



Development of fungi-specific microarrays for gene expression analysis

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Introduction

Genomic information determines the form and function of an organism. Genes, the functional units of the genome, encode proteins which execute the genomic instructions. Biological differences among individuals in a population are due to both genetic and environmental factors. These influences can be understood by studying variability in genomic sequence (mutations and polymorphisms) and in how much of each gene product is made in a given cell or tissue (gene expression). For the understanding of biological systems with more than 30.000 genes the measurement of RNA levels for a complete set of transcripts of an organism will be necessary. Therefore, massive parallel technologies are becoming increasingly important. An ideal tool for measuring the concentration of messenger RNA in living cells is the microarray technology, a high throughput method already fully established, and operating, in our lab.

Projects

- Cell cycle analysis in *S. cerevisiae*
- Organspezifische microarrays (Tissue Engineering)
- Tumor Diagnostics (HCC und Colon Carzinom)
- Development of protein arrays
- Pharmakogenomik und screening
- Optimierung von Fermentationsprozessen

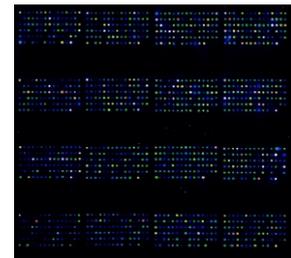
Cooperations

- Prof. Reardon, Colorado State University
- Prof. Luqmani, Kuwait University
- Prof. Schlegelberger, Dr. Wilkens, MHH
- Prof. Brakhage, Mikrobiologie, Uni Hannover
- Prof. Skutella, Dr. Just, Anatomie, Uni Tübingen
- Prof. Bader, Zell- und Gewebekultur, Uni Leipzig
- PD Dr. Friehs, AGFT, Bielefeld
- VLB Berlin

Methods

Basic steps of an array experiment

1. The target oligonucleotides are spotted onto a substrate.
2. The sample RNA is isolated.
3. The cDNA is synthesized, a procedure that also involves fluorescent labeling for later detection.
4. The labeled probe is hybridized to target the oligonucleotides on the substrate.
5. The hybridization results are imaged and analyzed.



Expression analysis of 1350 genes

Service

- Design of microarrays and experiments
- Spotting and hybridization service
- Data management
- Training courses

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Equipment and Contribution to the Project

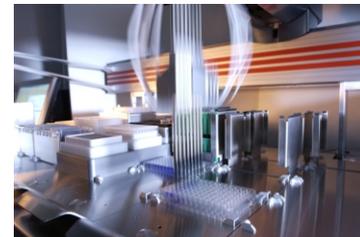
The Institute is equipped with an Affymetrix 427 arrayer and an Affymetrix 428 array scanner and has considerable experience in the planning, development and application of gene expression analysis using microarrays. Within the consortium we will cooperate with other partners to supply DNA-chips for special applications. Here DNA-chips based on known gene sequences can be prepared.



Affymetrix 427 arrayer



Affymetrix 428 scanner



Theonyx Liquid Performer