

# A MicroArray Production site in Evry

At the heart of the Evry Genopole, our microarray facility is dedicated to provide to the academic and industrial community state-of-the-art DNA chip production and analysis.

## MicroArray fabrication

MicroArrays are glass slides of a few cm<sup>2</sup> on which thousands of different DNA molecules are positioned in an organized manner. These DNA sequences act as probes to measure gene expression in global cell studies (development, environment adaptation, stress and drug responses,...). On a single chip, whole genomes (ie the full set of genes) may be analyzed in a single experiment.

**MicroArray fabrication** starts with the selection of the appropriate probe sequences. This step is carried out by computer assisted analysis of the gene sequences from public databases. After producing the probes by enzymatic amplification, the DNA is spotted onto glass slides using high density printing robots.



A 48 pin spotter at Evry



### Analysis:

The probes bind with very high specificity to their complementary counterparts present in the sample to be analyzed. Detection of this interaction and image processing software lead to relative quantification of gene expression. Thanks to powerful bioinformatic algorithms, these data are statistically validated and interpreted in a particular biological context (pathological vs normal tissue, changes over time or over space).

## Ressources

**Staff:** 35 people (6 in bioinformatics)

### Equipment:

- . 6 PCR thermocyclers (1728 amplifications per day),
- . 4 spotters (48 pin robots),
- . 1 liquid handline robot,
- . 3 scanners, 1 bioanalyser,
- . 2 servers.

## Products & Services

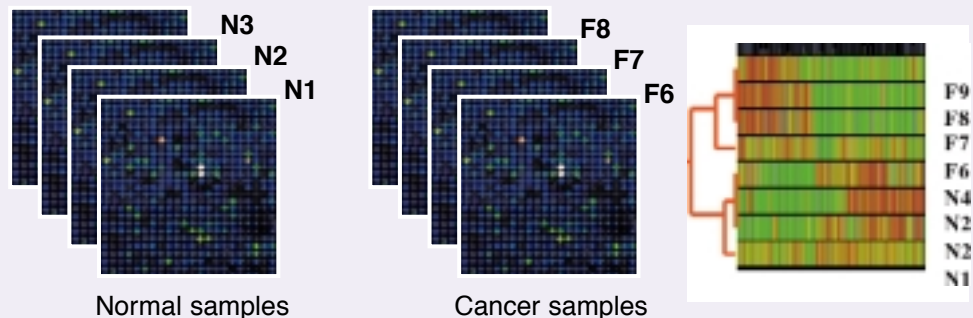
The Evry platform offers:

- . Human MicroArrays (up to 12 000 genes)
- . Mouse MicroArrays (15000 genes)
- . Yeast MicroArrays (6300 genes and 6300 intergenic areas)
- . Arabidopsis thaliana MicroArrays (9500 genes)

*Production capacity: 10 000 MicroArrays per year.*

## Applications

Microarrays produced at the CEA are used in particular for research activities in nuclear toxicity and radio-susceptibility. Specific genetic markers for individual susceptibility to radiation as well as for recent exposure to radiation have been discovered.



Identification of 163 genes differentially expressed in a cancerous thyroid gland vs a normal thyroid.

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