TolerScan

Among Thousands
Find Those That Thrive

Microbial Tolerance Screening System

SCREEN
THOUSANDS
DISCOVER
RESILIENCE



eCyte, Inc.

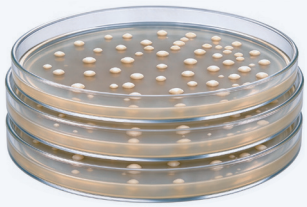
TolerScan

Microbial Tolerance Screening System

Microbial Tolerance Screening: Fast, Precise & Automated
Rapidly identify and isolate resilient strains surviving targeted stress conditions

Traditional Method

Plate-Based Screening



Plating + Cultivation + Observation + Picking + Rescreening

- **Labor-Intensive**
- **No Real-Time Monitoring**
- **Time-Consuming**
- **Limited Traceability**

VS.

TolerScan

Viability-Driven Screening



- **Compartmentalized Culture**
  Cultivate candidate clones in isolation under defined stress conditions
- **Viability Assessment**
  Analyze real-time growth kinetics to accurately identify viable clones
- **Precise Mapping**
  Link viable clones to their physical array coordinates for full traceability
- **Data Traceability**
  Automatically export screening results for easy review and comparison

TolerScan: Transforming Stress-Tolerance Screening from Endpoint Judgment to Visual Dynamic Process and Traceable Outcomes.

Efficient Screening

- Minimize manual plating, incubation, and inspection for faster strain screening

Visualized Growth

- Track clone growth in real time and reveal differences in growth dynamics

Traceable Results

- Link screening results to individual clone locations for easy verification and recovery

Versatile Applications

- Suitable for bacteria and fungi, including anaerobes with anaerobic workstation compatibility

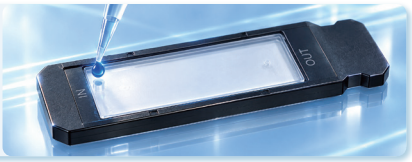
Simplified Workflow
All-in-One Microfluidic Chip

TolerScan streamlines sample loading, compartmentalized cultivation, and automated analysis to identify viable clones, track growth, and assess stress tolerance.

01
Sample Preparation
Prepare the sample suspension and apply target stress conditions.



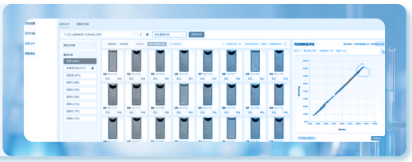
02
Sample Loading
Inject sample directly into the microfluidic chip.



03
Parallel Micro-Cultivation
Cultivate clones separately under stress to minimize interference.



04
Tolerance Scoring
Automatically detect, image, and score clone growth.



05
Target Clone Recovery
Precise automated localization and picking of top-performing clones.



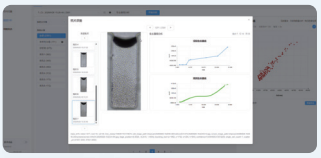
Streamlined Tolerance Screening

Viability Screening



Rapidly identify surviving clones under defined stress conditions.

Growth Curves



Track growth dynamics of individual clones for tolerance assessment.

Tolerance Scoring



Quantify and compare clone tolerance based on growth performance under stress.

Versatile Microbial Tolerance Screening

Acid · Salt · Solvents · Metal Ions · Temperature

Mutant Library Screening

Rapidly identify stress-tolerant strains from large mutant libraries.

- Large mutant libraries
- High-diversity strain libraries

Adaptive Evolution Screening

Identify strains with improved stress tolerance during adaptive evolution.

- Serial passaging under gradient stress
- Candidate strains from different evolutionary stages

Stress-Tolerant Strain Mining

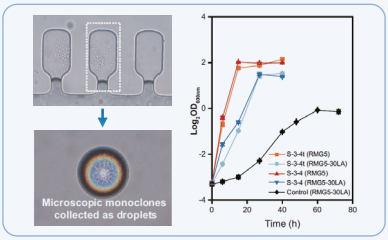
Screen existing and naturally isolated strains for stress tolerance.

- Soil, gut, and other environmental isolates
- Strains from microbial culture collections

TolerScan rapidly screens natural isolates, mutant libraries, and adaptive evolution samples for stress-tolerant strains based on clone-level phenotypes.

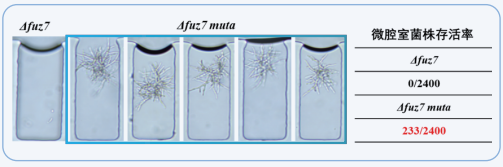
Case 1: Screening Lactic Acid Tolerant Strains

Organism: *Zymomonas mobilis*
Stress: 30 g/L Potassium Lactate
Criteria: Clone Growth under Lactic Acid Stress
Results: Identified an enhanced lactic acid-tolerant strain, S-3-4, exhibiting an approximately 77% higher growth rate than the control.



Case 2: Acid-Tolerance Screening of a Mutant Library

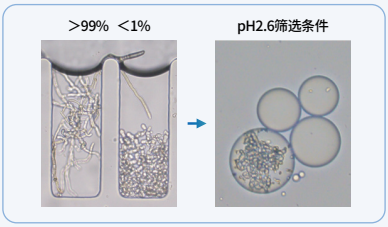
Organism: *Ustilago maydis*
Stress: Low pH
Criteria: Clone Survival and Growth
Results: Identified 233 viable candidate clones for the selection of acid-tolerant mutants.



微腔室菌株存活率
Δfuz7
0/2400
Δfuz7 muta
233/2400

Case 3: Screening of Acid-Tolerant Strains

Organism: *Aureobasidium*
Stress: Low pH
Criteria: Morphological Differences under Acid Stress
Results: Identified candidate strains capable of tolerating pH as low as 2.0.



Specifications

TolerScan

Compatible Microorganisms	Bacteria, yeasts, filamentous fungi, dimorphic fungi, and other industrial and environmental microorganisms capable of forming microcolonies
Applications	Microbial tolerance screening, strain optimization, adaptive evolution screening, and mutant library screening
Culture Format	Compartmentalized cultivation on a microfluidic chip, enabling independent cultivation of individual clones
Parallel Analysis Capacity	Parallel assessment of 1,000–5,000 single cells or clones (expandable)
Stress Conditions	Supports industrially relevant stress conditions, including low pH, high sugar concentrations, high salinity, hyperosmotic stress, solvent exposure, temperature stress, and product inhibition
Monitoring	Bright-field microscopy for monitoring microcolony growth and morphological changes
Imaging	Automated scanning of chip regions and time-lapse image acquisition
Clone Tracking	Target clone localization, position recording, and result traceability
Data Output	Viable clone information, growth curves, and tolerance scores
Collection	Compatible with standard 96-well culture / PCR plates
Laboratory Compatibility	Compatible with laboratory environments such as anaerobic workstations and biosafety cabinets

eCyte

Among Thousands, Find Those That Thrive

SCREEN THOUSANDS
DISCOVER RESILIENCE



About Us

eCyte, Inc. is dedicated to advancing single-cell analysis and sorting through its innovative Ramanome Technology, which characterizes the metabolic phenotypic information of individual cells, and detects metabolic functional heterogeneity. This technology provides a panoramic view at single-cell resolution that links metabolic phenotype information with genomics, transcriptomics, proteomics, and metabolomics for multi-omics studies.

eCyte has pioneered the concept of Ramanome, independently developed key components, core algorithms, application-specific databases, and intelligent data analysis software, culminating in high-precision life science instruments and microfluidic chip consumables. Additionally, the company has created a metabolically targeted live single-cell analysis and sorting technology platform, offering a powerful tool for rapid functional detection, resource mining, and mechanistic analysis of cells from humans, animals, plants, and microorganisms.

eCyte

techsupport@ecytebio.com | www.ecytebio.com
eCyte, Inc. 880W Maude Ave, Sunnyvale, CA 94085-2920

FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES