

CodeLink™ Expression Analysis

Software Version 5.0



CodeLink™ Expression Analysis software is an automated application for primary data extraction and acquisition of gene expression values from all types of CodeLink™ expression bioarray images – including CodeLink™ whole genome bioarray and multi-assay configuration images. CodeLink™ Expression Analysis v5.0 software ensures that high-quality data is extracted from CodeLink™ bioarray images generated from a variety of commercial scanners. For data preservation and maximum flexibility, CodeLink™ Expression Analysis v5.0 data is back-compatible with corresponding data from the same type of bioarrays generated with older versions of CodeLink™ Expression Analysis software. To address all levels of throughput, the software allows TIFF images to be processed either individually or as batches. After a TIFF image is submitted to either application, the software will automatically find all spots within the image, and extract the corresponding signal intensity. Additionally, the software will use the bioarray unique serial number to identify the gene identification and description for each spot within the bioarray. If needed, the end user can manually override the automated processes of the software to realign the spot finding results. Both applications provide quality metrics for each spot that are displayed both numerically and graphically.

Overview of New Features for CodeLink™ Expression Analysis version 5.0

- Support of all CodeLink™ Bioarray formats.
- Improved batch submission, processing and management.
- Improved reporting & exporting.
- Enhanced data extraction.
- Enhanced visualization.
- Data backwards compatible.
- Selected probe-set normalization.

Enhanced Batch Submission Features for CodeLink™ Expression Analysis version 5.0

- Processing images submitted via command line.
- The CodeLink™ Spotfinder can be integrated into customers own software infrastructure.
- Batch management new feature that displays TIFF image file path on tool-tip.

Image Quality Control

CodeLink™ Expression Analysis v5.0 software assists in maintaining high-quality data throughout the experimental analysis process. Statistical methods are applied to each spot to identify low abundant genes within the noise boundary. Spots with any background contamination, shape irregularity, or pixel saturation are flagged, and a Bioarray QC report summarizes all quality flags for each array in a batch. A Control Probes report displays the intensity results in detail for each positive and negative control. The Control Probes report can also be used to evaluate the sensitivity and specificity of the experiment.

New Image Quantification QC features for version 5.0.

- User can select probe types to be included in Bioarray QC calculations.
- User can track typical overall array intensity profile.
- Integration and Exporting of new flag (P) identifying spot contamination and pollution.

Visual inspection

A visual inspection module enables in-depth inspection of the image with tools for zooming, measuring distance, contrast, and color preferences. Manual re-gridding and spot adjustments may be performed for data rescue, and defective spots may be excluded from data analysis. The software tracks all modifications and exclusions. A spot statistics window provides tabulated information for individual spots including spot statistic values, quality flags, and adjustment tracking. Multiple images may be displayed and synchronized for easy visual spot reviewing.

New spot quality flag – Spot Pollution – P Flag

- Marks spots having contaminants which may affect the actual spot intensity value
- This feature can be considered a Robust Shape Irregularity flag
- Insensitive to scanner resolution or spot size

Expression Analysis reports

Several report formats are available for bioarray performance and probe annotation.

- Coefficient of Variation (CV) report to validate replicate performance
- Control Probe Performance report for assessing performance based on spiked controls
- Minimum Detectable Fold Change (MDFC) report for differential expression analysis
- Probe annotations with links to public repositories
- Array Comparisons between replicate or unique arrays
- Graph Comparisons of multiple samples

New Normalization Functionality (Fig 1)

- Essential for small array normalization.
- Users can select their own gene lists for normalization.
- Normalize arrays using housekeeping genes.
- Housekeeping gene lists provided for Human, Mouse, and Rat.

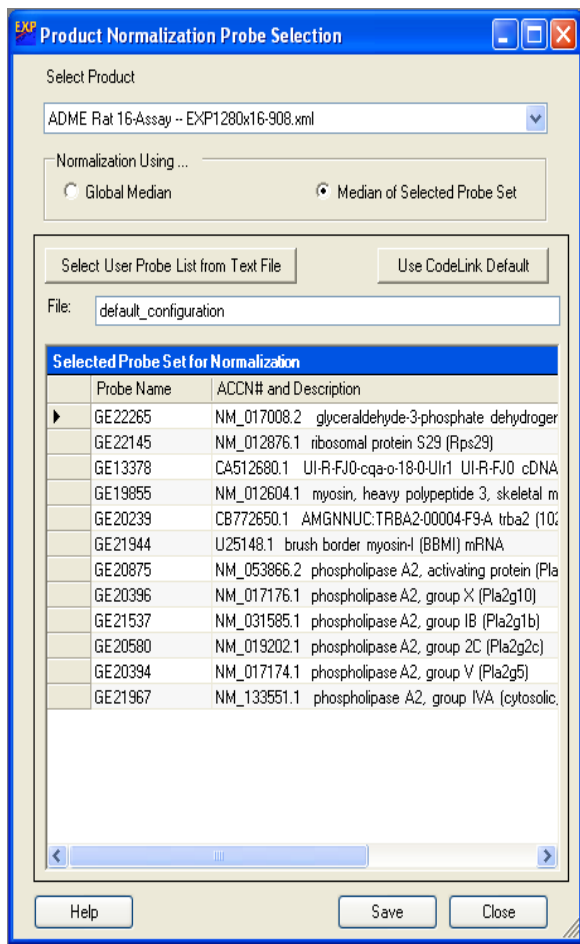


Fig. 1: Product Normalization Probe Selection options allow the user to select median normalized for whole genome arrays, and either housekeeping normalization or normalization with a custom selected probe set for small multi-assay arrays. Default housekeeping gene lists are supplied for each array, which can be customized for a particular system.

Specifications

- Product formats supported: CodeLink™ Whole Genome Bioarrays and multi-assay bioarrays.
- Data export formats: .txt, .xls, .xml, xml/GEML
- Scanner compatibility: GenePix™ 4000 Array Scanner, GenePix Personal 4100, Agilent™ G2565 microarray scanners, arrayWoRx microarray scanner, ScanArray™ Express scanners, GeneTAC™ UC4 Array Scanner, 428™ Array Scanner
- Data mining software compatibility: GeneSpring, Spotfire DecisionSite, Resolver, Luminator™, and dChip. Through custom export, additional applications can be supported.

Fully automated processing cycle time per image:

- <12 min for 60K spot images
- <3 min for 20K spot images

Minimum system hardware requirements

- Pentium™ 4 or equivalent processor at 1.8 GHz or higher
- Windows™ XP Professional with Service Pack 1 or Windows 2000 Professional with Service Pack 2
- 512 MB of available RAM for bioarrays <=10K probes, 1 GB (2 GB recommended) for CodeLink™ 16-Assay and CodeLink™ bioarrays with density 30K or more
- 1024 X 768 pixels in video display resolution
- 1.5 GB of available hard disk space
- Microsoft Office XP with Service Pack 1 or Office 2000 with Service Pack 3
- Microsoft Internet Explorer 6.0
- CD-ROM drive
- Network interface card (NIC) or equivalent device for connecting the computer to the Internet via a local area network (LAN).

Ordering Information

Description	Product Code
CodeLink™ Expression Analysis v5.0 Software	310035

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