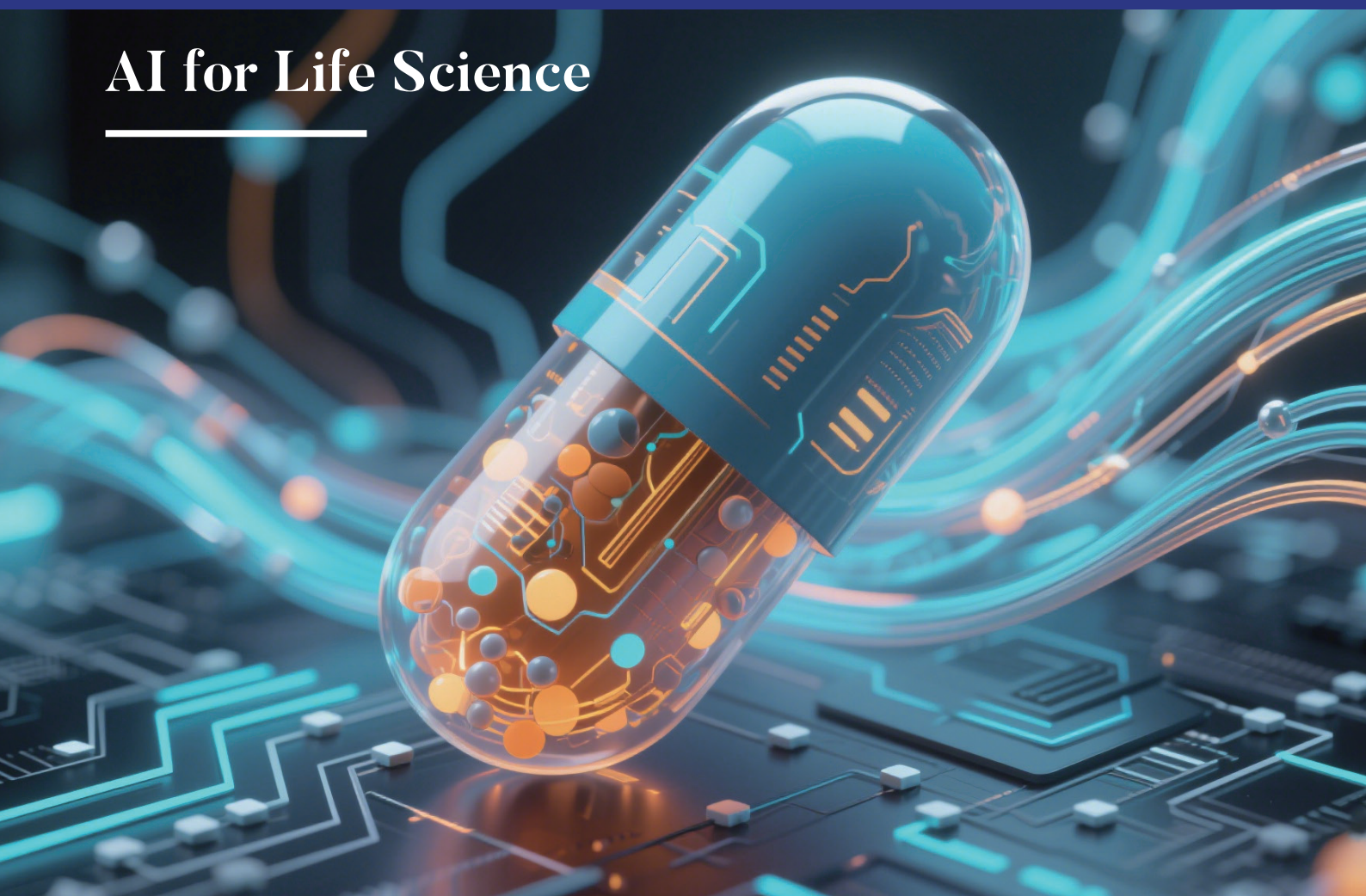


Drug Screening Integrated Solutions

AI for Life Science



Smart Drug
Screening

Compound
Management

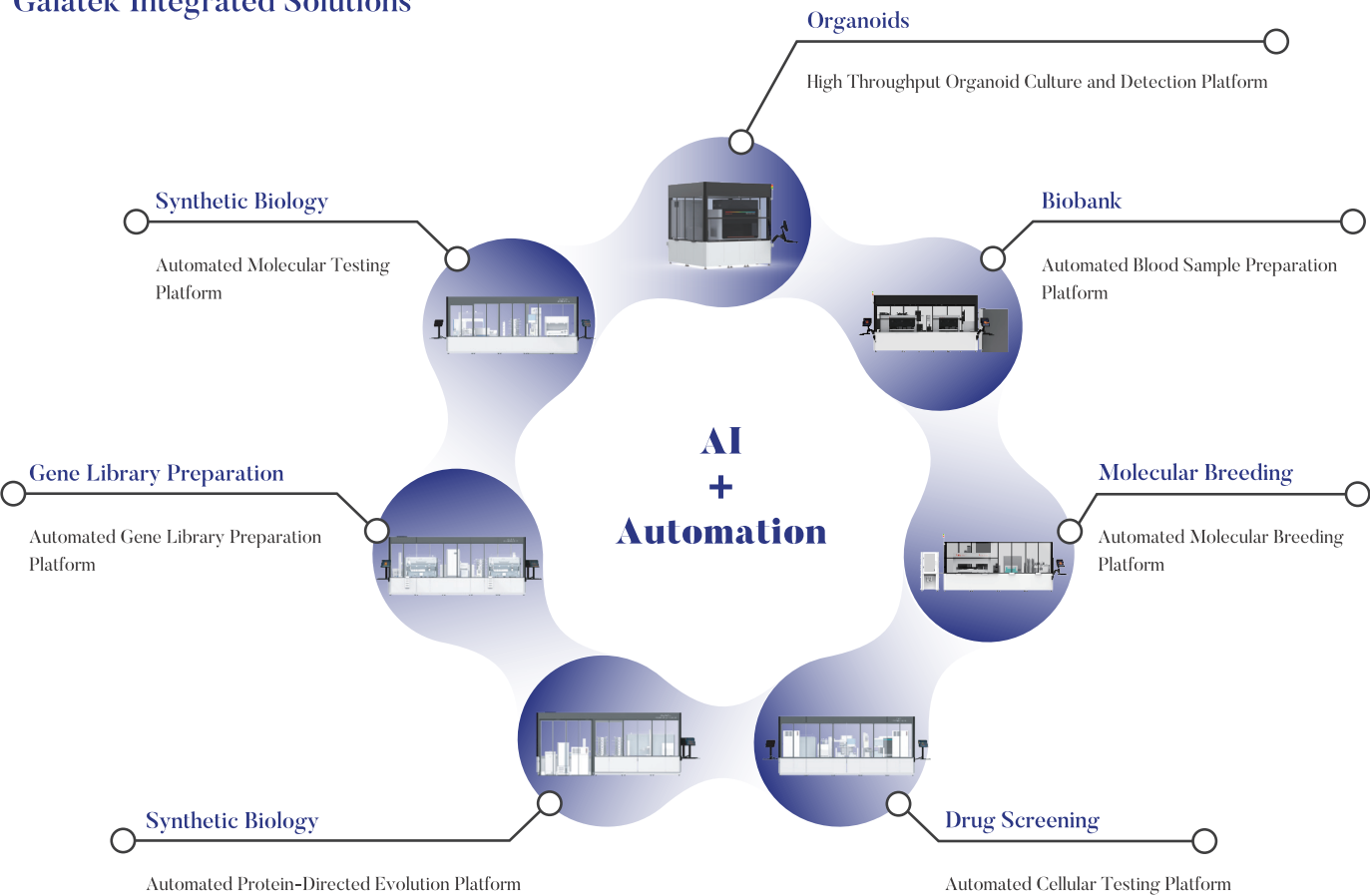
Data
Governance

AI-Assisted
Judgement

AI for Life Science - Building a Data Factory for Life Sciences

Empowering the life sciences with AI tech can accelerate scientific research innovation and industrial breakthroughs. In this process, high-quality data factory serves as the core infrastructure for generating the data required for AI, playing a crucial role. It provides a precise and reliable data foundation for scientific research, driving the transformation of scientific research paradigms.

Galatek Integrated Solutions



Digital Intelligence Platform



Overview of Drug Discovery

Drug screening is a crucial step in drug development, aimed at discovering potential candidate drugs by efficiently screening a large number of compounds.

Currently, drug screening relies primarily on High Throughput Screening (HTS) technology, which tests the biological activity of a large number of compounds in a short period of time using automated equipments. Methods such as phenotypic screening and targeted screening, identify potential drugs through different technological pathways. The application of new technologies such as virtual screening and High Content Screening (HCS) further improves the screening efficiency and precision.

However, drug screening still faces a number of challenges, such as the quality and diversity of compound libraries, the processing and analysis of screening data, and the complexity of biological validation. Nonetheless, with the application of AI and machine learning technologies, the industry is moving toward greater efficiency and precision. In the future, the integration of genomics and precision medicine, advancements in automated equipment, and open collaboration among companies will accelerate the development of new drugs.



Challenges in Manual Drug Screening Experiments



Low Screening Efficiency

Low efficiency of manual operations, with a throughput of <3,000 compounds



High Cost of Compounds

The compounds are costly, with a minimum manual pipetting volume of 1 μ L, making volume control difficult



Difficulty in Tracing Data

The experimental process is hard to preserve, prone to loss, and difficult to document



Errors are Inevitable

Manual pipetting is difficult to ensure precision, and transferring plates may lead to cross-contamination

Application Scenarios

Traditional Chinese Medicine (TCM) Component Research

High-Throughput Screening of Small Molecule Compounds

Organoid and Drug Sensitivity Screening

Drug Sensitivity Screening in Zebrafish Models

Nucleic Acid Drug Research

Antibody Drug Research

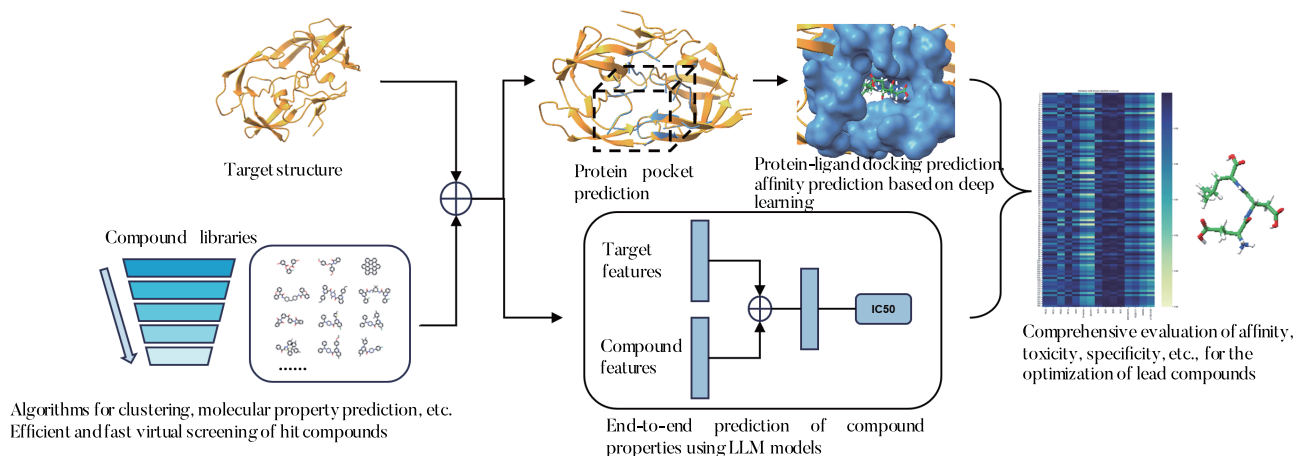
Polypeptide Drugs

Stem Cell Drug Research

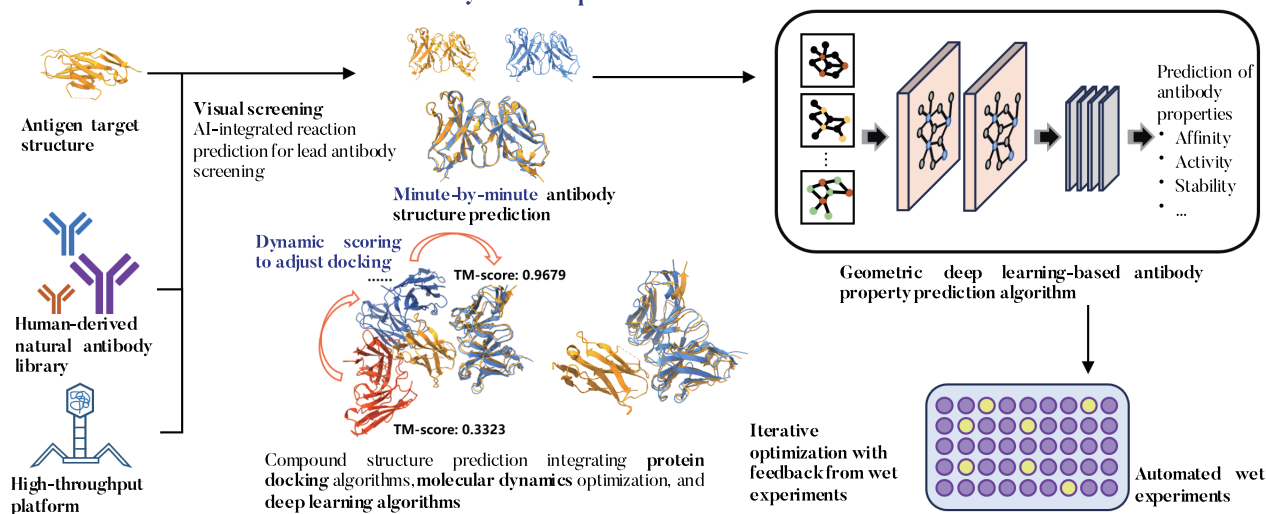
Digital Intelligence Empowering Drug Discovery

New drug discovery has long faced challenges such as long cycles, high costs and low success rates, and the efficiency of traditional manual screening has been difficult to meet the needs of the industry. With the continuous development of AI, big data and robotics, automated drug screening has become a core breakthrough for industry upgrading. By integrating AI prediction models with high-throughput automated platforms, it is expected to enable intelligent screening of millions of compounds on a daily basis, and improve efficiency by more than 100 times. It will drive decision-making with data, shorten the drug research cycle, and provide efficient and traceable screening for the high-quality development of innovative drugs.

AI-Assisted Small Molecule Drug Screening



AI-Assisted Macromolecular Antibody Development



Advantages of Digital Intelligence in Drug Screening



Fast and Efficient

Daily screening throughput:
10,000-100,000 compounds, 3-30
times higher than manual screening



Standardized Control

Strictly control and standardize
experimental processes through
standard data platforms and
automated experimental platforms



Significant Cost Reduction

1 μ L vs 25 nL, the compound cost is
only 1/40th of the manual process

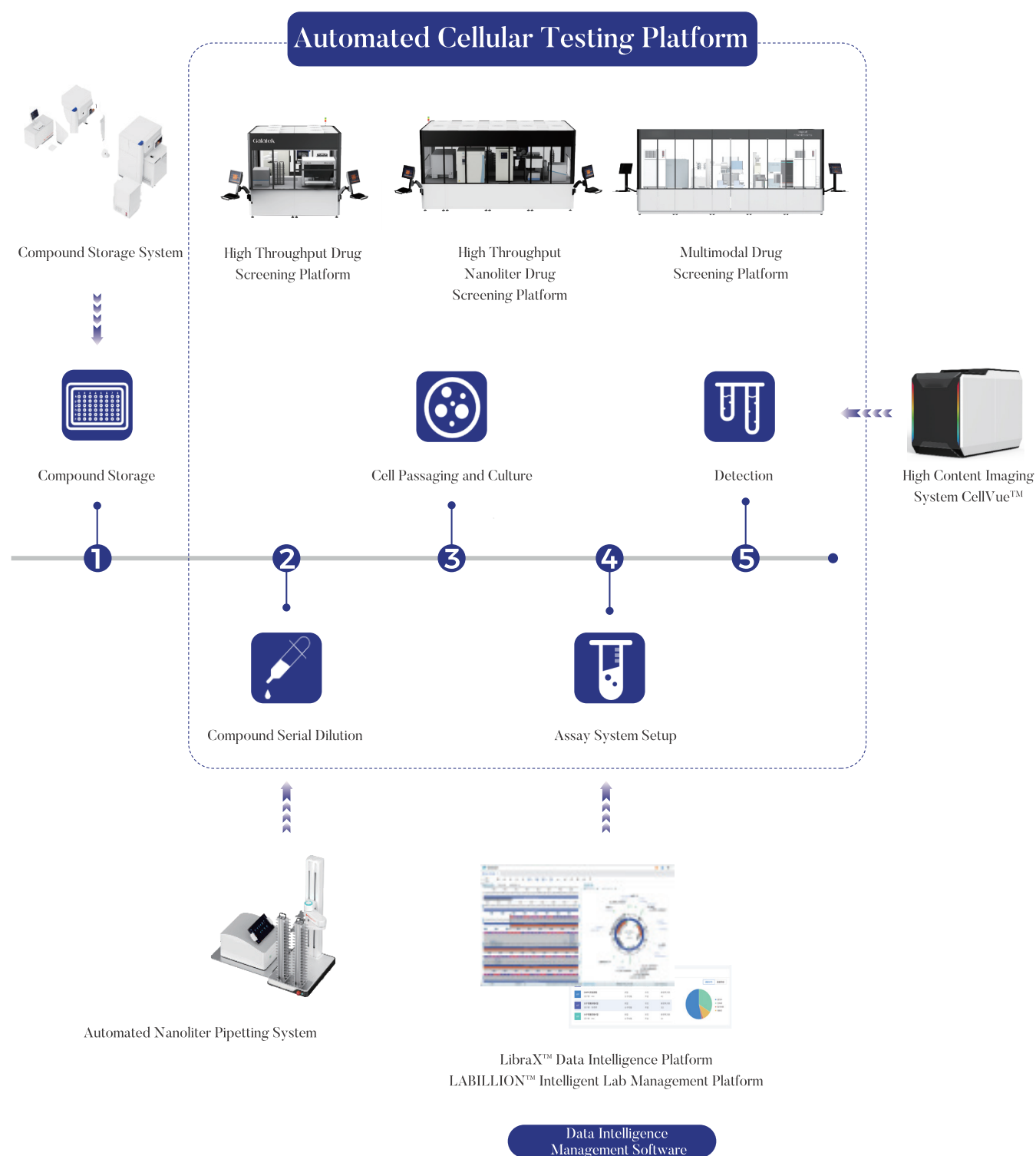


Reliable Results

Each compound is assigned a
unique code for traceability

Drug Discovery Solutions, Enabling the Acceleration of Drug Development

MegaRobo's Drug Discovery Solutions automate the whole process of screening various proteins and cells, from sample pipetting and screening to storage. It supports the integration of MegaRobo's self-developed High Content Imaging System, CellVue®, using unique AI algorithms to efficiently handle the problem of closely adjacent and overlapping sample nuclei, and reflecting the information about the morphology, quantity, expression and products of cells from both 2D and 3D levels, comprehensively accelerating the drug discovery.

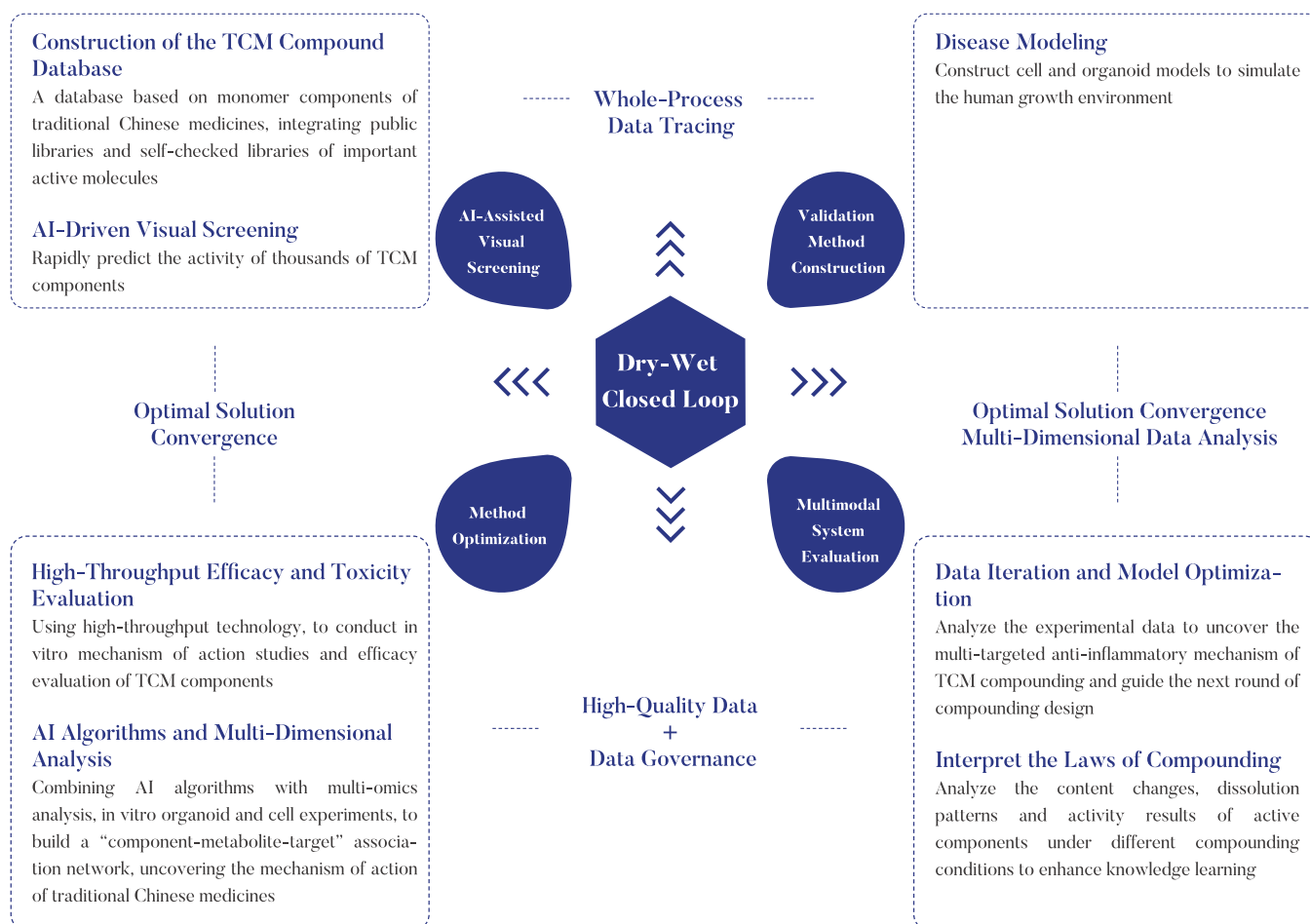


Automated Cellular Testing Platform

The Automated Cellular Testing Platform series are suitable for automatic detection and screening of small molecule drugs, traditional Chinese medicines, antibodies, cytokines etc. The system integrates advanced technologies such as automated tilt module, Echo nanoliter dispenser, AI-based image identification, etc., enabling highly precise operations such as cell culture, media replacement, imaging, digestion, and counting. It can handle up to 100 plates (384-well) of enzymatic or cell proliferation assays and 50 plates (384-well) of cell image analysis per day, and can automatically reflect cell structural features in both 2D and 3D formats. The whole process of drug screening can be fully automated, significantly improving efficiency and accuracy.

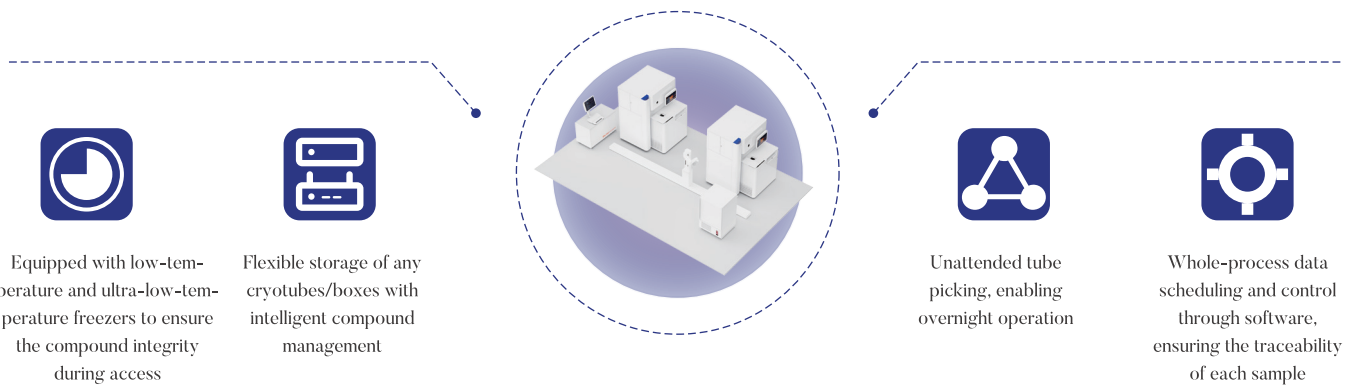


Application Case: TCM Active Component Screening



Compound Storage System

The Compound Storage System supports the storage of tens of thousands of compounds in 2D cryotubes, with flexible picking of any one or several compounds according to on-demand instructions. The system enables high-density storage of up to tens of thousands of compounds, eliminating the repeated freeze-thaw cycles and ensuring the integrity of the compounds.



Automated Nanoliter Pipetting System

The non-contact nanoliter pipette plays an important role in research areas such as high-throughput screening, library preparation, microfluidics, genomics, and magnetic bead dispensing. The Galatek Automated Nanoliter Pipetting System enables continuous, multi-batch nanoliter pipetting of target plates, significantly reducing the need for manual intervention. This significantly improves experimental efficiency and precision, meeting the high-throughput and high-speed liquid handling requirements of laboratories.



Device Parameters	
Stack Types	Standard configuration: 3 fixed stacks with narrow-side grasping or 2 fixed stacks with wide-side grasping (optional sequential-access or random-access stacks)
Expanded Options	Expanded option 1: Additional fixed stacks (optional sequential-access or random-access stacks) Expanded option 2: Additional carousels (optional sequential-access or random-access stacks)
Equipped Devices	Non-Contact Nanoliter Pipetting System
Compatible Plate Types	SBS standard sample plates
Consumable Transfer Station	4-plate position, used for switching the orientation of sample plates
Standard Barcode Scanning	Compatible with common 1D or 2D codes

Application Scenarios

NGS Library Preparation

Drug Screening

Organoid Drug
Sensitivity Screening

High-Throughput
Molecular Testing

High Throughput Drug Screening Platform

The system enables automation of the whole process, including serial dilution of small molecule compounds from source plate to destination plate, cell plating, digestion, media replacement, Assay system setup, culture detection and analysis. It is applicable to the drug screening and enzymology research in which the compounds are stored in the 96-/384-well plates. With its compact design and small footprint, the platform is suitable for low to medium throughput drug screening research.



- ① Liquid handling workstation
- ② Cell incubator
- ③ Film sealer
- ④ Film peeler
- ⑤ Microplate reader
- ⑥ Wellplate delidder
- ⑦ Consumable stack
- ⑧ Robotic arm and slide
- ⑨ Environment control module



Multiple plates are handled simultaneously by the pipetting module for better protection of cell activity



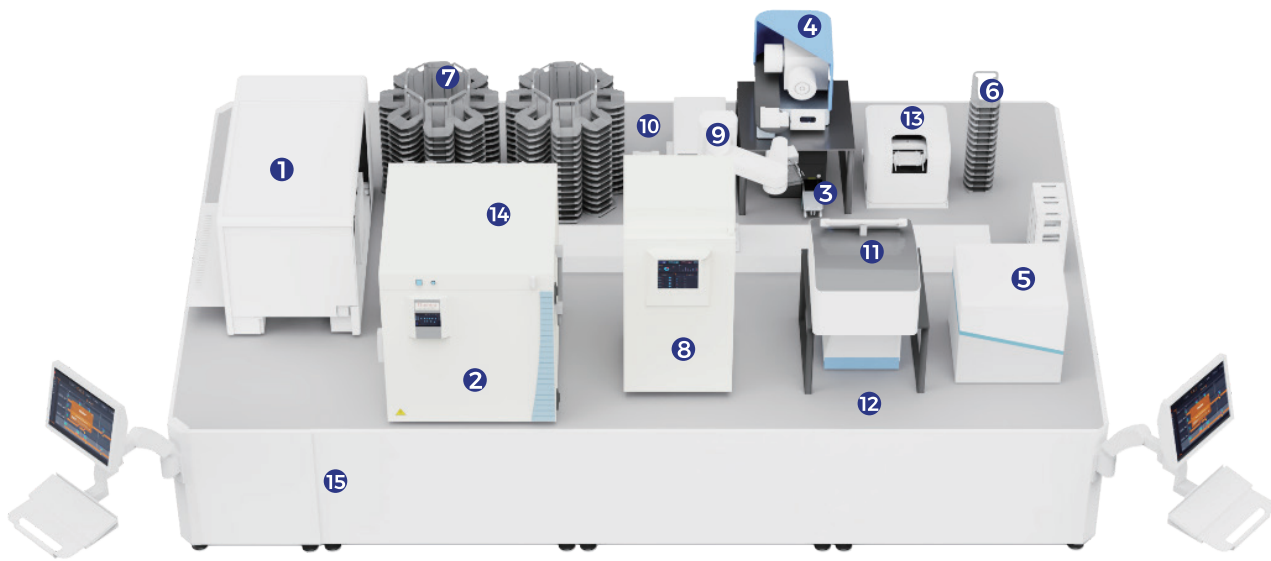
Features self-developed tilt module, ensuring complete liquid aspiration and disposal without dead corners, leaving no residue

Product Parameters

Basic Parameters	Description
Dimensions	2,450 mm(W)*2,450 mm(D)*2,600 mm(H)
Compatible Plate Types	96-/384-well plates
Daily Screening Throughput	Approx. 10,000 to 20,000 compounds (384-well plate)
Environment Control	Positive/Negative pressure laminar flow hood, UV

High Throughput Nanoliter Drug Screening Platform

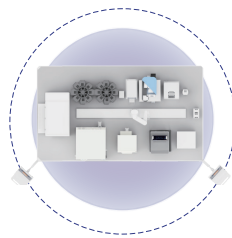
The system automates the whole process from sample pre-processing, Assay system setup, culture, detection to analysis. It supports nanoliter dispensing, and is compatible with 96-/384-/1536-well plates and cryotubes to store compounds in the drug screening process. It can be integrated with MegaRobo LibraX™ Data Intelligence Platform for big data statistics and threshold setting, enabling fast screening of target compounds, which is suitable for medium and high throughput drug screening research in enterprises and research institutes.



- 1 Liquid handling workstation
- 2 Cell incubator
- 3 Film sealer
- 4 Film peeler
- 5 Microplate reader
- 6 Multi-well plate delidder
- 7 Consumable stack
- 8 Automated freezer
- 9 Cryotube decapping instrument
- 10 Cryotube scanner
- 11 Nanoliter liquid dispenser
- 12 Automated liquid dispenser
- 13 Automated centrifuge
- 14 Robotic arm and slide
- 15 Environment control module



Multidimensional data analysis for high-throughput and fast screening of target compounds



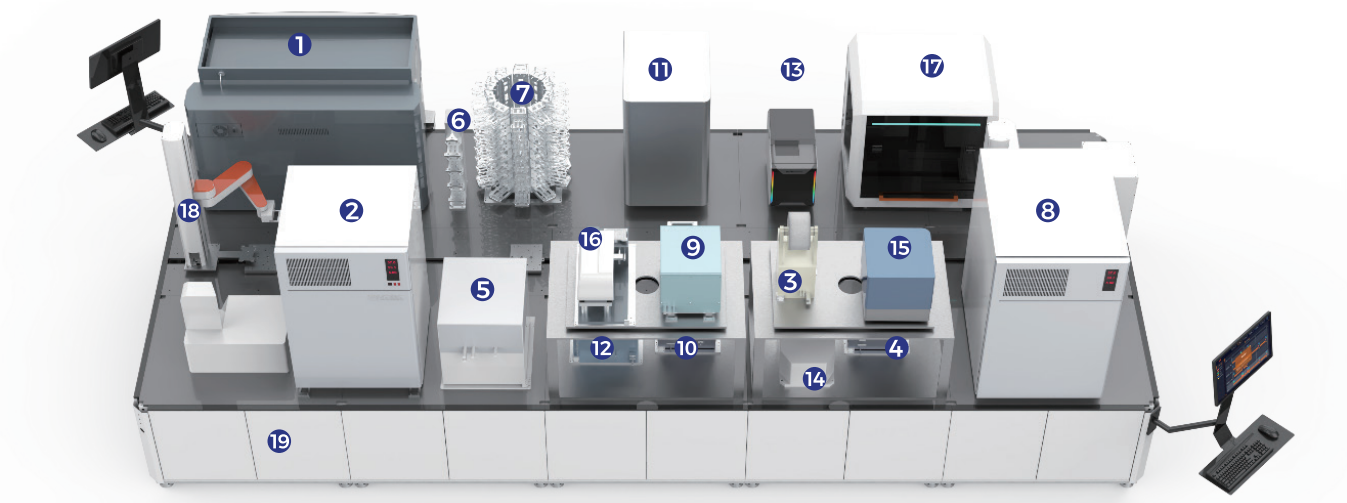
Features nanoliter liquid dispensing to save precious sample volume

Product Parameters

Basic parameters	Description
Dimensions	4,200 mm(W)*2,450 mm(D)*2,600 mm(H)
Compatible Plate Types	96-/384-/1536-well plates, cryotubes
Daily Screening Throughput	Approx. 30,000 to 50,000 compounds (384-well plate)
Environment Control	Positive/Negative pressure laminar flow hood, UV

Multimodal Drug Screening Platform

The system automates cell culture processes such as cell plating, media replacement and drug addition, as well as subsequent signal reading, data analysis for cell detection. It is equipped with a software system that can assist in cell experiment design and intelligent scheduling, and is compatible with various detection modes, such as cell imaging, high-content detection, enzyme labeling, ELISA



- 1

Liquid handling workstation
- 2

Cell incubator
- 3

Film sealer
- 4

Film peeler
- 5

Microplate reader
- 6

Multi-well plate delidder
- 7

Consumable stack
- 8

Automated freezer
- 9

Cryotube decapping instrument
- 10

Cryotube scanner
- 11

Automated acoustic pipetting system
- 12

Automated liquid dispenser
- 13

Cell imaging instrument
- 14

Automated centrifuge
- 15

Automated plate washer
- 16

Print labelling instrument
- 17

Liquid handling workstation
- 18

Robotic arm and slide
- 19

Environment control modul

Self-developed CellVue® High Content Imaging System, equipped with AI-driven recognition algorithms for intelligent image processing

A multi-functional platform that provides AIDD services to meet the needs of complex applications

The data intelligence platform provides big data statistics and threshold settings on drug results, enabling fast screening of target compounds

Product Parameters

Basic Parameters	Description
Dimensions	5,000 mm(W)*2,450 mm(D)*2,600 mm(H)
Compatible Plate Types	96-/384-/1536-well plates, cryotubes
Daily Screening Throughput	Approx. 30,000 to 50,000 compounds (384-well plate)
Environment Control	Positive/Negative pressure laminar flow hood, UV

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Declaration

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