



Newsletter GenomeCenter Maastricht

October, 2003

The Newsletter of the GenomeCenter was being sent around at irregular intervals. From now on we will send it quarterly. One of the reasons is that developments in the field of genomics and in the Genome Center occur at a rapid pace, another that most research group from the UM and azM are using the Genome Center for one of the many services we offer and we want to keep them optimal informed. Last year we completed a development and business plan for the Genome Center in the years to come within the frames of contributing research institutes and increasing demand of the hospital. This will be released shortly. It is impressive what has been achieved already and the future is bright for genomics in Maastricht. We hope and expect that all genomics researchers in Maastricht take the chances and opportunities we offer them.

New personnel

We are happy to welcome Dr. Patrick Lindsey and Dr. Torik Ayoubi, 2 new members of the GenomeCenter Maastricht and the Division of Population Genetics. **Patrick Lindsey** is a biostatistician, who finished his thesis on Non-Linear Models for Multivariate Repeated Ordinal Data at the Limburgs Universitair Centrum Diepenbeek in 2001. The same year he started as a post-doc at EURANDOM in the group on Computational Molecular Biology. EURANDOM is a European research institute for the study of stochastic phenomena. Patrick has an extensive experience in both gene expression profiling and genotyping, covering the areas of experimental design and data analysis. The following keywords highlight the areas of his research interest: quantitative genetics, molecular biology, dynamic models, repeated measurements, categorical data, genetic linkage, dependencies, copulas, non-linear models and sample size calculations. **Torik Ayoubi** started his career as a PhD student on the regulation of gene expression of Proopiomelanocortin (POMC) and the neuroendocrine protein, 7B2 at the department of Animal Physiology, University of Nijmegen, followed by a post-doc period at the Department of Human Genetics, University of Leuven, where he became a group leader in 1996. Extensive research experience was obtained in the area of regulation of gene expression. The last 4 years he was Science Advisor at the Flanders Interuniversity Institute for Biotechnology (VIB) in Belgium. The VIB is an academic institute with a budget of about 60 million USD, employing over 750 people, working in several areas of molecular biology, plant and human genetics, cell biology, immunology, cancer and neurodegeneration. The institute publishes over 300 publications per year in peer-reviewed journals of which over 10% in high-ranking journals (impact factor higher than 10). As a science advisor, he had to stay abreast of the science performed within the VIB and in related fields and of the developments in the Biotechnology industry and keep track of technological innovations, especially in the areas of Functional Genomics and Bioinformatics. He was a member of the management committee of the microarray core facility of VIB and recently wrote a business plan for the proteomics core facility. His most recent task has been stimulating the implementation of bioinformatics. Torik will join the Genome Center Maastricht at November 1, where he will be in charge of the gene expression unit and continue his work on (regulation of) gene expression.

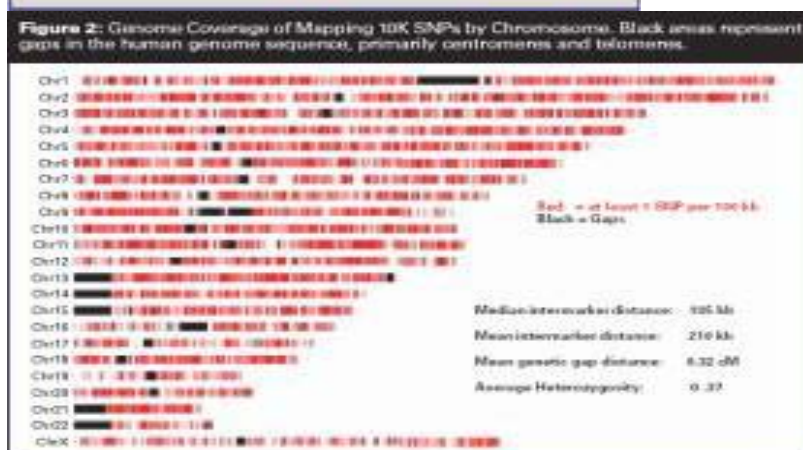
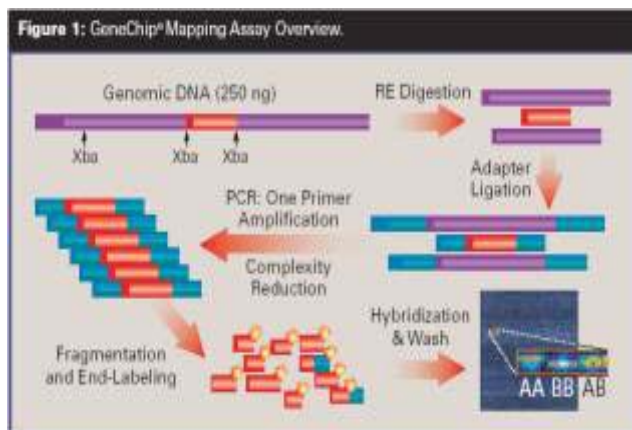
The presence of these key staff members will allow the Genome Center to cope with the expectations that have been raised when it started more than a year ago. Lack of this staff have been one of the main reasons that the Genome Center sometimes fell short in giving the intended and expected support. These days are over and the coming months you will experience the changes going on.

Home-made microarrays – New collections

In addition to the Operon Rat Array-Ready Oligo-set Version 1.1 (containing 5702 70-mer oligos) and the Operon Human Array Ready Oligo-set Version 2.0 (21329 70-mer oligos), we recently acquired the Mouse Genome Oligo Set Version 3.0, containing 31,769 arrayable 70mers representing 24,878 genes and 32,829 gene transcripts. The design is fully based on the Ensembl (<http://www.ensembl.org/>) Mouse 14.30 Database and Mouse Genome Sequencing Project and deals directly with alternative splicing variants using common, partial common, or individual transcript oligos. The oligo set comes with complete annotation including Gene Ontology (GO), oligo chromosome coordinates, comparative genome analysis, and other functional annotation. With the current specifications of the arrayer, we will have to spot this huge collection on 2 slides. With improvements, which are scheduled next year, we will be able to print the collection on a single slide. The design was made by Patrick Lindsey to deal with all types of variation. Prices of the human and mouse microarray will be about Euro 150 and of the rat about Euro 80. We will make a specific price setting for each project also to enable investigators to gather the necessary data for subsequent grant applications at low cost. This will allow them to get sufficient support to deal with the actual costs. Our conditions and delivery terms can be found on our web site. Please contact us if you are interested in these products.

Affymetrix

Affymetrix has a number of new and exciting products, which will be of interest for many of our users.



- The **GeneChip® Human Mapping 10K Array Xba 131** (GeneChip® Mapping 10K Array) is a new SNP genotyping tool for investigating the genetics of complex human disease. More power, less PCR and less DNA: 10,000 SNPs, One Primer, One Array.

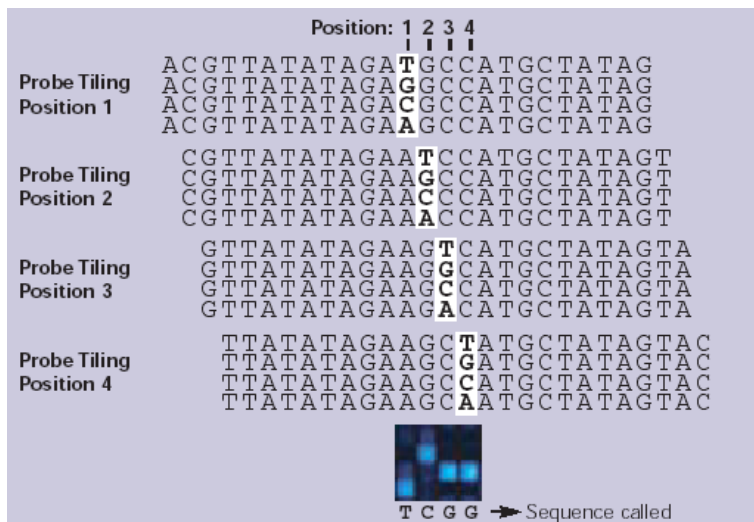


Figure 1: CustomSeq™ arrays tile four probes per strand for each individual base. The central position of each probe varies to incorporate each of the four possible nucleotides—A, C, G, or T.

CustomSeq™ Array Benefits

High Quality	→	>99.99% Reproducibility
High Accuracy	→	>99.99%
High Call Rate	→	>90%*
Flexible	→	Contiguous or dispersed fragments Multiple organisms
More information in one experiment	→	~30 Kb unique sequence, 60 Kb of total information on a single array

*Call rate may vary depending on genomic sequence

- **CustomSeq™ Resequencing Arrays** provide an efficient and cost-effective method for resequencing large amounts of DNA. This array presents the opportunity to sequence 30,000 bases of user-specified sequence. Utilising Affymetrix' core technology and manufacturing superiority, CustomSeq arrays deliver the highest quality sequencing data to your bench top.

- **Affymetrix workshops**

Affymetrix workshops will be scheduled throughout the year and you will be notified about their contents and dates separately.

- **Reference samples**

As Affymetrix technology is particularly suited to establish databases of gene expression profiles, we will give our customers a considerable price reduction on GeneCHIP experiments on reference samples, if they agree on making these control data sets available for other researchers in Maastricht.

New or Planned Equipment

- **Spectrophotometer Nanodrop**

Benefits

1 microliter samples

- ✓ Use less of your valuable sample

Quick and Easy Sample Handling

- ✓ Clean up in seconds
- ✓ No cuvettes or capillaries
- ✓ No sample dilution required

Applications

Microarray Cy-dye Measurement: ideal for determining the dye label concentration of microarray samples.

Nucleic Acid Concentration and Quality Measurement: ideally suited for measuring the concentration and quality of nucleic acid samples. Concentrations from 2-3700 ng/μl can be measured without dilution.

Spectrophotometry: performs full-spectrum UV/Vis spectrophotometry. Safety is improved when analyzing dangerous materials due to the small sample size.



Recently we purchased a new spectrophotometer. Some of the specifications are indicated here.

- **Microarray Scanner**

A new scanner will be purchased before the end of the year by the Department of Clinical Genetics (azM), which contributes heavily to the Genome Center and has, for example, previously bought the Affymetrix system.

- **Hybridization and wash station**

For homemade microarrays the step of hybridisation and washing needs to be automated to increase throughput and reproducibility. This will be realised in the next half year.

- **DNA isolation robot**

Ongoing developments in robotics make us consider the acquisition of a DNA isolation robot for small and large samples this year.

New Prices

Sequencing at the Genome Center has become routine for many research groups in the university and hospital and also for groups from outside. We are happy to let you know that due to improvements in our protocols we will be able to reduce our price from Euro 3,45 to Euro 2.75. The sequencing protocols have been sent around to all registered users, but can be received upon request. Protocols will be attached to our web site shortly.

Training Courses

Following the highly successful hands-on training course on high-throughput genomic technologies and gene expression profiling for members of a European Network on Mitochondria, we will extend our program of lectures, workshops and courses. The TERA meetings, which provide a platform to genomics and proteomics initiatives in Maastricht, Liege and Aachen, will be continued as well. With the new staff we plan to provide researchers within the University and Hospital with all the necessary information, training and education. Please contact us, if you need any dedicated support or training proposal.

Dr. H. Smeets, Head of the Genome Center Maastricht

The Genome Center Maastricht is an integral part of the Department of Population Genetics, Genomics and Bioinformatics (Head Prof.dr. R. Vlietinck) and of the Department of Clinical Genetics (Head Prof.dr. J. Geraedts).

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