GENOMICS PROTEOMICS INFORMATICS

A T C T G A T C C T T C T G A A C G G A A C T A A T T T C A A
G A A T C T G A T C C T T G A A C T A C C T T C C A A G G T G

Integrated Biology Solutions

One-Color Gene Expression Microarray Solution

Dual-mode delivers the best of both worlds

Product Note

Agilent's dual-mode Gene Expression Microarray platform is a comprehensive and robust system that couples the ease and simplicity of one-color experimental design with the capability of two-color to detect small transcriptional changes – all on the same platform. Let the dual-mode platform expand your microarray applications, decrease your system variability, and accelerate your discovery process.

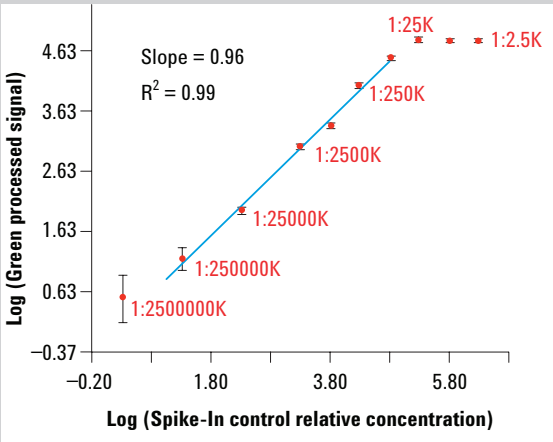
Features and Benefits at a Glance

- **Convenience** – versatility of open-ended one-color experimental design
- **System sensitivity** – detection of fewer than 1 in 1,400,000 transcripts (based on molar ratio)*– less than one transcript per cell
- **Overall performance** – exceptional linear dynamic range and array-to array reproducibility
- **Flexibility** – easy microarray design using Agilent's eArray web site

* Molar ratio was calculated from mass ratio assuming 2,000 base pair average transcript length and 2% mRNA representation in total RNA.

Accurate Detection of Low-Abundance Transcripts

Emerging gene expression applications place a premium on the detection of transcripts expressed at very low levels. This capability is especially valuable when analyzing complex tissue types such as heterogeneous cell populations in tumor samples. Agilent's high-performance inkjet synthesis process produces exceptional 60-mer oligonucleotide microarray probes that deliver unsurpassed sensitivity. This technology detects very low-abundance transcripts even with low sample input amounts (down to 200 ng total RNA) and only one round of amplification (avoiding the risk of amplification bias).



System performance
For determination of linear and total dynamic range of every microarray run, Agilent offers Spike-In transcript controls across a wide concentration range. Red numbers indicate mass unit ratio of Spike-In transcript to total RNA. Blue line represents the linear range (of approximately four orders of magnitude) based on a parametric curve fit through the data. Overall system sensitivity is 1:250,000K (mass unit ratio), as indicated by the lowest intensity Spike-In probe within the linear range .

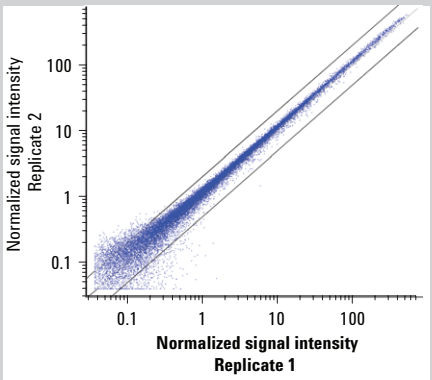
Agilent Technologies

Exceptional Linear Dynamic Range

Agilent's One-Color Gene Expression solution delivers accurate relative quantitation across a wide range of expression levels. The linear dynamic range is routinely between 3.5–4.0 orders of magnitude, with a total dynamic range of nearly 4.5 orders of magnitude. Agilent provides Spike-In controls at concentrations spanning seven orders of magnitude to measure the linear and total dynamic range of every microarray experiment.

Superior Resolving Power

The ability to accurately resolve small changes in gene expression requires exceptional system reproducibility – not only run-to-run but also week-to-week. Achieving this level of reproducibility requires a precision-optimized and tightly-controlled workflow. Agilent's One-Color Gene Expression Microarray solution has been optimized to detect very small transcriptional changes (less than 1.5 fold) over most of its dynamic range.



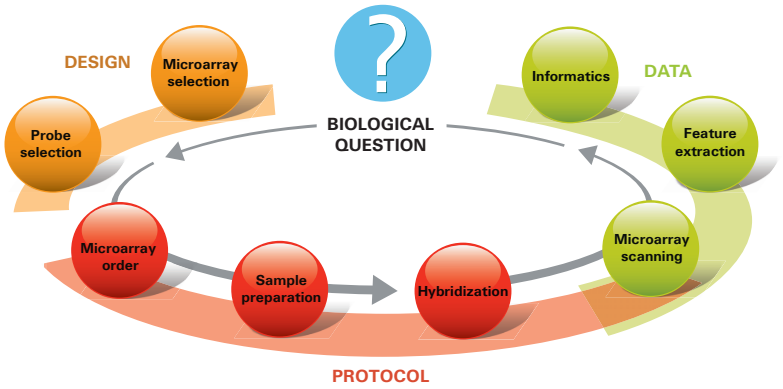
Excellent reproducibility
Signal intensity comparison plot of two randomly chosen Whole Human Genome microarrays hybridized with identical input RNA. Replicates display consistant signal intensity values across four orders of magnitude. Black lines represent the two-fold change cut-off.

Thorough Quality Control Assessment

Agilent's new microarray QC Reports provide integrated quality control information to validate the results of every experiment. These reports take advantage of Agilent Spike-In Kit transcript controls to measure sensitivity, linear dynamic range, and reproducibility. Achieve an unprecedented level of confidence in your data and take the guesswork out of your microarray quality assessments.

Comprehensive Workflow

Agilent's platform of microarrays, reagents, hardware, and software is designed for ease-of-use. Components have been developed to work seamlessly together to extract larger amounts of useful data from your experiments. Experience a unified system with end-to-end solution support that addresses all of your gene expression, CGH, ChIP-on-chip, and splice variant applications, and grows with your needs.



The Agilent Comprehensive Microarray Workflow – experience a unified system with end-to-end solution support

Content Offerings

Catalog Microarrays

For your immediate research objectives, Agilent provides a full line of predesigned catalog microarray products. Our design methods combine powerful probe design algorithms with Agilent's probe selection and empirical validation for optimal probe performance and genome coverage. Each catalog microarray is easily customizable so you can conveniently update and evolve genomic content to meet your experimental needs. All of Agilent's catalog microarrays are fully enabled for both one-color and two-color experiments.

Custom Microarrays

We offer Custom Microarrays for unique customer designs and requirements not addressed by current catalog microarray offerings. This custom microarray offering puts the power of Agilent's SurePrint microarray manufacturing technology at your fingertips. Agilent's manufacturing process features a flexible, industrial scale inkjet printing process that synthesizes oligonucleotide probes *in situ* onto 1"× 3" slides. This maskless process allows quick iteration of microarray designs required in today's continuously evolving genomic research environment. Our custom microarray capabilities deliver the flexibility you need, when you need it.

Catalog Oligo Microarrays

- Human
- Mouse
- Rat
- Dog (*Canis familiaris*)
- *Arabidopsis thaliana*
- *Caenorhabditis elegans*
- Fungus (*Magnaporthe grisea)*
- Rice (*Oryza sativa* L. *ssp. japonica*)
- Zebrafish (*Danio reio*)
- Frog (*Xenopus laevis*)

eArray is a Secure, Web-Based Application Tool That Enables You to:

- Create custom designs in a secure, online environment
- Search and access catalog microarray probe sequences and up-to-date annotations
- Submit array designs directly to Agilent manufacturing
- Download annotation files for use in image and data analysis applications
- Work collaboratively and share designs with colleagues

For more information, go to http://earray.chem.agilent.com/earray

Specifications

Oligonucleotide probe length	60-mer
Starting sample input	Total RNA
Type of labeling	Cy3-labelled linear amplification
RNA required for labeling	200 ng (single round)
Agilent internal quality controls	eQC grid controls with RNA Spike-In controls
Microarrays per slide	Variable
Slide format	1" x 3"
Total number of features	Customizable up to 44K

Major Applications of Agilent's One-Color Platform

- Global gene expression profiling
- Therapeutic target (for example, oncogenes, tumor suppressors) identification
- Biomarker or pathway identification for disease and therapies using a broad variety of sample types
- Transcriptional-based drug resistance mechanisms
- Toxicant signature identification and prediction

About Agilent's Integrated Biology Solutions

Agilent Technologies is a leading supplier of life science research systems that enable scientists to understand complex biological processes, determine disease mechanisms, and speed drug discovery. Engineered for sensitivity, reproducibility, and workflow productivity, Agilent's Integrated Biology Solutions include instrumentation, microfluidics, software, microarrays, consumables, and services for genomics, proteomics, and metabolomics applications.

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