

Automated DNA Extraction with the DNA IQ™ Kit Training Module

1 PURPOSE

After successful completion of the assessment of this module, the staff member will have provided evidence showing the required knowledge and understanding of the automated DNA extraction process using the DNA IQ Kit within the Analytical section of Forensic Biology.

2 PREREQUISITE TRAINING MODULES

QIS 24450 Operation and Use of the MultiPROBE® II PLUS HT EX Robotic Platform Training Module

QIS [24471](#) AUSLAB Batch Functionality Analytical Scientists Training Module

3 TRAINING PROTOCOL & ASSESSMENT

The Expected Time frame to achieve competency in this module is 2 weeks

- Read the associated documentation and references.
- Discuss the key issues with a competent trainer.
- Observe and assist the competent trainer with the procedure.
- Perform the procedure under supervision.
- Perform the assessment.

Element of competency	Key Performance Criteria	Assessment Type
1. Principle of DNA IQ™ Kit	1.1 Chaotropic salts/agents	WQ, OQ
	1.2 Proteinase K	WQ, OQ
	1.3 Dithiothreitol (DTT)	WQ, OQ
	1.4 DNA IQ™ resin	WQ, OQ
	1.5 DNA IQ™ modifications	WQ, OQ
	1.6 Washing	WQ, OQ
	1.7 Elution	WQ, OQ
	1.8 Reagent Preparation	Ob, WQ, OQ
2. Safety requirements and Quality Control	2.1 Biohazardous material and safety precautions	Ob, WQ, OQ
	2.2 Quality controls	WQ, OQ
	2.3 Decontamination	Ob, WQ, OQ
3. Actions -Automated Method	3.1 Using the MP II platform	Ob, WQ, OQ
	3.2 Labware required	Ob, WQ, OQ
4. Actions - AUSLAB	4.1 AUSLAB	Ob, WQ, OQ
	4.2 Platemarks	Ob, WQ, OQ
	4.3 Worksheets	Ob, WQ, OQ
	4.4 Importing Files	Ob, WQ, OQ

Assessment Type

WQ = Written Questions
OQ = Oral Questions
Ob = Observation
V = Viva

Si = Simulation
Sc = Scenario
A = Attendance
D = Diary

O = Other

4 REFERENCES

Nil

5. AMENDMENT HISTORY

Revision	Date	Author/s	Amendments
0	24 Oct 2007	T. Nurthen, B. Gallagher, V. Hlinka	First Issue
0	April 2008	QIS2 Migration Project	Headers and Footers changed to new CaSS format. Amended Business references from QHSS to FSS, QHPSS to CaSS and QHPS to Pathology Queensland

6. APPENDICES

6.1 Training checklist

6.2 Assessment

6.3 Records of Assessment

NOTE only completed Appendices are to be kept in Training Portfolios

Not Current

6.1 Training Checklist

	Trainer name, signature and date	Trainee name, signature and date
Documentation <ul style="list-style-type: none"> • QIS 24897R___ • QIS 17120R___ 		
Associated Safety Discussed <ul style="list-style-type: none"> • DNA IQ™ MSDS 		
Training Resources <ul style="list-style-type: none"> • MultiPROBE® II PLUS HT EX with Gripper Integration Platform 		
Key Performance Criteria		

Comments

Not Current

6.2 Assessment

- All operations during the course of these duties assume that staff will observe compliance to the QLD Health organisational policies and regulations on WHS, security and confidentiality. This will not specifically be covered by the scope of this assessment.
- Prior to commencement of assessment modules staff should have completed training checklist with the trainer and have familiarised themselves with reference documentation
- Completion of this Module will be in the work environment during work hours. Assessment should be completed within 2 weeks and documentation returned to the training coordinator.
- To facilitate completion, manuals, procedures, flowcharts etc may be used if required. However no discussion must be entered into in relation to completing this assessment or authenticity of knowledge will be jeopardized. By signing the assessment record, staff will acknowledge responsibility for ownership of work.

Trainee { **CONTROL Forms.TextBox.1 \s** }
Signature { **CONTROL Forms.TextBox.1 \s** }

Date { **CONTROL Forms.TextBox.1 \s** }

PART A- Demonstrated Ability

This section must be completed and verified by a person who is Competent to Train.

- Please provide Batch IDs for five (5) extraction batches extracted on the MPIIs

Batches Extracted

	Batch ID	Date	Name and signature of trainer	Comments	Mode of Training
1					Demonstration
2					Observation
3					Observation
4					Observation
5					Observation
6					Observation

PART B – Demonstrate understanding of underpinning knowledge

(Submit electronically using Part B Answer template [24899](#))

Question 1 (KPC 1.1)

Why are chaotropic salts included in the lysis buffer?

Question 2 (KPC 1.1)

How do chaotropic salts help DNA bind to silica?

Question 3 (KPC1.2)

Why is Proteinase K added to the extraction buffer? What is its mechanism?

Question 4 (KPC 1.3)

What role does DTT play in the DNA IQ extraction?

Question 5 (KPC 1.4)

Is the DNA IQ resin binding selective to the type of DNA? Please explain.

Question 6 (KPC 1.4)

Does DNA IQ isolate all sizes of DNA?

Question 7 (KPC1.5)

What are the major modifications made to the automated DNA IQ extraction program compared with the Promega method? Explain why the changes were made.

Question 8 (KPC 1.5)

Why is the SlicPrep™ 96 device used in our protocol?

Question 9 (KPC 1.6)

How many washes are performed? List the washes performed and explain why they are used.

Question 10 (KPC 1.6)

Explain how inhibitors are removed in the DNA extraction protocol.

Question 11 (KPC 1.7)

Explain the elution process in the DNA IQ method.

Question 12 (KPC1.7)

What can cause lower yields when using the DNA IQ method?

Question 13 (KPC 1.7)

Why does the magnetic pellet that forms in the protocol form a “doughnut” shape rather than a ball?

Question 14 (KPC 1.8)

How often and why do you prepare:

- a) Lysis Buffer
- b) Extraction Buffer?

Question 15 (KPC 1.8)

When do you prepare the Wash buffer?

Question 16 (KPC 2.1)

What safety procedures must be followed to ensure safety of the MP II user?

Question 17 (KPC 2.2)

Explain what constitutes a QC failure.

Question 18 (KPC 2.3)

Explain why decontamination of the instrument deck and labware and surrounding area is necessary and what chemicals can be used.

Question 19 (KPC 3.1)

Explain where and why fixed versa tips are used rather than disposable tips.

Question 20 (KPC 3.2)

Explain the principle of the SlicPrep™ 96 device.

Question 21 (KPC 3.2)

List the positions and orientations of barcodes on the labware where barcodes are required?

Question 22 (KPC 4.1)

Briefly outline the role that AUSLAB has in the automated extraction process.

Question 23 (KPC 4.2)

What information is contained on a Worksheet and where is it stored after the extraction has finished?

Question 24 (KPC 4.3)

Why is a platemap used?

Question 25 (KPC 4.4)

What files are imported and stored against a batch and why?

Oral Questions are often an expansion of the written questions above. If oral questions are part of the final assessment they must be documented by the mentor / trainer and the trainee's responses recorded. The oral questions and answers should be appended to the training module using Part B Answer template [24899](#).

PART C- Other supporting assessment

Can be developed as required if Trainee needs to be recognized for Prior Learning or Current Competence or if there is difficulty in determining competency via Part A and Part B The mentor may consider additional oral questions and / or other appropriate Supporting Assessments can be employed, for example:

- Scenario questions
- Literature reviews

Attach supporting assessment if required using Part C template 24898.

6.3 Record of Assessment

	Key Performance Criteria	Part A		Part B		Part C	
		Trainer & Date	Result	Assessor & Date	Result	Trainer & Date	Result
1.1	Chaotropic salts/agents		N/A				
1.2	Pro K		N/A				
1.3	Dithiothreitol (DTT)		N/A				
1.4	DNA IQ™ resin		N/A				
1.5	DNA IQ™ modifications		N/A				
1.6	Washing		N/A				
1.7	Elution		N/A				
1.8	Reagent Preparation						
1.9	DNA IQ™ features		N/A				
2.1	Biohazardous material and safety precautions						
2.2	Quality controls		N/A				
2.3	Worksheets						
2.4	Decontaminating						
3.1	Using the MP II platform to perform the automated method						
3.2	Labware required						
4.1	Platemaps						
4.2	AUSLAB						
4.3	Importing results						

NYC = Not yet competent
C= Competent

CTT= Competent to train
N/A = Not Applicable

Comments:

Trainee:

Name **Signature:** { CONTROL Forms.TextBox.1 \s } **Date**
completed: { CONTROL Forms.TextBox.1 \s }

Training Coordinator

Name:{ CONTROL Forms.TextBox.1 \s } **Signature:** { CONTROL Forms.TextBox.1 \s }
Date completed: { CONTROL Forms.TextBox.1 \s }

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