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INTRODUCTION

The Idaho State Police Forensic Services' *Biology Training Manual* is modular in its design. The purpose of this design is to allow flexibility in training as it relates to an individual's job function and experience. This program is developed for a new employee having no prior experience. Therefore, an analyst with prior training and experience or those individuals who perform only limited duties within the Biology Section (e.g., database personnel or general laboratory technicians) are not required to complete all of the modules. Each module is composed of defined tasks including some or all of the following: lecture/seminar attendance, performance exercises, written and/or oral examinations and qualifying examinations, where appropriate. Documentation of successful completion of training modules will be maintained in an employee's training file and will consist of any documents generated by the employee during the course of training, as well as, the standardized form (refer to **Form 100-TR**) documenting the successful completion of each required module. The goal of this training program is to ensure that upon completion of all necessary training modules, an employee will be capable of performing all aspects of his/her laboratory position to a high standard.

Module 1: Laboratory Introduction

Goal(s): This is an introduction to the Idaho State Police as an organization, the Forensic Services laboratory, the Biology Section and the policies and procedures which guide the laboratory's operations.

1.1 Orientation to Laboratory/ISP Facility

1.2 Instruction on Organizational Structure, Chain of Command, FS Policies and Procedures

1.3 Laboratory Security and Confidentiality

1.4 Quality Assurance/Quality Control

1.5 Safety

Successful completion of this module is required of all permanent employees in the Biology Section. An abbreviated version of this module may suffice for interns or other "temporary" staff.

Module 2: Evidence Handling

Goal(s): The purpose of this module is to introduce the trainee to the proper procedures for evidence acceptance, receipt, documentation and handling.

2.1 Case/Evidence Acceptance Policy and Evidence Receipt

2.2 Evidence Packaging and Chain of Custody

2.3 Evidence Handling, Consumption and Documentation

Assessment: Successful completion of this module is required of all "analysts" employed in the Biology Section. Training for other permanent employees (e.g., technicians) or temporary personnel will depend upon their assigned duties. Interns or other temporary staff will only handle evidence when under direct oversight of the Biology Section Supervisor or his/her designee.

Module 3:Biology Instrumentation and Reagents

Goal(s): To familiarize the trainee with the reagents and instrumentation in the Biology Section. Following successful completion of this module an employee should be able to operate the necessary instrumentation as dictated by his/her assigned duties, make up and/or order needed reagents and perform and document routine maintenance of equipment.

3.1 "In-house" Reagents

3.2 Vendors and Ordering

3.3 MSDS/Safe use of Reagents/Chemicals

3.4 Chemical Logs/Documentation

3.5 Instrumentation

Successful completion of this module is required of all permanent personnel in the Biology Section. An abbreviated version of this module may suffice for interns or other "temporary" staff.

Module 4: Biology Screening

Goal(s): Acquisition of the necessary knowledge base and mastery of all of the technical skills necessary to examine/process items of evidence for the presence of biological substances. This includes, but is not limited to the following: safe handling of biohazards; observation, documentation and collection of stains (and trace material where appropriate), substance identification and communication of findings. Upon successful completion of this module, an analyst will be able to perform casework processing up to and including the assembly of a "DNA Packet" to be used in genetic analyses, communicate the results of the evidence screening and participate in research/validation relevant to the development and improvement of screening techniques employed in the Biology Section.

4.1 Biohazard Review

4.2 Literature/Protocol Review

Module 4: Serology Screening (cont.)

4.3 Practical Exercises and Casework with Mentor

4.4 Report Writing and Testimony

4.5 Mock Cases/Qualifying Exam(s)

Successful completion of this module is required of all casework analysts; technicians, temporary employees and individuals processing only database samples need not complete this module. This module should take a minimum of six months to complete to ensure adequate exposure to typical case evidence.

Module 5: Court: Decisions and Testimony

Goal(s): To introduce the trainee to the legal system in the state of Idaho, relevant case law regarding scientific testimony and to acquire the knowledge base and skills necessary to become a competent expert witness.

5.1 Review of Relevant Literature and Court Decisions

5.2 Testimony Training (e.g., Ethics, Presentation, Demeanor)

5.3 Moot Court(s)

Successful completion of this module is required of all casework and database analysts. A minimum of one moot court must be successfully completed for both Serology and DNA analysis, respectively. Formal courtroom testimony training may be completed internally, externally or in some combination. However, the Biology Section Supervisor or his/her designee must evaluate minimal moot court performance in person.

Module 6: DNA Analysis

Goal(s): Acquisition of the necessary knowledge base and mastery of the technical skills needed to perform all aspects of DNA analysis. This includes, but is not limited to the following: historical understanding/appreciation for DNA analysis and its application in forensic science, theoretical and applied skills in DNA methodologies and relevant population genetics and statistical analyses. Upon successful completion of this module an analyst will be able to perform, interpret and communicate the results of DNA analyses and participate in research/validation relevant to the future development and improvement of DNA methodologies employed in the Biology Section.

6.1 Verification/Completion of Relevant/Required College Coursework

6.2 Literature/Protocol Review

6.3 Practical Exercises and Casework with Mentor

6.4 Report Writing and Testimony

6.5 Mock cases/Qualifying Exam(s)

Successful completion of this module is required of all permanent DNA casework analysts. An abbreviated version of this module may suffice for database analysts. This module should take a minimum of six months to complete and will contain all of the elements necessary to fulfill current national guidelines.

ISP Forensic Services Biology Training Bibliography

Note: This is a suggested list of reading materials that is not meant to be all-inclusive. Required reading is preceded by an asterisk (*); References with which a trainee should be familiar are preceded by a plus sign (+).

Module 1

Books/Manuals

*ISP Policy Manual (relevant sections)

*ISPFS Policy Manual

*ISPFS Biology QA/QC Manual

*Saferstein, Richard, Criminalistics: An Introduction to Forensic Science, Sixth Edition, Chapter 1: Introduction, pp. 1-35, Prentice Hall, 1998

Module 2

Books/Manuals

*ISPFS Policy Manual

*ISPFS Biology QA/QC Manual

Papers

*Kaye, J.A. Correspondence About Handling Evidence in cases of Acquired Immune Deficiency Syndrome (AIDS)[letter]. American Journal of Forensic Medicine and Pathology, March, 1986; 7(1):87-88.

Module 3

Books/Manuals

*ISPFS Biology QA/QC Manual

*MSDS for reagents in Biology Section

*Instrumentation Instruction Manuals

*Product Inserts

ISP Forensic Services Biology Training Bibliography

Module 4

Books/Manuals

*Bunker, Judith, Bloodstain Evidence Manual, Vol.3: Identification Stain and Pattern Characteristics, Institute of Applied Forensic Technology, Doje's Press, 1998

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*Rosenthal, Paul Symposium: Effective Expert Testimony, Nature of Jury Response to the Expert Witness. Journal of Forensic Sciences, April 1983; 28(2):528-531.

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Module 5

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Module 6

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***Current** Quality Assurance Standards for Forensic DNA Testing Laboratories (DNA Advisory Board), 1998.

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ISP Forensic Services Biology Training Bibliography

Module 6

Papers (cont.)

Wilson, M.R. et al Guidelines for the Use of Mitochondrial DNA Sequencing in Forensic Science. Crime Laboratory Digest, 1993; 20(4):68-77.

Wilson, M.R. et al Validation for Mitochondrial DNA Sequencing for Forensic Casework Analysis. International Journal of Legal Medicine, 1995; 108(2):68-74.

Yoshida, K. et al. The Modified Method of Two-step Differential Extraction of Sperm and Vaginal Epithelial Cell DNA from Vaginal Fluid Mixed with Semen. Forensic Science International, March 21, 1995; 72(1):25-33.

Form 100-TR

ISP Forensic Biology
Training Evaluation Form

Trainee:_____

Supervisor:_____

Module 1: Laboratory Introduction

1.1 Lab/ISP Facilities Orientation. ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

1.2 Has read and understands policies and procedures detailed in BFS manual (and pertinent policies in ISP manual; HRLF). ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

1.3 Has been made aware of and understands security and confidentiality issues including but not limited to: 1)internal building security/BFS security (e.g., access codes, visitors), 2) internal and external security/confidentiality issues (e.g., communications and associated data privacy). ☐

_____/_____ _____/_____
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Trainee:_____

1.4 Has reviewed and understands the QA/QC practices of ISPBFS as outlined in mission statement(s) and P&P manuals. ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

1.5 Has reviewed existing safety manual(s) and been made aware of location and proper use of safety equipment. ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

1.6 Written Examination ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

Comments:

Successful Completion of Module 1

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

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ISP Forensic Biology
Training Evaluation Form

Trainee:_____

Module 2: Evidence Handling

2.1 Has read and received further instruction on the policies regarding case/evidence acceptance and the proper practices for evidence receipt (e.g., Evidence Tracking system). Has demonstrated sufficient knowledge of, and compliance with, current policies/practices. ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

2.2 Has read and received further instruction on proper evidence packaging practices and chain of custody maintenance. Has demonstrated sufficient knowledge of, and compliance with, current policies/practices. ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

2.3 Has read and received further instruction on proper evidence handling procedures (e.g., evidence integrity, safe handling of biohazards), evidence consumption (retention for retesting; consumption notification) and necessary documentation (e.g., evidence and packaging condition). Has demonstrated sufficient knowledge of, and compliance with, current policies/practices. ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

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Trainee:_____

2.4 Written Examination ☐

_____/_____ _____/_____

Trainee Signature Date Reviewer Signature Date

Comments:

Successful Completion of Module 2

_____/_____ _____/_____

Trainee Signature Date Reviewer Signature Date

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ISP Forensic Biology
Training Evaluation Form

Trainee:_____

Module 3: Biology Instrumentation and Reagents

3.1 Has read protocols and received further instruction on making reagents and completing reagent logs. Has demonstrated sufficient knowledge and proficiency in making reagents. ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

3.2 Has received instruction on appropriate processes involved in ordering from external vendors. Has demonstrated sufficient knowledge and proficiency in proper ordering. ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

3.3 Has read and received further instruction on the safe use of chemicals/reagents used in the Biology Section and demonstrated sufficient knowledge and proficiency in safe chemical use. ☐

_____/_____ _____/_____
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Trainee:

3.4 Has reviewed forms and received further instruction on the appropriate labeling and documentation associated with chemicals/reagents made and/or received in the Biology Section. Has demonstrated sufficient knowledge and proficiency in chemical labeling and documentation. ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

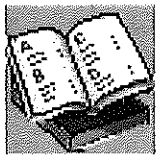
3.5 Has read and received further instruction on proper use, maintenance and documentation for instrumentation employed in the Biology Section. Has demonstrated sufficient knowledge and proficiency in the operation and maintenance of Biology Section instrumentation. ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

3.6 Written Examination

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

Comments:



Form 100-TR

Trainee:_____

Successful Completion of Module 3

_____/_____ _____/_____

Trainee Signature Date Reviewer Signature Date

Form 100-TR

ISP Forensic Biology
Training Evaluation Form

Trainee:_____

Module 4: Serology Screening

4.1 Has read and received further instruction on proper handling and necessary precautions used in dealing with biohazardous material. Has demonstrated sufficient knowledge of, and compliance with, current policies/practices. ☐

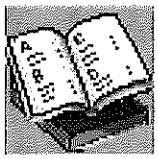
_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

4.2 Has read and demonstrated sufficient understanding of the principles and methodologies documented in the recommended/required reading assignments. Has reviewed and demonstrated proficiency in the practical application of Biology Section protocols employed in the identification of body fluids. ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

4.3 Has successfully completed practical exercises (covering detection/identification of semen, blood, saliva, urine and feces) joint casework analyses with a mentor. ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date



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Trainee:_____

4.4 Has read and received further instruction on report writing and communication of findings through courtroom testimony (See **Module 5** which is taught concurrently). ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

4.5 Written Examination

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

4.6 Has successfully completed the processing of a minimum of two mock cases, one of which may serve as a qualifying exam (See Module 5 Moot Court Requirement). ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

Comments:

Successful Completion of Module 4

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

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ISP Forensic Biology
Training Evaluation Form

Trainee:_____

Module 5: Court: Decisions and Testimony

5.1 Has read and demonstrated sufficient knowledge and understanding of the concepts and material presented in the literature. ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature

5.2 Has received instruction and demonstrated sufficient proficiency in proper courtroom testimony presentation. ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature

5.3 Has successfully completed a minimum of one moot court presentation.

Serology ☐

Serology Moot Court:

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

DNA ☐

DNA Moot Court:

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

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Trainee:_____

Comments:

Successful Completion of Module 5

_____/_____ _____/_____

Trainee Signature Date Reviewer Signature Date

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Training Evaluation Form

Trainee:_____

Module 6: DNA Analysis

6.1 Review of trainee's educational documentation verified fulfillment of relevant coursework requirements dictated in current national guidelines. ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

6.2 Has read and demonstrated sufficient knowledge and understanding of the concepts and material presented in the literature and current BFS protocols. ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

6.3 Has successfully completed practical exercises (designed in number and type to fulfill requirements dictated in current national guidelines see in Module 6 references) and joint casework analyses with a mentor. ☐

6.3.1 Extraction Exercise (various tissues/extractions) ☐

_____/_____ _____/_____
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Trainee:_____

6.3.2 Amplification Exercise (CODIS/Forensic samples) ☐

_____/_____ _____/_____
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6.3.3 DNA Mixture Exercise (Set-up and analysis of mixed DNA samples). ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

6.3.4 DNA Mixture Analysis Exercise (Data analysis) ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

6.4 Has read and received further instruction on report writing and communication of findings through courtroom testimony (See Module 5 which is taught concurrently). ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

6.5 Exam: General Genetics and Forensic Statistics ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

6.6 Exam: DNA Extraction and Methods of Analysis ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

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Trainee:_____

6.7 Exam: Analysis and Interpretation of STRs ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

6.8 Has successfully completed the processing of a minimum of two mock cases, one of which may serve as a qualifying exam (See Module 5 Moot Court Requirement). ☐

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date

Comments:

Successful Completion of Module 6

_____/_____ _____/_____
Trainee Signature Date Reviewer Signature Date