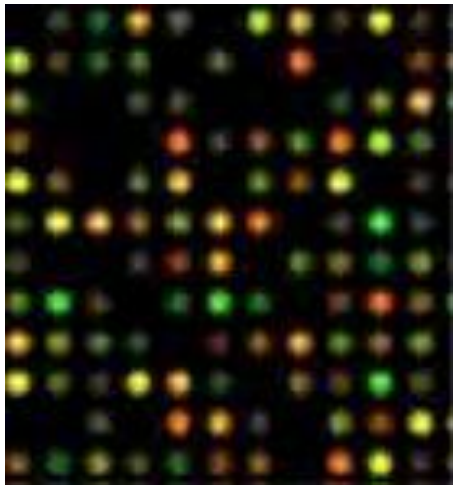
BIOTECHNOLOGY
NC STATE UNIVERSITY

BIT 462/562: Gene Expression Analysis: Microarrays

Overview: Microarray analysis has become the method of choice for screening the impacts of stimuli on global gene expression in an organism. We will review current theory, techniques, machinery, troubleshooting, tools, and analysis methods for microarray analysis. At the conclusion of this course, students should feel comfortable with microarray experimental design, its tools, and analysis of generated data.



Lectures:

1. Intro to gene expression and the enemy RNAse
2. Experimental design and labeling strategies , oligo design and array layout
3. Alternative use for array technologies
4. The equipment used in the array process, gene expression using SAGE
5. Statistical analysis of array data
6. Statistical analysis of microarray data, real-time PCR and analysis
7. Data analysis, clustering and categorization

Labs:

1. Experion analysis of RNA, print oligo arrays
2. cDNA labeling and prep, check array quality- nonspecific dye
3. Hybridization of arrays, post-hybe washes
4. Scanning, gridding and generate raw data files
5. Real-time PCR, compare array data and real-time PCR results