CHECKLIST FOR DNA ISOLATION

Name of Trainee: _____

1. Preparation of reagents necessary for DNA isolation.

   Date:_____ Training Coordinator:_____

   Comments:_____

2. Trainee has successfully and accurately completed all appropriate paperwork associated with the DNA extraction process.

   Date:_____ Training Coordinator:_____

   Comments:_____

3. Trainee has successfully isolated DNA:

   Organically extracted DNA from a minimum of 14 blood stains on different substrates and stains ranging in size (5 µL to 200 µL).

   Date:_____ Training Coordinator:_____

   Comments:_____

   Using the manual DNA IQ™ extraction method isolated DNA from a minimum of 7 blood stains on different substrates and stains ranging in size (5 µL to 200 µL).

   Date:_____ Training Coordinator:_____

   Comments:_____

   Using the automated DNA IQ™ extraction method isolated DNA from a minimum of 7 blood stains on different substrates and stains ranging in size (5 µL to 200 µL).

   Date:_____ Training Coordinator:_____

   Comments:_____

   Estimated the amount of isolated DNA from all 28 blood stains using a yield gel and the Plexor® HY System.

   Date:_____ Training Coordinator:_____

   Comments:_____

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Organically extracted DNA from a minimum of 14 unmixed biological stains, to include semen, vaginal fluid, saliva, vasectomized semen, urine, and feces on different substrates and stains ranging in size (5 µL to 200 µL).

Date:_____ Training Coordinator:_____

Comments:_____

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Successfully isolated DNA from a minimum of 14 unmixed biological stains, to include semen, vaginal fluid, saliva, vasectomized semen, urine, and feces on different substrates and stains ranging in size (5 µL to 200 µL) using the DNA IQ™ extraction method.

Date:_____ Training Coordinator:_____

Comments:_____

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Estimated the amount of isolated DNA from all 28 unmixed biological stains using the Plexor® HY System.

Date:_____ Training Coordinator:_____

Comments:_____

Extracted DNA, using the organic differential method, for a minimum of 10 mixed biological stains, to include semen, vaginal fluid, blood, and saliva.

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Date:_____ Training Coordinator:_____

Comments:_____

Extracted DNA, using the manual DNA IQ™ differential method, for a minimum of 5 mixed biological stains, to include semen, vaginal fluid, blood, and saliva.

Date:_____ Training Coordinator:_____

Comments:_____

Extracted DNA, using the automated DNA IQ™ differential method, for a minimum of 5 mixed biological stains, to include semen, vaginal fluid, blood, and saliva.

Date:_____ Training Coordinator:_____

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Comments:_____

Estimated the amount of isolated DNA from all 20 mixed biological stains (this should include the sperm and non-sperm fractions for each mixed sample, where appropriate) using the Plexor® HY System.

Date:_____ Training Coordinator:_____

Comments:_____

Performed DNA isolation on the following validation samples using either an organic extraction method, manual DNA IQ™ extraction method or the automated DNA IQ™ extraction method.

- Two blood/bone/tissue sample sets, each set from a different individual
- Five animal samples
- Ten contamination stains
- Five blood/semen/hair sets
- A family study
- Non-probative case samples (at least 5 cases)
- Ten old stains (at least 5 years old)
- Two buccal swab/teeth sample sets

Date:_____ Training Coordinator:_____

Comments:_____

Estimated the amount of isolated DNA from all validation samples using the Plexor® HY System.

Date:_____ Training Coordinator:_____

Comments:_____

4. Trainee has developed a thorough understanding of the organic, manual DNA IQ™ and automated DNA IQ™ extraction methods, to include differential extractions.

Date:_____ Training Coordinator:_____

Comments:_____

5. Notebook is organized and complete.

Date:_____ Training Coordinator:_____

Comments:_____

6. Trainee has read and understands all applicable literature.

Date:_____ Training Coordinator:_____

Comments:_____

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CHECKLIST FOR DNA QUANTITATION – YIELD GEL

Name of Trainee: _____

1. Trainee has prepared reagents and gels necessary to quantitate DNA samples using a yield gel.

   Date:_____ Training Coordinator:_____

   Comments:_____

2. Trainee has successfully and accurately completed all appropriate paperwork associated with the yield gel.

   Date:_____ Training Coordinator:_____

   Comments:_____

3. Trainee has successfully run yield gels for all required samples extracted as addressed in chapter 4, DNA Isolation.

   Date:_____ Training Coordinator:_____

   Comments:_____

4. Trainee has successfully interpreted the results for all yield gels.

   Date:_____ Training Coordinator:_____

   Comments:_____

5. Trainee has evaluated the appearance of degraded DNA when run on a yield gel.

   Date:_____ Training Coordinator:_____

   Comments:_____

6. Trainee has developed a basic understanding of the advantages and limitations associated with the yield gel and how these results compare when the same samples were run using the Plexor® HY System.

   Date:_____ Training Coordinator:_____

   Comments:_____

7. Notebook is organized and complete.

   Date:_____ Training Coordinator:_____

   Comments:_____

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8. Trainee has participated in mini-mock trials and/or question and answer sessions.

Date:_____ Training Coordinator:_____

Comments:_____

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CHECKLIST FOR OPERATING THE BIOMEK® 2000 AUTOMATION WORKSTATION – SECTION I

Name of Trainee (Project Coordinator): _____

1. The trainee can independently operate the Biomek® Automation Workstation, including conducting DNA isolation, deck setup, and program design, and accurately complete the appropriate documentation.

   Date:_____ Forensic Molecular Biologist and/or Qualified Project Coordinator:_____

   Comments:_____

2. The trainee can independently perform the Biomek® Automation Workstation calibration programs, the position calibration test, the base module and left and right side module alignments, Teleshake and electronic heater unit alignments, tool calibration and can accurately document the results.

   Date:_____ Forensic Molecular Biologist and/or Qualified Project Coordinator:_____

   Comments:_____

3. The trainee has successfully run the Checkerboard and Zebra Stripe training sets using the Biomek® Automation Workstation.

   Date:_____ Forensic Molecular Biologist and/or Qualified Project Coordinator:_____

   Comments:_____

4. The trainee has successfully performed quantitation studies using the Biomek® Automation Workstation and the Plexor® HY System.

   Date:_____ Forensic Molecular Biologist and/or Qualified Project Coordinator:_____

   Comments:_____

5. The trainee has successfully performed Checkerboard contamination studies using the Biomek® Automation Workstation in conjunction with the Normalization Wizard and PCR Amplification Set Up programs.

   Date:_____ Forensic Molecular Biologist and/or Qualified Project Coordinator:_____

   Comments:_____

6. The trainee has successfully performed the deselection of data points on the Plexor® HY DNA Standard Curve for five sets of data.

   Date:_____ Forensic Molecular Biologist and/or Qualified Project Coordinator:_____

   Comments:_____

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7. The trainee has successfully completed the analysis of the two sets of competency samples.

Date:_____ Forensic Molecular Biologist and/or Qualified Project Coordinator:_____

Comments:_____

8. The trainee has gained the knowledge and skills necessary to operate the Biomek® Automation Workstation and recognize when a problem arises, and when appropriate, to manually shut down the system, troubleshoot the problem and/or seek assistance.

Date:_____ Forensic Molecular Biologist and/or Qualified Project Coordinator:_____

Comments:_____

Qualified By:_____ Date:_____
Forensic Molecular Biologist
and/or Qualified Project Coordinator

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CHECKLIST FOR OPERATING THE BIOMEK® AUTOMATION WORKSTATION – SECTION II

Name of Trainee: _____

1. Trainee has isolated the DNA from the following samples using the Biomek® Automation Workstation:

   - A minimum of 7 blood stains
   - A minimum of 5 mixed biological stains (at total of 10 samples), to include semen, vaginal fluid, blood, and saliva.

   Date:_____ Project Coordinator:_____

   Comments:_____

2. Trainee has observed the Project Coordinator run the blood stains and mixed biological stains through the entire DNA isolation process, deck setup, and initiation of the BioWorks™ program

   Date:_____ Project Coordinator:_____

   Comments:_____

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CHECKLIST FOR DNA QUANTITATION

Name of Trainee: _____

1. Trainee has observed the Project Coordinator run the blood stains and mixed biological stains through the entire Plexor® HY Quantitation process and deck setup.

   Date:_____ Project Coordinator:_____

   Comments:_____

2. Trainee has quantitated the DNA from the following samples using the Plexor® HY Quantitation System:

   - 28 blood stains
   - 28 unmixed biological stains, to include semen, vaginal fluid, blood, and saliva.
   - 20 mixed biological stains, to include semen, vaginal fluid, blood, and saliva.
   - 68 validation study samples

   Date:_____ Project Coordinator:_____

   Comments:_____

3. Trainee has successfully interpreted the results developed using the Plexor® HY Quantitation System.

   Date:_____ Training Coordinator:_____

   Comments:_____

4. Trainee has successfully and accurately completed all appropriate paperwork associated with the Plexor® HY Quantitation System.

   Date:_____ Training Coordinator:_____

   Comments:_____

5. Trainee has evaluated the appearance of degraded DNA using the Plexor® HY Quantitation System.

   Date:_____ Training Coordinator:_____

   Comments:_____

6. Trainee has developed a basic understanding of the advantages and limitations associated with the Plexor® HY quantitation method and how these results compare when the same samples were run on a yield gel.

   Date:_____ Training Coordinator:_____

   Comments:_____

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7. Notebook is organized and complete.

Date:_____ Training Coordinator:_____

Comments:_____

8. Trainee has participated in mini-mock trials and/or question and answer sessions.

Date:_____ Training Coordinator:_____

Comments:_____

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CHECKLIST FOR NORMALIZATION WIZARD AND AMPLIFICATION PROCESSES

Name of Trainee: _____

1. The trainee has demonstrated he/she can work in an environment free of contamination and follow proper guidelines to prevent contamination.

   Date:_____ Training Coordinator:_____

   Comments:_____

2. Trainee has successfully programmed and performed quality control testing on the thermal cycler and completed the appropriate documentation.

   Date:_____ Training Coordinator:_____

   Comments:_____

3. Trainee has successfully and accurately completed all appropriate paperwork associated with the amplification of the samples using the PowerPlex® 16 System.

   Date:_____ Training Coordinator:_____

   Comments:_____

4. Trainee has manually performed amplification on the following samples using the PowerPlex® 16 System:

   - A minimum of 14 blood stains extracted using the organic, manual DNA IQ™ and automated DNA IQ™ extraction methods.
   - A minimum of 14 unmixed body fluid stains, to include semen, vaginal fluid, saliva, vasectomized semen samples, urine and feces, using the organic, manual DNA IQ™ and automated DNA IQ™ extraction methods.
   - A minimum of 10 mixed biological stains (at total of 20 samples), to include semen, vaginal fluid, blood, and saliva using the differential organic, manual DNA IQ™ and automated DNA IQ™ extraction methods.
   - Half of the validation samples using either an organic extraction method, manual DNA IQ™ extraction method or the automated DNA IQ™ extraction method.
     - Two blood/bone/tissue sample sets, each set from a different individual
     - Five animal samples
     - Ten contaminated stains
     - Five blood/semen/hair sets
     - A family study
     - Non-probative case samples (at least 5 cases)
     - Ten old stains (at least 5 years old)
     - Two buccal swab/teeth sample sets

   Date:_____ Training Coordinator:_____

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Comments:_____

5. Trainee has observed the Project Coordinator run the second half of the training samples through the entire Normalization Wizard, amplification setup, and deck setup using the BioMek® Automation Workstation.

Date:_____ Project Coordinator:_____

Comments:_____

6. Trainee has developed an understanding of the theory of the amplification process, including the importance of quality control.

Date:_____ Training Coordinator:_____

Comments:_____

7. Notebook is organized and complete.

Date:_____ Training Coordinator:_____

Comments:_____

8. Trainee has read and understands all applicable literature.

Date:_____ Training Coordinator:_____

Comments:_____

9. Trainee has participated in mini-mock trials and/or question and answer sessions.

Date:_____ Training Coordinator:_____

Comments:_____

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CHECKLIST FOR PRODUCT GEL

Name of Trainee: _____

1. Trainee has prepared reagents and gels necessary to verify the success of the amplification process.

   Date:_____ Training Coordinator:_____

   Comments:_____

2. Trainee has successfully and accurately completed all appropriate paperwork associated with the product gel.

   Date:_____ Training Coordinator:_____

   Comments:_____

3. Trainee has successfully run product gels for all samples amplified using the PowerPlex® 16 ~~BIO~~ System.

   Date:_____ Training Coordinator:_____

   Comments:_____

4. Trainee has successfully photographed and interpreted the results for all product gels.

   Date:_____ Training Coordinator:_____

   Comments:_____

5. Trainee has developed an understanding of the theory and limitations of the product gel, including the importance of controls.

   Date:_____ Training Coordinator:_____

   Comments:_____

6. Notebook is organized and complete.

   Date:_____ Training Coordinator:_____

   Comments:_____

7. Trainee has participated in mini-mock trials and/or question and answer sessions.

   Date:_____ Training Coordinator:_____

   Comments:_____

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CHECKLIST FOR CAPILLARY ELECTROPHORESIS

Name of Trainee: _____

1. Trainee has prepared reagents necessary to perform capillary electrophoresis.

   Date:_____ Training Coordinator:_____

   Comments:_____

2. Trainee has successfully and accurately completed all appropriate paperwork associated with the DNA typing via capillary electrophoresis.

   Date:_____ Training Coordinator:_____

   Comments:_____

3. Trainee has successfully run the capillary electrophoresis instrument for samples amplified using the PowerPlex® 16 System.

   Date:_____ Training Coordinator:_____

   Comments:_____

4. Trainee has developed an understanding of the theory and limitations of capillary electrophoresis.

   Date:_____ Training Coordinator:_____

   Comments:_____

5. Notebook is organized and complete.

   Date:_____ Training Coordinator:_____

   Comments:_____

6. Trainee has read and understands all applicable literature.

   Date:_____ Training Coordinator:_____

   Comments:_____

7. Trainee has participated in mini-mock trials and/or question and answer sessions.

   Date:_____ Training Coordinator:_____

   Comments:_____

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CHECKLIST FOR CAPILLARY ELECTROPHORESIS DATA ANALYSIS AND INTERPRETATION

Name of Trainee: _____

1. Trainee has demonstrated his/her ability to interpret the capillary electrophoresis data.

   Date:_____ Training Coordinator:_____

   Comments:_____

2. Trainee has a clear understanding of the purpose of each of the controls and how each affects the interpretation of the results.

   Date:_____ Training Coordinator:_____

   Comments:_____

3. Trainee has successfully completed the typing and interpretation of all training samples specified in Chapter 4, DNA Isolation, including proper documentation of the interpretation.

   Date:_____ Training Coordinator:_____

   Comments:_____

4. Notebook is organized and complete.

   Date:_____ Training Coordinator:_____

   Comments:_____

5. Trainee has participated in mini-mock trials and/or question and answer sessions.

   Date:_____ Training Coordinator:_____

   Comments:_____

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CHECKLIST FOR STATISTICS, REPORT WRITING, AND CODIS

Name of Trainee: _____

1. Trainee is familiar with the report wording and format that is currently used by the examiners in the Forensic Biology Section of the Virginia Department of Forensic Science.

   Date:_____ Training Coordinator:_____

   Comments:_____

2. Trainee has demonstrated his/her ability to accurately interpret DNA typing results and accurately calculate random match probabilities, likelihood ratios and combined probability of exclusion statistics using actual cases.

   Date:_____ Training Coordinator:_____

   Comments:_____

3. Trainee has used the DNA results of examinations on actual cases to write reports which were then compared to the original reports. Results were satisfactory.

   Date:_____ Training Coordinator:_____

   Comments:_____

4. Notebook is organized and complete.

   Date:_____ Training Coordinator:_____

   Comments:_____

5. Trainee is familiar with Combined DNA Index System applications/procedures.

   Date:_____ Training Coordinator:_____

   Comments:_____

6. Trainee has participated in mini-mock trials and/or question and answer sessions.

   Date:_____ Training Coordinator:_____

   Comments:_____

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CHECKLIST FOR TESTIMONY AND EXPERT WITNESS QUALIFICATION

Name of Trainee: _____

1. Trainee is skilled in expressing results and conclusions orally in a simple, clear, concise and technically correct manner.

   Date:_____ Training Coordinator:_____

   Comments:_____

2. Trainee is adept at answering questions on all aspects of forensic DNA analysis based on education, training, knowledge, experience and skills.

   Date:_____ Training Coordinator:_____

   Comments:_____

3. Trainee is skilled in properly communicating with attorneys, judges, and juries.

   Date:_____ Training Coordinator:_____

   Comments:_____

4. Trainee is familiar with the use of testimony aids.

   Date:_____ Training Coordinator:_____

   Comments:_____

5. Trainee has observed qualified DNA examiners testify.

   Date:_____ Training Coordinator:_____

   Comments:_____

6. Trainee has participated in at least one pretrial conference with a qualified examiner.

   Date:_____ Training Coordinator:_____

   Comments:_____

7. Trainee has read and understands all applicable literature.

   Date:_____ Training Coordinator:_____

   Comments:_____

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8. Trainee has participated in mini-mock trials and/or question and answer sessions. Performance was satisfactory.

Date:_____ Training Coordinator:_____

Comments:_____

9. Trainee has successfully completed the final comprehensive oral examination.

Date:_____ Training Coordinator:_____

Comments:_____

10. Trainee has successfully completed the analysis, including all appropriate documentation, of the final mock trial case.

Date:_____ Training Coordinator:_____

Comments:_____

11. Trainee has successfully completed one formal, comprehensive mock trial as an expert witness.

Date:_____ Training Coordinator:_____

Comments:_____

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CHECKLIST FOR HAIR ROOT EVALUATION FOR STR ANALYSIS

Name of Trainee:_____

1. Trainee has attended lectures:

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- Hair Biology; Hair Microscopic Examination and Hair Root Evaluation for Nuclear DNA Typing

Date: _____ Training Coordinator: _____

Comments: _____

- Stereomicroscopic Views of Human Hair Roots

Date: _____ Training Coordinator: _____

Comments: _____

- Hair Evaluation for Nuclear DNA Typing (Examples)
  - Part I: Animal versus Human versus Textile Fiber
  - Part II: Root Suitability for STR Typing

Date: _____ Training Coordinator: _____

Comments: _____

- Use of the digital camera with the compound microscope

Date: _____ Training Coordinator: _____

Comments: _____

2. Trainee has examined and sketched the microscopic appearance from reference slides at least 2 dog hair telogen roots absent tissue and at least 2 cat hair telogen roots absent tissue.

Date: _____ Training Coordinator: _____

Comments: _____

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3. Trainee has examined and sketched the microscopic appearance of the following human hairs from the reference collection:

- Anagen/catagen head hair root bulb with attached follicular tissue
- Anagen/catagen head hair root bulb absent attached follicular tissue
- Telogen head hair root club with attached follicular tissue
- Telogen head hair root club absent attached follicular tissue
- Anagen/catagen pubic hair root bulb with or without attached follicular tissue
- Telogen pubic hair root club with attached follicular tissue
- Telogen pubic hair root club absent follicular tissue

Date: _____ Training Coordinator: _____

Comments: _____

4. Trainee has mounted on temporary microscope slides, sketched and identified root forms for several hairs gently remove from trainee's scalp. A microscopic root image has been captured with digital photography using a 20x objective; 10x ocular.

Date: _____ Training Coordinator: _____

Comments: _____

5. Trainee has mounted on temporary microscope slides, sketched and identified root forms for several hairs forcibly remove from trainee's scalp. A microscopic root image has been captured with digital photography using a 20x objective; 10x ocular.

Date: _____ Training Coordinator: _____

Comments: _____

6. Trainee has read and understands all applicable literature.

Date:_____ Training Coordinator:_____

Comments:_____

7. Trainee has acquired the skills to successfully determine which hair roots may be suitable for STR analysis.

Date: _____ Training Coordinator: _____

Comments: _____

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