
Innovate the way we see life



Tomocube



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Prologue

Chapter 1. Why Holotomography(HT)

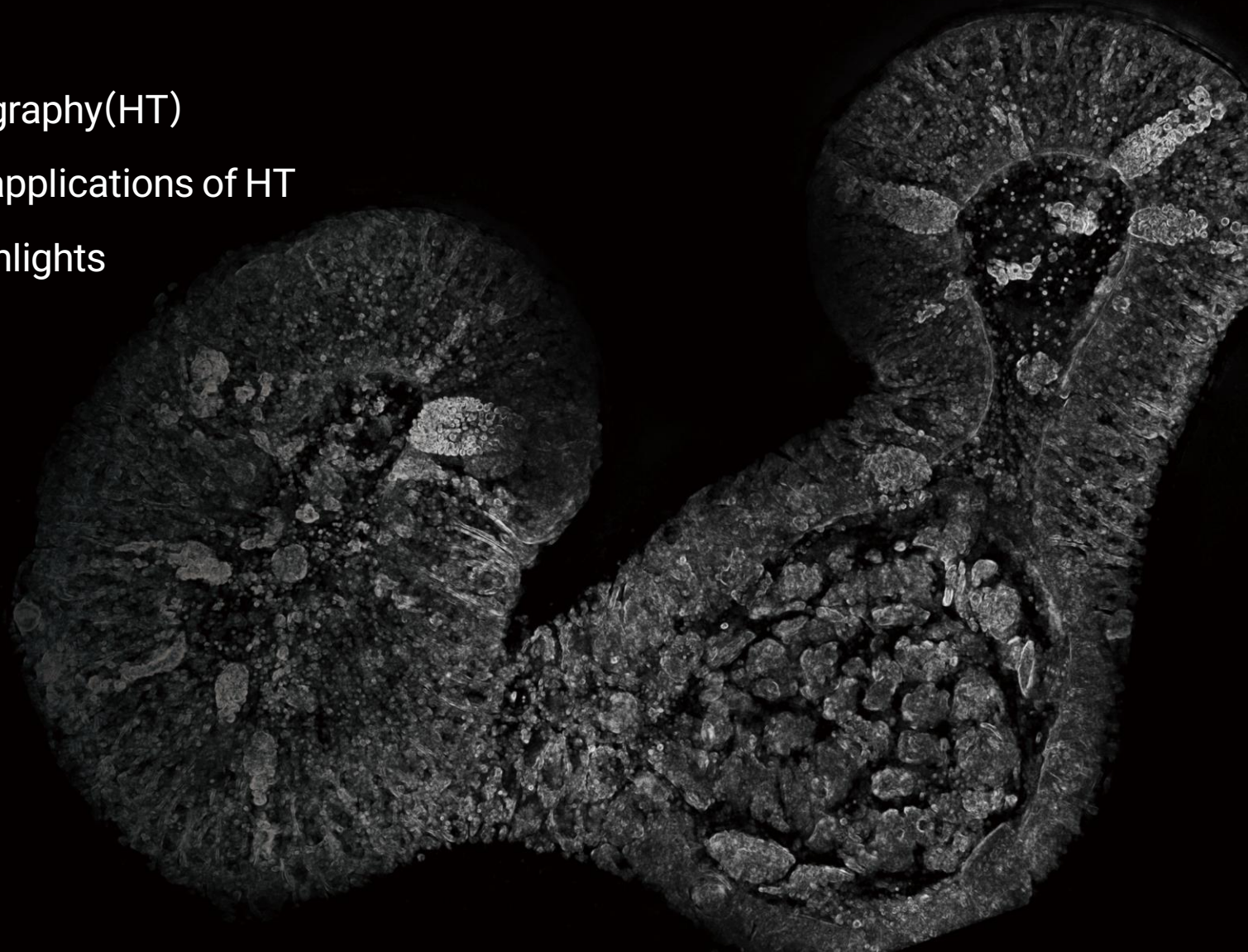
Chapter 2. Expanding the applications of HT

Chapter 3. Investment Highlights

Appendix



Tomocube



Paradigm Shift in Cell Analysis

- Growth drivers: 3D Biology & Regenerative Medicine



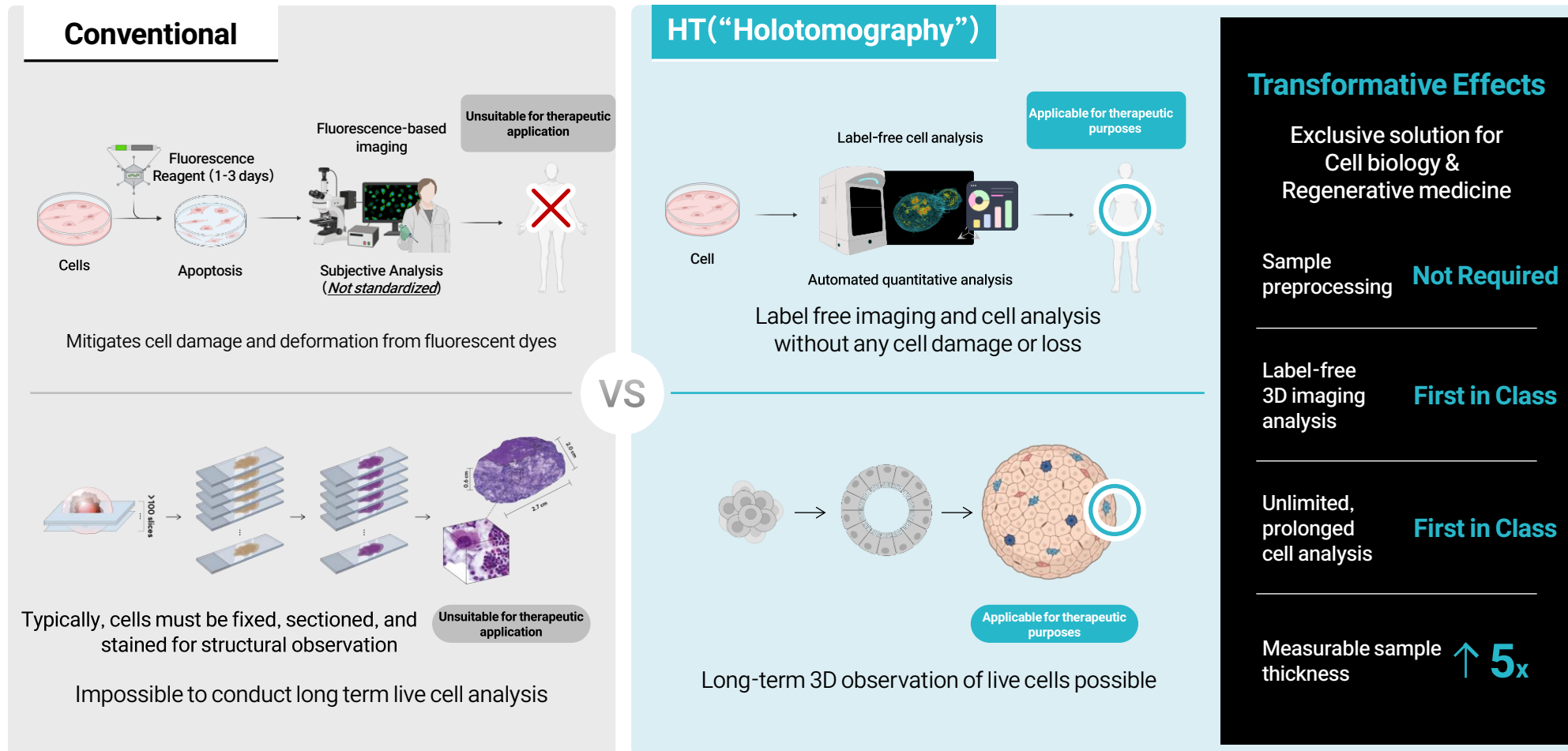
Core: 3D label-free measurement & AI-enabled analysis of living cells, tissues, and organoids



Holotomography: Real-time, high-resolution, label-free 3D analysis of live cells

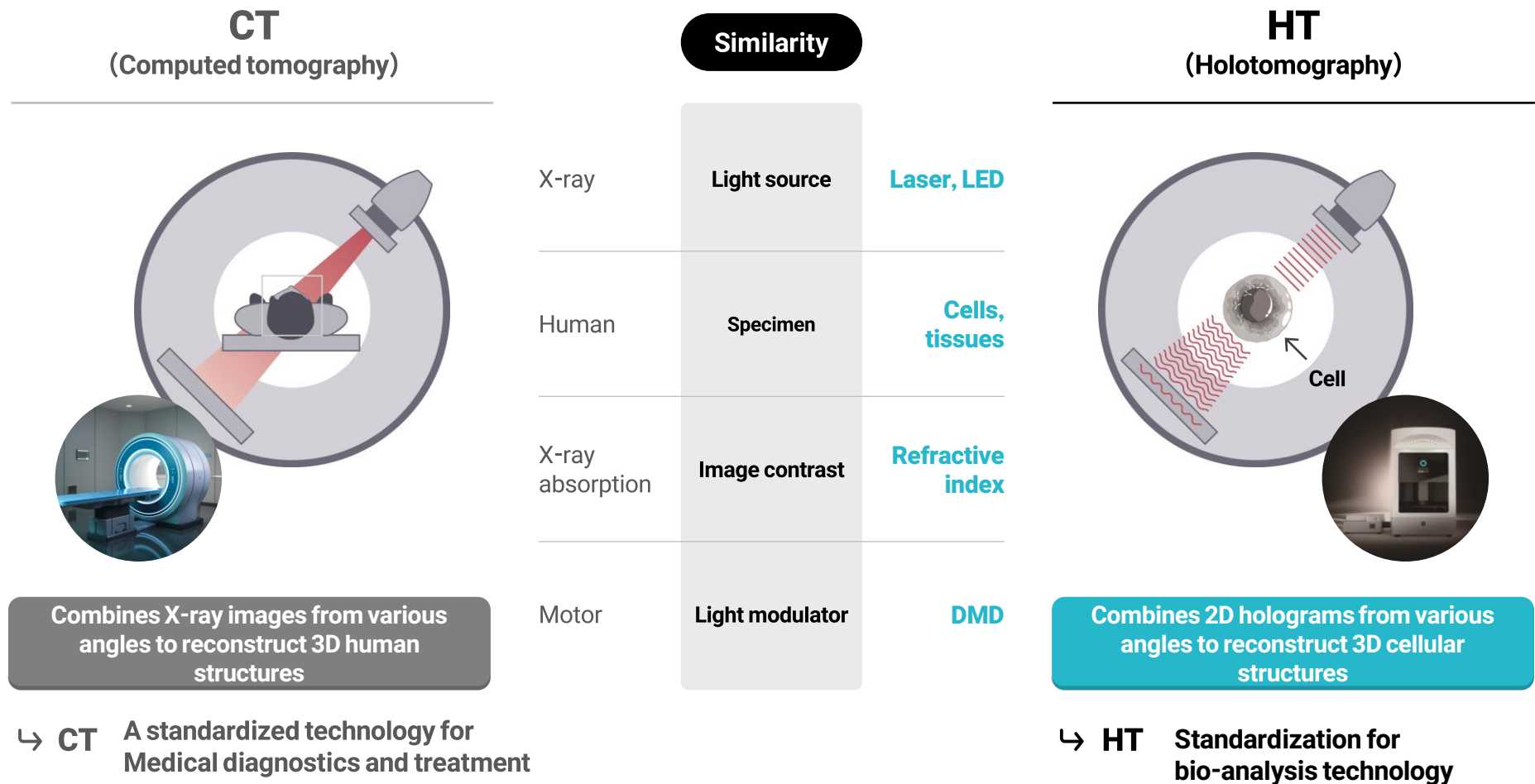
Unmet Needs Addressed by Holotomography

• Fulfilling Unmet Needs in the Advanced Biomedical Sector



Setting new standards in cell analysis through Holotomography

- Just as CT Transformed Diagnosis, HT is Poised to Transform Bioanalysis



Leading Advanced Bio/Medical Industry

- Pioneering Holotomography: From Innovation to Global Commercialization

Paradigm Shift in Bioimaging

The Evolution of Cell Imaging in the Era of Bio-Analysis Transformation

17th
century

Development of
light microscopy

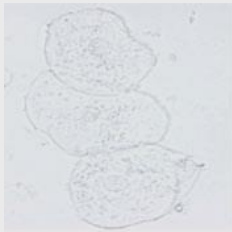
20th
century

Advances in
Cell biology

21st
century

Molecular cell
Biology and diagnostics

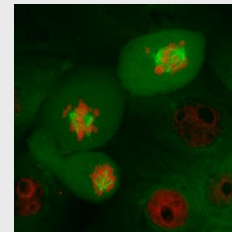
Brightfield
microscopy



Phasecontrast
microscopy



Fluorescence
microscopy



ZEISS



OLYMPUS

Nikon

Leica



ThermoFisher

Sartorius

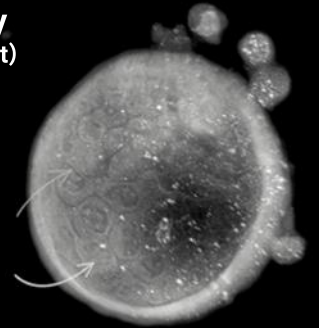
GE Healthcare



3D Biology & Regenerative Medicine

3D Cell Structure Measurement & Analysis

Holotomography
(Korea, 2015 - Present)



“ Major Developer of
Holotomography Technology ”

 Tomocube

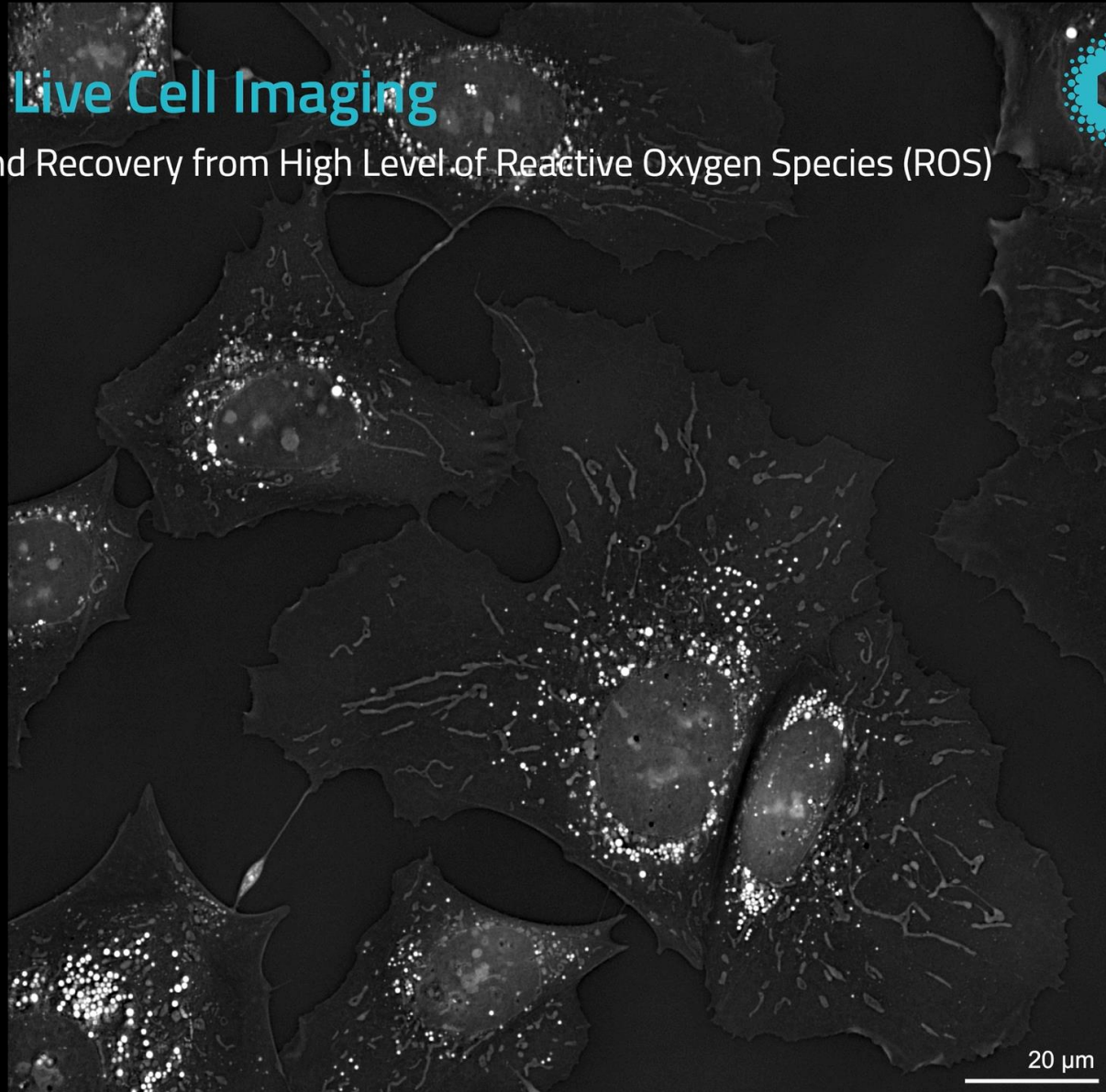


Label-free 3D Live Cell Imaging

Cellular Responses and Recovery from High Level of Reactive Oxygen Species (ROS)



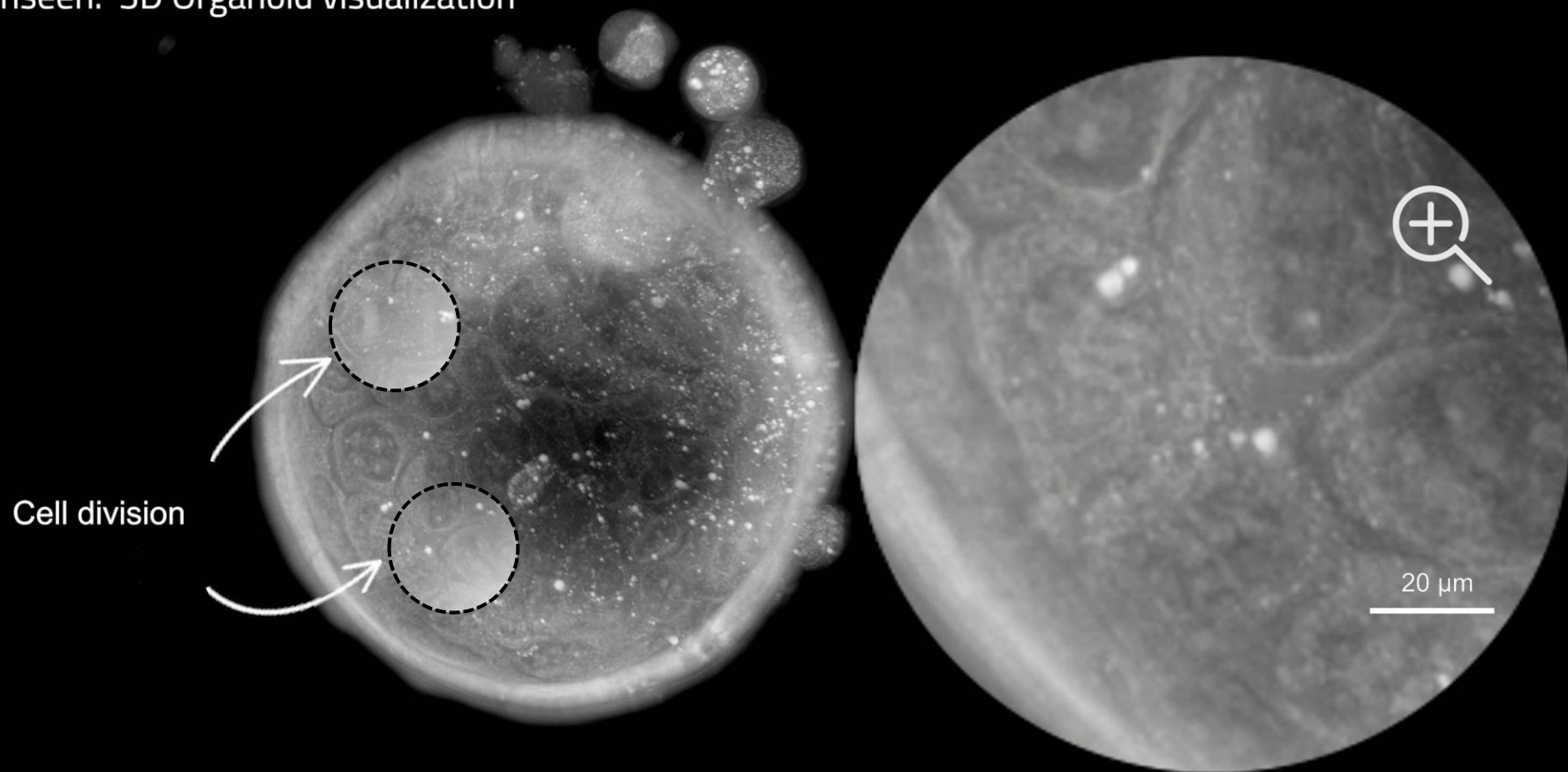
Tomocube



- Cell line: Hep3B
- Microscope: HT-X1
- Observation duration: 4.5 hr
- Time interval: 20 sec
- Chip: ibidi μ -Slide 1 Luer
- Flow rate: 0.23 μ L/min

Label-free 3D live cell imaging

Unveiling the unseen: 3D Organoid visualization



Chapter 1.

Why Holotomography (HT)

01. Key Advantages of Holotomography

02. HT Platform (1) Hardware

(2) Software

(3) AI

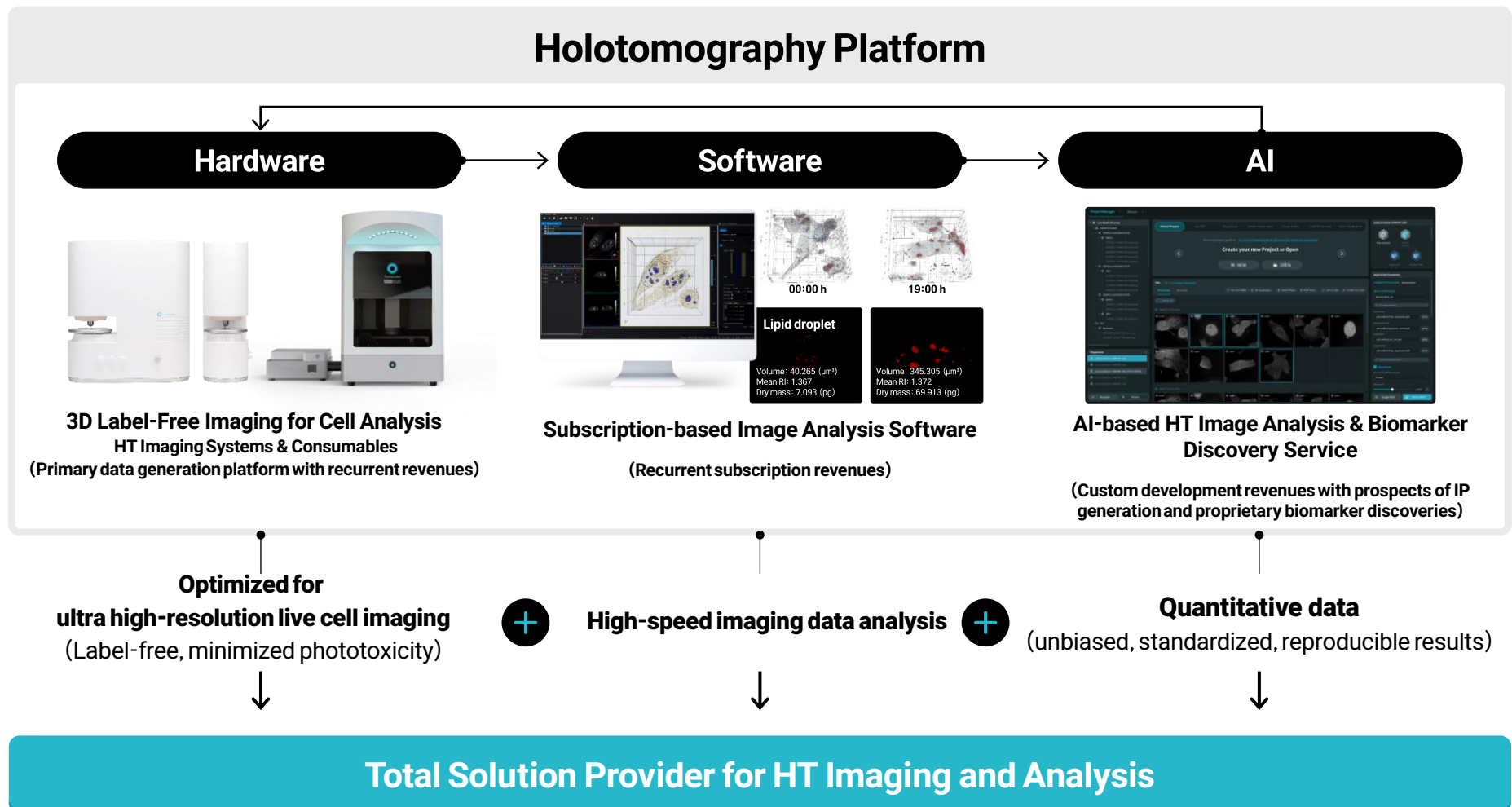
03. Distinct Competitive Advantages (1) Holotomography Comparison

(2) Cell Analysis Technology Comparison

04. Externally Validated Technology

01. Key Advantages of Holotomography

- Establishing a Competitive Business Model Through Proprietary Hardware, Software, and AI solutions

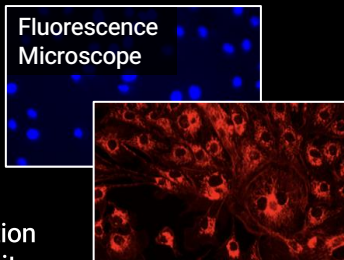


02. HT Platform (1) Hardware

- Establishing a Standard Protocol for 3D Label-Free Imaging

Unmet Needs

Limitations of Labeling



Fluorescent Excitation Induces Phototoxicity, Causing Cellular Damage and Functional Alteration

Limitations of 2D cell analysis

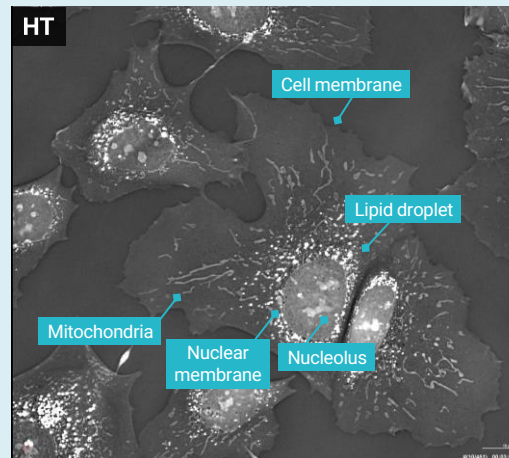


Challenging to Analyze Complex 3D Cellular Structures, Leading to Reduced Accuracy and Reliability



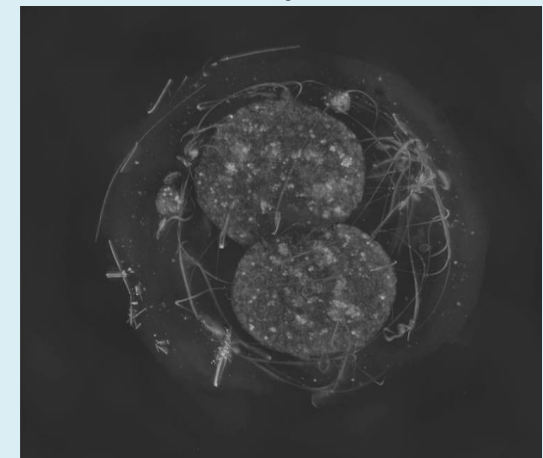
Hardware Competencies

Enables Observation of Cells in Their Native State Without Compromising Viability or Function



Observes intracellular organelles Label-free, based on precise refractive index measurement

Accurate 3D Cellular Analysis of Thick Tissues, Organoids, and Complex Samples



No sectioning for thick tissues (< 150 μm)

Allows comprehensive structural analysis of entire cells

Maximizes cell survival with minimal structural impact

Enables extended cell imaging over time

02. HT Platform (2) Software

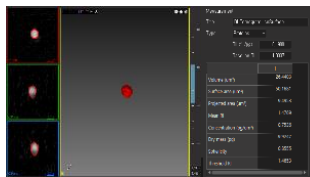
- From Custom Solutions to an Integrated Analysis Platform

Software Competencies

Demand-Based Solution Development

2017

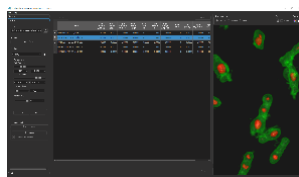
TomoStudio



Visualization of 3D HT data and single-cell analysis

2019

Lipid Analysis

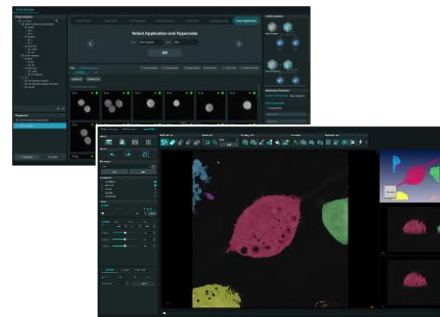


Targeted analysis optimized for specific conditions

“ Expanded application areas through AI model-based software ”

2022

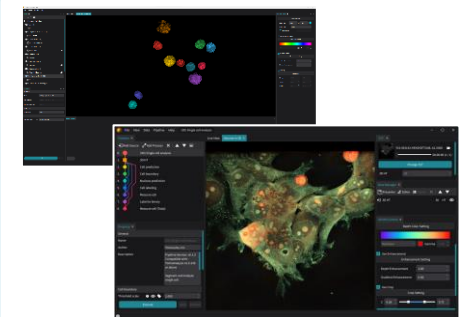
TomoAnalysis 1.0



- AI Model-Based Cell Organelle Analysis
- Rule-based multi cell analysis
- Applying uniform logics to big data

2024

TomoAnalysis 2.0

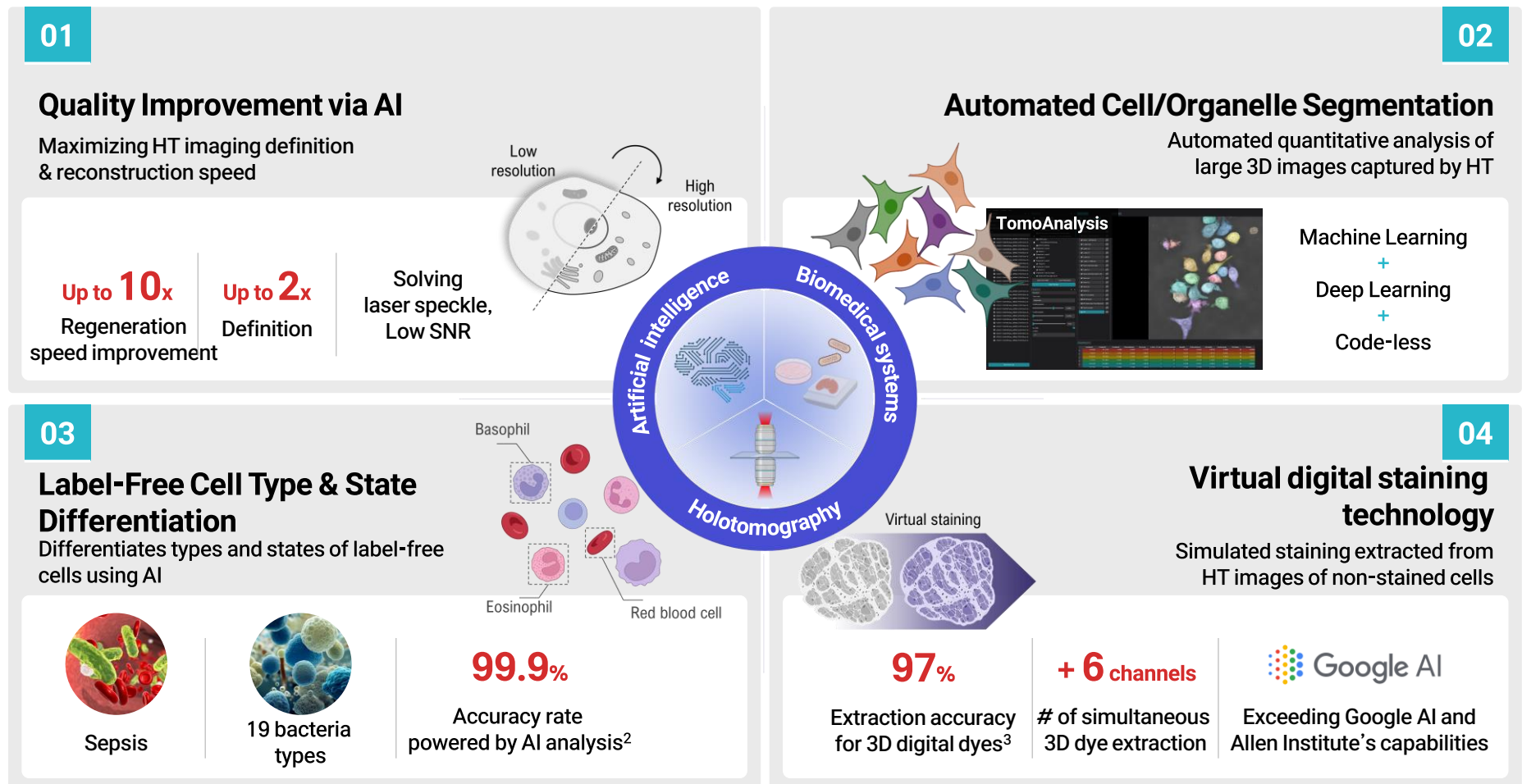


- Real-Time 3D Visualization
- Manageable Analysis Logic System
 - 120 Rule-based modules
 - 7 AI-based modules
- 33 Application-Specific Algorithms

AI-based software for cell and organelle analysis

02. HT Platform (3) AI

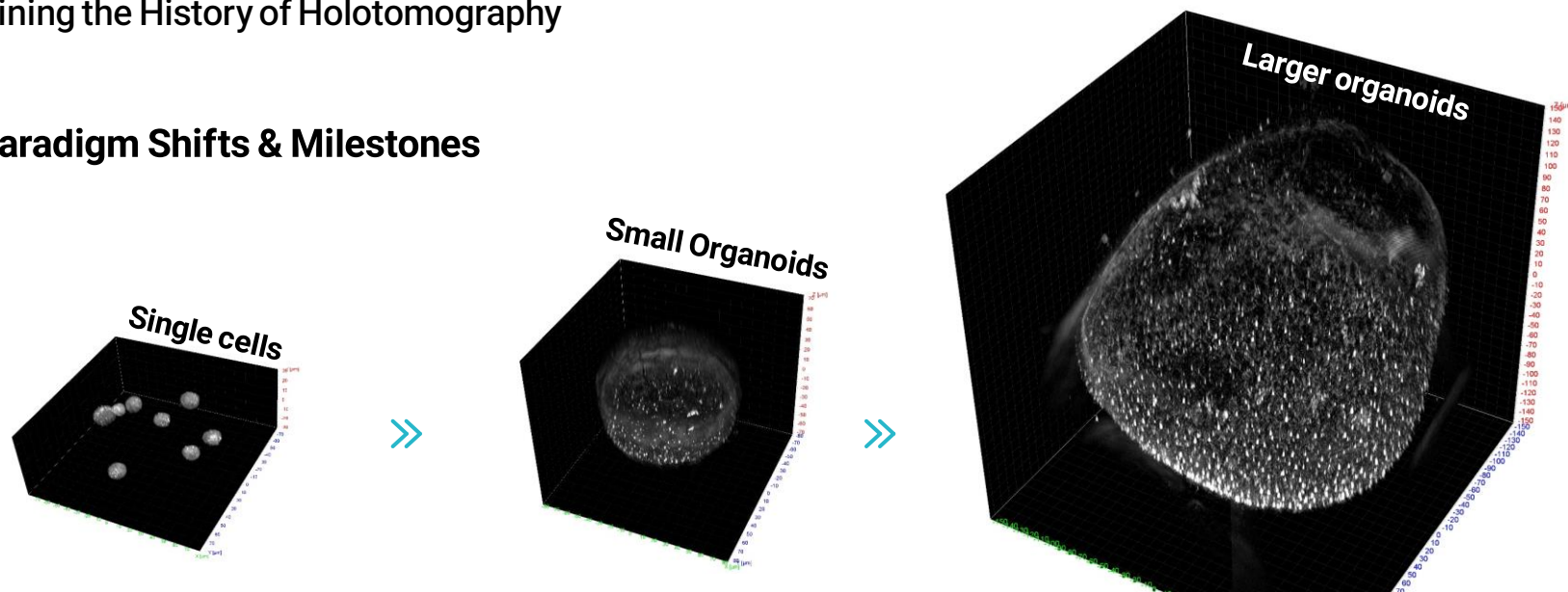
•• World-Leading AI-Powered Analysis Platform for HT Imaging and Biomarker Discovery

Reference 1 : J. Park et al., *Nature Methods* 20, 1645 (2023)Reference 2 : G Kim et al. *Light: Science & Applications* 11, 190 (2022)Reference 3 : Y. Jo et al., *Nature Cell biology* 23, 1329 (2021)

03. Distinct Competitive Advantages: Holotomography Comparison

- Tomocube: Defining the History of Holotomography

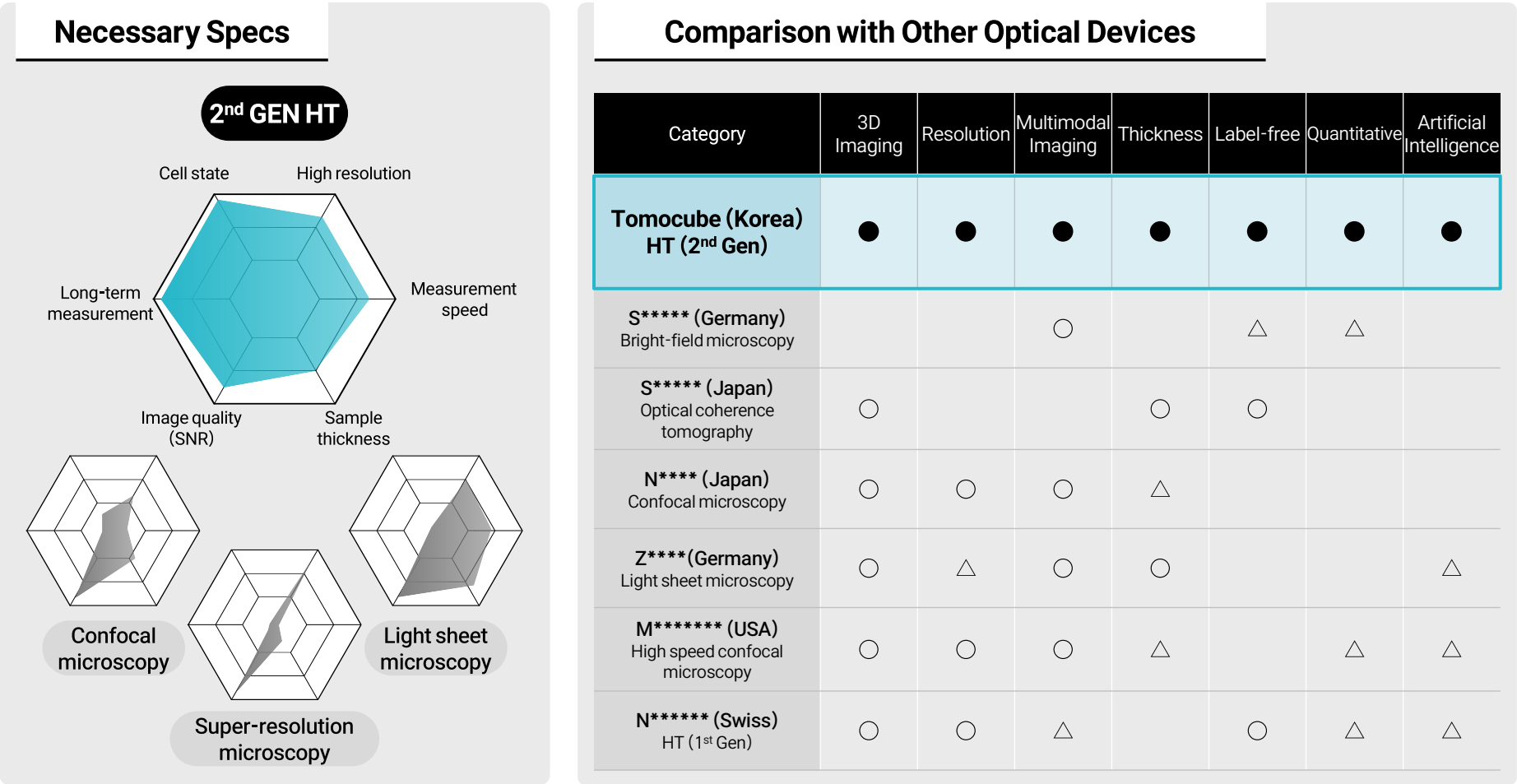
HT Technology Paradigm Shifts & Milestones



	1 st Generation		2 nd Generation	Future
Category	1 st Gen HT (Competitor)	1 st Gen HT (Tomocube)	2 nd Gen HT (Tomocube)	Future HT (Tomocube)
Model	3D Explorer	HT-2H	HT-X1(2H 2022) / HT-X1 Plus (2H 2024)	HT-X1 Max (Planned 2026; currently under client testing)
Pros	High resolution	High resolution, 3D Fluorescence	High resolution& SNR(Signal-to-Noise Ratio) System stability with quantitative measurement	2x + a depth improvement from previous models Able to scan thicker organoids
Cons	Unstable, 3D measurement only for monolayered cell	3D measurement mostly for single cells	Increased capital expenditure	-
Maximum resolution	250 nm	110 nm	150 nm	124 nm
Depth	30 μm	40 μm	150 μm	Max 500 μm
Light source	Laser	Laser	LED (single wavelength)	LED (Multiple wavelengths)

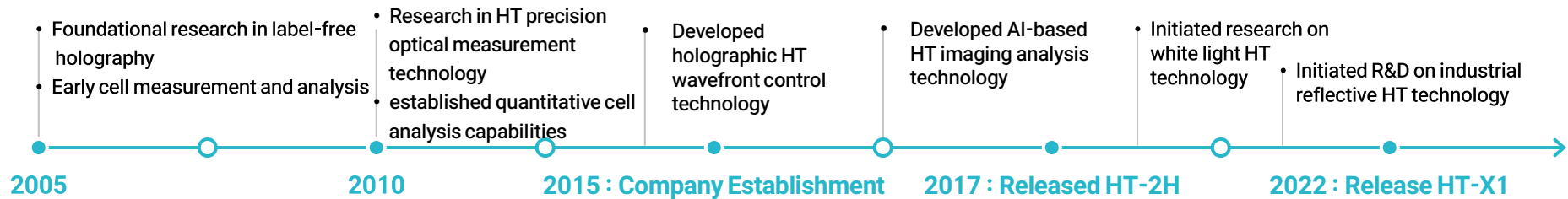
03. Distinct Competitive Advantages: Cell Analysis Technology Comparison

•• Setting the Benchmark in Cell Analysis: Tomocube vs. Competitors



04. Externally Validated Technology with robust IP protection

81 Granted and Pending Patents; Domestic & International Recognition



Patents related to core tech

R&D History **18 years**

Publications **63**

R&D Costs **KRW 19.8 bn.**

domestic patents pending **14**

domestic patents granted **25**

international patents pending **25**

international patents granted **22**

Total patents 86

Awards and Recognitions



IR52 Jang Young-shil Award

Nov. '17 / Min. of Science and ICT



Microscopy Innovation Award

2019, 2025 / Microscopy Society of America



Best Life Science Product Finalist

2023 / SelectScience

- Top 10 Mechanical Technologies(2016)
- PRISM Awards Finalist (2018)
- Awarded by the Min. of Science and ICT, South Korea (2021)
- Awarded by the Min. of SMEs and Startups, South Korea (2021)
- Awarded by "Korea Innovative Startup" (2022)

Chapter 2.

Expanding the applications of HT

01. Tomocube's Target Market

02. Opportunity # 1 Organoids

Opportunity # 2 In Vitro Fertilization

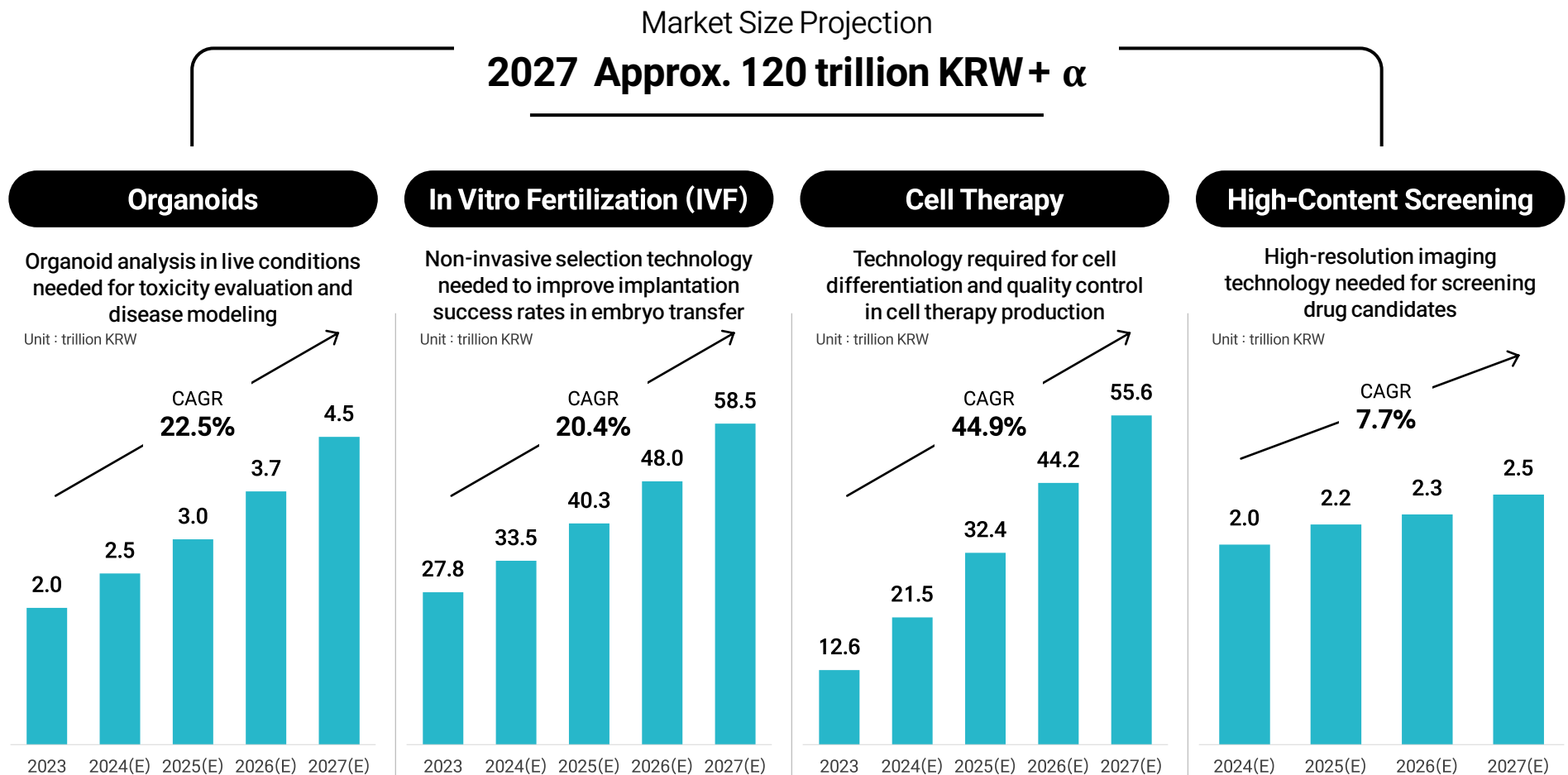
Opportunity # 3 Cell Therapies

Opportunity # 4 Drug Development

Opportunity # 5 Non-Bio Industrial Applications

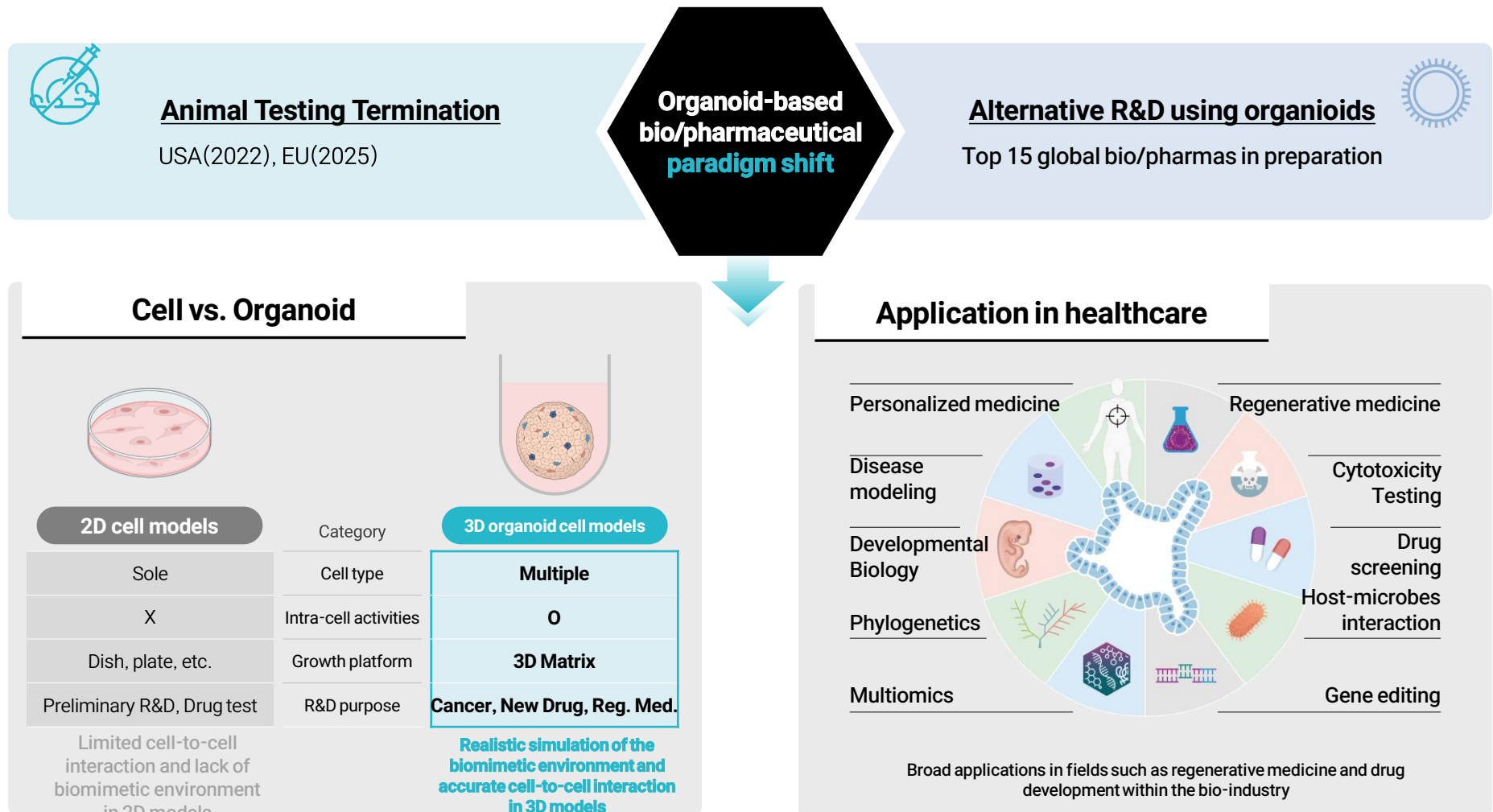
01. Tomocube's Target Market

• 3D Biology & Regenerative Medicine Market Growth



02. Expanding Applications of HT(1): Organoids*

•• Organoids as a new model in Advanced Bioindustry



* Organoid: tiny, self-organized three-dimensional tissue cultures that are derived from stem cells

02. Expanding Applications of HT(1): Organoids

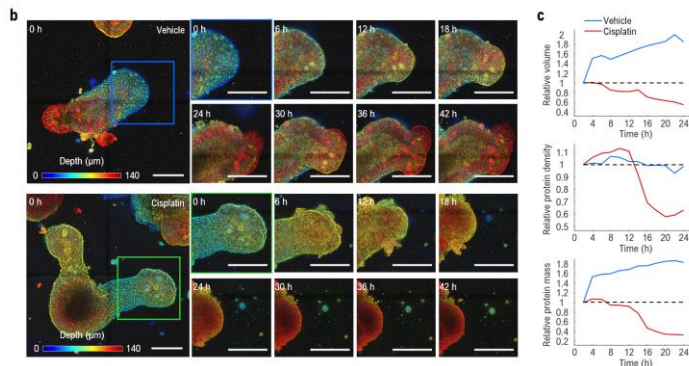
• Standardization of Organoid Analysis Using HT

Collaboration with Global Top Pharmas

Phenotypic Analysis of Organoid Cells Using AI-powered Holotomography

→ **Signed a Joint Development Agreement with a Global Top-tier Pharmaceutical Company('25.01)**

Establishing a Standard Protocol for Organoid Analysis Using 3D Label-free Imaging and AI



Reference: M. J. Lee et al., Experimental & Molecular Medicine (2024)

Collaborating w/ US-KOR Gov't Agencies

Selected for bio material developments

→ **3D organoids imaging device for new drug safety verification**

Leading organoids R&D and QA/QC standardization

Korea



USA



Joint R&D with NIH and its counterparts in Korea

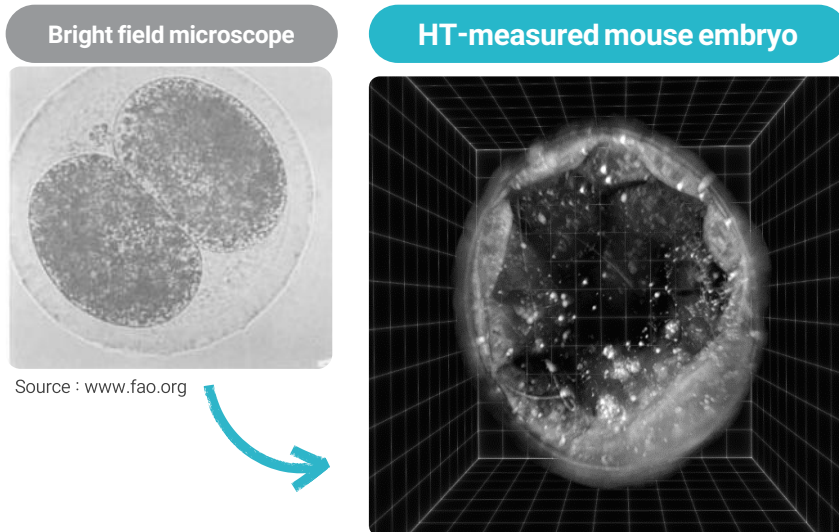
Leading Standardization Efforts with Global Enterprises and Government Agencies

02. Expanding Applications of HT(2): IVF

- 3D Label-Free HT Imaging and AI for Selecting High-Implantation Embryos

Conventional Unmet Needs

- Label-free imaging is essential for embryo selection processes
- Prohibited to dye or edit genes during embryo selection process
- Current BF microscopy: intra- inter-clinician variability



**Unique Technology for Label-Free Selection
→ 3D Label-free Holotomography**

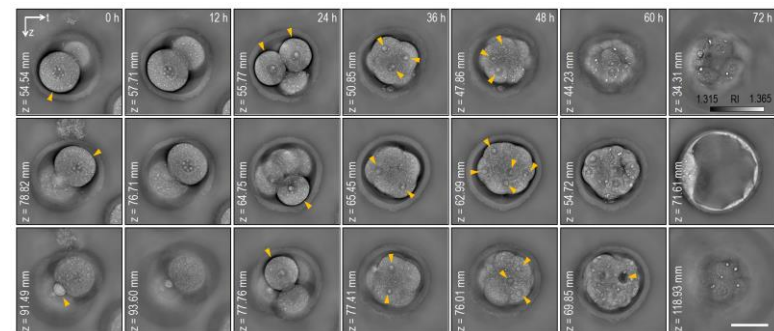
Synergies from strategic partnerships

Ovum selection using HT and Virtual Biomarkers

Big hospitals & institutions



Phototoxicity test for IRB approval using HT-X1 on human fetus studies

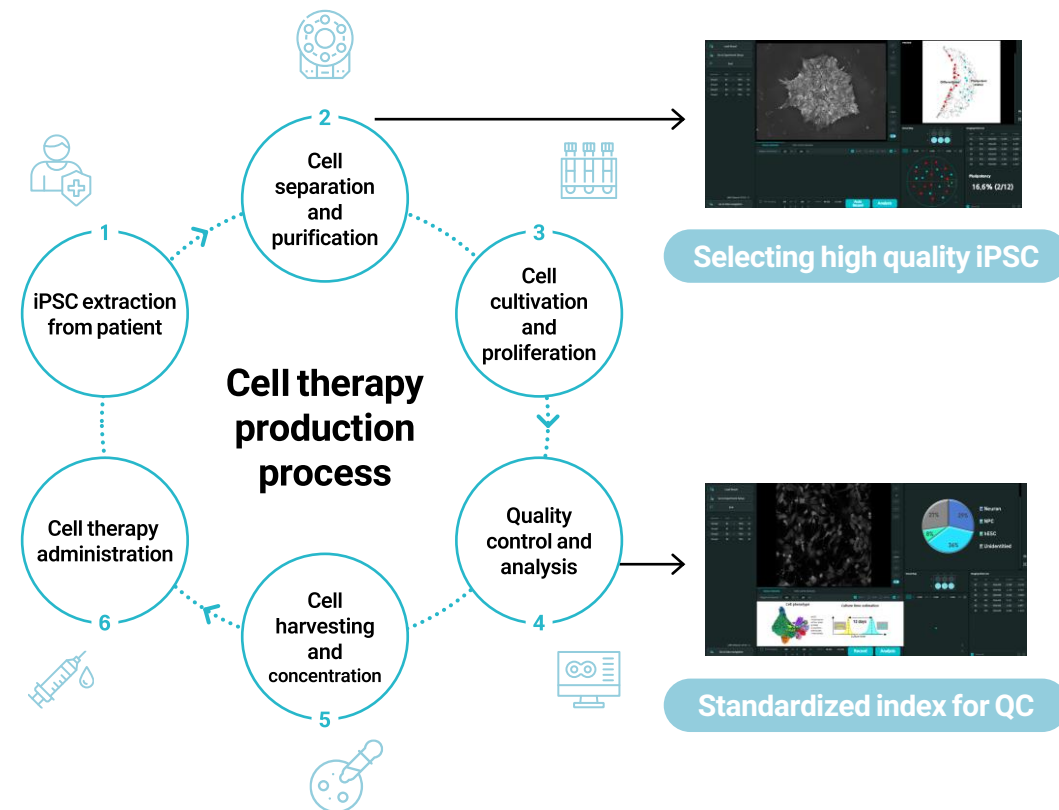


- 3D high-res. imaging from G1 phase to blastocyst (72 hours) confirmed
- AI-based embryo selection – 95% Accuracy (under review)

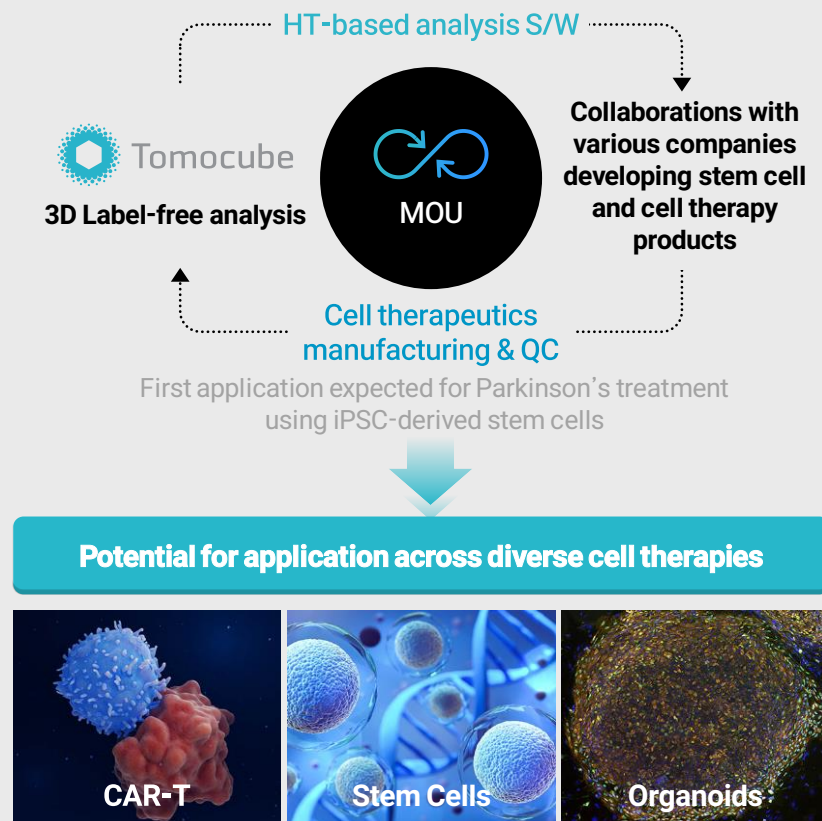
02. Expanding Applications of HT(3): Cell Therapy

- **Transformative Solution for Quality Control in Cell Therapy Manufacturing**

HT powered analysis S/W allowing Improvements in cell therapeutics manufacturing

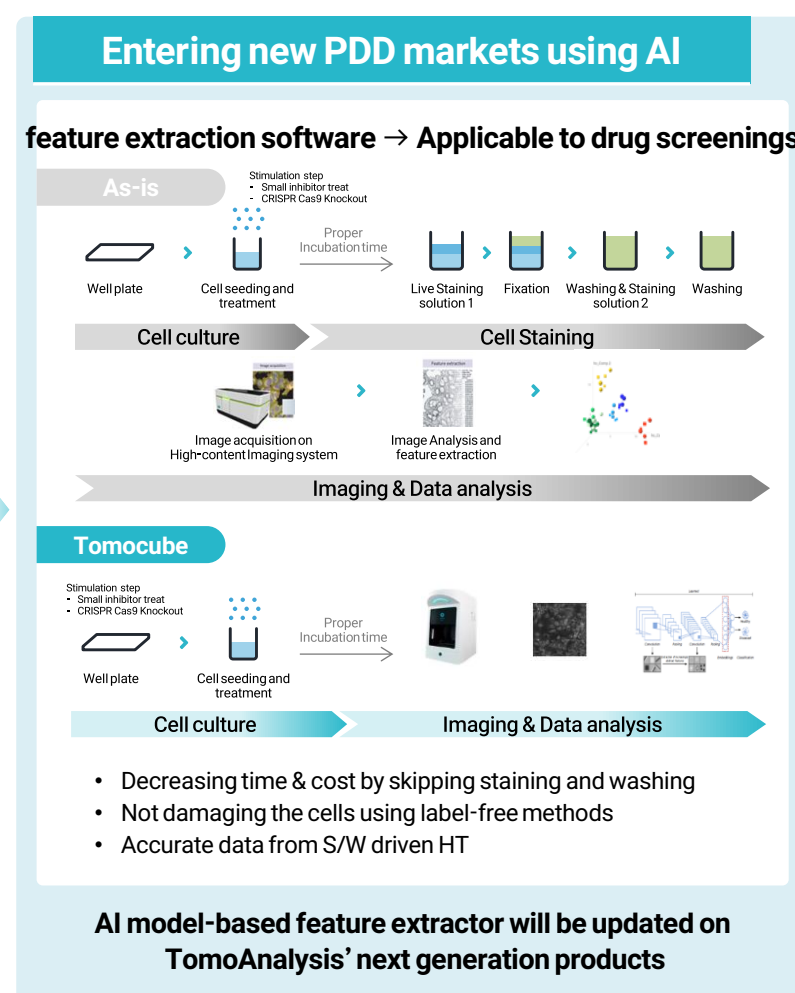
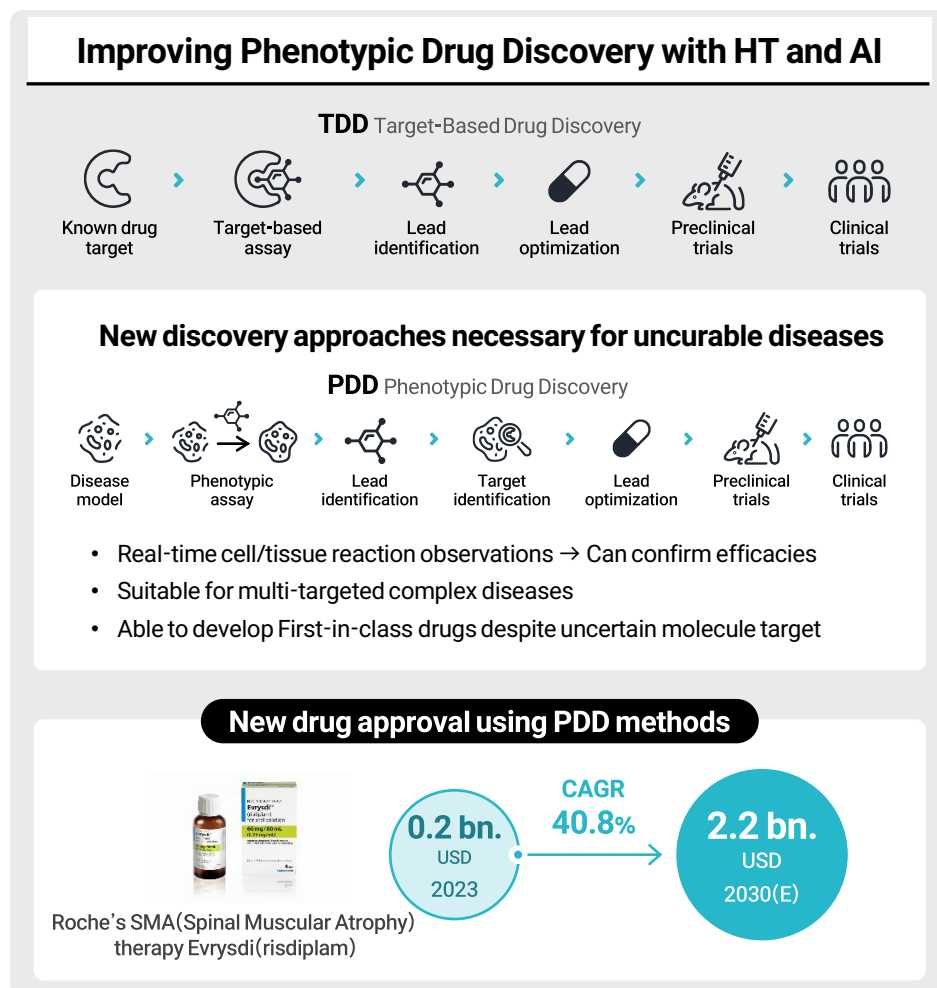


Non-invasive QC Process for Cell Therapy



02. Expanding Applications of HT(4): Drug Development

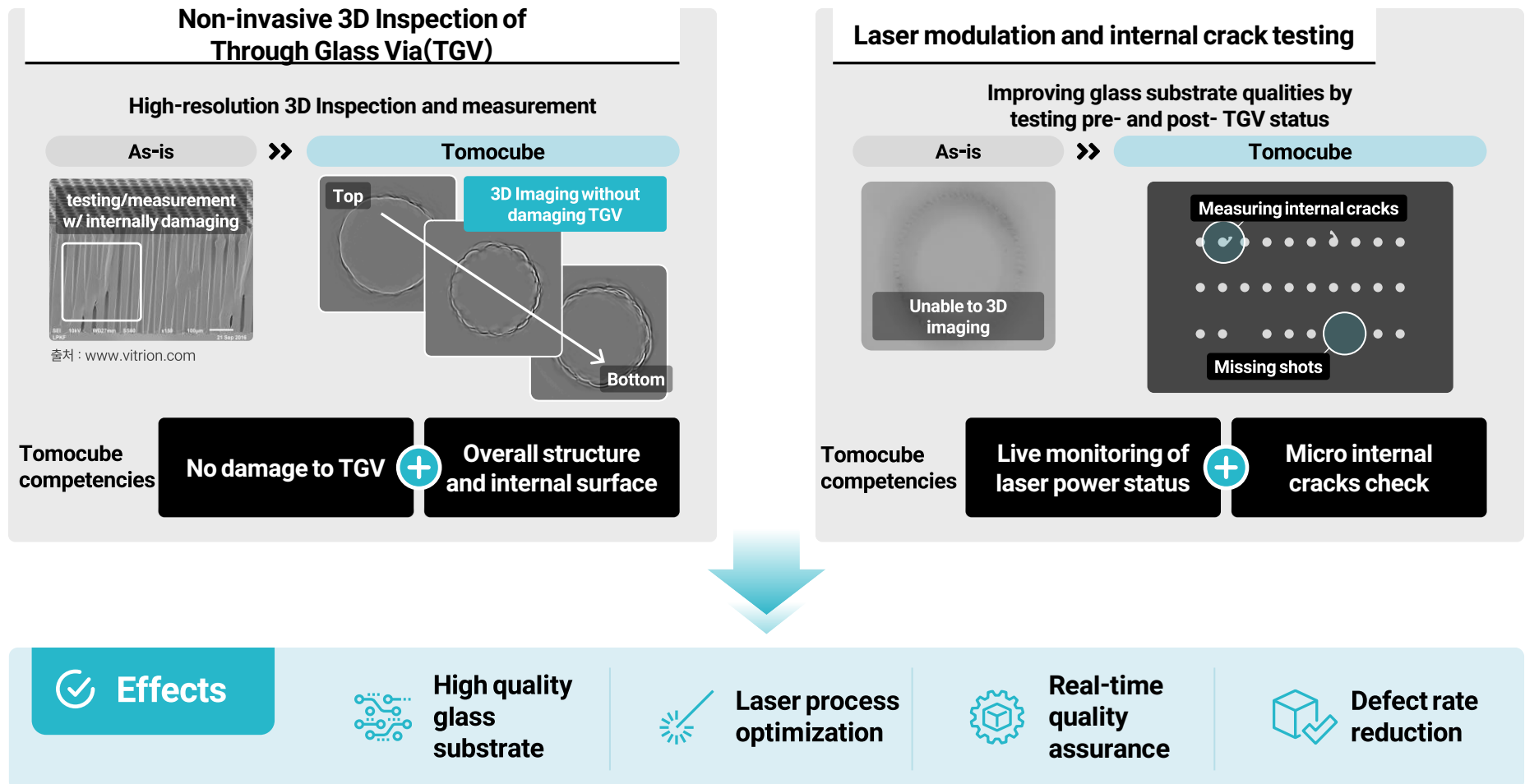
• Application of HT in Phenotypic Drug Discovery (PDD)



PDD(Phenotypic Drug Discovery): uses empirical, target-agnostic lead generation to identify pharmacologically active molecules and novel therapeutics which work through unprecedented drug mechanisms.
 TDD(Target-Based Drug Discovery): focused on a drug target, a gene product that provides a starting point for invention of a therapeutic which modulates its expression, function, or activity

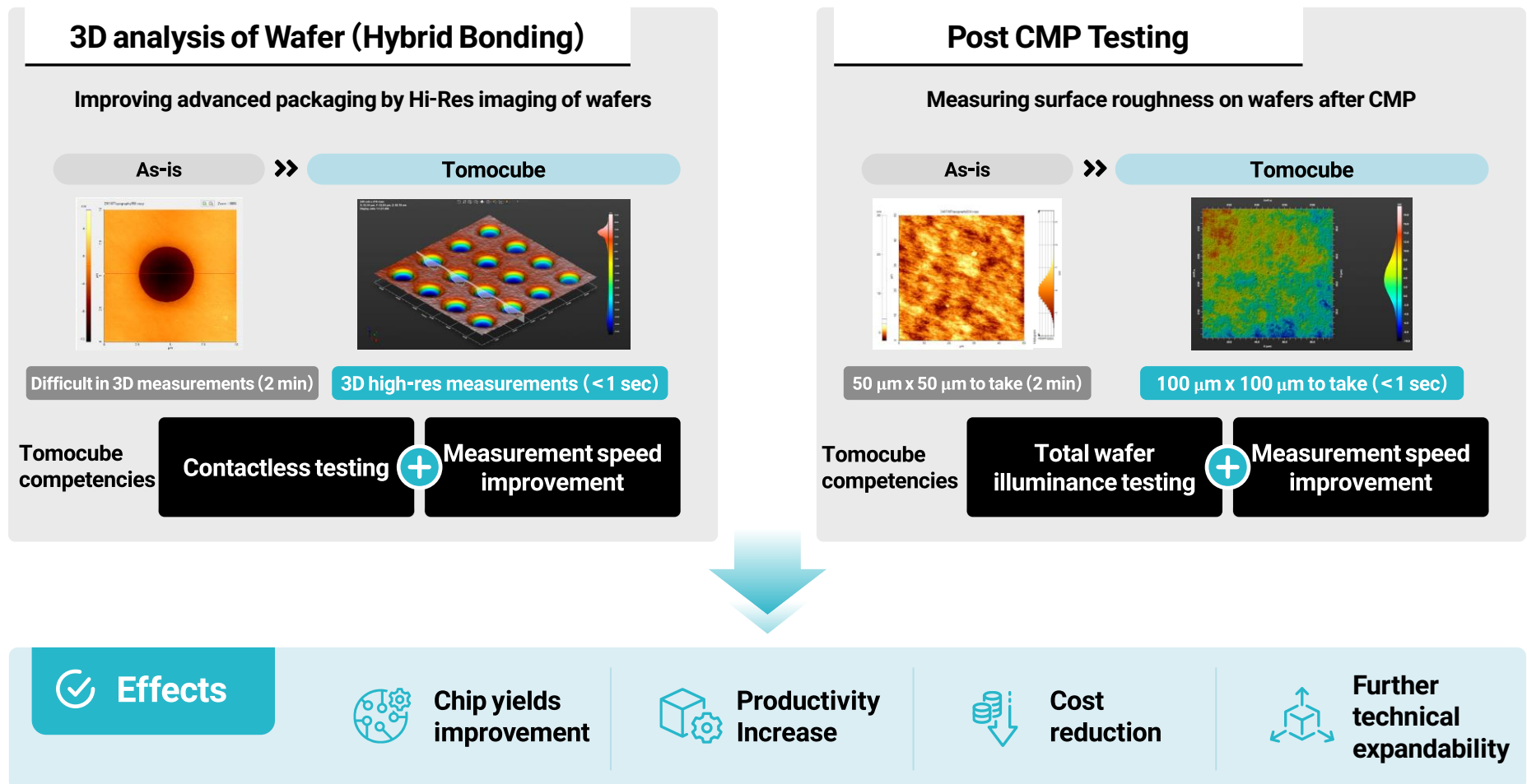
02. Expanding Applications of HT(5): Non-Bio Industrial Use

• Non-Destructive Testing: Key Challenges in Glass Substrate and TGV Manufacturing



02. Expanding Applications of HT(5): Non-Bio Industrial Use

- High-Throughput Metrology: Key Challenges in Hybrid Bonding and CMP Process Control



02. Expanding Applications of HT(5): Non-Bio Industrial Use

- Continuous R&D enabling the expansions beyond semiconductor and display sectors

New product launching



July '24 HT-R1 (Alpha) rev.3 dev. complete



Q3 '24 Aberration correction algorithm appl.



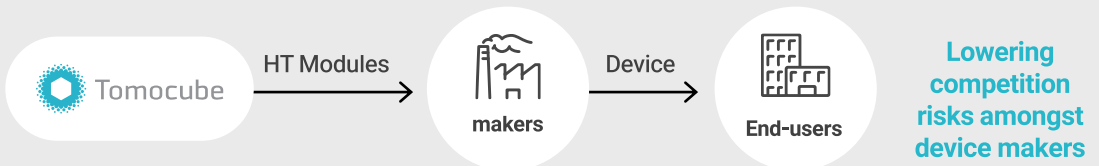
2025 Products for Hybrid Bonding testing



2026 HT-R1 launching

3D measurement modules & device

Early Providing modules to machinery/device makers



Key Industrial Applications

OLED/microLED	3D structural measurement and inspection of ultra-fine display components
TGV	3D structural analysis and crack detection of TGVs in glass substrates
Wafer	Hybrid bonding inspection
AR/VR	3D structural analysis of Holographic Optical Elements

(HT-R1 module shipments to partner companies and clients to begin in 1H 2025)

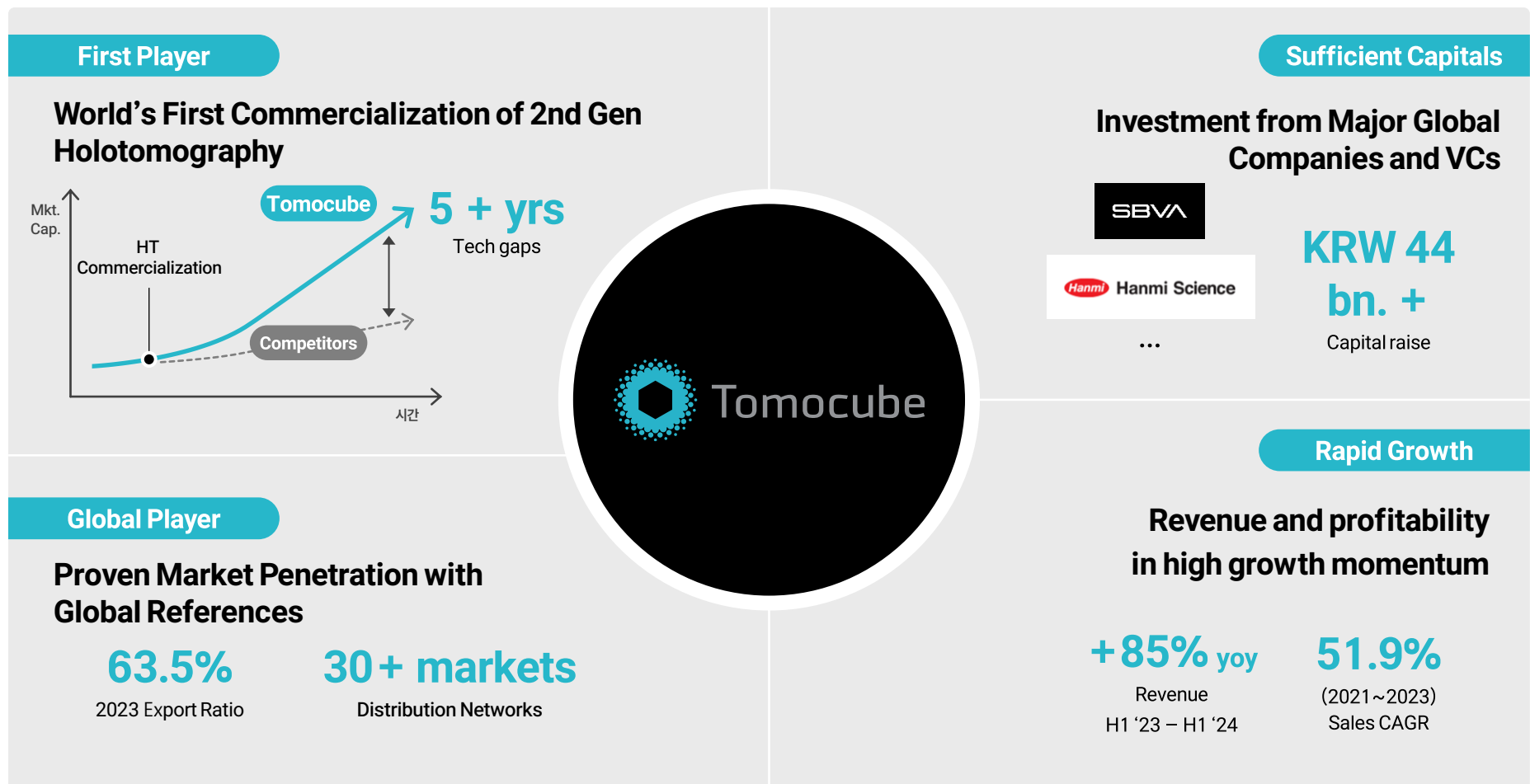
Chapter 3.

Investment Highlights

- 01. Tomocube's Key Success Factors
- 02. Proven Technology Excellence
- 03. Proven Commercial Viability
- 04. Global Expansion Strategy
- 05. Leading Localization in Bio Equipment Manufacturing
- 06. 2Q25 Financial Highlights

01. Tomocube's Success Factors

- Advanced Deep Tech Innovator in Bio Industry

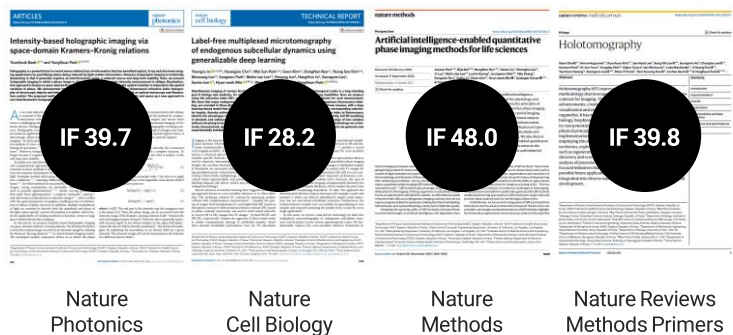


02. Proven Technological Excellence

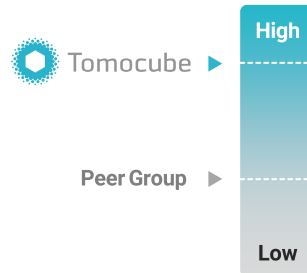
• Holotomography Recognition in Global Market

Tomocube is leading global technology developments

Holotomography featured in top publications by industry

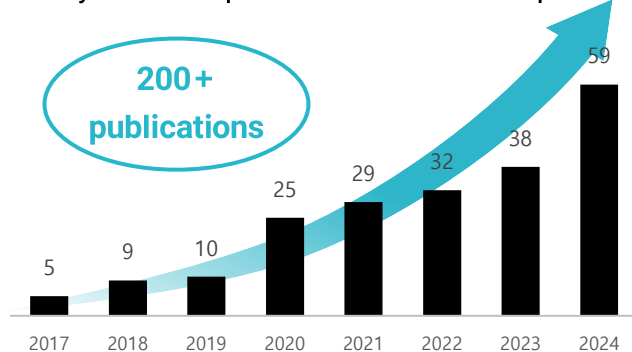


Competitive Impact Factor (IF)



Cumulated customer references to HT's market position

Steady increase in publications w/ Tomocube products



Main Research Areas



Driving new customer acquisition opportunities

Major International Collaborations and Conferences

Bioimaging, Organoids, Major Institutions (MIT, Harvard, Mayo Clinic, University of Tokyo, Tsinghua University)



Continuous exposure as the new bio/healthcare technology

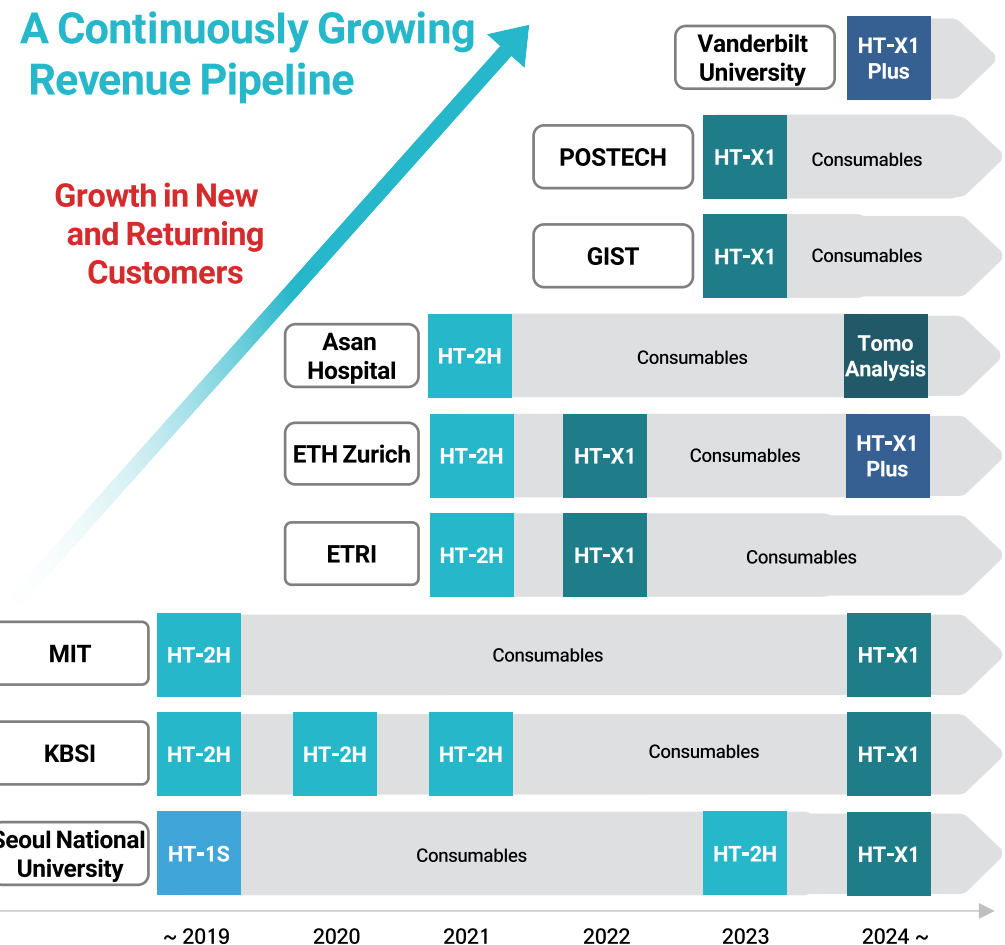
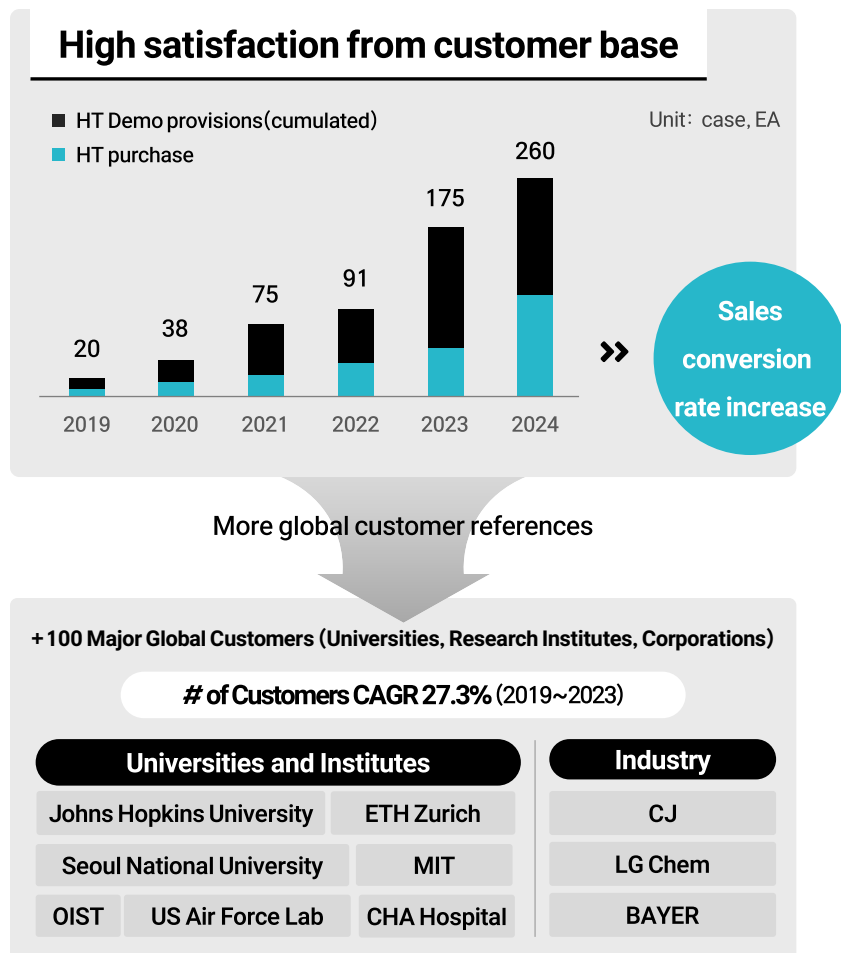


High Interest from Global Biopharma & Research Institutions

* : Impact Factor - a measure of the frequency with which the average article in a journal has been cited in a particular year. It is used to measure the importance or rank of a journal by calculating the times its articles are cited.

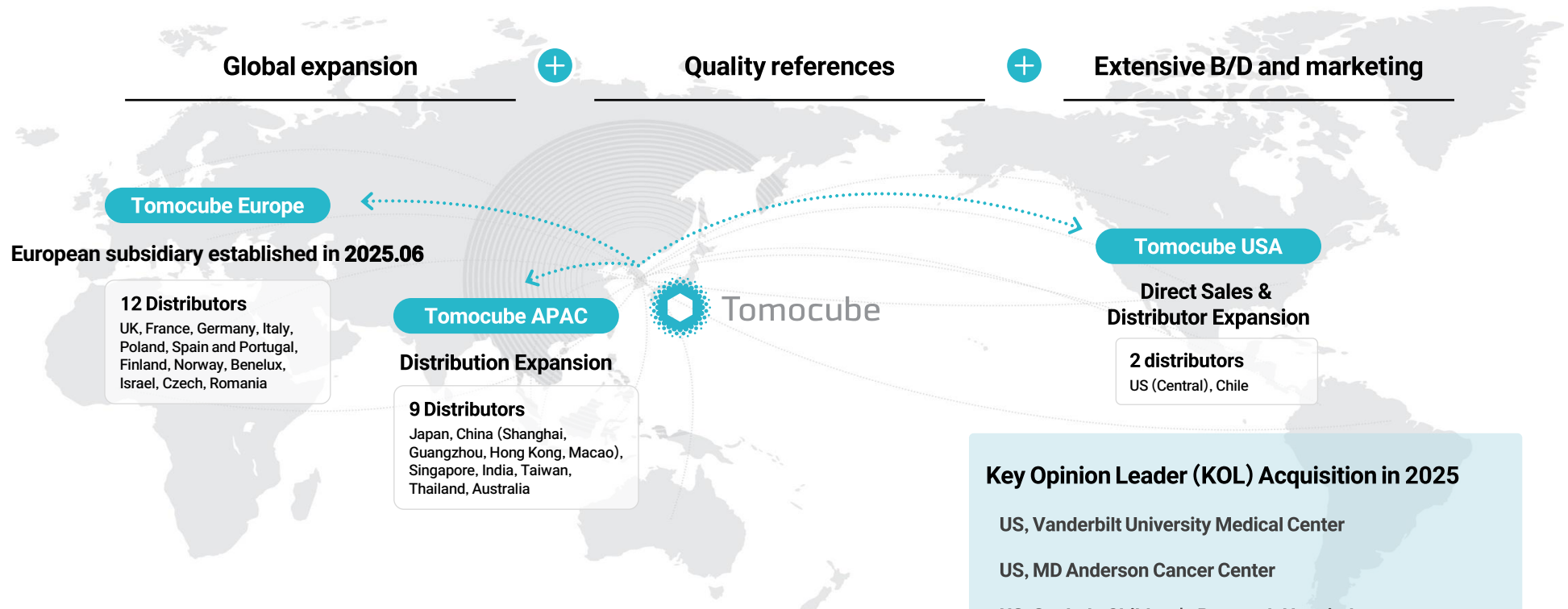
03. Proven Commercial Viability

- HT Expected to Show Explosive Growth as Best-in-Class Technology



04. Global Expansion Strategy

- Expansion of Direct Sales & Distribution Networks Globally



Global Marketing and Business Development

- Established Centers of Excellence
- Conference exhibition
- On-site demos
- Collaboration with distributors
- Social media / online PR



Key Opinion Leader (KOL) Acquisition in 2025

US, Vanderbilt University Medical Center
US, MD Anderson Cancer Center
US, St. Jude Children's Research Hospital
US, Wake Forest Institute of Regenerative Medicine
Switzerland, ETH Zurich (Returning Customers)

Acquisition of Global KOL Customers →
Enhanced Technology and Product Promotion in
Academia and Industry

05. Leading Localization in Bio Equipment Manufacturing

- Direct Beneficiary of Government's Bio Equipment Localization Policy

KR Government's subsidy on domestic device R&D 5% or less for cell analysis equipment and other device dev.



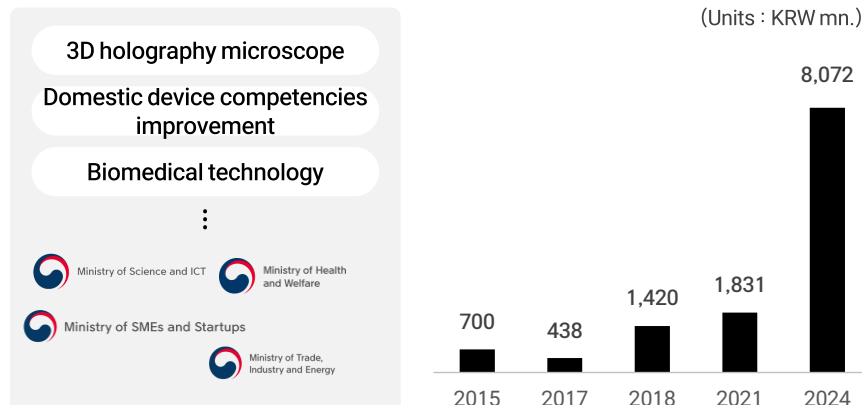
Ministry of Science and ICT

"20% or more to be domestically manufactured by 2027"

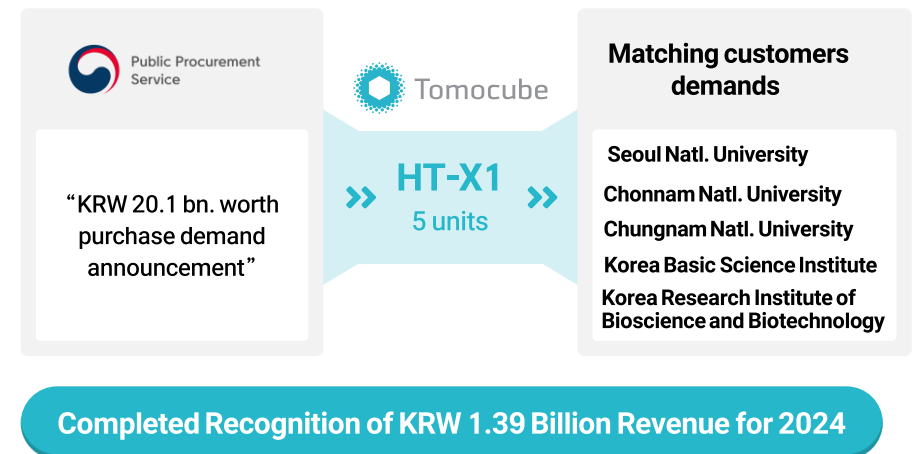
World-Class HT Technology

Tomocube's cumulative public funding history

Over KRW 12.5 bn. public R&D and subsidies since 2015



Selected for PPS's innovative device purchase



06. 2Q25 Financial Highlights

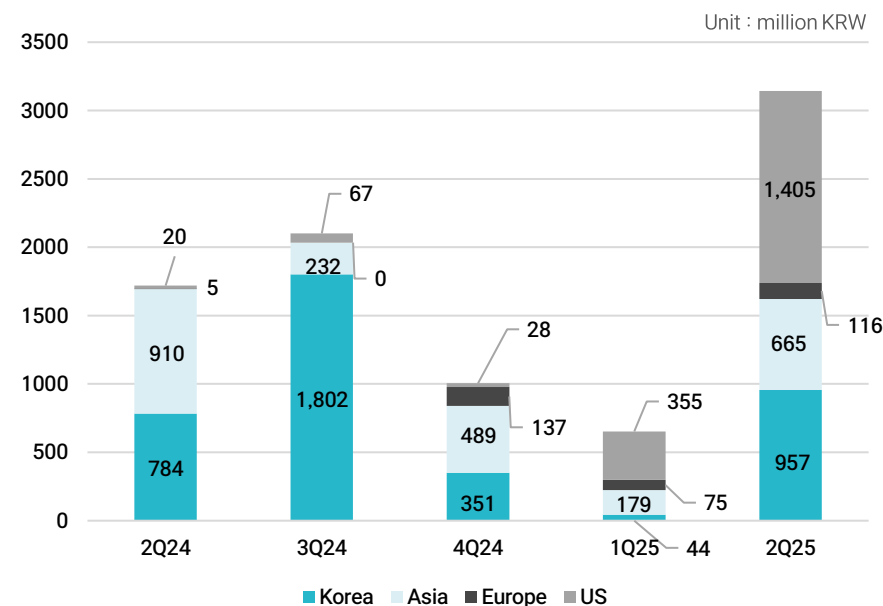
Summary Income Statement

- 2Q Revenue Recorded at KRW 3.14 Billion (YoY 82.8%, QoQ 381.3%): Driven by normalization of operations following organizational restructuring and sales contribution from the launch of HT-X1 Plus as well as non-bio products.
- 2Q Gross Profit Margin (GPM) 68.3% (YoY + 11.5%p) : Reflecting improved profitability from economies of scale and a higher proportion of high-margin products.
- Operating Loss KRW 1.13 billion : Narrowed loss due to higher sales.
- 2Q Export Ratio 69.3% : Increase in U.S. sales contribution, supported by the opening of direct sales operations at the U.S. subsidiary.

Unit : million KRW

	2Q 25	2Q 24	YoY (%)	1Q 25	QoQ (%)
Sales	3,143	1,719	82.8	653	381.3
Cost of Goods Sold	997	743	34.2	328	204.4
Gross Profit	2,145	976	119.8	325	560.0
GPM (%)	68.3	56.8		49.8	
SG&A	3,272	2,924	8.2	3,337	-2.0
Operating Profit	-1,126	-1,948	-42.2	-3,012	-62.6
Net Profit (Loss)	-1,130	-1,837	-38.5	-2,786	-59.4

Notes: Based on K-IFRS (consolidated)



06. 2Q25 Financial Highlights

•• Financial Statements

Statement of Financial Position

Unit : million KRW

Category	2022	2023	2024	1H25
Current Assets	22,126	15,952	40,062	35,515
Non-Current Assets	2,930	3,823	3,548	6,040
Total Assets	25,055	19,775	43,610	41,555
Current Liabilities	52,198	1,776	1,328	1,771
Non-Current Liabilities	692	291	292	1,193
Total Liabilities	52,890	2,067	1,620	2,964
Capital Stock	1,100	2,612	6,523	6,585
Capital Surplus	-	66,720	97,882	99,006
Other Capital Items	4,713	5,610	3,069	2,420
Accumulated Other Comprehensive Income	21	-16	36	19
Retained Earnings (Deficit)	(33,668)	(57,218)	(65,520)	(69,437)
Total Equity	(27,834)	17,708	41,990	38,591

Notes : Based on audited K-IFRS financial statements.

Income Statement

Unit : million KRW

Category	2022	2023	2024	1H25
Sales	1,871	3,747	5,939	3,795
Cost of Goods Sold	928	1,565	2,349	1,325
Gross Profit	943	2,182	3,590	2,471
Selling & Admin Expenses	7,311	8,915	12,370	6,608
Operating Profit	(6,369)	(6,733)	(8,780)	(4,138)
Financial Gains (Losses)	35,579	(16,889)	300	375
Other Gains (Losses)	126	71	177	154
Profit (Loss) Before Tax	29,336	(23,550)	(8,302)	(3,916)
Income Tax Expense	-	-	-	-
Net Profit (Loss)	29,336	(23,550)	(8,302)	(3,916)

Notes : Based on audited K-IFRS financial statements.

Appendix

01. Board of Directors

02. Key Personnel

01. Board of Directors

- Independent, professional board with a focus on accountability



YongKeun Park Chairman of the Board, CEO

Education Ph.D. in Health Science and Technology, Harvard-MIT

- Career**
- Co-founder & CEO, Tomocube
 - Professor, KAIST



Sang-II Park Outside Director

Education Ph.D., Stanford University

- Career**
- CEO, Park Systems
 - Founder & CEO, Park Scientific Instrument



Byung-Kyun Ham Outside Director

Education J.D., Seton Hall University School of Law

- Career**
- Dentons Lee Senior Attorney
 - Law Firm Jipyeong Senior Foreign Lawyer
 - General Counsel, Seegene
 - attorney for the U.S. Department of Health and Human Services



Sang-Hoon Cha Outside Director

Education Ph.D., Seoul National University, Medicine

- Career**
- Multipurpose Synchrotron Radiation Construction Project Committee
 - Central Pharmaceutical Affairs Council
 - Professor, Department of Medicine, Chungbuk National University College of Medicine
 - President, Osong Foundation for Advanced Medical Industry
 - President, Korea Drug Development Fund



Sung-Ho Ko Inside Director, COO

Education M.S. in Industrial Engineering, KAIST

- Career**
- General Manager, Lutronic
 - Country Manager, Samsung Medison



Young-seok Shin Auditor

Education M.S., Beijing University, MBA

- Career**
- CFO, ASTech Co., Ltd.
 - Director, Samjong KPMG LLC

02. Senior Executives

- More than 10 years of experienced management and development personnel in the relevant field



YongKeun Park **CEO**

Education Ph.D. in Health Science and Technology, Harvard-MIT

- Career**
- Co-founder & CEO, Tomocube
 - Professor, KAIST



Sung-Ho Ko **COO**

Education M.S. in Industrial Engineering, KAIST

- Career**
- General Manager, Lutronic
 - Country Manager, Samsung Medison
 - Quality Control, Daewoo Electronics



Taehong Kim **SVP of Precision Division**

Education B.S. in Electrical and Electronic Engineering, KAIST

- Career**
- Software Team Lead, Wiseplanet
 - Software Engineer, Photon Dynamics Korea
 - Acron, S/W team



Sumin Lee **SVP of Life Science Division**

Education Ph.D. in Life Sciences, POSTECH

- Career**
- R&D Project Planning, National Forensic Service
 - Postdoctoral Researcher, POSTECH



Wan-Sung Ku **CFO&CSO**

Education Ph.D. (ABD) in Pharmacy, Sungkyunkwan University

- Career**
- CFO, Genius
 - Analyst, NH Investment & Securities
 - Research Planning, Dong-A Socio Holdings

