CaSS | Forensic and Scientific Services
A CLINICAL AND STATEWIDE SERVICE

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 DNA Analysis.

2 PREREQUISTE 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
		1.2	Proteinase K	WQ
		1.3	Dithiothreitol (DTT)	WQ
		1.4	DNA IQ™ resin	WQ
		1.5	DNA IQ™ modifications	WQ
		1.6	Washing	WQ
		1.7	Elution	WQ
2.	Safety requirements and Quality Control	2.1	Biohazardous material and safety precautions	Ob, WQ
		2.2	Quality controls	WQ, OQ
		2.3	Decontamination	Ob, WQ
3.	Actions – Off-Deck Lysis	3.1	Batch labelling	Ob, WQ
		3.2	Reagent preparation	Ob, WQ
		3.3	Standard & Retain Supernatant	Ob, WQ
		3.4	Use of Spin baskets	Ob, WQ
4.	Actions - Automated Method	4.1	Using the MP II platform	Ob, WQ
		4.2	Labware required	Ob, WQ
		4.3	Reagent Preparation	Ob, WQ
5.	Actions - AUSLAB	5.1	AUSLAB	Ob, WQ
		5.2	Platemaps	WQ
		5.3	Worksheets	Ob, WQ
		5.4	Importing Files	Ob, WQ

Assessment Type

WQ	= Written Questions	Si	= Simulation	O	= Other
OQ	= Oral Questions	Sc	= Scenario		
Ob	= Observation	A	= Attendance		
V	= Viva	D	= Diary		

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
1	21 Jul 2008	Maria Aguilera, Allan McNevin	Revise to amend questions in line with suggestions and comments in QIS. Added in specific KPC's for off-deck lysis

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

6.1 Training Checklist

	Trainer name, signature and date	Trainee name, signature and date
Documentation • QIS 24897R___ • QIS 17120R___		
Associated Safety Discussed • DNA IQ™ MSDS		
Training Resources • MultiPROBE® II PLUS HT EX with Gripper Integration Platform • Nurthen, T., Hlinka, V., Muharam, I., Gallagher, B., Lundie, G., Iannuzzi, C. "Project 11: Report on the Validation of the Automated Extraction Chemistry Kit using the MultiPROBE® II PLUS ht ex with Gripper™ Integration Casework Platform." 2007. • Nurthen, T., Hlinka, V., Muharam, I., Gallagher, B., Lundie, G., Iannuzzi, C. "Project 13: Report on the Verification of the Automated Extraction Chemistry Kit using the MultiPROBE® II PLUS HT EX with Gripper™ Integration Casework Platform." 2007. • Huston, K, "DNA IQ™ System "Frequently Asked Questions"", www.promega.com, Profiles in DNA, Feb 2002		
Key Performance Criteria		

Comments

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 _____ **Date { CONTROL Forms.TextBox.1 \s } Signature { 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) off-deck lysis batches
- Please provide Batch IDs for five (5) extraction batches performed on the MPII's

Off-Deck Lysis batches

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

NOTE: at least one "retain supernatant" batch must be observed and one performed under observation

Extraction Batches (MPII)

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

NOTE: at least one batch with SlicPrep™ 96 device and one batch without must be observed and performed under 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 (KPC1.2 & 3.2)
Why is Proteinase K added to the extraction buffer? What is its mechanism?

Question 3 (KPC 1.3)
What role does DTT play in the DNA IQ extraction?

Question 4 (KPC 1.4)
Is the DNA IQ resin binding selective to the type of DNA? Please explain.

Question 5 (KPC 1.4)
Does DNA IQ isolate all sizes of DNA?

Question 6 (KPC 1.5)
Why is the SlicPrep™ 96 device used for some batches and not others? Explain the principle of the SlicPrep™ 96 device.

Question 7 (KPC 1.6)
How many washes are performed? List the washes performed and explain why they are used.

Question 8 (KPC 1.6)
Explain how inhibitors are removed in the DNA extraction protocol.

Question 9 (KPC 1.7)
Explain the elution process in the DNA IQ method.

Question 10 (KPC1.7)
What can cause lower yields when using the DNA IQ method?

Question 11 (KPC 1.7)
Why does the magnetic pellet that forms in the protocol form a “doughnut” shape rather than a ball?

Question 12 (KPC 2.1)
What safety procedures must be followed when processing off-deck lysis batches?

Question 13 (KPC 2.2)
What quality control & anti-contamination measures are in place for off-deck lysis batches.

Question 14 (KPC 3.1 & 3.3)
What requires labelling during:

(i) An Off-deck lysis batch
(ii) A Retained supernatant batch

Question 15 (KPC 3.1)
Why are the 5mL tubes kept for the entire process. What samples may require a 5mL tube allocated to them during the labelling of tubes if they are submitted to the Analytical section without one?

Question 16 (KPC 3.2)
What reagents are included in the extraction buffer for a normal off-deck lysis batch?

Question 17 (KPC 3.2)
How often and why do you prepare Extraction Buffer?

Question 18 (KPC3.2)
Why is 40% Sarcoysl added to the extraction buffer? What is its mechanism?

Question 19 (KPC 3.2 & 3.3)
For retained supernatant off-deck lysis batches, in what order are the reagents added to the sample tubes, and the incubations of these performed? How and why does this differ from a normal off-deck lysis batch?

Question 20 (KPC 3.3)
Explain briefly what the main steps of an off-deck lysis are and they difference between a retain supernatant off-deck lysis batch?

Question 21 (KPC 3.4)
During the transferring of substrates, what substrates require:

(i) spin baskets
(ii) 1.5mL tubes

Question 22 (KPC 4.1)
Explain where and why fixed versa tips are used rather than disposable tips.

Question 23 (KPC 2.1, 4.1 & 4.3)
What safety procedures must be followed to ensure safety of the MPII user?

Question 24 (KPC 4.1)
Explain why decontamination of the instrument deck and labware and surrounding area is necessary and what chemicals can be used.

Question 25 (KPC 4.2)
List the positions and orientations of barcodes on the labware where barcodes are required?

Question 26 (KPC 4.3)
How often and why do you prepare Lysis Buffer?

Question 27 (KPC 4.3)
When do you prepare the Wash buffer?

Question 28 (KPC 5.1 & 5.4)
Briefly outline the role that AUSLAB has in the off-deck process process.

Question 29 (KPC 5.1 & 5.4)
Briefly outline the role that AUSLAB has in the automated extraction process.

Question 30 (KPC 5.2)
What information is contained on the Worksheet and where is it stored after the completion of the off-deck lysis batch?

Question 31 (KPC 5.2)
Once the Off deck lysis process has been completed, what steps are taken in completing the batch in AUSLAB? What are important steps taken there after in preparation for STORstar and extraction of the batch?

Question 32 (KPC 5.2)
What information is contained on a Worksheet and where is it stored after the extraction has finished?

Question 33 (KPC 5.3)
Why is a platemap used?

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					
2.1	Biohazardous material and safety precautions						
2.2	Quality controls						
2.3	Worksheets						
3.1	Batch labelling						
3.2	Reagent preparation						
3.3	Standard & Retain Supernatant						
3.4	Use of Spin baskets						
4.1	Using the MP II platform						
4.2	Labware required						
4.3	Reagent Preparation						
5.1	AUSLAB						
5.2	Platemaps						
5.3	Worksheets						
5.4	Importing Files						

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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