



UNIVERSITY AT BUFFALO

State University of New York



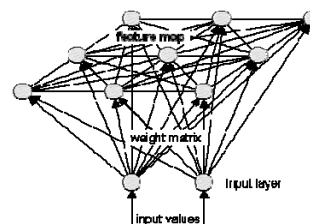
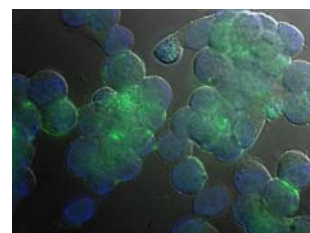
Molecular Genetic Methodologies for Pharmaceutical Sciences Workshop

4 - 8 August 2008



Pharmaceutical Genetics Laboratory

524A Cooke Hall



<http://pharmsci.buffalo.edu/facilities/pgl/>

In the post-human genome years, drugs and diagnostics will be directed to specific molecular targets. Molecular genetics is one of the most rapidly growing fields of biomedical science and has become integral to all fields of study in the life sciences. This workshop consists of lectures and laboratories designed to introduce current theory and the fundamental tools that underlie the most recent technologies in molecular genetics. The course goal is to give participants hands-on experience with a number of the techniques used in genomics as they are applied in the pharmaceutical sciences. The lectures will provide much of the theory that forms the basis of these techniques.

Laboratory Techniques:

Nucleic acid isolation
Quantitation of nucleic acids
Agarose gel electrophoresis
Polymerase Chain Reaction
Reverse transcription and cDNA synthesis

Cloning and screening of PCR products
Transformation & recovery of plasmid DNA
siRNA gene knockdown (New !!!)
Quantitative Real-time PCR – Gene arrays
Genotyping (New !!!)

Lecture topics:

Pharmacogenomics and MicroRNAs and siRNA
Pharmacogenetics Technologies
DNA sequencing and cloning Microarray data analysis
PCR theory and primer design Gene expression - Quantitative PCR
Genotyping & Population Genetics (New !!!)

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Molecular Genetic Methodologies for the Pharmaceutical Sciences

Monday 4 Aug

9:00-9:30 Introduction: Continental Breakfast
9:30-11:30 **Lab:** Isolation & quantification of RNA
11:30-12:30 Lunch
12:30-1:30 **Lab:** Gel electrophoresis of total RNA
1:30-2:30 **Lecture:** Primer on DNA/RNA & genomes
2:30-3:00 Break

3:00-4:00 **Lecture:** Polymerase Chain Reaction I
4:00-5:00 Discussion: Lab results

Tuesday 5 Aug

8:30-9:00 Continental Breakfast
9:00-10:00 **Lab:** cDNA synthesis
10:00-11:00 **Lecture:** MicroRNAs & siRNA technologies
11:00-12:00 **Lab:** Transfection of HeLa Cells w/ siRNA
12:00-1:00 **Lunch**
1:00-2:00 **Lecture:** Enzymes in Molecular Biology
2:00-3:30 **Lab:** RT-PCR
3:30-5:00 **Lecture:** Nucleic Acid Hybridization Assays - Microarrays I

Wednesday 6 Aug

8:30-9:00 Continental Breakfast
9:00-10:00 **Lab:** Genomic DNA Isolation
Lab: Gel Fractionation of PCR products
10:00-11:30 **Lab:** siRNA - transfection efficiency
11:30-1:00 Lunch
1:00-2:00 **Lab:** Cloning of PCR products – Ligation & Transformation
2:00-3:00 **Lecture:** Polymerase Chain Reactions II
1:00-2:00 **Lab:** Pre-hybridization
3:00-4:45 **Lab:** Genotyping for MDR1 3435T
Lab: Cloning of PCR Products – Plating of transformed cells

Thursday 7 Aug

8:30-9:00 Continental Breakfast
9:00-10:30 **Lab:** Quantitative Real Time PCR
10:30-11:30 **Lecture:** Array Analysis – Microarrays II
11:30-12:30 **Lab:** Immunofluorescence with Anti-GAPDH
12:30-1:30 Lunch
1:30-3:00 **Lab:** Immunofluorescence with Anti-GAPDH
Lecture: Genotyping – ABCB1 (MDR1 C3435T)
3:00-4:00 **Lab:** Array analysis
4:00-5:00 **Lab:** Positive colony selection and setup of overnight cultures

Friday 8 Aug

8:30-9:00 Continental Breakfast
9:00-10:30 **Lab:** Mini preparation of plasmid DNA
10:30-11:30 **Lab:** Gel fractionation of restriction digests
11:30-1:00 Lunch
1:00-2:00 **Lab:** Analysis of restriction digestions
2:00-3:00 **Workshop Conclusions and Evaluation**

REGISTRATION FORM: Molecular Genetic Methodologies for the Pharmaceutical Sciences,

Name _____ Title _____ Organization _____

Address _____

City _____ State/country _____ Postal Code _____

Telephone _____ Fax _____ Email _____

Signature _____

Date _____

Please return to: Molecular Methodologies, Department of Pharmaceutical Sciences, School of Pharmacy, State University of NY at Buffalo, 519 Hochstetter Hall, Buffalo, NY 14260, Phone: 716 645-2842, ext. 260; Fax: 716 645-3693. Email: dbrazeau@acsu.buffalo.edu.

Course location: The course will be held at the University at Buffalo, 524A Cooke Hall, North (Amherst) Campus.

Fee: Individual fee: \$500 for students, \$1500 for faculty and researchers. This includes course documentation, laboratory supplies and reagents, and mid session refreshments each day.

Registration: Please register ASAP in view of the limited course capacity of 20 participants. Confirmation of registration will be returned upon receipt, together with an invoice for the course fee. Registration will not be final until payment is received.

Cancellations: Cancellations with a full refund may be made until 14 July 2008. No refund is possible on cancellations received after this date. Substitutions may be made at any time.

Payment: Credit cards or checks made payable to: University at Buffalo Foundation Inc.