Centre for Infectious Diseases and Microbiology
Institute of Clinical Pathology and Medical Research

Real-Time Molecular Diagnostics for Infectious Diseases
Workshop

Course Directors:
Dr Vitali Sintchenko
Dr Neisha Jeoffreys

Dates: 29th of February- 1st of March 2008
Venue: Day 1 – Lecture Theatre 3, Westmead Hospital Education and Conference Centre;
Day 2 – Molecular Diagnostics Section, Centre for Infectious Diseases and Microbiology, Level 3, ICPMR, Westmead Hospital, Sydney

Day 1 (Friday)

8.30-9.00am	Registration

Session 1 Overview of technology *(Chair – Prof Lyn Gilbert)*

9.00-9.20	PCR in a clinical microbiology: past, present and future *Lyn Gilbert, Centre for Infectious Diseases and Microbiology, Westmead*
9.20-9.40	Developments in nucleic acid extraction methods *Neisha Jeoffreys*, *Centre for Infectious Diseases and Microbiology, Westmead*
9.40-10.10	Real time PCR techniques and lab workflows *Greg James, Centre for Infectious Diseases and Microbiology, Westmead*
10.10-10.40	Multiplexing assays *Theo Sloots, Sir Albert Sakzewski Virus Research Centre, Royal Children's Hospital, Brisbane*
10.40-11.10	Update on regulatory requirements *Robyn Wood, TGA, Canberra*
11.10-11.30	*MORNING TEA (Compliments of Applied Biosystems)*

Session 2 Real-time PCR applications in a clinical laboratory (*Chair – Dr Vitali Sintchenko)*

11.30-11.50	Real time multiplex assays for the diagnosis of mycobacterium infection *Peter Jelfs*, *Centre for Infectious Diseases and Microbiology, Westmead*
11.50-12.10	Detection of respiratory viral infections by real-time PCR *Mala Ratnamohan*, *Centre for Infectious Diseases and Microbiology, Westmead*
12.10-12.30	Implementation and evaluation of SmartCycler PCR for group B Streptococcus *Tom Olma, Centre for Infectious Diseases and Microbiology, Westmead*
12.30-12.50	Multiplex PCRs for fungal diagnostics *Catriona Halliday*, *Centre for Infectious Diseases and Microbiology, Westmead*
12.50-13.10	Bioinformatics for Infectious Diseases: *Vitali Sintchenko, Centre for Infectious Diseases and Microbiology, Westmead*
13.10-14.00	*LUNCH (Compliments of Roche Diagnostics)*

Session 3 Industry update *(Chair – Greg James)*

14.00-15.15	Universal Probe Library *Faiyaz Hussain, Roche Diagnostics* Increasing Real Time-PCR Throughput by Faster Cycling *Michael Emmerling, Qiagen Pty Ltd* Why use a multiplexed assay? *Keith Stanley, AusDiagnostics/Corbett Research* Effective design principles for applying Real Time PCR to pathogen detection *Shane Herbert, Applied Biosystems* RealTime Probe Design Philosophy - Does one size fit all? *Vanessa Tyrrell, Abbott Molecular Division*
15.15-15.40	*AFTERNOON TEA (Compliments of Qiagen Pty Ltd)*

Session 4 Emerging platforms for detection of antimicrobial resistance *(Chair Dr Neisha Jeoffreys)*

15.40-16.00	Real-time identification and surveillance of antimicrobial resistance *Jon Iredell*, *Centre for Infectious Diseases and Microbiology, Westmead*
16.00-16.20	Rapid screening for MRSA colonisation and infection *Matthew O'Sullivan*, *Centre for Infectious Diseases and Microbiology, Westmead*
16.20-16.40	Evolution of antiviral resistance testing in a clinical laboratory *Dominic Dwyer*, *Centre for Infectious Diseases and Microbiology, Westmead*
16.40-17.00	Real-time detection of influenza virus mutants resistant to neuraminidase inhibitors *Bin Wang, Millennium Institute, Westmead*

<u>Day 2 (Saturday)</u>

Session 5	**Practical demonstrations in the CIDMLS (30 participants)**
8.30-9.00am	Registration
9.00-9.20am	CIDM Molecular Diagnostics Laboratory tour (three groups - Group leaders Greg James, Neisha Jeoffreys and Peter Jelfs)
9.20-10.00am	Demonstration of automated DNA and RNA extractions using Qiagen easy Q and EasyMAG instruments (groups – Demonstrators : Neisha Jeoffreys; Lee Thomas)
10.00-10.30	*MORNING TEA (Compliments of Corbett Research)*

10.30-12.00am Real time PCR demonstrations (PCR set-up, optimisation, analysis and data interpretation. Standard operating procedures and troubleshooting.

- **Station 1 LightCycler (Demonstrator Dr Neisha Jeoffreys):**
- **Station 2 SmartCycler (Demonstrator Lee Thomas):**
- **Station 3 Corbett (Demonstrator Anna Lau):**

Stream 1 (up to 10 people)	Station 1→ Station 2→Station 3
Stream 2 (up to 10 people)	Station 2→ Station 3→Station 1
Stream 3 (up to 10 people)	Station 3→ Station 1→Station 2

12:00-1.00pm Data analysis

- Station 4 High resolution melting curve analysis (Demonstrator Dr Cheryl Toi)
- Station 5 Software packages for assay design and sequence annotation (Demonstrator Anna Lau)

1.00pm Concluding remarks
LUNCH *(Compliments of Abbot Molecular Division)*