page 13 of 16

Approved by Director: Dr. Guy Vallaro

<input type="checkbox"/> Supervised practice of report writing from SAK body fluid testing		
Task	Trainee Initials/Date	Trainer Initials/Date
7A, continued:		
<input type="checkbox"/> Complete Modules 5A, 6A, 6B, 7B (at least up to competencies)		
Competency		
<input type="checkbox"/> Practical – SAK with body fluid testing – with report		
<input type="checkbox"/> Practical – SAK for male screen prep		
<input type="checkbox"/> Written / Oral (circle applicable)		
<input type="checkbox"/> Mock Court		

Post- Competency (Male Screen Prep): New examiners must have a minimum of first (5) case jackets reviewed by a unit supervisor.

1.

2.

3.

4.

5.

FB SOP-26 Training Manual and Checklist*Approved by Director: Dr. Guy Vallaro*

Document ID: 2286

Revision: 10

Effective Date: 08/24/2023

Status: Published

Page 14 of 16

7B: Spermatozoa Identification – Sperm Hy-Liter (SH) and Christmas Tree Staining (CT)

Task	Trainee Initials/Date	Trainer Initials/Date
<input type="checkbox"/> Read validation summaries		
<input type="checkbox"/> Review (2) completed cases with SH testing 1. DSS- 2. DSS-		
<input type="checkbox"/> Review (2) completed cases with CT testing 1. DSS- 2. DSS-		
<input type="checkbox"/> Trainer will demonstrate unstained smear searching for red blood cells and sperm identification		
<input type="checkbox"/> Trainer will demonstrate SH staining procedure to include border preparation, QR-14, direct pellet and resuspended pellet methods; minimum (2) smears		
<input type="checkbox"/> Observe a minimum of (2) SH smear searches. Trainer will demonstrate appropriate use of fluorescent microscope and photo-documentation.		
<input type="checkbox"/> Supervised practice of SH staining procedure from <u>extract</u> ; minimum of (2) smears (1 each direct/indirect)		
<input type="checkbox"/> Supervised practice of SH smear searches		
<input type="checkbox"/> Trainer will demonstrate CT staining procedure and sperm search; minimum (2) smears		
<input type="checkbox"/> Supervised practice of CT staining procedure and sperm search; minimum of (2) smears		
<input type="checkbox"/> Complete independent sperm search practice set		
Competency – SH / CT / Both		
<input type="checkbox"/> Practical		
<input type="checkbox"/> Written / Oral (circle applicable)		
<input type="checkbox"/> Mock Court		

Post-Competency: New analysts must have a minimum of three (3) negative smears verified.

1.

2.

3.

FB SOP-26 Training Manual and Checklist*Approved by Director: Dr. Guy Vallaro*

Document ID: 2286

Revision: 10

Effective Date: 08/24/2023

Status: Published

Page 15 of 16

Module 8: Human Hair Identification and Screening

Trainee:

Module Completion Date:

Goal(s): Trainee will be able to identify a human hair and tissue-like material and prep hair root for DNA testing.

Reference(s): FB SOP-19 (Trace/HLF Exam)

Task	Trainee Initials/Date	Trainer Initials/Date
*Observations and supervised practice will include documentation in LIMS and on relevant FB QRs		
<input type="checkbox"/> Review (2) completed cases		
1. DSS-		
2. DSS-		
<input type="checkbox"/> Observe a minimum of (3) hair-like fiber examinations		
<input type="checkbox"/> Supervised practice of a minimum of (3) hair-like fiber examinations		
<input type="checkbox"/> Trainer will demonstrate report writing and appropriate result conveyance		
<input type="checkbox"/> Supervised practice of report writing		
Competency		
<input type="checkbox"/> Practical with report writing		
<input type="checkbox"/> Written / Oral (circle applicable)		
<input type="checkbox"/> Mock Court		

FB SOP-26 Training Manual and Checklist*Approved by Director: Dr. Guy Vallaro*

Document ID: 2286

Revision: 10

Effective Date: 08/24/2023

Status: Published

Page 16 of 16

Module 9: Technical and Administrative Reviews

Trainee:

Module Completion Date:

Goal(s): The trainee will learn the necessary steps to conduct technical and administrative reviews. The trainee will demonstrate the tasks necessary to properly complete reviews.

Reference(s): FB SOP-05 (Reports and Records), GL-18 (Case Reviews)

Task	Trainee Initials/Date	Trainer Initials/Date
*Observations will include documentation in LIMS and on relevant FB QRs		
<input type="checkbox"/> Observe trainer conduct a minimum of (5) reviews. Observations must cover at least (1) administrative review. 1. DSS- 2. DSS- 3. DSS- 4. DSS- 5. DSS-		
<input type="checkbox"/> Practice reviews of a minimum of (3) cases. Reviews evaluated by Unit supervisor. 1. DSS- 2. DSS- 3. DSS-		