

# GenePix® Professional 4200A microarray scanner

FAST, HIGH-QUALITY IMAGING WITH 4-LASER EXCITATION



→ **ULTIMATE FLUOROPHORE  
FLEXIBILITY AND SAMPLE  
COMPATIBILITY**

→ **HOUSES UP TO FOUR  
LASERS**

→ **16-POSITION EMISSION  
FILTER WHEEL**

→ **UPGRADABLE FOR  
INCREASED THROUGHPUT**

→ **FULLY-INTEGRATED WITH  
GENEPIX PRO IMAGE  
ANALYSIS SOFTWARE**

The top-of-the-line GenePix Professional 4200A scanner from Molecular Devices offers maximum flexibility and automation. Configurations include a laser with up to four excitation-wavelengths and sixteen emission-wavelength filters, allowing detection of a wide variety of fluorophores. Coupled with GenePix Pro microarray image analysis software and Acuity microarray informatics software, the GenePix system provides a powerful, flexible and easy-to-use solution for the acquisition and analysis of data from all types of arrays, including nucleic acids, proteins, tissues, and cells. For walk-away ease-of-use, the GenePix Professional can be upgraded to the 36-slide capacity GenePix Autoloader 4200AL.

## OUTSTANDING FLUOROPHORE FLEXIBILITY

Up to four internal lasers can be installed in the GenePix Professional 4200A scanner, for compatibility with a wide range of fluorophores. An easy-to-access sixteen-position filter wheel allows users to add additional emission filters as desired, enhancing the flexibility of the system (Figure 1). Laser upgrades can be added at any time.

## EXPANDED SAMPLE COMPATIBILITY

In addition to fluorophore flexibility, the GenePix Professional 4200A scanner expands overall sample compatibility with user-adjustable focus offset and laser power settings. Adjustable focus offset allows proper imaging of slides with either a raised surface, as with membrane-coated glass, or a recessed surface, as in embedded arrays. The ability to adjust laser power in 1% increments provides fine control in imaging intensely bright samples or limiting laser exposure to unstable samples. To ensure constant signal output at each pixel, laser power is dynamically monitored and small fluctuations, inherent to all lasers, are automatically corrected.

## HIGH-RESOLUTION ACQUISITION, AUTOMATED PMT BALANCING

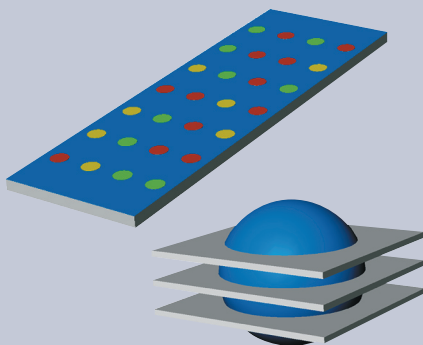
The GenePix Professional 4200A acquires data at user-selectable resolutions between 5 and 100 microns, allowing optimization of image resolution and file size for each experiment. In addition, the GenePix Professional 4200A is capable of automatically choosing photomultiplier gain values, for fast and easy optimization of signal intensity and channel balance.

## flexible filters (figure 1)



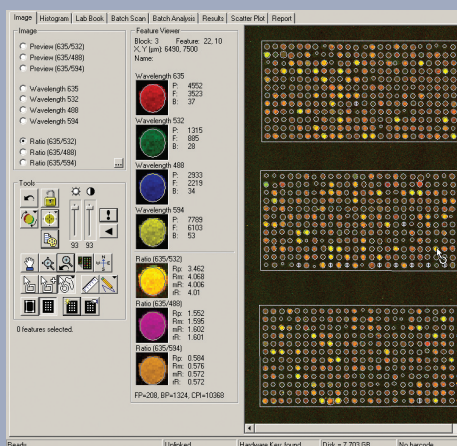
The GenePix Professional 4200A houses a 16-position, user-accessible emission filter wheel. A standard emission filter is included with the purchase of each laser. Additional filters are available for purchase.

## non-confocal optics (figure 2)



The GenePix Professional 4200A optical path is designed specifically for microarrays. Confocal optics do not benefit microarray imaging, because the primary source of background is in the same plane of focus as the sample (left). Confocal imaging is primarily beneficial for rejecting out-of-plane background when scanning a thick sample (right).

## integrated software (figure 3)



GenePix Professional 4200A is closely integrated with GenePix Pro software, which is used both for scanner control and image analysis.

## GENEPIX PROFESSIONAL 4200A MICROARRAY SCANNER

### NON-CONFOCAL OPTICAL DESIGN

The non-confocal optics of the GenePix Professional 4200A are designed specifically for microarray imaging. Confocal technology was originally developed for imaging thin sections of a thick sample for subsequent 3-D reconstruction as with tissue samples. (See Figure 2.) However, most of the background signal on a microarray slide is produced by non-specific hybridization, which is in the same plane of focus as the arrayed sample, and not reduced by confocal imaging. In addition, most microarray slides are not held to tight flatness specifications. A confocal imaging system with a very narrow depth of field may actually fluctuate in and out of the optimal plane of focus as the surface of the slide varies. GenePix scanners are designed to collect as much light as possible from the array surface, while rejecting stray light from other sources.

### UNPARALLELED SIGNAL-TO-NOISE PERFORMANCE

The GenePix Professional 4200A combines industry-leading low noise digitization technology with an ultra-sensitive photomultiplier (PMT) detector for five- to ten-times higher signal-to-noise ratios than white-light CCD systems.

### INTEGRATED HARDWARE AND SOFTWARE

The GenePix Professional 4200A microarray scanner and GenePix Pro microarray analysis software have been designed to work together as a complete integrated platform. (See Figure 3.) The seamless communication between scanner and software ensures unmatched efficiency for data acquisition and analysis, as well as for real-time scanner performance monitoring. Optional Acuity microarray informatics software completes the package, offering database storage, clustering algorithms, advanced statistics and visualizations.

### TECHNICAL SPECIFICATIONS

#### Performance Specifications

Sample type:	Standard microscope slides (1" x 3", 25 x 75 mm or 26 x 76 mm)
Scan area:	Adjustable, 22 x 71.5 mm max.
Excitation:	Up to 4 lasers (all internal); 488 nm, 532 nm, 594 nm, 635 nm
Laser settings:	User-selectable, from 5–100% (1% increments)

Emission filters:	16-position user-accessible filter wheel
Detection:	1 photomultiplier (PMT), automatic and manual gain adjustment settings
Focus offset:	Adjustable between -50 and +200 $\mu$ m (5 $\mu$ m increments)
Optics:	Non-confocal
Scanning method:	Sequential
Scan time:	4 minutes per channel, 10 $\mu$ m resolution, full scan area
Pixel resolution:	Adjustable from 5 to 100 $\mu$ m
Digital resolution:	16-bit
Dynamic range:	Four orders of magnitude at SNR > 3
Image type:	Single- or multi-image TIFF
Barcode reading:	Integrated hardware barcode reader

### General Specifications

Dimensions (in.):	16.9 (W) x 13.4 (H) x 25.6 (D)
Dimensions (cm):	43 (W) x 34 (H) x 65 (D)
Power supply:	110/220V universal
Weight:	103 lbs. (47 kg)

Computer requirements available on our web site at [http://www.moleculardevices.com/pages/software/gn-genepix\\_pro.html](http://www.moleculardevices.com/pages/software/gn-genepix_pro.html)

### ORDERING INFORMATION

GenePix Professional 4200A Microarray Scanner  
 → GenePix Professional 4200A  
 → GenePix Pro image analysis software  
 → Acuity microarray informatics software (optional)

### SALES OFFICES

→ North America +1-800-635-5577  
 → UK +44-118-944-8000  
 → Germany +49-89-9605-880

Check our web site for a current listing of our worldwide distributors.

[www.moleculardevices.com](http://www.moleculardevices.com)

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