CaSS | Forensic and Scientific Services
A CLINICAL AND STATEWIDE SERVICE

DNA Extraction with DNA IQ™ Kit Training Module

1 PURPOSE

After successful completion of training and assessment in this module, the staff member named below,

[ ] will have provided evidence of required knowledge, skills and abilities in Automated DNA extraction with the DNA IQ™ Kit in DNA Analysis Laboratory.

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

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

Note: This training module is used to assess *Competency* only and not *Competent to Train* status (refer to QIS23651).

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
5	Actions – Off-Deck Lysis and Manual Extraction method	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
9	Actions - Automated Method	4.1	Using the MP II platform	Ob, WQ
		4.2	Labware required	Ob, WQ
		4.3	Reagent Preparation	Ob, WQ
1	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	V	= Viva	A	= Attendance
OQ	= Oral Questions	Si	= Simulation	D	= Diary
Ob	= Observation	Sc	= Scenario	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
1	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
2	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
3	4 Aug 2009	M Mathieson	Changed title, removed automated, updated to new template, included manual extraction. Minor formatting changes.

6 CHECKLIST AND ASSESSMENT

6.1 Training checklist

6.2 Assessment Questions

6.3 Record of Assessment

NOTE only completed Assessments are to be kept in Training Portfolios

6.1 Training Checklist

	Trainer name, signature and date	Trainee name, signature and date
Documentation • QIS 24897 V___ • QIS 17120 V___		
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		

Note: if there was more than one trainer, record name and dates that training was delivered for each of the KPC's.

Comments:

6.2 Assessment rules

The Rules of Assessment can be located in QIS 23651 FSS Learning & Development Manual.

"I acknowledge responsibility for ownership and authenticity of the work contained within this training module".

Name:{ 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) off-deck lysis batches
- Please provide Batch IDs for five (5) automated extraction batches performed on the MPII's
- Please provide Batch IDs for three (3) manual extraction

Off-Deck Lysis batches

	Batch ID	Date	Name of trainer / assessor	Initial and Date	Mode of Assessment
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

Automated Extraction Batches (MPII)

	Batch ID	Date	Name of trainer / assessor	Initial and Date	Mode of Assessment
1					Demonstration
2					Observation
3					Observation
4					Observation
5					Observation
6					Observation

Manual Extraction Batches

	Batch ID	Date	Name of trainer / assessor	Initial and Date	Mode of Assessment
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

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

Question 7 (KPC 1.6)
Explain how inhibitors are removed in the DNA extraction protocol.

Question 8 (KPC 1.7)
Explain the elution process in the DNA IQ method.

Question 9 (KPC1.7)
What can cause lower yields when using the DNA IQ method?

Question 10 (KPC 1.7)
Why does the magnetic pellet that forms in the protocol form a “doughnut” shape rather than a ball?

Question 11 (KPC 2.1)
What safety procedures must be followed when processing off-deck lysis and manual extraction batches?

Question 12 (KPC 2.2)
What quality control & anti-contamination measures are in place for off-deck lysis and manual extraction batches.

Question 13 (KPC 3.1 & 3.3)
What requires labelling during:

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

Question 14 (KPC 3.1)
Why are original 2mL tubes kept for the off-deck and manual DNA IQ extraction processes and what type of original 2mL tubes are not kept?

Question 15 (KPC 3.2)
What reagents are included in the extraction buffer for a normal off-deck lysis batch and manual extraction batch?

Question 16 (KPC 3.2)
How often and why do you prepare Extraction Buffer?

Question 17 (KPC 3.2)
Why is 40% Sarcoysl added to the extraction buffer? What is its mechanism?

Question 18 (KPC 3.2 & 3.3)
For retained supernatant off-deck lysis batch and retain supernatant manual extraction batch, 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 and manual extraction batch?

Question 19 (KPC 3.3)
Explain briefly what the main steps of an off-deck lysis are and the difference between it and a retain supernatant off-deck lysis batch?

Question 20 (KPC 3.4)
During the transferring of substrates, what substrates require:
(i) spin baskets
(ii) 2mL tubes

Question 21 (KPC 4.1)
Explain where and why fixed versa tips are used rather than disposable tips.

Question 22 (KPC 2.1, 4.1 & 4.3)
What safety procedures must be followed to ensure safety of the MPII user?

Question 23 (KPC 4.1)
Explain why decontamination of the instrument deck and labware and surrounding area is necessary and what chemicals can be used.

Question 24 (KPC 4.2)
List the positions and orientations of barcodes on the labware where barcodes are required?

Question 25 (KPC 4.3)
How often and why do you prepare Lysis Buffer?

Question 26 (KPC 4.3)
When do you prepare the Wash buffer?

Question 27 (KPC 5.1 & 5.4)
Briefly outline the role that AUSLAB has in the off-deck process.

Question 28 (KPC 5.1 & 5.4)
Briefly outline the role that AUSLAB has in the automated extraction process.

Question 29 (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 30 (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 31 (KPC 5.2)
What information is contained on a Worksheet and where is it stored after the extraction has finished?

Question 32 (KPC 5.3)
Why is a platemap used?

Oral Questions

If oral questions are part of the final assessment the Question and Answer shall be recorded by the assessor.

Attach a record of the Oral Questions and Answers by using the Answer template 24899.

PART C- Other supporting assessment

1 If there is difficulty in determining competency via Part A and Part B assessment, the trainer / assessor may need to consider an alternative assessment strategy. eg. delivery of refresher training followed by re-assessment.

2 Alternatively Part C assessment can be used to address gaps when using RPL / RCC processes.

Attach Part C - Supporting Assessment, if required, using Answer template 24899.

Note: it is recommended that the Scientific Skills Development Unit (SSDU) is contacted to provide advice and assistance if a Part C assessment strategy is considered necessary.

6.3 Record of Assessment

	Key Performance Criteria	Part A		Part B		Part C	
		Assessor & Date	Result	Assessor & Date	Result	Assessor & Date	Result
1.1	Chaotropic salts/agents	N/A	N/A				
1.2	Pro K	N/A	N/A				
1.3	Dithiothreitol (DTT)	N/A	N/A				
1.4	DNA IQ™ resin	N/A	N/A				
1.5	DNA IQ™ modifications	N/A	N/A				
1.6	Washing	N/A	N/A				
1.7	Elution	N/A	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						

C= Competent

N/A = Not Applicable

NYC - if the trainee is considered *Not yet competent,* leave the result of assessment blank / unsigned until deemed Competent. The Comments section can be used to add detail(s).

CTT – this module is not to be used to record Competent to Train status. Refer to QIS 23651.

Comments:

Trainee

Name: _____ **Signature:** _____ **Date completed:** / /

Training Coordinator *(or delegate eg. Trainer / Assessor)*

Name: _____ **Signature:** _____ **Date completed:** / /

Line Manager *(Review on completion of module)*

Name: _____ **Signature:** _____ **Date completed:** / /

☐ Entered in QIS2 as Competent