



# Clonipix 2 Mammalian Colony Picker Enhanced for Monoclonality Verification

Accelerate your cloning operations with high-precision monoclonality assurance and high resolution single-cell imaging capability

# *Superior clone selection with integrated monoclonality verification*

## **ClonePix® 2 Enhanced for Monoclonality Verification** builds on the strengths of the original ClonePix 2 colony picker with significant upgrades in automation and imaging technology.

This advanced system speeds up the screening and selection of high-value clones across diverse cell types, including hybridomas, CHO cells, and stem cells. Enhanced with precise day zero monoclonality verification and streamlined screening processes, this solution cuts development time dramatically. Its fully integrated workflow, from plate handling to data management, simplifies operations and increases the likelihood of discovering highly productive cell lines, thereby boosting efficiency and reducing labor.



Figure 1. The image depicts a scientist loading plates in the ClonePix 2



### **Advanced Imaging System**

The ClonePix 2 Enhanced for Monoclonality Verification features a new optical system with rapid Z-stack acquisition capabilities, allowing for high-resolution imaging at multiple focal depths to ensure precise single-cell detection.



### **Streamlined Cloning Workflow**

Simplified from cell plating to picking, this enhanced system reduces media volume requirements and increases plate throughput, enabling more efficient use of resources and time.



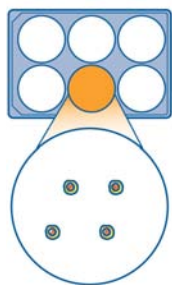
### **Integrated Monoclonality Verification**

This system ensures that each picked colony has undergone rigorous monoclonality verification at the outset, ensuring a shorter timeline through a single round of clone screening to proof monoclonality.

# ClonePix 2 Enhanced for Monoclonality Verification Workflow

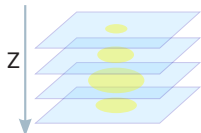
## Day 0 imaging

Plate cells at low density into semi-solid medium

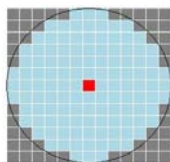


Single cells are compartmentalized by semi-solid medium

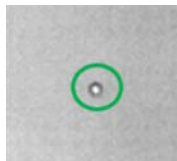
Z-stack imaging on day 0



Rapid Z-stack acquisition provides images of single cells



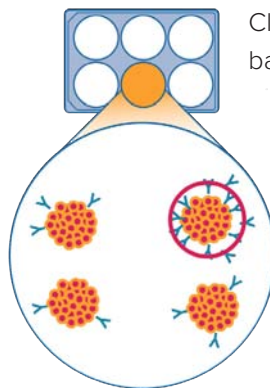
User can select specific locations or whole well to capture Z-stack



Z-stack acquisition at a single field-of-view

## Day 1–14 imaging

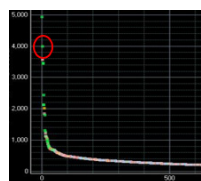
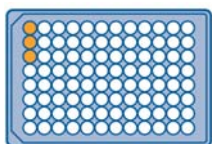
Let colonies grow for a number of days; optional imaging on subsequent days during this period



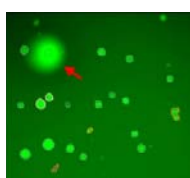
Clone productivity can be observed based on fluorescence intensity

## Day of picking

Screen and pick high-value clones based on fluorescence ranking and single-cell origin

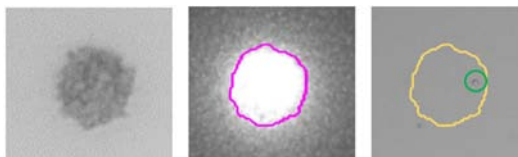


Clone Ranking



Clone Selection

Determining single-cell derived colonies



Fusion software associates colony with day 0 images for automated assessment of single-cell derived clones. User selects the clones that will be picked.





## Key Benefits



### Enhanced Precision and Accuracy

Achieve exact colony selection thanks to the system's ability to perform detailed day 0 imaging, ensuring that only the highest quality monoclonal colonies are processed.



### Reduced Time in Workflow

Significantly cut down on the time from cell plating to final selection, integrating imaging, screening, and picking processes into streamlined steps for rapid throughput.



### Higher Throughput

With the ability to process up to 12,000 colonies on just 10 plates, ClonePix 2 Enhanced dramatically increases laboratory productivity and operational efficiency.



### Cost-Effective Operations

Minimize operational costs through reduced manual labour, decreased media volume requirements, and enhanced processing speed, making large-scale cloning more economically viable.



### Flexible and Scalable Application

The system is designed to be adaptable to a wide range of laboratory sizes and throughput needs, from academic research to industrial biotechnology applications, ensuring scalability and flexibility in use.

# ClonePix 2 vs. ClonePix 2 Enhanced for Monoclonality Verification

Discover the technical advancements of the ClonePix 2 Enhanced for Monoclonality Verification over the original ClonePix 2. Explore the significant improvements in imaging capabilities, magnification, data transfer, and imaging throughput. Our latest ClonePix instrument provides more detailed imaging and faster data processing, allowing for a more efficient monoclonality verification process.

Feature	ClonePix 2	ClonePix 2 Enhanced for Monoclonality Verification
Imaging Capability (6 Well Format)	Planar Imaging: 6 Images/Well, 1 Plate 5 Min WL + FL, 36 Images/Plate	Planar Imaging (Pick Day): 121 Images/Well, Day 0 Stack: 121 Images/Well x 31 Stacks x 6 Wells, 1 Plate 42 Min for WL, 22,506 Images per Plate *z-stack imaging assuming 1000 µm stack in 33 µm steps
Magnification	0.86X	4X
Image Capture and Transfer	USB 1.0	USB 3.0
Throughput, Imaging	10 Plates – 1 Hour	10 Plates – 6–7 Hours for Day 0, 10 Plates – 5 Hours for Pick Day

Table 1. This table provides a side-by-side comparison between ClonePix 2 and its enhanced version, focusing on key technological enhancements.

# Traditional Planar Imaging vs. ClonePix 2 Enhanced for Monoclonality Verification

Explore the operational efficiency of ClonePix 2 Enhanced for Monoclonality Verification versus traditional Planar Imaging methods. We focus on the handling of 12,000 clones, showcasing how the enhanced system significantly reduces the number of plates and the time required for imaging and screening, streamlining the process from weeks to days.

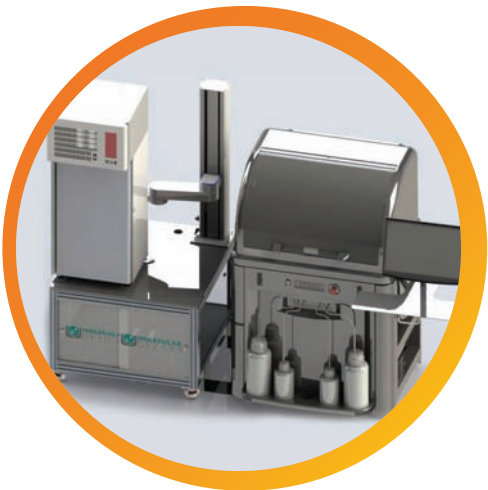


Figure 2. ClonePix 2 Enhanced for Monoclonality Verification with robotic integration.

## Key Highlights

### Reduced Plate Usage

The ClonePix 2 Enhanced for Monoclonality Verification requires only 10 plates for what would typically need 125 plates in traditional, manual methods.

### Faster Processing Time

Completes imaging in just one day, as opposed to two days with traditional imaging, with automated processes cutting down significant manual work.

### Advanced Screening and Selection

Implements automated clone selection, minimizing manual intervention and optimizing accuracy and efficiency on screening day.

# Specifications

## ClonePix 2 Mammalian Colony Picker Enhanced for Monoclonality Verification\*

### Instrumentation

Containment	Fully enclosed working environment with Class 100-type, HEPA filtration**
Instrument dimensions	1010 mm (width) x 900 mm (depth) x 1490 mm (height)
Instrument weight	350 kg
Picking head	8 x picking pins – each pin independently controlled
Picking pins	Application specific – F1: suspension cells (0.4 mm), F2: adherent cells (0.7 mm)
Sanitization	UV sterilization; Ethanol wash bath (automatically refilled)
Pin drying	Proprietary halogen pin drying station
Source plate capacity	10 plates**
Destination plate capacity	10 plates**

### Imaging

Software	Dedicated imaging software pre-installed on a high-specification PC, Microsoft Windows 10 64-bit
Camera	Basler 2048 X 2048-pixel, monochrome, selectable bit depth (8 or 12 bits), CMOS camera
Optics	<ul style="list-style-type: none"><li>• 4x Objective</li><li>• Custom optical system</li><li>• Single-cell resolution, 10–18 µm diameter</li></ul>
TransWL illumination	Custom LED based Overhead Illumination
FL illumination	Lumencor Aura III
Drive position encoders for high precision picking	Yes
Data tracking	Internal barcode reader for source and destination plates enables data tracking for each run
Image archive storage memory	18 TB

### Performance

Picking speed	> 200 clones per hour
Picking efficiency	>95% selected clones picked and transferred to 96 well plates
Imaging speed (single plane imaging; WL + single FL channel only)	<35 minutes/plate (1452 images)
Imaging speed (stack imaging; 1000um stack in 33um steps)	<45 minutes/plate (22506 images)
Colony detection	Custom image detection algorithms, optimized for high resolution images
Processes	<ul style="list-style-type: none"><li>• Pick Day Imaging Process</li><li>• Pick Run, with optional Single Cell Analysis</li><li>• Stack Imaging Run</li><li>• Stack Imaging (Day Zero) Run</li></ul>
Reports	Monoclonality Report
Applications	<ul style="list-style-type: none"><li>• Imaging/Picking of cell colonies grown in semi-solid media</li><li>• Z stack imaging for resolution of single cells on day zero</li><li>• Imaging/Picking of cell colonies grown in semi-solid media, with Single Cell Analysis (Certainty of Monoclonality)</li></ul>
Automation	<ul style="list-style-type: none"><li>• Currently supported (Liconic STX 44 with PF-400 with Lab Assist Software)</li><li>• Automation system capacity (Source- 17 plates; Destination – 22 plates)</li></ul>

### Regulatory approval

Compliance	CE
Quality	ISO9001:2008 certified

### Electrical ratings

100V	50/60 Hz, 1250W
115V	60 Hz, 1250W
230V	50 Hz, 1250W

### Compressor air requirements

Air	Clean, oil-free with sub micron filtration
Minimum operating pressure	6 bar ( ~90psi)
Minimum operating volume	80 L/min

### Optional air compressor

Compressor unit	DynAir DA7001CS, Clean, oil-free compressor with sub-micron filtration
Dimensions	440 mm (width) x 440 mm (depth) x 613 mm (height)
Weight	84 lbs (38 kg)
Power	0.75 KW
Tank size	9 L
Pump head number	2
Rated output free air	Max 5.37CFM/152L.Min
Noise level	56 ±5 dB/A
Drain	Manual/buffer bottle

\*Price, time to deliver, and specifications will vary based on mutually agreed technical requirements. Solution requirements may cause adjustment to standard performance. Custom solutions are subject to Molecular Devices Custom Products Purchase Terms available at <http://www.moleculardevices.com/custom-products-purchase-term>

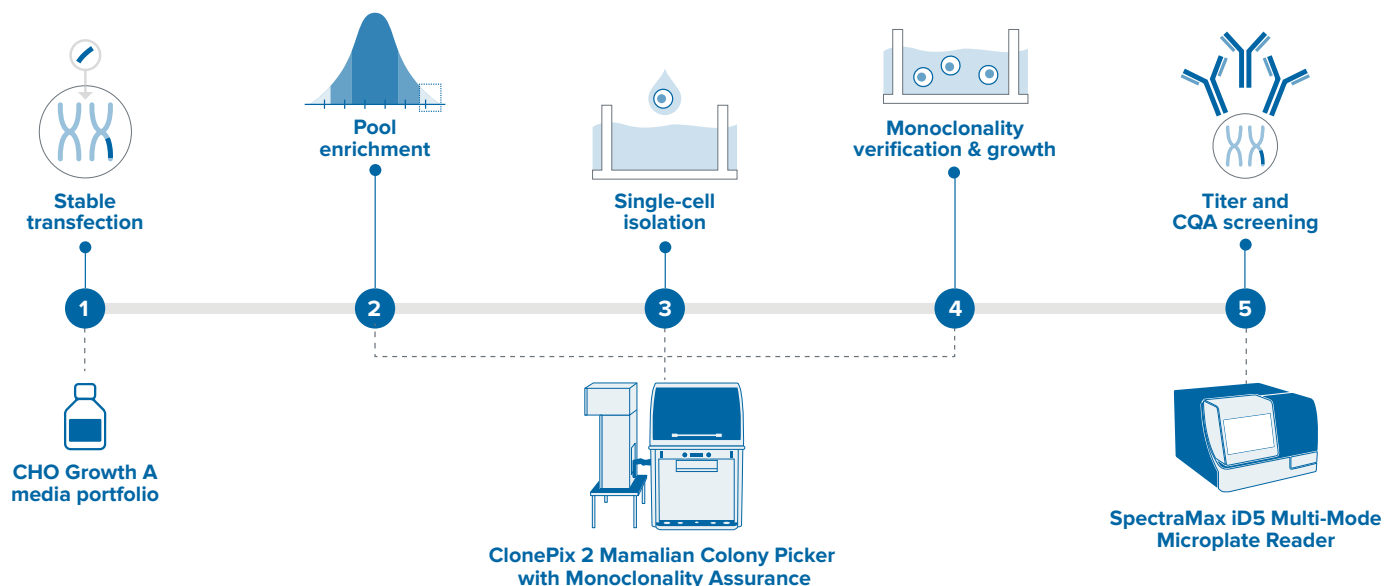
\*\*Non-automated operation

*Speeds up the screening and selection of high-value clones across diverse cell types*



# Transform Cell Line Development with ClonePix 2 Enhanced for Monoclonality Verification

Integrate multiple steps into one streamlined process with the enhanced ClonePix 2 system, ensuring rapid and precise screening of high-producing, monoclonal clones. Reduce screening time and enhance productivity with image-based clonality verification on day zero and top producer identification in less than two weeks.



## ClonePix Reagent Kits

Enhance your ClonePix 2 system with our specialized reagent kits, designed for both CHO and non-CHO users. These kits streamline cell line development with features such as:

- Optimized media for efficient CHO cell line development.
- Converts existing media to semi-solid form for colony integrity.
- Enables fast screening and high-value clone selection.

Find out more at [moleculardevices.com/clonepix-kits](https://moleculardevices.com/clonepix-kits)

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