



QPix colony picking series

High-throughput, automated
colony picking and screening
with data management



Colony pickers that do more

QPix® systems earned a well-deserved reputation for performance and reliability during the race to sequence the human genome with the Human Genome Project, and continues to support important areas of research. Discover why research institutes, sequencing facilities, biotech, and pharmaceutical companies worldwide use over 600 QPix systems every day.

Modular integration with **automation and robotics for increased throughput**

Flexible bed setup allows the use of multiple formats of source and destination plates

Barcode reader provides **reliable traceability of data**

Automated plate de-lidding **maintains sterility**

Objective software data analysis and database integration **allow clear and concise record of experimental data**



Acoustic sensors detect agar height, helping high-precision robotics to **pick single colonies gently and accurately**

Organism-specific, interchangeable picking heads offer flexibility to **handle multiple organisms**

Wash baths and halogen heat sterilization **eliminate cross-contamination among pins**

Get the highest level of flexibility in application and experimental design with the QPix HT System.

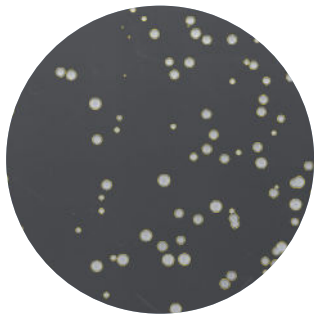
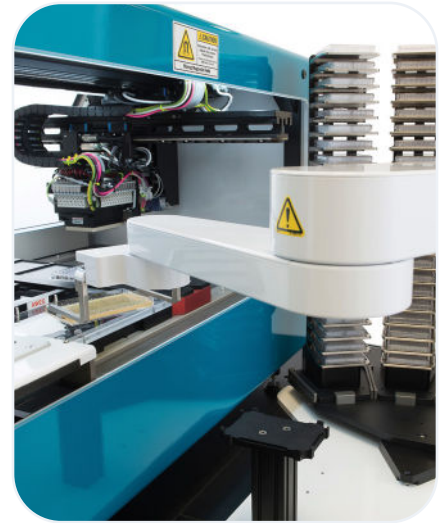
Key benefits of automated colony picking

- Screen and pick microbial colonies
- Pick 3,000 colonies per hour
- Get up and running quickly with easy-to-use, application driven software interface
- Future-proof your investment with a modular design that's automation compatible
- Track comprehensive data from start to finish
- Do more than just colony picking—plating, hit picking, streaking, and liquid handling

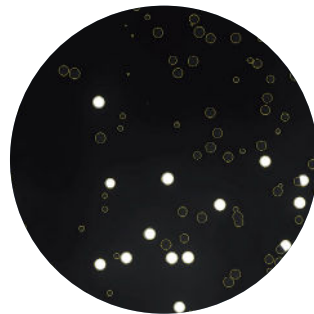
Accelerate objective, quantitative colony selection

Develop constructs or target proteins for protein expression more efficiently

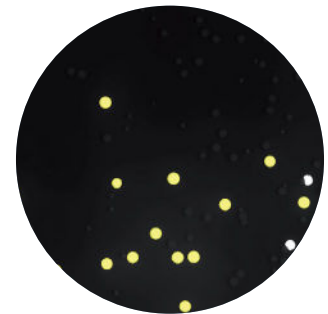
- Prescreen to pick the right colonies
- Identify colonies that have desirable morphological and spectral characteristics
- Automate and track the entire workflow from spreading of transformed cells to colony picking and library management



All colonies detected in white light



Colonies expressing required level of target protein identified in fluorescent channel (optional)



Selected colonies ready for picking

Zymergen uses the QPix systems to make better microbes in industrial fermentation

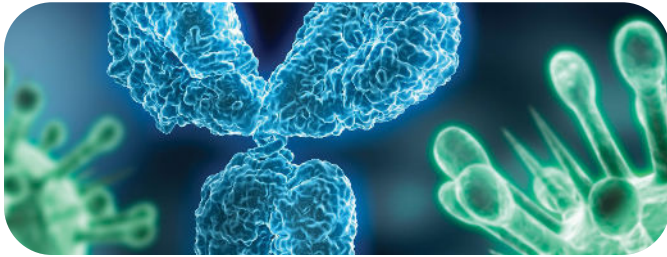
The Challenge: Zymergen is a technology company using high-throughput biology to drive the next industrial revolution. Their method of designing, building, and testing microbes rely on advanced molecular biology tools, robotic automation, and proprietary computational and analytical methods.

The Solution: This capability allows Zymergen to generate novel chemicals, advanced materials, and pharmaceuticals much faster and at a lower cost than current approaches. Zymergen's growing fleet of Molecular Devices QPix® 420 systems allows them to identify and pick large numbers of colonies quickly, accurately, and reliably. The QPix systems are a critical link in their microbe engineering pipeline, integrating seamlessly with their state-of-the-art laboratory information management system (LIMS).



Key applications

For use in synthetic biology, biotechnology, biofuels, agriculture, microbiome, environmental science, food and beverage, academia, and government research



Protein engineering

Protein engineering is an iterative two-step process that involves generating libraries of protein mutants and then screening them to select for desired traits. It can be used for a wide range of applications including antibody discovery, enzyme evolution, and structural biology. The QPix system can be used to increase the throughput of variants to be screened. Its accurate, high-speed picking protocols allow users to screen through a richer genetic library, increasing the chances of a desirable hit. Additionally, library management features provide robust sample tracking.

Use the QPix system for:

Colony picking | Library management



Microbial strain engineering

Strain engineering is a broad term that refers to the manipulation of genetic pathways to harness the power of existing biological systems in novel ways (often to manufacture molecules or proteins). The QPix system allows identification and selection of variants with desired characteristics in a high-throughput manner. Optional fluorescence imaging can be leveraged to prescreen colonies and automatically image and select clones of engineered microorganisms.

Use the QPix system for:

Plating and streaking | Phenotypic selection
Colony picking | Library management

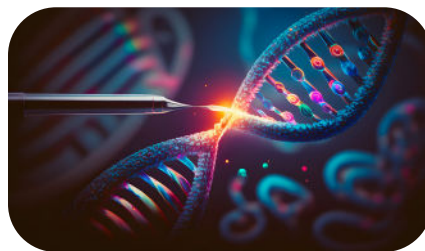


Molecular cloning

Molecular cloning is the assembly of DNA into a vector, leveraging *E. coli* as a host organism to produce plasmids. Using the QPix system to automate the laborious process of plating and streaking, as well as colony picking, frees scientists to analyze data, not perform repetitive, time-consuming tasks. Increase throughput and speed while also increasing accuracy with complete audit trail and sample tracking.

Use the QPix system for:

Plating and streaking | Colony picking
Library management



Gene editing/CRISPR in microbes

Gene editing techniques, such as CRISPR-Cas9, have improved the ability to create precise mutant libraries, allowing scientists to explore the genome more accurately. The QPix system makes it possible to screen a larger library than what could otherwise be done manually.

Use the QPix system for:

Library management
Pooled library picking



Phage display

Phage display is commonly used to find high affinity interactions between antibodies and antigens, which play a critical role in viral pathogenesis, vaccines, and other treatments. The QPix system can be used to increase the throughput of colonies screened, increasing the chances that you are able to identify a high affinity binder.

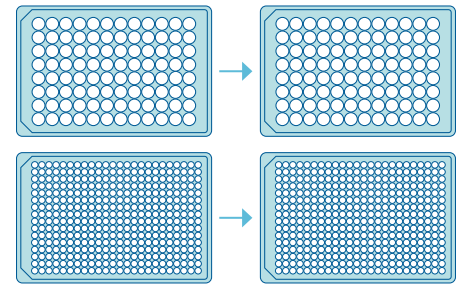
Use the QPix system for:

Colony picking | Library management

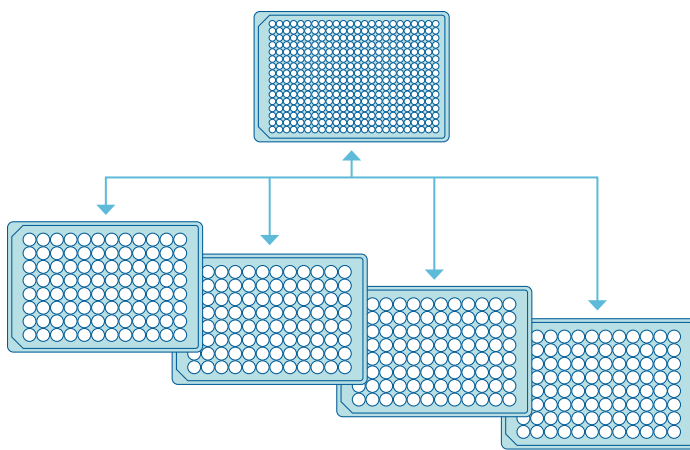
Plate replication and rearraying—liquid to liquid

Automate the process of creating sample banks while eliminating errors

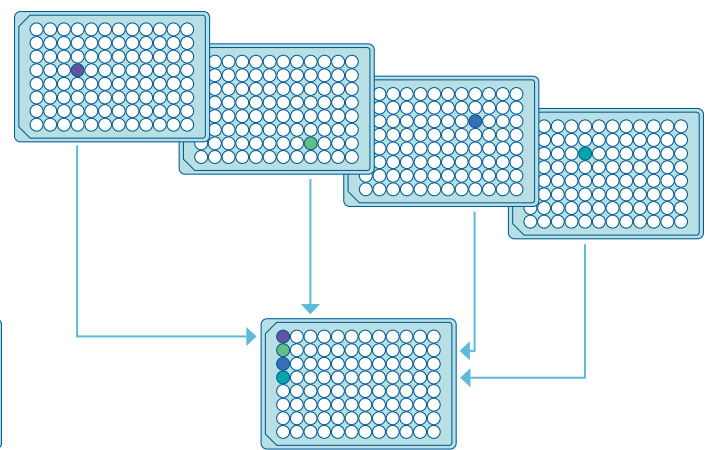
- Create duplicate and sub-libraries to maintain clone viability
- Streamline downstream assays and sample management
- Identical replicates (96- or 384-well)
- Compression (4x96 into 1x384) or expansion (1x384 into 4x96)
- Hit pick/cherry pick selected clones into new destination microplate with high accuracy



Replicate (96x96 or 384x384)



Compression or expansion



Cherry pick best clones

Inscripta enables scientists to perform digital genome editing with their Onyx system integrated in a fully automated workflow that includes the QPix system

The Challenge: Inscripta's vision is to democratize scalable genome editing to the world by offering a holistic platform consisting of software, instrument, reagents, and consumables to enable forward engineering solutions that are faster, easier, and more cost-effective for their customers. The output of the Inscripta Onyx genome editing system is a pool of cells containing up to 10,000 unique edits that necessitate picking large numbers of colonies (e.g. 1,000 – 10,000) into high-throughput microtiter plate-based screening workflows.

The Solution: The QPix and Onyx systems are synergistic tools that allow customers to effectively generate and screen phenotypic diversity to enable successful bioeconomy solutions for the next generation of synthetic biology companies.

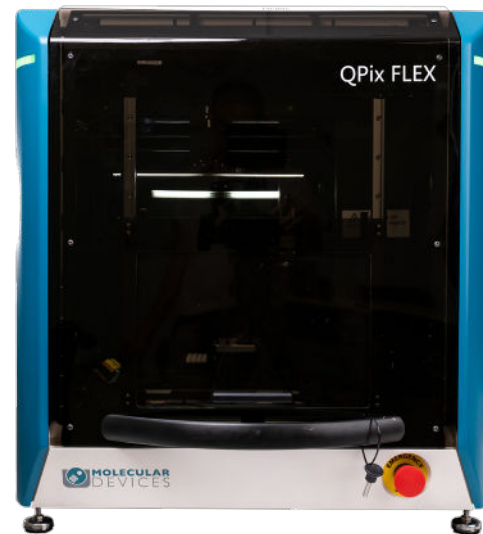


Introducing the QPix FLEX, one smart, streamlined system that replaces the clutter and moves your research forward.

QPix[®] FLEX[™] Microbial Colony Picker

Plating, streaking, picking, and liquid handling, all in one compact device?

The QPix[®] FLEX[™] Microbial Colony Picker makes it look easy. With advanced color imaging, it helps you spot the right colonies faster. And yes, it fits on your bench or in a hypoxic chamber – because why wouldn't it?



High Resolution Color Camera

The QPix FLEX system classifies and selects colonies based on morphology and color – ensuring you pick the most relevant and viable colonies every time.



Hypoxic and Anaerobic Chamber-Ready

With its small footprint, the QPix FLEX system fits directly into hypoxic and anaerobic chambers, making advanced automation accessible in environments where space and sterility are critical.



Ultimate Flexibility

Switch between eco-friendly sterilizable tips and disposable plastic tips without changing hardware, giving you flexible control over sterility, sustainability, and cost.



Automate Every Step of Your Workflow

From plating and streaking to colony picking, liquid handling, and cherry picking, the QPix FLEX system automates every step in your microbial screening workflow – saving time, reducing error, and streamlining operations.



Automate Liquid Handling

Automate complex liquid handling tasks like media dispensing, glycerol addition, plating, and hit picking without needing additional instruments, thanks to the versatile 4-channel pipettor.



2D Barcode Scanning

Maintain full traceability across every plate and pick with automated 2D barcode scanning, supporting reproducibility, regulatory compliance, and high-integrity data.

Tailored solutions for every application and workflow

Get the highest level of flexibility in application and experimental design

Our expert team of engineers and application scientists can tailor the QPix® systems to meet your workflow demands for automated microbial colony picking and plating.

QPix XE system



Compact automated colony picker.

The QPix XE is a compact microbial colony picker ideal for labs that have reduced space, but still need efficient colony picking throughput. The QPIX XE is a great entry level system to replace highly subjective and error prone manual picking with automated colony picking.

QPix 420 system



Automated colony picker.

The QPix 420 system is ideal for groups looking to increase the throughput and efficiency of their colony screening. The system increases walk away time with the ability to pick up to 12 96-well plates before needing manual intervention, at a throughput of 3000 colonies/hour.

QPix HT system



Flexible, modular, fully automated colony picking and library management system.

With a fully automated workflow, this QPix system provides the greatest flexibility in application and experimental design including sample plating and streaking. The system comes ready for integration with robotics for maximum throughput and walkaway time.



Scalable automation

Modular design allows you to future proof your system by allowing you to add additional pieces of instrumentation down the line. As your workflow changes and adapts, our systems scale with you.



Customized solutions

Offer services from consultation through implementation. Includes throughput analysis, software and hardware customization, factory acceptance, site acceptance, and instrument validation.



Biological validation

We work with you to understand your process and biological requirements so we can reproduce and test the actual performance in-house prior to shipment.

Specifications

Instrumentation

Destination plate capacity	QPix 420 system: Picking: 12 plates; replicating and re-arraying, maximum of 20 plate positions
Source plate capacity	QPix 420 system: Without manual intervention: 1 x 15 cm petri dish; 5 x 9 cm petri dishes; 2 x OmniTrays; 1 x 22 cm QTrays
Picking destination plate type	Various, 24-, 48-, 96-, or 384-well including deep well
Picking height	Integrated ultrasonic agar height sensor to set agar height per plate for accurate picking
Picking head	Fully pneumatic, 96 pin picking head. Interchangeable heads for other applications
Picking pin types	Range of organism-specific pins
Picking capacity	3000 colonies per hour in white light, 2000 colonies per hour in fluorescent light
Fluorescent picking	Colonies imaged in white light for location identification and fluorescence for data analysis. WL and FL image multiplexed.
Fluorescence data	Multiple parameters available e.g. interior mean. Fluorescent intensity recorded for picked colonies.
Wash bath	3 x static wash baths
Pin drying	Proprietary halogen pin drying station
Dimensions	QPix 420 system (without table): 1460 mm (width) x 770 mm (depth) x 750 mm (height)

Compressed air specifications

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

Imaging

Camera (white light only system)	CCD Camera, image resolution: 22 pixels /mm. Field of view: 62 x 46 mm
White light imaging	Trans-illumination
Camera (white light and fluorescence system)	CCD Camera, image resolution 22 pixels /mm. Field of view: 32 x 24 mm
Fluorescent imaging (optional)	Epifluorescence illumination, five standard wavelengths included: <ul style="list-style-type: none"> • Ex/Em: 377/447 nm for DAPI /Hoechst • Ex/Em: 457/536 nm for FITC /GFP • Ex/Em: 531/593 nm for Cy3 /DS Red • Ex/Em: 628/692 nm for Cy5 • Ex/Em: 531/624 nm for Rhodamine/ Texas Red
Colony screening parameters	Colonies selectable based on size, proximity, roundness. Selection performed on whole tray image.
Tracking	1 x barcode reader for tracking of source and destination plates. Data tracked through all applications for plates with same ID.

Software

Plate replication, re-arraying and gridding	Software license and additional picking heads
Zone of inhibition detection	Software license
Colorimetric colony selection	Software license and filters

Regulatory approval

Compliance	CE
Quality	ISO9001:2008 certified

Contact Us

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Check our website for a current listing of worldwide distributors.

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United Kingdom	+44.118.944.8000	Japan	+81.3.6362.9109
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