DNA Microarray Technology Workshop: A Comprehensive Introduction  
OSU Microarray Core and the Department Of Biochemistry & Molecular Biology  
Oklahoma State University, Stillwater  OK   Summer 2004

Instructor  
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Course Description  
This comprehensive, hands-on workshop on DNA microarrays is designed for investigators contemplating or pursuing studies in differential gene expression. This entry-level workshop will lead participants through the processes and techniques for designing, printing, hybridizing, scanning, and analyzing microarrays.

Daily Schedule

Monday
• Morning  
  Lecture (348B NRC): Introduction to the workshop and DNA microarray technology  
  Laboratory (144 NRC): Preparation of tagged cDNA target Part I, cDNA synthesis
• Afternoon  
  Laboratory (144 NRC): Preparation of tagged cDNA target Part II, cDNA tagging  
  Preparation of fluorescent target Part III, slide pre-treatment and hybridization

Tuesday
• Morning  
  Lecture (348B NRC): RNA target labeling and hybridization  
  Laboratory (144 NRC): First stringency washes and 3DNA hybridization
• Afternoon  
  Lecture (348B NRC): Fabrication of microarrays  
  Laboratory (144 NRC): Second stringency washes

Wednesday
• Morning  
  Lecture (348B NRC): Introduction to microarray scanning  
  Laboratory (348H NRC): Microarray scanning and image acquisition  
  Laboratory (348H NRC): Syto-61 staining and microarray quality assessment
• Afternoon  
  Lecture (348B NRC): Issues of experimental design: replicates, controls, MIAME and more  
  Laboratory (348H NRC): Microarray scanning and image acquisition  
  Laboratory (349 NRC): Tour of the OSU Microarray Core Facility and demonstration of microarray printing  
  Laboratory (349 NRC): Tour of the OSU DNA/Protein Core Facility

Thursday
• Morning  
  Lecture (005 AH): Data acquisition: spot recognition and intensity extraction  
  Laboratory (005 AH): Data acquisition and normalization using GenePix Pro 5.0
• Afternoon  
  Lecture (005 AH): Microarray data pre-processing, normalization and identification of differentially expressed genes  
  Laboratory (005 AH): Data normalization, pre-processing and management

Friday
• Morning  
  Lecture (005 AH): Feature reduction and pattern recognition: supervised and unsupervised clustering methods  
  Laboratory (005 AH): Exploratory data analysis using Genesis
• Afternoon  
  Lecture (005 AH): Class prediction and pathway analysis  
  Laboratory (005 AH): Exploratory data analysis using Genesis and web-based tools