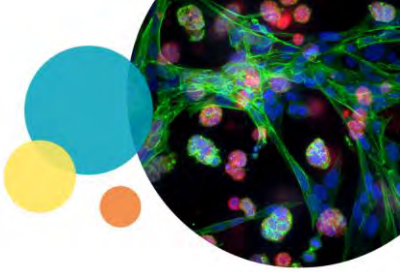

ImageXpress Pico Automated Imaging System with CellReporterXpress Software — our unique system advantages

Updated April 15th, 2018

The ImageXpress™ Pico Automated Imaging System with CellReporterXpress® software enables researchers to get better data faster and improve collaborations with peers—anywhere, anytime. Drawing upon extensive feedback from our customers coupled with over 30 years of imaging expertise, the ImageXpress Pico system enables researchers to capture high quality images and garner more relevant, quantitative data.

Software		
Feature	**User benefit**	**Detailed specification**
☐ **Over 25 different predefined analysis protocols**	• Addresses a wide range of cell and bead-based assays • Ready-made tools available for fluorescent and transmitted light analysis	• System includes over 25 different predefined analysis protocols including Angiogenesis, Apoptosis, Autophagy, Cell Count, Cell Differentiation, Cell Scoring, Multi-Wavelength Cell Scoring, Endocytosis, Live-Dead, Internalization, Mitochondria, Lysosomes, Mitotic Index, Phagocytosis, Pits and Vesicles, Protein Expression, Transmitted Light Cell Count, Bead Count, Bead Scoring, Transmitted Light Scoring, and Viral Infectivity. • Optional Patented Neurite Tracing module available. Covered by patent Methods and systems for analysis of fibers and branching structures within an image of a sample: WO2014036153A1 CN104813364A, EP2891134A1, EP2891134A4, US9646194, US20150213301
☐ **Click-to-Find feature**	• Allows users to easily tune the analysis algorithms with a few clicks of the mouse	• Click-to-Find feature automatically defines cell analysis parameters after the user clicks on a few cells representing the population of interest.
☐ **Label-free transmitted light cell analysis**	• Identify unstained cells as objects for cell counting or for reference against stains in transfection efficiency and other experiments.	• Predefined modules include patented machine learning based algorithms designed to automatically identify objects in bright-field including small cells, large cells, and round objects such as suspension cells or beads. • Patent #s for Method and system for classifying and identifying individual cells in a microscopy image: US20160259963 CN105849274A, EP3063289A1, EP3063289A4, WO2015065697A1

3860 N First Street
San Jose, CA 95134
United States

toll-free 1.800.635.5577
office 408.747.1700
fax 408.747.3601

moleculardevices.com

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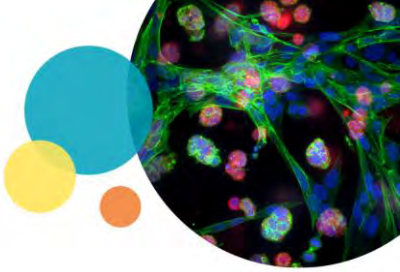

System Software		
Feature	**User benefit**	**Detailed specification**
☐ **Fast image analysis with on-the-fly capability**	• Analyze and re-analyze images quickly and easily • On-the-fly image analysis means the image measurements are ready when the experiment is finished • On-the-fly image analysis allows you to interrogate your data while it is still being acquired.	• The CellReporterXpress software distributes image processing jobs to a multi-CPU environment and is built in a scalable server-client approach that can drive image analysis to be faster than acquisition • Option to expand the number of processing units that are deployed for image analysis
☐ **Integrated data management**	• Seamless integration of image and data visualization in one software solution • No limitation to storage locations, enabling perpetual access to data from within the software as storage needs increase over time • Network access to data • No database administrator experience is necessary	• Software is designed to save to and display data and measurements from multiple locations as defined by the end user. • Locations are available to all users with appropriate software and IT privileges. • Distributed storage concept allows simple steps to attach and detach the storage and moving data from one CellReporterXpress system to another.
☐ **Comprehensive data visualization**	• Seamlessly access images, measurements and analysis within a single interface. • Drill down from images to cells and extract multi-parametric measurements • Rapidly zoom from overview to individual cells to focus on data of interest	• Software includes capabilities for cell galleries, heat maps, scatter plots, and bar charts for data visualization. • Software interface is designed to review plate level measurements, images and cellular data from within a single integrated package. • Compact multi-scale pyramid image format
☐ **Secure data access**	• Secure data access aligned with institutional password and security policies • Minimizes need to manage user login and passwords • Improves the security of the data	• Compatible with Microsoft Active Directory • CRX application supports institution's password policies
☐ **At-a-glance sample temperature and environmental control status**	• At-a-glance temperature, CO_2, O_2, and humidity information on sample area can be displayed on all user interface screens • Helps assures user their sample is at-the prescribed temperature, CO_2, O_2, and humidity levels prior to starting acquisition • Allows user to check after acquisition that sample temperature, CO_2, O_2, and humidity was maintained for the duration of the experiment.	• Temperature, CO_2, O_2, and humidity of sample area displayed on menu bar on all user interface screens when enabled • User sets upper and lower sample temperature, CO_2, O_2, and humidity alert limits • Temperature, CO_2, O_2, and humidity levels available for viewing or plotting at the experiment conclusion. • Any parameters outside the defined boundaries are captured as alerts within the experimental data.

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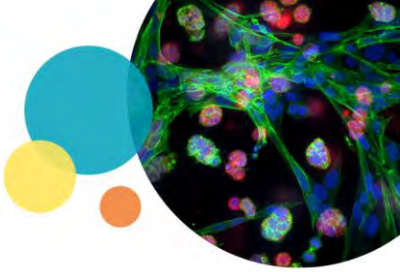

System Software		
Feature	**User benefit**	**Detailed specification**
☐ **Browser based software**	• Minimize the time spent installing software on offline analysis stations • Access your system and data online from across the room, the building, the organization or the Internet. • Share, present, and collaborate with built-in sharing and remote access capabilities • Shorten collaborative project time with easy sharing of data across sites	• Anytime, anywhere access enabled by software operating as a web client allows either instrument control or data analysis from any device running Chrome or Safari on any operating system. • Icon driven interface for intuitive, linear workflow
☐ **Touch Screen compatible**	• Flexible user experience based on preference for software interaction: touchscreen or keyboard and mouse. • Intuitive and modern touch-compatible workflow improves user experience	• Unique touch optimized user interface, supports tablet, laptop and desktop clients
☐ **Login-specific user interface views**	• Personalize your user-interface (UI). • Lock acquisition or analysis protocols to preserve your personal settings	• Separate user log-ins allow protection of preferences • Choose from collection of themes to work in dark and bright environments • Connection to and acquisition from multiple instruments allowed by software. • Configure heat maps and number of significant figures in measurements based on individual user preferences
☐ **Continuous and discontinuous time-lapse capability**	• Capture images at regular intervals or discontinuously to detect spatial changes in cells • Assemble your set of time-lapse images into a movie	• Continuous or discontinuous time-lapse image capture • Outputs time-lapse images in MP4 format

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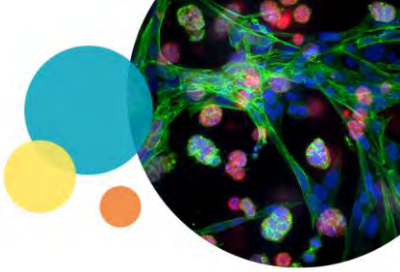

Hardware		
Feature	**User benefit**	**Detailed specification**
☐ **Brightfield, colorimetric, and fluorescence modes of operation**	• Wide variety of samples can be analyzed from fluorescently stained, H&E stained, to unstained samples. • No need to physically change light sources with mode change – all light sources on board.	• Instantly switch modes with no changing of LEDs cubes,
☐ **Large field-of-view (FOV)**	• Statistically relevant number of cells can be captured in a single FOV • Faster image acquisition, yielding more data in less time. Reduce the number of missed targets • Reduce artifact introduction by minimizing the number of stitching interfaces with multiple FOV • View larger objects • Identify rare objects quickly	• Greater than 5-megapixel CMOS sensor • Single image FOV with a 10x objective is 1.39 mm^2
☐ **Seamless tiling and stitching of image**	• Image large fields of cells, fibrous networks, and tissue sections with on-the-fly tiling • Software stitching of multiple fields-of-view for a seamless, accurate image. • Flexibility to analyze large stitched or tiled regions of well or slides	• System automatically acquires the correct number of images to represent the area of the well or slide user would like to acquire. • Based on user input system will tile or stitch selected images together to compose your region of interest. • Side-by-side CellMagnify™ feature allows you to zoom or pan high-resolution images from whole-well (stitched) view down to cell-level view.
☐ **Bright, stable, long lasting light source**	• Short exposure times for increased throughput • Consistent photon exposure to the sample throughout the lifetime of the light source • No mechanical shutter for minimal down-time • Long LED life for reduced possibility for service calls. • Instantaneous warm up eliminates waiting time.	• Solid-state light source with active power monitoring and exposure time compensation (patent pending). • Bright LED light source with a life rated by the manufacturer over 20,000 hours.
☐ **Slide overview mode**	• Quickly identify one or more regions of interest on a slide to further interrogate at a higher magnification • Minimize time spent discovering your sample on the slide.	• Overview image of a 1x3” slide captured in a few seconds • Draw your regions to acquire directly over your overview image
☐ **Robust Auto-Focus**	• Choose between LED and image-based auto-focus, or LED-only for rapid, robust and reliable focus-determination	• Three 3 LED and image-based auto-focus methods, and the LED-only based auto-focus method are available
☐ **Temperature control from Ambient +8°C to 40°C**	• Stable temperature control for live-cell measurements. • Stable temperature across the plate for consistent cell growth.	• Capable of maintaining 37°C ± 0.5°C at 23°C ambient. • Plate inhomogeneity < 1°C

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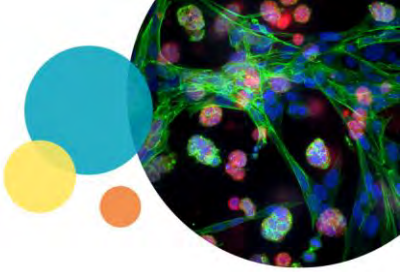

Hardware		
Feature	**User benefit**	**Detailed specification**
☐ **Wide magnification range**	• Image very large organisms (*C. elegans*, zebrafish) to very small sub-cellular features (e.g. vesicles) with a single system • Conduct a wide range of studies needed by core labs, on shared equipment and for dynamic research programs	• With 4x to 63x magnification, this system has the flexibility needed to match the range of resolutions required by most biology labs typically supporting a wide range of projects
☐ **Z - Stack imaging**	• Image large organisms under optimal focus conditions using fluorescence and/or transmitted light channels	• Capture up to 51 Z slice images and create a projected image using one of several available projection methods. • Z-slice thickness as low as 0.2um
☐ **Label-free imaging**	• Implement label-free imaging assays • Localize fluorescent signal to cellular morphology and therefore compare fluorophore-independent morphology with fluorescent image overlay • Measure transfection efficiency	• Analysis modules combine use of Transmitted light, RGB, and fluorescence segmentation
☐ **Fluorophore flexibility**	• Work with a variety of dyes and stains • Minimize the requirements of changing filter sets with a configured system	• Select from 6 different standard filter sets covering fluorophores from Cy5, TRITC, FITC, Texas Red, CFP, to DAPI. • Support for other fluorophores available upon request.
☐ **Small footprint**	• Fit the system in the space you have	• Footprint of 45.3 cm (H) x 55.1 cm (W) x 43.5 (D) cm
☐ **Complete integrated solution**	• Use a single point of contact for service for instrumentation • Make use of our complete solution for image acquisition, image analysis, data management and data mining from one vendor	• Complete integrated hardware and software solution from Molecular Devices • Highly experienced global support team
☐ **Live cell imaging with environmental control**	• Run multi-day experiments while mimicking physiological environment • Hypoxia experiments are possible with <1% O_2 • Small environmental chamber maintains steady conditions for several days • External humidifying column significantly decreases media evaporation	• O_2 Control = 1-15% • CO_2 Control = Ambient to 15% • Active humidity controlled to 85% relative humidity

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