



EcoArray Microarrays for Environmental Toxicology Fathead Minnow (*Pimephales promelas*)

The freshwater fathead minnow, *Pimephales promelas*, is one model system used for evolutionary/ecological genetics and genomic studies. Microarrays, solid support matrices that contain oligonucleotide probes, represent thousands of unique genes from an organism. RNA from these organisms translates into a “snapshot” of the genes being expressed at the time the RNA is collected. This RNA is labeled with a cyanine dye and hybridized to the probes on the microarray. The resultant gene expression patterns are biologically relevant and, when used in ecotoxicology studies, can help identify molecular and genetic mechanisms associated with exposure to environmental contaminants.



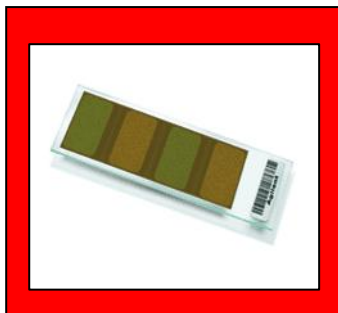
Our fathead minnow(FHM) microarray was constructed by first compiling all known gene sequences for fathead minnows: 250,000 ESTs published by the JGI plus our own proprietary sequences obtained from suppressive subtraction hybridizations and library construction. We then assembled these genes to discern ~47,000 non-overlapping unique sequences (contigs and singlets). Homology searches (Blast) were performed on these sequences in order to provide annotation (gene name) and ontology (gene function) information where present. A total of 21,495 contigs were assembled. Probes, 60-bases in length, were designed using Agilent’s web-based E-Array program.

The content of our FHM microarray is located on our web site and contains 21,495 contigs of which:

- 17,588 are annotated and represented by one sense or antisense probe.
- 1,331 are annotated and represented by one reverse complement for the probe.
- 2,576 are poorly annotated (e-value >0.0001) and represented by one probe.

EcoArray’s microarrays have a unique multipack format. Each slide contains either 4 individual 44K arrays or 8 individual 15K arrays.

EcoArray selected Agilent Technologies as the manufacturer of our microarrays for environmental toxicology. Agilent Technologies is a leading supplier of genomics and proteomics products. Using their SurePrint inkjet deposition of *in situ* synthesized 60-mer oligonucleotides, all microarrays are manufactured on superior quality 1” x 3” (24.2 mm x 76.2 mm) treated glass slides for overall excellent performance. This process minimizes variability across each production lot (batch to batch) and provides the **highest consistency** in slide-to-slide comparisons. These glass slide microarrays are designed for either a one- or two-color (cyanine-3 and cyanine-5) labeling reaction, the most reliable and sensitive methods for detecting differentially expressed genes. Agilent’s Feature Extraction software, when used with a high-resolution (5µm) scanner, provides QA metrics for each individual microarray, ensuring quality results.



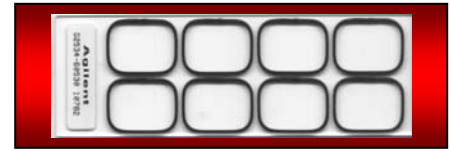
4 x 44K Format (“4-Pack”)

This microarray contains 60-mer probes for 21,495 fathead minnow sequences. The majority of these genes (~70%) are well annotated -- matched (e-score \leq E-04) to named genes in the published databases. The genes are part of a wide variety of biological pathways and processes including: reproduction, cell communication, metabolism, homeostasis, and others. This array may be most useful for researchers who want to discover “new” genes that may not be fully described.



8 x 15K Format ("8-Pack")

This microarray contains 60-mer probes for 15,208 fathead minnow sequences. Because there are eight arrays per slide, this is the most economical array, costing less than \$100 for most academic researchers. This microarray is **100% ANNOTATED**. Genes included on this array matched the Swiss Prot or Nonredundant databases with an evalue <E-05, or the Nucleotide database with evalue <E-06. All duplicate accession numbers were removed. This array is perfect for those who do not want to worry about "no hits."



HOW TO PURCHASE:

These microarrays are sold in two different package configurations:

- **The Complete Package:** With the complete package, you receive not only the arrays, but also complete sample processing in our laboratory. The package includes preparation and quality checks of the RNA samples, labeling with cyanine dyes, hybridization, scanning, quantitative estimates of gene expression with Agilent's Feature Extraction software, and basic analyses with GeneSpring software. You will receive an EcoArray CD with the scanned images and metrics, raw data, analyzed data (graph, etc.), instructions on use of the databases, and customer support. Please contact EcoArray for a quote.
- **The Array Only Package:** This package is intended for researchers who are very familiar with RNA extraction, target labeling and who have access to the specialized equipment (hybridization oven and chambers, and a high resolution 5 micron platform scanner) necessary for processing arrays. Please contact EcoArray for authorization to purchase the arrays directly from Agilent.

The minimum number of arrays that must be purchased and run is 8 (one slide). EcoArray and Agilent offer academic and government discounts where applicable.

Publishing and research use agreement:

EcoArray charges a small licensing/research use agreement fee for each array, which will be billed separately. Our Research Use Agreement is pretty standard -- the only significant limitation is that researchers not use the array for commercial purposes. The research agreement permits publication under MIAME standards.

Data Sharing Program

Additional discounts are available to members of the Data Sharing Program. (See our web site for details on the Data Sharing Program.)

For more information, visit our web site at: www.ecoarray.com

You may also contact us by phone, mail or e-mail:

Current address:

EcoArray, Inc.

12085 Research Drive

Alachua, FL 32615

Tel: (386) 418-1400

Fax: (386) 462-0875

bcarter@biotech.ufl.org

New address as of 1 Jan 2008:

EcoArray, Inc.

4949 SW 41st Blvd, Suite 50

Gainesville, FL 32608

Tel: Please check our web site.

Fax: Please check our web site.

bcarter@ecoarray.com