There is no more high-throughput and precise way to complete a microbial screen, period.

*Example comparison based on screening 6,144 samples with a 384 channel liquid handler.
**Example comparison based on screening 6,144 samples with an 8-channel pipette.


HIGH-THROUGHPUT SCREENING OF CHLAMYDOMONAS REINHARDTII TRANSFORMANTS

“I CAN’T SPEAK HIGHLY ENOUGH ABOUT THESE TWO INSTRUMENTS. WE HAVE HAD THEM UP AND RUNNING FOR 6 MONTHS IN OUR LAB, AND TOGETHER, THEY HAVE BEEN A GAME-CHANGER IN TERMS OF THROUGHPUT AND REPRODUCIBILITY”

Kyle Lauersen
King Abdullah University of Science and Technology - Saudi Arabia
PXL is a reliable and easy-to-use microbial colony picker. It automates high-quality colony imaging, detection, selection and picking.

90% of the functionality can be learnt by anybody in as little as 10 minutes.
MORE THAN 10,000 CITATIONS SAYS ROTOR+ IS THE WORLD’S FAVOURITE MICROBIAL ARRAYING ROBOT!

Colony Screening

ROTOR+ is a compact benchtop robot for easy, ultra-fast manipulation of high-density arrays of yeast, fungi, bacteria and algae. ROTOR+ uses sterile polymer replica plating pads to support liquid pinning to and from 96 and 384-well microtiter plates and agar pinning at densities of 96, 384, 1536, and 6144.
STREAKING

The colony manipulating print head is able to streak or plate cells using a 7x7 matrix protocol onto an agar plate from liquid or agar sources at world-leading throughputs, enabling the isolation of single colonies. This protocol automates high-throughput plating of microbial organisms, allowing researchers to isolate colonies from 96 samples onto one target plate, in less than two minutes.

RE-ARRAYING AND MATING

Replicate, Mate, and re-array from single or multiple source plates at densities of 96, 384, 1536 and 6144. Multiple, low-density plates may be combined into fewer, high-density plates with ease.

2D AND 3D MIXING

The wet mix function allows the colony manipulating print head to stir in a helical motion. This ensures that the cells are evenly and consistently transferred from and to a liquid culture. Dry mixing is achieved by the colony manipulating print head scraping the agar surface in a custom set diameter. This enables transfer rates >99% across a range of microorganisms.
PINNING FEATURES

PINNING EXAMPLES

- 4x 96-density plates are combined onto 1x 384-density plate.

1:4 Array

These protocols can be applied at all pinning densities.

1:4 Single source

ROBOTIC ARM MOVES UP TO 3 METRES A SECOND!

THE POWER OF ROTOR+ IS UNPARALLELED. IT TAKES <25 SECONDS TO REPLICATE THE ENTIRE YEAST GENOME!

96-density 384-density 1536-density 6144-density

AGAR TO AGAR PINNING SPEED IS 25 SECONDS PER PLATE.
LIQUID TO AGAR PINNING SPEED IS 28 SECONDS PER PLATE.
PLATES & PADS

ROTOR+ uses Singer RePads: high-quality plastic replica-plating pads to transfer colonies between plates. Singer RePads are available in two pin lengths: short for agar-to-agar colony transfer and long for transferring cells in liquid culture.

Our short-pin RePads come in a range of densities: 96, 384, 1536 and 6144. Our long-pin RePads are available in 96 and 384 format, allowing transfer from shallow and deep multi-well microtitre dishes.

Singer high-quality PlusPlates, with increased plating area, are essential for precise replication at all densities. Singer RePads and PlusPlates come in gamma-irradiated packs and in application-matched sleeves.

ROTOR+ will also accept multi-well, microtitre plates: Shallow and Deep Well Plates [96 and 384] and SBS standard trays, compatible with long-pin RePads.
Pinpoint picking technology can cope with any variation in agar height, automatically. PIXL detects the surface and regulates the contact pressure for every pick. This ensures that every single colony on your plate is picked, without damaging, missing or splashing cells all over the place.
COLONY HIT PICKING
Cherry pick the hits that interest you from multiple source plates onto one target plate, or vice versa. With a transfer rate >99% and agar surface detection on every pick, PIXL will never miss your colonies.

COLONY STREAKING
PIXL is able to streak or plate cells using a customisable protocol onto an agar plate, from liquid or agar sources, allowing the isolation of single colonies.

AGAR PIERCING
Pierce the agar to pick colonies or subsurface hyphae. Within the settings, agar piercing can optionally be applied to each of your source and target plates. Adjustable penetration depth ensures you only pick colonies or hyphae that you are interested in.

FLUORESCENCE DETECTION
Turn on its fluorescent LEDs, insert the appropriate bandpass filter and PIXL will quantify and allow selection for wtGFP, sfGFP, mCherry, tagBFP, Venus and many other fluorescent markers.

BOOK A DEMO
ACCESSORIES

PICKUPLINE
PUL-001
Load a single 200m reel into PIXL to form up to 33,000 sterile, disposable tips.

BLADE & ANVIL KIT
BAK-001
Repeatable and reliable. Specifically engineered for your PickupLine.

PIXL DUMP DRAWER
PDD-001
An additional dump drawer can increase workflow efficiency - continue working while a dump drawer is being autoclaved.

PETRI DISH ADAPTOR
90mm: PET-002  150mm: PET-003  120mm SQUARE: PET-005
Easily adapt your PIXL source bay to work with rectangular plates, square plates, 90mm or 150mm Petri dishes.

KINEMATIC NOZZLE
KEN-001
For those who are super-cautious, but want to maximise PIXL’s uptime: send one nozzle for autoclaving and use this spare.

FLUORESCENCE FILTERS
452nm: PXF-001
510nm: PXF-002
527nm: PXF-003
615nm: PXF-004

PICKUPLINE
PickupLine is a 1mm bespoke polymer extrusion, available in sterile 200m reels. Load a single reel into PIXL to form up to 33,000 sterile, disposable tips. Its cutting-characteristics allow PIXL’s precision blade to produce a tip perfect for picking bacteria and fungal colonies.

- Select up to 33,000 colonies with each PickupLine
- Sterile
- Tips optimised for microbial colony picking
To increase throughput, it is essential to automate colony manipulation, by standardising... It is imperative that the robots produce consistent results and show repeatability between runs.
TRANSFER EFFICIENCY

ROTOR+ transfer efficiency is very high across all the RePad and array combinations. Transfer is proven to be 99.68% in S. cerevisiae and 99.94% in E. coli.

Across different plate types using S. cerevisiae and E. coli PIXL has an average transfer efficiency of 99.78%. Read the report here.

STERILITY

PIXL uses specially developed Pinpoint™ picking technology for a step-change in reliability and sterility. PickupLine comes gas sterilised, prepackaged in a sealed bag and is thermally sterilised again, just before picking. Pinpoint uses the freshly-cut end of a sterile PickupLine to transfer microbial colonies.

ROTOR+ uses disposable polymer pin pads, which removes the need for lengthy washing and sterilisation cycles between pinnings (and the associated chance of biological and ethanol contamination of your precious samples).

The pin pads come in sealed bags, which are then gamma irradiated, ready to be used. Disinfect your working environment in between uses with the built-in UV light. Run the UV light at the end of the day and ROTOR+ PIXL will turn themselves off.

ROTOR+ PIXL TOGETHER HAVE A CROSS CONTAMINATION RATE OF <0.04%.

FLUORESCENCE DETECTION

Six SpectraStar™ lighting channels enable simultaneous colony detection across multiple fluorescent wavelengths, making experiments quicker and more cost-effective. PIXL will quantify and allow selection for wtGFP, sfGFP, mCherry, tagBFP and Venus as standard. This is not a microscope! It is a colony picker. As such it will not detect sub-cellular or low levels of expression. PIXL's LEDs are configured as standard to emit: Blue, Cyan, Green, two wavelengths of Violet, and white light.

The Normalised Power vs. Wavelength of the LEDs is shown below. PIXL accepts standard 50mm filters. The filters can be manually inserted in front of the CMOS camera on a manual sliding mechanism. You can easily switch between all of your favourite lighting conditions to filter for the markers that interest you. To see if your favourite fluorescent marker is supported, please get in touch: contact@singerinstruments.com

“I’m happy to say that every strain we picked and replica plated onto solid agar in the 96 well plates grew, and after three weeks in the incubator, no plate has shown evidence of contamination.” Martin Sim, Isomerase.
Our software engineers understand your biology! We recruit scientists and spend a lot of time with our collaborators to ensure our user interface thinks like you do.
**WORKFLOW SET-UP**

The user interface will guide you through your workflow set-up to get you picking the right colonies within minutes.

**IT’S THIS SIMPLE TO USE, ANYONE CAN DO IT!**

1. Login  
2. Load Source Plates  
3. Select Lighting  
4. Detect Colonies  
5. Filter for hits of interest  
6. Load Target Plates  
7. Pick Colonies  
8. Export Images & Data

**PLATE SECTORING**

Sectoring your plates enables you to group multiple clones, isolates, or mutant strains on a single plate. Experiment using different antibiotic, antimicrobial or chemical treatments on the same plate. Sectoring plates increases your workflow efficiency, saves space, and minimises your reagents and consumables expenditure. Conduct multiple experiments at the same time, on the same plate.

**COLONY FILTERING**

Filter your colonies by size, proximity, circularity, colour or fluorescence intensity. Multiple filters can be applied simultaneously to ensure you are selecting the most interesting hits.

**IT TAKES LESS THAN 10 MINUTES TO LEARN HOW TO OPERATE**

**ROTOR+ | PIXL**

**ROTOR+** PIXL eliminates any user confusion during operation through its intuitive software. Compatible pin pad and plate options will be determined through your chosen protocol, the step-by-step software minimises human error and makes it virtually impossible for you to select incompatible hardware. The robotic arm moves very rapidly (up to 3 metres per second) and intelligently selects the shortest path between source and target.

**INTUITIVE**

When replicating a single source plate multiple times, tiny, alternating offsets will be applied to the source plate picking position by default, to maximise the homogeneity and consistency of target plate cell density. When spotting liquid to agar, the helical stirring of 96 or 384 well plates is applied by default to maximise cell resuspension and target plate homogeneity. These smart parameters have been carefully optimised to save the user time, they are also fully customisable.

**OPTIMISE TRANSFER**

Filter your colonies by size, proximity, circularity, colour or fluorescence intensity. Multiple filters can be applied simultaneously to ensure you are selecting the most interesting hits.

**DATA EXPORTS**

ROTOR+ PIXL facilitates the selection of a multitude of phenotypes and exports rich, time-stamped, experimental data, as well as publication quality images. Cartesian coordinates assigned to each colony allow the user to re-array random colonies or arrays from multiple source plates to a selection of target plates. Connect the exported data to your LIMS, via our free API.
Benefits

Singer Instruments has a long-standing reputation for fantastic service and support, for which we are very proud. Our motto, "a responsibility to science", extends to our service and support whereby our primary motivation is to eliminate, or at very least minimise your experimental downtime.
Singer products are designed for reliability, longevity, speed, and ease-of-use. Singer Lab Support augments these design criteria by increasing life-expectancy and increasing device reliability with preventative and predictive maintenance.

**DEDICATED SUPPORT**

Customer satisfaction
100% out of 137 tickets*

First response time
95% of queries responded to within 24 hours*

>1000 Successful Singer Instruments installations

*SINGER+ PIXL customer support enquiries from October 2019 - October 2021

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**AN EXCELLENT AND COST EFFECTIVE SERVICE THAT GIVES THE LABORATORY UNLIMITED ACCESS TO SINGER TECHNICAL EXPERTS**

by phone, email, VOIP or remote access. All requests are entered into the Singer ticketing system allowing the Laboratory to log, track and monitor any reported issues from initial contact through to resolution.

<table>
<thead>
<tr>
<th>SERVICE TYPE</th>
<th>NO COVER</th>
<th>LAB SUPPORT</th>
<th>LAB SUPPORT PLUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software updates and patches – via remote access</td>
<td>N/A</td>
<td>FREE</td>
<td>FREE</td>
</tr>
<tr>
<td>Initial diagnosis + 2 hours support</td>
<td>£410</td>
<td>FREE</td>
<td>FREE</td>
</tr>
<tr>
<td>Telephone, Email, VOIP, Webcam support</td>
<td>£127 / hour (min 1 hour)</td>
<td>FREE</td>
<td>FREE</td>
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<tr>
<td>Remote access</td>
<td>£127 / hour (min 1 hour)</td>
<td>FREE</td>
<td>FREE</td>
</tr>
<tr>
<td>Unattended remote access (optional)</td>
<td>£127 / hour (min 1 hour)</td>
<td>FREE</td>
<td>FREE</td>
</tr>
<tr>
<td>Parts and delivery</td>
<td>Full price</td>
<td>First £100 free (50% discount thereafter)</td>
<td>FREE</td>
</tr>
<tr>
<td>Engineer hourly rate</td>
<td>£127 / hour (min 1 hour)</td>
<td>FREE</td>
<td>FREE</td>
</tr>
</tbody>
</table>
Customer service

"Singer Instruments is a wonderful company that makes very high quality tools and put their customers at the heart of everything they do. They provide outstanding support, both engineering and application support. Our Rotor+ is a workhorse for the lab that has served us for more than 10 years!"

Liz Miller
The Medical Research Council Laboratory of Molecular Biology

"My lab has used the Rotor+ from Singer Instruments for many years. The instruments are very reliable and the scientific and technical support from Singer Instruments is outstanding."

Michael Lisby
University of Copenhagen

"Awesome company! Their instruments are well-designed and easy to use, simple and extremely useful. Their customer care is unmatched as far as I’m concerned. It is always a pleasure to deal with them, they listen and care for their scientific customer base."

Thomas Germe
John Innes Centre

NET PROMOTER SCORE

The industry standard way of measuring customer satisfaction.

Any positive Net Promoter Score (NPS) rating means that a company has more customer advocates (promoters) willing to recommend you than critics (detractors). A score of 0 means that you have as many critics of your products, as you do advocates.

Click here to view the original online data source.

Microsoft and Apple are in the category: Computer software Computer hardware Consumer electronics Digital distribution.

PROVIDING THE HIGHEST LEVELS OF CUSTOMER SERVICE

PROVIDING WORLD-CLASS CUSTOMER SERVICE

Singer Instruments’ customer aftercare is outstanding, in fact, it’s the very best in our industry. By maintaining regular contact with our customers, we support your experimental and technical journey from day one. We proactively provide solutions and answer any questions to ensure that you achieve your desired outcome.
See a live demonstration

INTERACT WITH THE CREATION OF A WORKFLOW FROM START TO FINISH.

Personalised to your lab, there is no better way to see whether the Rotor+ Pixl would be able to add value to your research, than via one of Singer Instruments’ bespoke online demonstrations. Specify plate types and your organism of interest, to gain an insight into how your workflow could be optimised.

Qualified Scientific Advisors will guide you through your demonstration and will be able to answer any questions you may have on your applications of interest, such as:

- Can I pick a certain organism?
- How can I achieve this?
- Can you show me a specific feature?

This demonstration can be delivered one on one, or to larger groups via online video conferencing.

"The accuracy and reproducibility is excellent, even between multiple machines."

Prof. Daniela Delneri, FRSB
Chair in Evolutionary Genomics,
Manchester Institute of Biotechnology.

singerinstruments.com
TECHNICAL SPECIFICATIONS

LIGHTING MODEL
White light and UV disinfectant light

TECHNICAL SPECS
Footprint:
Length: 730mm
Width: 640mm
Height: 805mm

Weight: 114.4kg
110-240V AC 50-60 Hz Power: 500W
Power connection at the right hand end (from front) via IEC cable supplied

AIR SUPPLY
Dry, oil-free, compressed air/nitrogen at min 4 bar (60 psig) max 10 bar (150 psig)
Consumption: 3 litres/min (0.1 CFM)
Air connects to left hand end (front)

TOUCH SCREEN MONITOR
1x Ethernet Port
2x USB Port
1x RS232 Serial Port
1x KB/MS/LAN2

PINNING HEAD
Movement X-axis: 800mm
Movement Y-axis: 30mm
Movement Z-axis: 90mm

PINNING SPEED
Agar to agar: 25 seconds per plate
Agar to liquid/liquid to agar: 28 seconds per plate

SUPPORT OPTIONS
1-YEAR LAB SUPPORT
SLS-002
1-YEAR LAB SUPPORT PLUS
SLS-003

PRODUCT CODE
RT2-001

WARRANTY
1 year as standard

LIGHTING MODEL
1x White Channel & 5x Fluorescence Channels

TECHNICAL SPECS
Footprint:
Length: 730mm
Width: 640mm
Height: 805mm

Weight: 100kg
Power: 240VAC at 3 Amps, 100-240VAC Compatible Hz
Max Power Consumption: 65w

Camera specifications
5MP (2448 x 2048) Resolution
USB 3.0
2/3" Sensor
16mm Autofocus Liquid Lens

MONITOR
21.5", 1080p Full HD, LED-Backlit LCD Monitor
Edge-to-edge glass with anti-glare

WARRANTY
1 year as standard

AIR SUPPLY
Dry, oil-free, compressed air/nitrogen at min 4 bar (60 psi) max 10 bar (150 psi)
Consumption: 3 litres/min (0.1 CFM)
Air connects to left hand end (from front)

TOUCH SCREEN MONITOR
1x Ethernet Port
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PINNING HEAD
Movement X-axis: 800mm
Movement Y-axis: 30mm
Movement Z-axis: 90mm

PINNING SPEED
Agar to agar: 25 seconds per plate
Agar to liquid/liquid to agar: 28 seconds per plate

SUPPORT OPTIONS
1-YEAR LAB SUPPORT
SLS-002
1-YEAR LAB SUPPORT PLUS
SLS-003

PRODUCT CODE
PIX-001

WARRANTY
1 year as standard

INTERNAL PC SPEC
2.30GHz Intel 6th Gen Dual Core i3-6100U Processor
-20 ~ 60 °C extend temperature operating
2.5" 32GB MLC SSD (0~70°C) - Can be upgraded to: 128GB / 256GB / 512GB
4GB DDR3 Memory
DC-PWR-MIOe – 9V36W power module

All information is correct at the time of printing. Some revisions may be made as specifications are improved.
For more information please contact: contact@singerinstruments.com
About Us

For over eighty years, Singer Instruments have been designing and manufacturing cutting-edge scientific research equipment.

No one understands the needs of microbiology researchers and yeast and bacteria manipulation better than Singers. From the automation of tetrad dissection using the MSM 400, to the ROTOR+ personal omics robot, no one has done more to make microbiology accessible to all. From its headquarters in the beautiful Exmoor National Park in Somerset, UK, Singer ships robotic systems and associated products internationally. World-leaders in instrumentation for yeast and bacteria, Singer Instruments are working hard to make continual improvements to help assist the scientific community.
OUR DISTRIBUTORS

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