CYNTELLECT

unleashing the power of the cell

LEAP™

Automated Live Cell Imaging, Purification and Optoinjection

The cell is the fundamental engine of life. The recent trend to leverage the living cell as a system to characterize new disease targets & potential drugs, innovate novel cellular diagnostics and revolutionize cellular therapy has created the need for system solutions that can improve the robustness, quality and information value of science exploiting live cells.

LEAP (**L**aser-**E**nabled **A**nalysis and **P**rocessing) combines the power of laser-based semiconductor manufacturing technology with medical knowledge regarding laser-based manipulation of living tissues. LEAP enables important applications such as: (i) *in situ* purification of fragile, adherent and/or rare cells; (ii) delivery of a wide range of molecules into cell types that are refractory to traditional transfection methods, and (iii) ultra high-throughput imaging.

Using LEAP, live cells (adherent or non-adherent) can be:

purified to unprecedented levels in a manner that can be applied to large or small samples and to robust or fragile cell types, or

laser-transfected (called "optoinjection") with small molecules, proteins, peptides, biosensors and more.

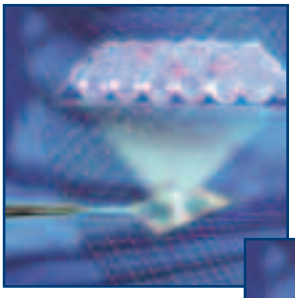
LEAP represents a break-through in live cell manipulation that is designed for researchers involved in applications including:

- gene expression
- cell line development
- biomarker discovery
- cell-based assay development
- functional proteomics
- functional genomics
- cloning

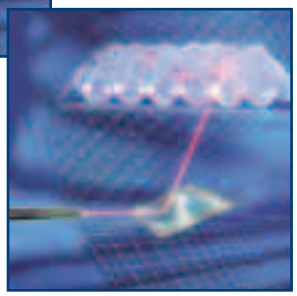
PRODUCT BENEFITS

- Purifies adherent or non-adherent cells to user-specified limits (up to 100%)
- Flexible cell gating based on fluorescent or non-fluorescent phenotypic and functional criteria
- Optoinjects a multiplicity of molecular payloads into difficult cell types, including primary cells
- Unprecedented high cell viability and yield
- Processes cells in a sterile, closed micro-environment
- Empowers iterative processing to ensure maximal purity

THE LEAP PROCESS



High-speed galvanometer-driven mirror enables illumination of a large field of cells...



Followed by near-simultaneous image analysis and laser manipulation

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PRODUCT FEATURES

Hardware Features and Upgrades:

- Brightfield and darkfield illumination
- Halide lamp excitation (350-800 nm) – 8 position wheel
- Mega-pixel intensified CCD (365-700 nm) 8 position wheel
- Adjustable magnification (3x, 5x, 10x, 20x)
- One or two wavelength laser manipulation (>1,200 shots/sec)

Software Features:

- Adaptive image processing and segmentation algorithms
- Built-in targeting calibration wizard for exceptional targeting accuracy
- Automatic in-line background extraction & removal with flat-fielding
- High-performance multi-threaded application maximizes computing resources
- Automated & manual protocol execution (both turnkey & user-defined protocols)
- Instrument control settings and user preferences storage and retrieval

specifications subject to change

PRODUCT SPECIFICATIONS

LEAP Instrument

Width: 40.5 in (1030 mm)
Depth: 29.5 in (750 mm)
Height: 24 in (610 mm)
Weight: 550 pounds (250 kg)
Electrical Requirements: 1100 Watts; 90 – 230 VAC; 50 – 60 Hz

LEAP Computer

Processor: 2 X AMD Opteron 275 (2.2 GHz) Dual Core
Motherboard: Tyan Thunder K8WE nVidia nForce4 Pro 2200
Memory: 4 X PC-3200 512 MB ECC Reg. DDR SDRAM
Hard Disc: 4 X Maxtor DiamondMax 10 300GB 7,200 RPM (RAID5 = 900 GB)
Disc Controller: Broadcom RAIDCore BC4452 Serial ATA RAID Controller
DVD/CD: Plextor PX-716SA SATA/150 DVD ± RW / CD-RW
OS: Windows XP Professional
Graphics Card: eVGA GeForce 6800 GT PCIe 256MB
Instrument Connection: 2 X RJ45, DV422, and CameraLink

Microplates

C-LECT™ microplates: Proprietary microplates exclusively designed for LEAP and HOP optical and laser specifications.

o 384-well
o 96-well
o Others

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