



ClonePix 2

Mammalian Colony Picker

Redefine clone screening and selection with
transformative cell line development workflows

ClonePix 2 Mammalian Colony Picker



Automate antibody discovery and cell line development workflows



Increase probability of identifying high-value clones while eliminating or recovering unstable clones early



Condense the workflow into a single solution

Upgrade options: explore modifications to fit your needs

Our engineering team has successfully tailored the ClonePix® 2 Mammalian Colony Picker for customers by request—including software and hardware*.

- **ClonePix system with monoclonality assurance**—Screen more clones in less time with monoclonal verification on day zero, then screen and pick for highest produces in weeks, not months
- **ClonePix system for stem cell applications**—Identify desirable, clonal stem cell colonies for high-throughput colony screening and picking

*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 www.moleculardevices.com/custom-products-purchase-terms.

Key benefits

- Screen more clones in less time
- Accurate, automatic colony picking avoids errors associated with limiting dilution
- Excellent image quality allows for screening of stable, high-producing clones
- Increased productivity of a cell line development workflow



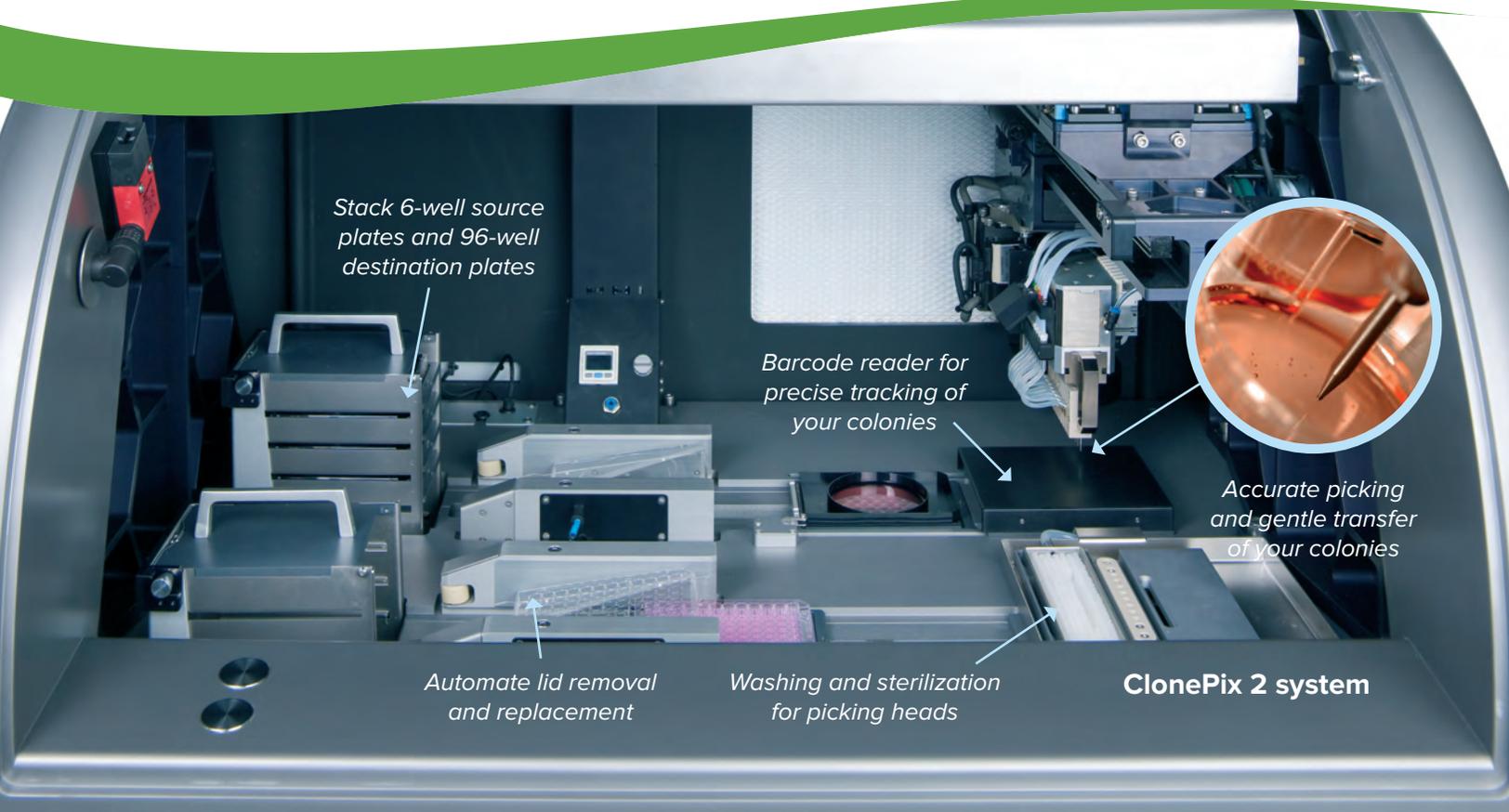
Accelerate development workflows: screen more clones in less time

Cut cell line and antibody development times

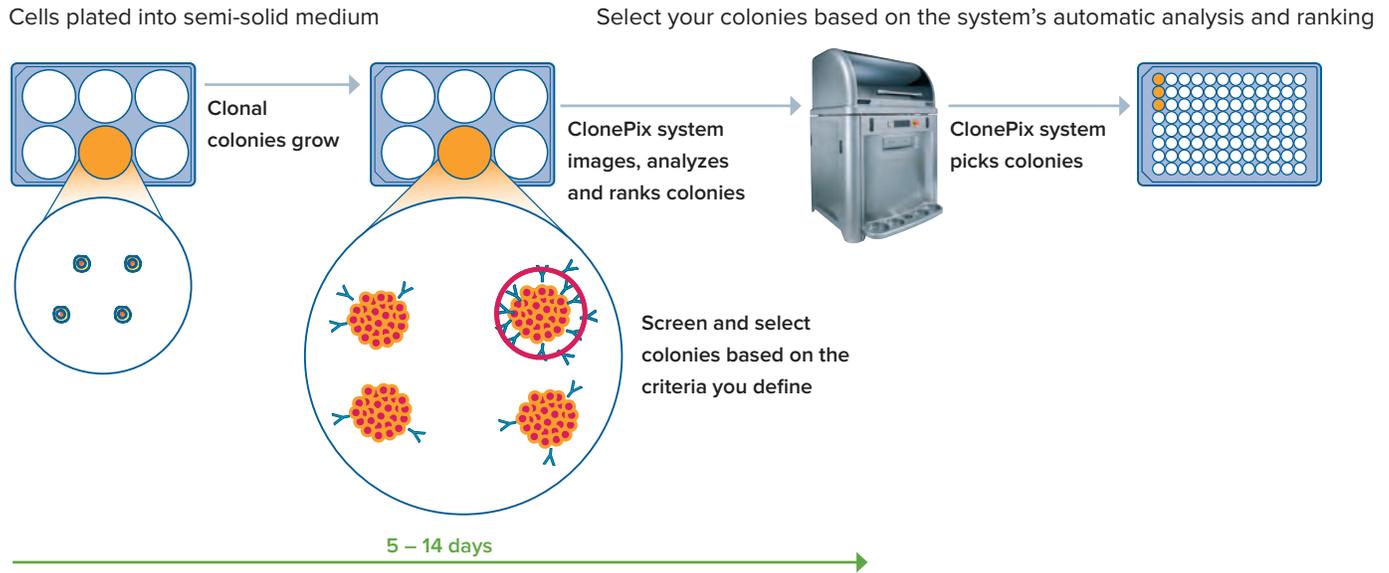
Screen more clones in less time with the ClonePix system's fully automated workflow. Our users see major improvements both in productivity and overall costs compared to conventional techniques. Now you can reduce your timelines for monoclonal antibody generation by screening 10X more clones in weeks, not months!

"The ClonePix 2 system has allowed us to completely redefine our project workflow and capacity."

—Ben Hoffstrom, PhD, Director, Antibody Development
Fred Hutchinson Cancer Research Center

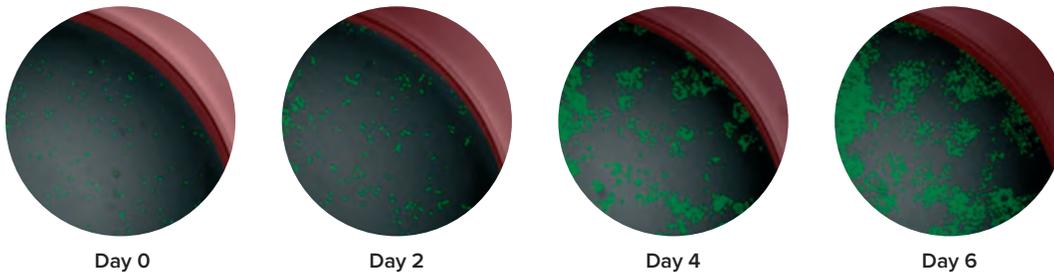


Select and pick with more accuracy and confidence



Pick and transfer

- Define the final picking list from system images and statistics
- The system selects your colonies and transfers each to a well in a 96-well destination plate for growth assay and/or expansion of clonal cells
- Optimal cell growth for cell line expansion after picking is achieved using XP Media and CloneMedia



Track cell growth using CloneSelect® Imager.

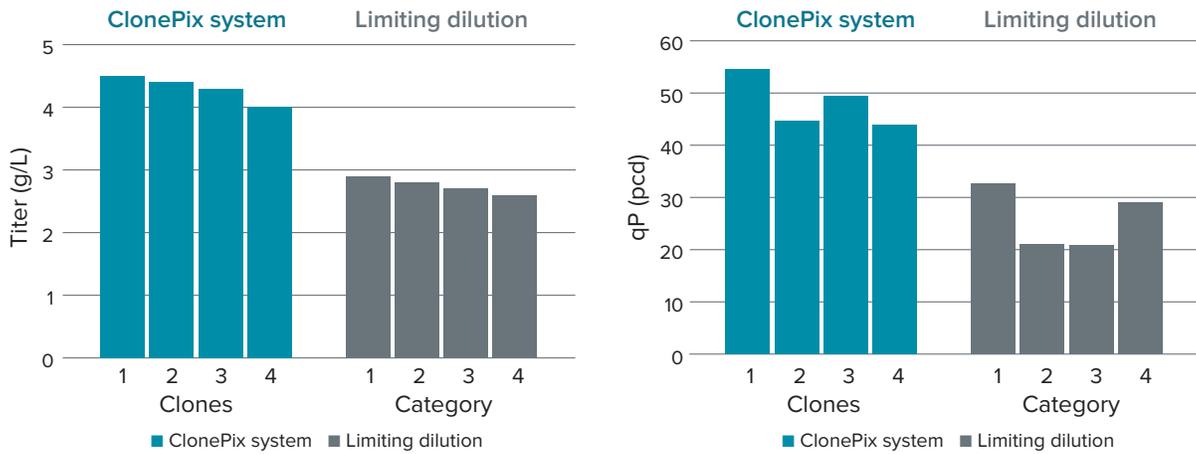
Green represents software overlay applied for automatic confluence determination.

Accurate and gentle picking

Transfer of colony to destination plates



High titer clones obtained prior to process optimization (NS/O: 4-5 g/L)



Comparison of top NS/O clones from ClonePix system and limited dilution revealed almost a 2X increase in qP and titer. Subclones from same parent.

Reduce cost by finding your highest producers with fewer reagents

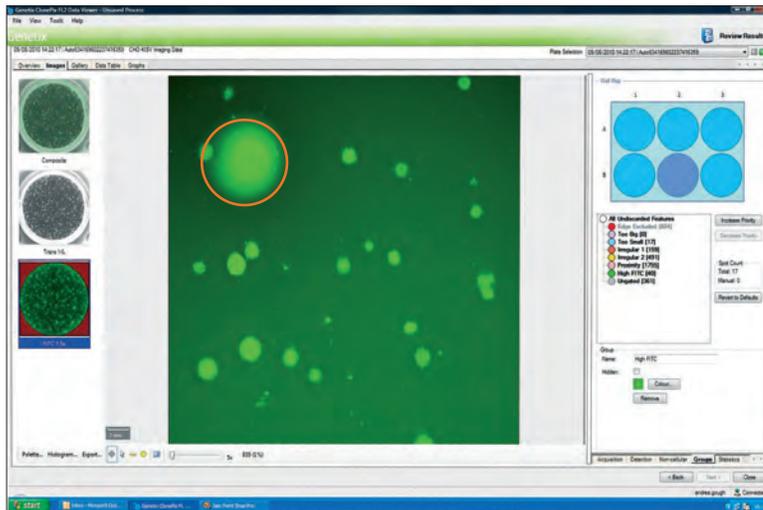
ClonePix system | 2,500 clones/week

Limiting dilution | 300 clones/week

How many plates does it take to screen 10,000 clones?

- ClonePix: 10 plates
- Limiting dilution: 1,000 plates

Data analysis and tracking—reveal stable clones faster



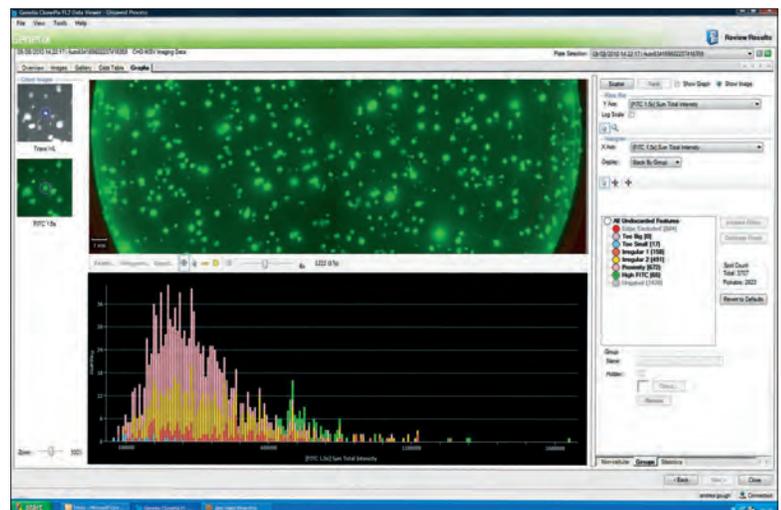
Fluorescence reveals the optimal secretor

Data analysis

- Automatically generate a 2D map of clones and their secretion levels from a series of images generated *in situ*
- Screen and select colonies based on:
 - Size, roundness, and proximity to neighbors
 - Ranking according to fluorescence levels
 - Closely placed colonies ignored via user-controlled “proximity” software setting

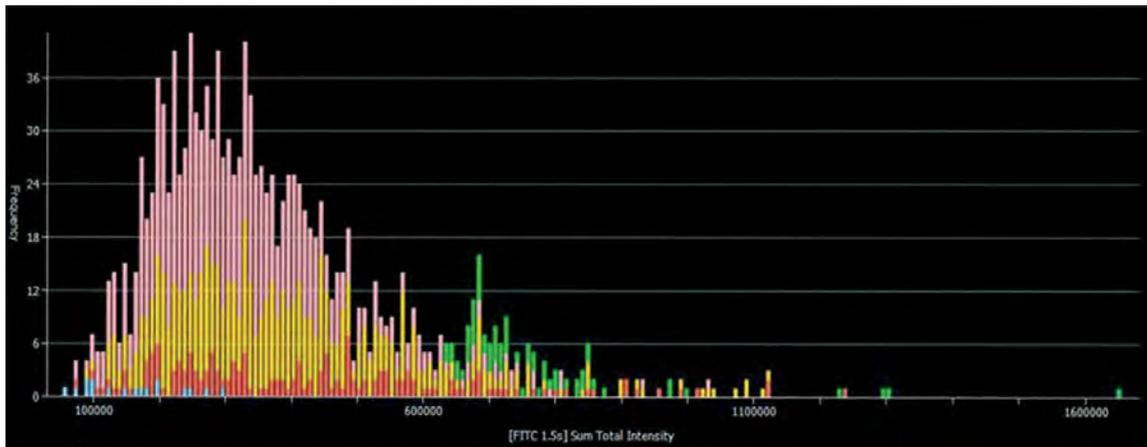
Data tracking

All relevant data associated with each colony (including images taken before and after picking along with their picking coordinates) are automatically saved for review and downstream analysis.



You define selection parameters, the system selects clones

Quickly and easily identify which colonies meet your criteria



Customer breakthrough

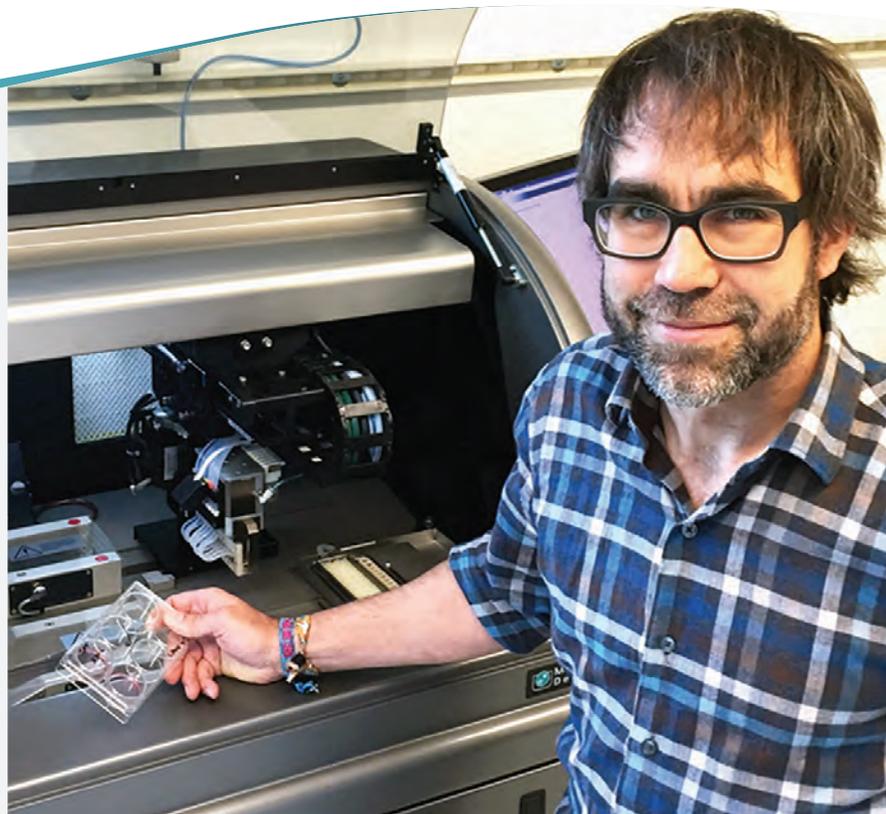
The Fred Hutchinson Cancer Research Center uses the ClonePix 2 system to efficiently screen and isolate positive hybridoma clones.

The Challenge

The Antibody Technology Shared Resource at the Fred Hutchinson Cancer Research Center offers custom antibody development to academic and industrial research groups. Our unique multiplex screening platform incorporates a Molecular Devices ClonePix 2 system for identifying and picking monoclonal hybridoma colonies that secrete antibody to specific protein, peptide, or small molecule targets. The system has allowed us to completely redefine our project workflow and capacity.

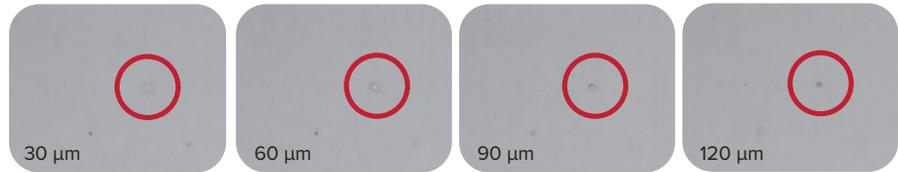
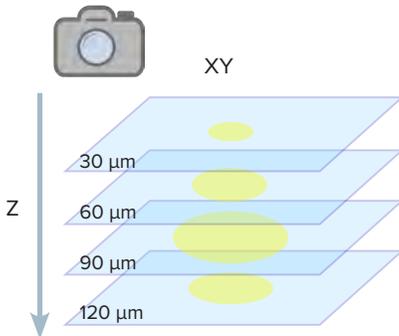
Products Used

Automatically screen more clones in less time than conventional techniques, select cells with optimal expression levels, and pick colonies with accuracy with the ClonePix 2 system. The systems are now used in over 100 laboratories around the world to increase workflow productivity, leaving more time to better characterize target proteins and run new projects. A large number of biopharma companies have implemented ClonePix systems in their routine use, and data are cited increasingly in scientific publications and conferences.



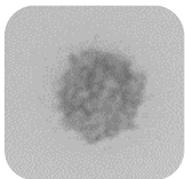
ClonePix with monoclonality assurance

Day 0



Confident identification of single cells is provided by a high precision XY stage mechanism and z-step motor, which enable accurate alignment of images in XY and Z dimensions, respectively. Imaging over multiple planes decreases the likelihood of misidentifying objects by screening for nearby cells in three dimensions instead of two. Clones can also be visualized in greater details with over 4X increase in resolution compared with previous versions of the ClonePix systems.

Day of picking



Colonies are assessed for productivity *in situ* using fluorescence



Automatically associates high-value colonies to day 0 image data



Outline of colony is compared to day 0 image

The enhanced ClonePix system links high-value colonies with its day 0 image for automated assessment of single-cell derived clones.

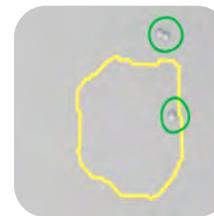
Accelerate cell line development timelines by integrating multiple steps into a single step

Monoclonal

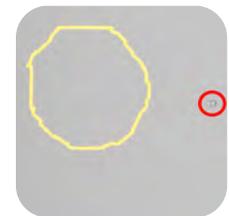


Certainty score = 0.92

Not monoclonal



Certainty score = 0.11



Certainty score = 0.06

Fusion software assigns a certainty score to each colony based on picking day, colony location, and single cell z-stack images at day 0. The threshold of determining monoclonality from the certainty score is variable based on user-defined inputs.

Key benefits

- Reduce screening time from two rounds to one by providing image-based evidence of clonality
- Rapid z-stack acquisition feature allows detection of single cells throughout the medium volume, not just a single focal plane, on day 0
- Simplified workflow from single cell identification and productivity screening with the all-in-one system

ClonePix system for stem cell applications

Optional high-throughput stem cell colony screening and picking

This system uses high-resolution imaging to identify desirable, clonal stem cell colonies for high-throughput colony screening and picking. Specialized picking pins allow for the gentle transfer of adherent, feeder free cells to high density plates for clonal expansion and downstream analysis.



Day 0

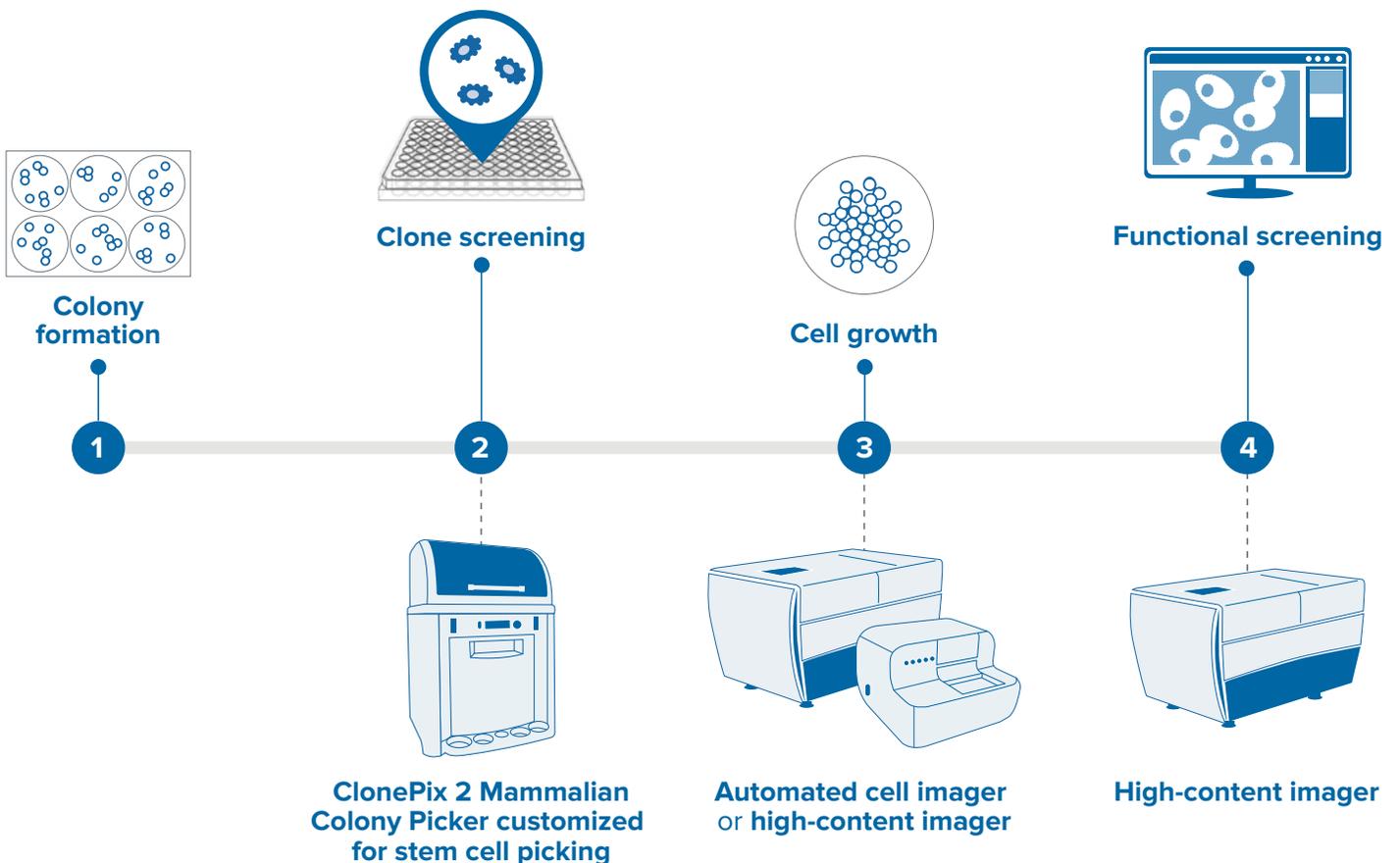
Plating (by hand – use 6 well plate)

Day 1–3

Feeding – incubator

Day 4–5

Analyze colonies of interest; pick colonies



System specifications

Instrumentation

| | |
|----------------------------|---|
| Containment | Fully enclosed working environment with Class 100-type, HEPA filtration |
| Source plate type | PetriWell-6 plate, PetriWell-1 plate, Greiner 6-well plate, Nunc 6-well plate, Nunc OmniTray |
| Destination plate type | PetriWell-96 plate, Costar 96-well plate, Greiner 96-well plate, Nunc 96-well plate, Falcon 96-well plate |
| Source plate capacity | 10 plates |
| Destination plate capacity | 10 plates |
| Picking head | 8 x picking pins – each pin independently controlled |
| Picking pin size | Diameter of picking pins is application specific – F1: suspension cells, F2: adherent cells |
| Picking speed | > 200 clones per hour |
| Wash bath | Ethanol wash bath, automatically refilled |
| Picking system fluids | 5 L sterile water supply, 5 L waste bottle |
| Pin drying | Proprietary halogen pin drying station |
| Instrument dimensions | 1010 mm (width) x 900 mm (depth) x 1490 mm (height) |
| Instrument weight | 350 kg |

Compressed air specifications

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

Optional compressor specifications

| | |
|----------------------------|---|
| Compressor unit | Clean, oil-free compressor with sub-micron filtration |
| Dimensions | 250 mm (width) x 600 mm (depth) x 750 mm (height) |
| Weight | 60 kg |
| Minimum operating pressure | 6 bar |
| Minimum operating volume | 80 L/min |
| Noise level | 61 dB(A) |

Regulatory approval

| | |
|------------|------------------------|
| Compliance | CE |
| Quality | ISO9001:2008 certified |

Advance your clone screening and cell line development with proven, automated technologies

QPix 400 Series



Fully automate synthetic biology workflows for DNA assembly, antibody discovery and protein engineering

The QPix® 400 Series Microbial Colony Pickers combine intelligent image analysis with precise automation for fast and efficient screening of large libraries. With a variety of data tracking and assay tools, the QPix Software streamlines the control and management of complex and iterative processes.



ClonePix Series

Automate antibody discovery and cell line development workflows

Screen more clones in less time with monoclonal verification on day zero, then screen and identify for highest producers in weeks, not months.



CloneSelect Imager

Verify monoclonality confidently

The CloneSelect Imager can help you meet regulatory demands of single cell verification with its automated analysis of cells in the white light channel. The system also enables concurrent confluence and monoclonality studies.



CloneSelect Single-Cell Printer^{††}

Demonstrate monoclonality with greater confidence

The CloneSelect® Single-Cell Printer™ (SCP series) by Cytena and Molecular Devices is a fully automated system that utilizes proprietary microfluidics-based technology and real-time image analysis to sort and deposit single cells into standard microplates—while simultaneously providing assurance of monoclonality through image documentation.

^{††}Only available in North America, China, Hong Kong, and Taiwan.

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