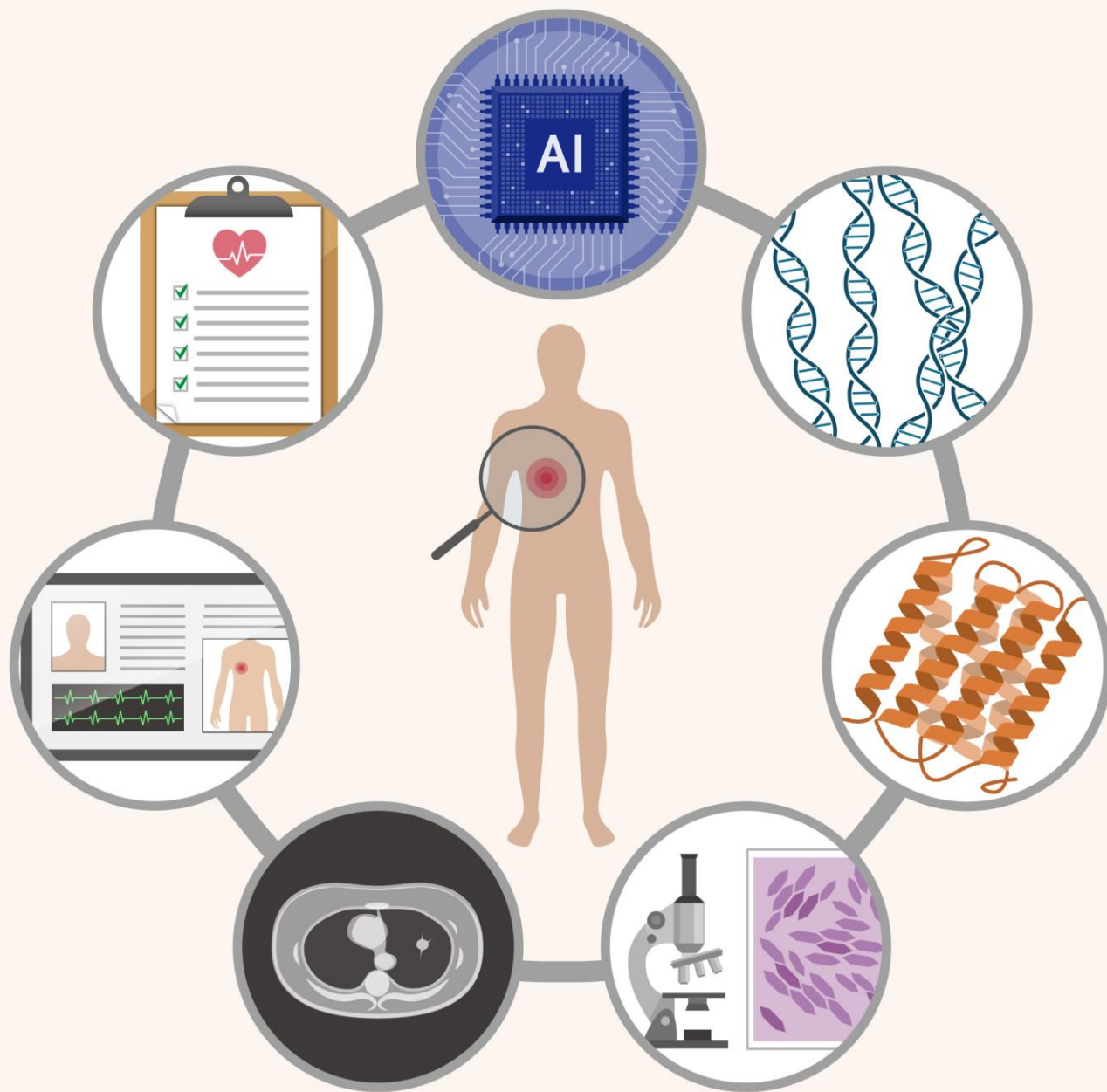




HLB PANAGENE

Company Profile

Disclaimer

The purpose of this presentation is to inform about HLB Panagene's business.

This presentation contains certain "forward-looking statements". Any statements that are not historical fact should also be forward-looking statements. These statements are based on management's assumption and belief in light of information currently available. These statements may be identified by words such as 'expects', 'anticipates', 'intend', 'plan', 'seek', 'see', 'will', 'would', 'projects', 'believe', '(E)' or similar expressions. The assumptions involve risks and uncertainties and the material in this presentation is not a guarantee of the company's future business performance.

Since the "forward-looking statement" on this presentation are based on the information about current market status and business of HLB Panagene at the time the data were prepared, please be aware that the contents of this presentation are subject to change or deletion without advanced notice.

Please also be aware that HLB Panagene, its advisors and representatives assume no responsibility for any problems resulting from using this data (including but not limited to mistakes, errors and deficiencies).

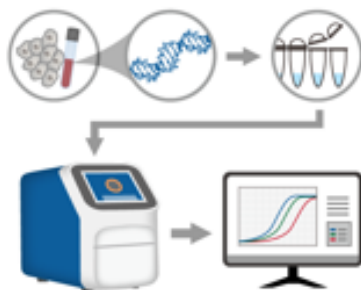
The information contained herein is subject to change without notice and should not be relied upon as such.

Core Business

Diagnostics

- Multiple platform technologies for biomarker detection
- Oncology-related mutation detection kits (Companion diagnostics)
- Infectious disease test kits

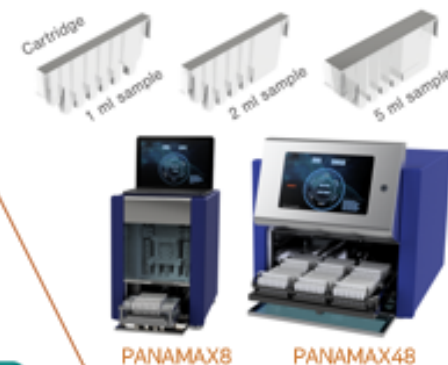
Commercialize
molecular diagnostic kits
based on superiority of PNA



Automation

Solution optimized for
molecular diagnostic products

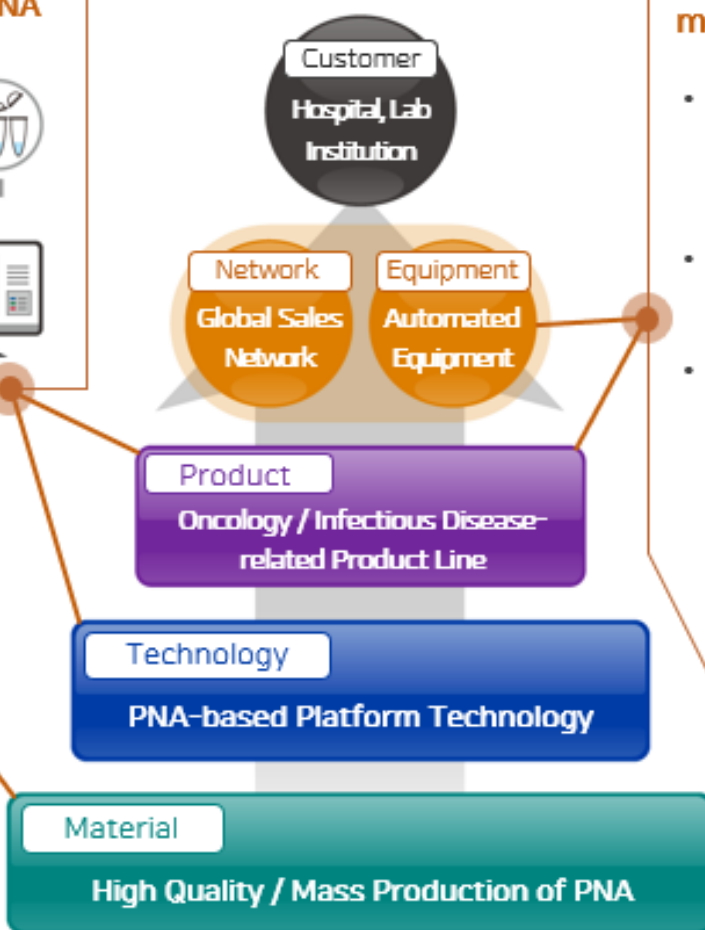
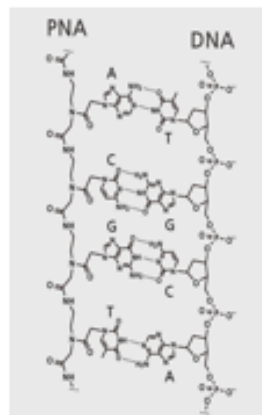
- Automated nucleic acid extraction solutions applied to various sample types
- Create synergy through connection with diagnostic kits
- 100% Self-developed



Materials

No.1 mass production &
modification of PNA

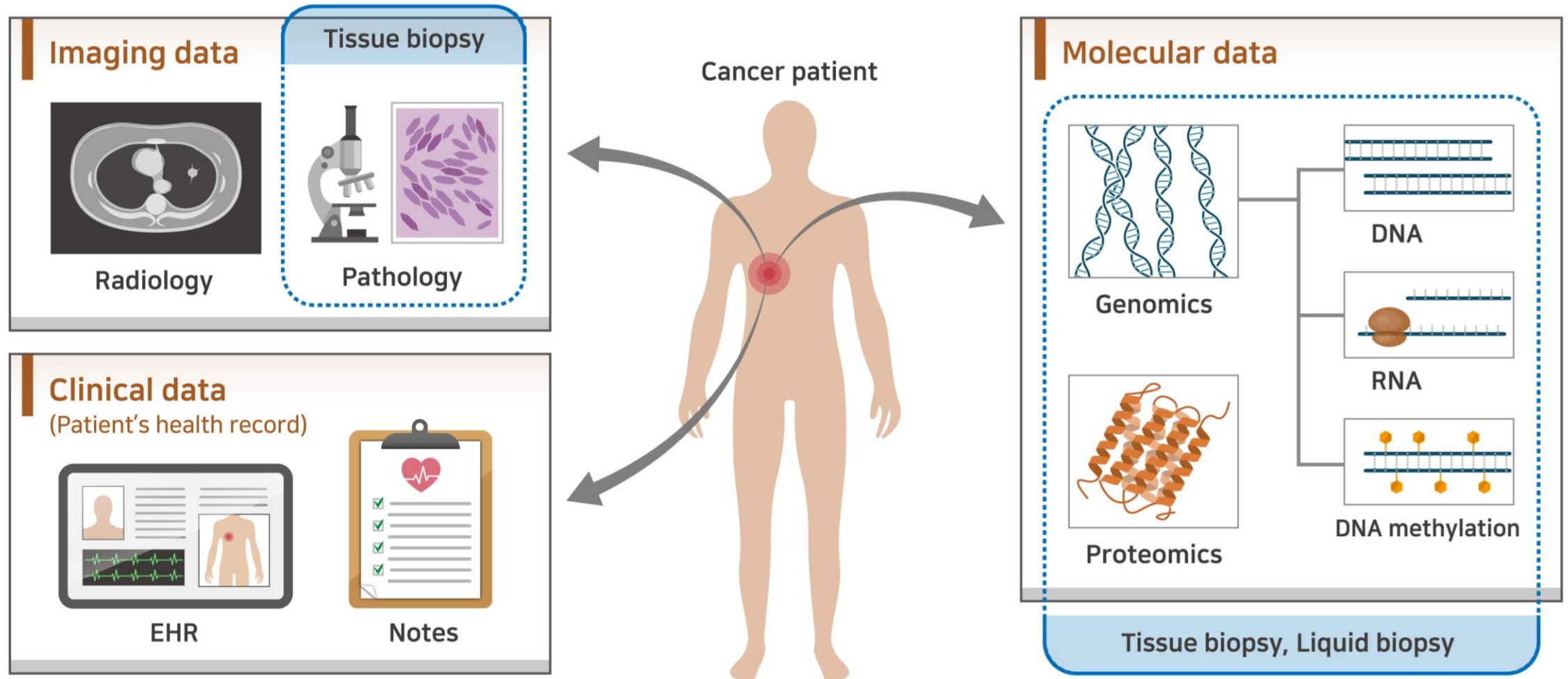
- PNA is DNA/RNA analogue which can be used to various application
- Has potential to be applied as new therapeutics material



Future Medical Diagnostic – Multimodal

Data modalities in oncology

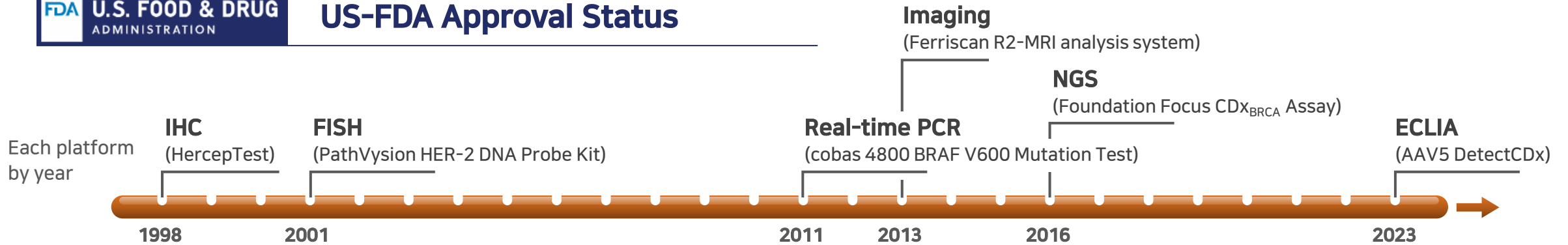
출처: Waqas, A. et al., 2024. Front. Artif. Intell. 7:1408843. | He, W. et al., 2024. MedComm. 5:e722.



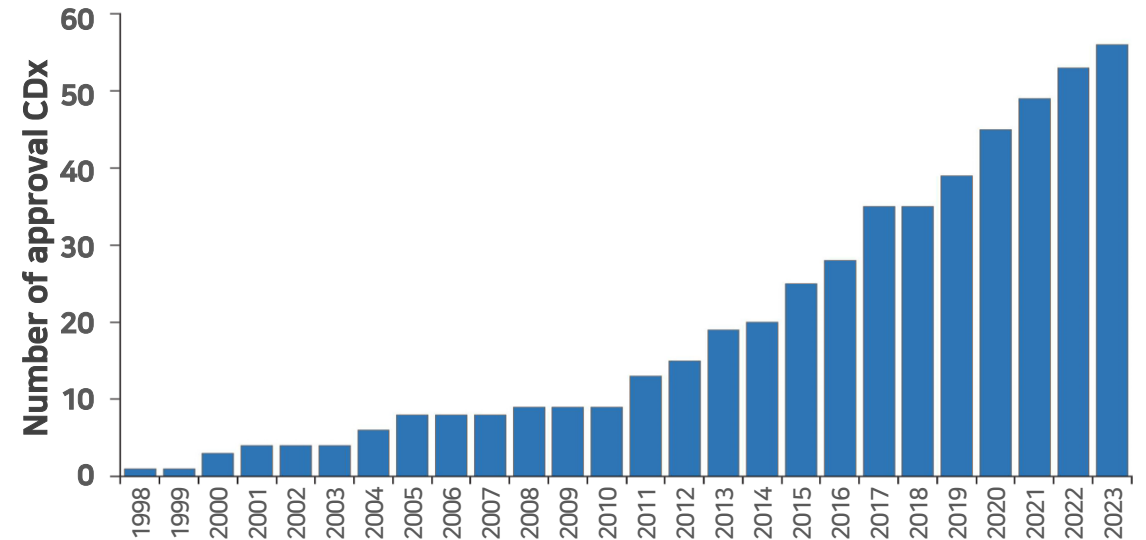
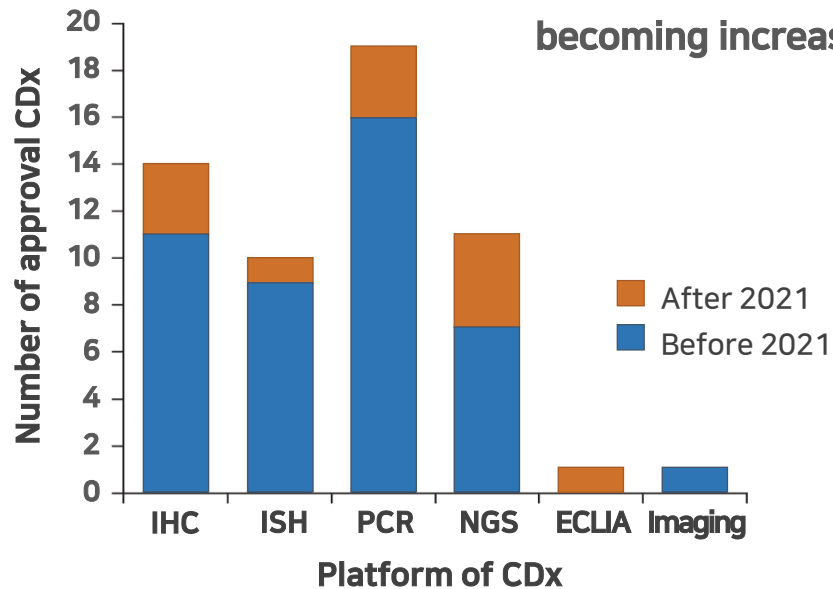
Current status of Companion Diagnosis



US-FDA Approval Status



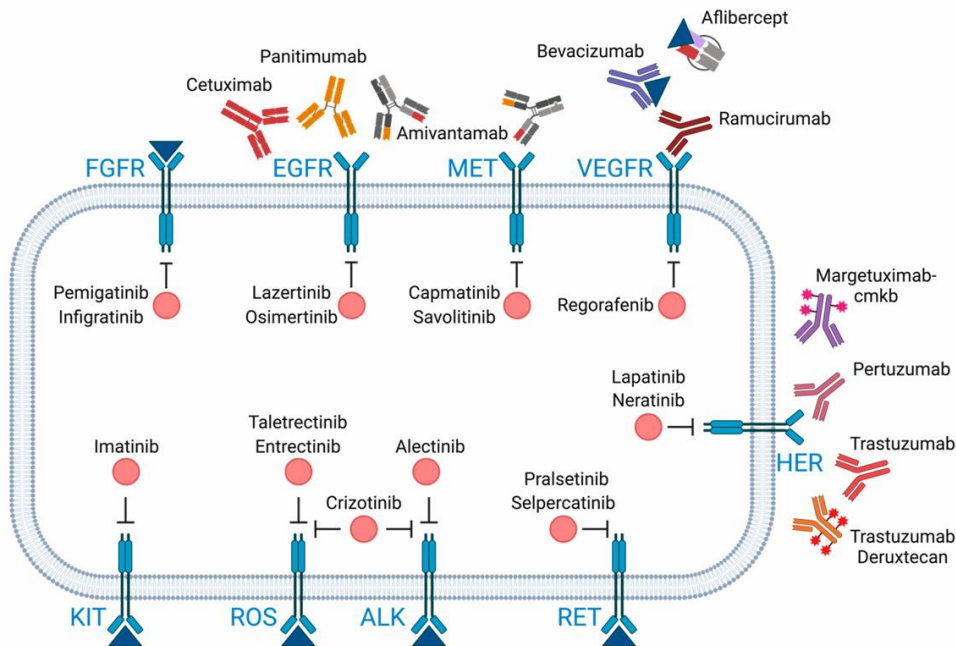
"Platforms related to companion diagnosis are becoming increasingly diverse"



Molecular Diagnostic Platform

Nucleic acid biomarkers associated with CDx

Source: US-FDA



출처: Mechahougui, H. et al., 2024. Cancers 16:2862.

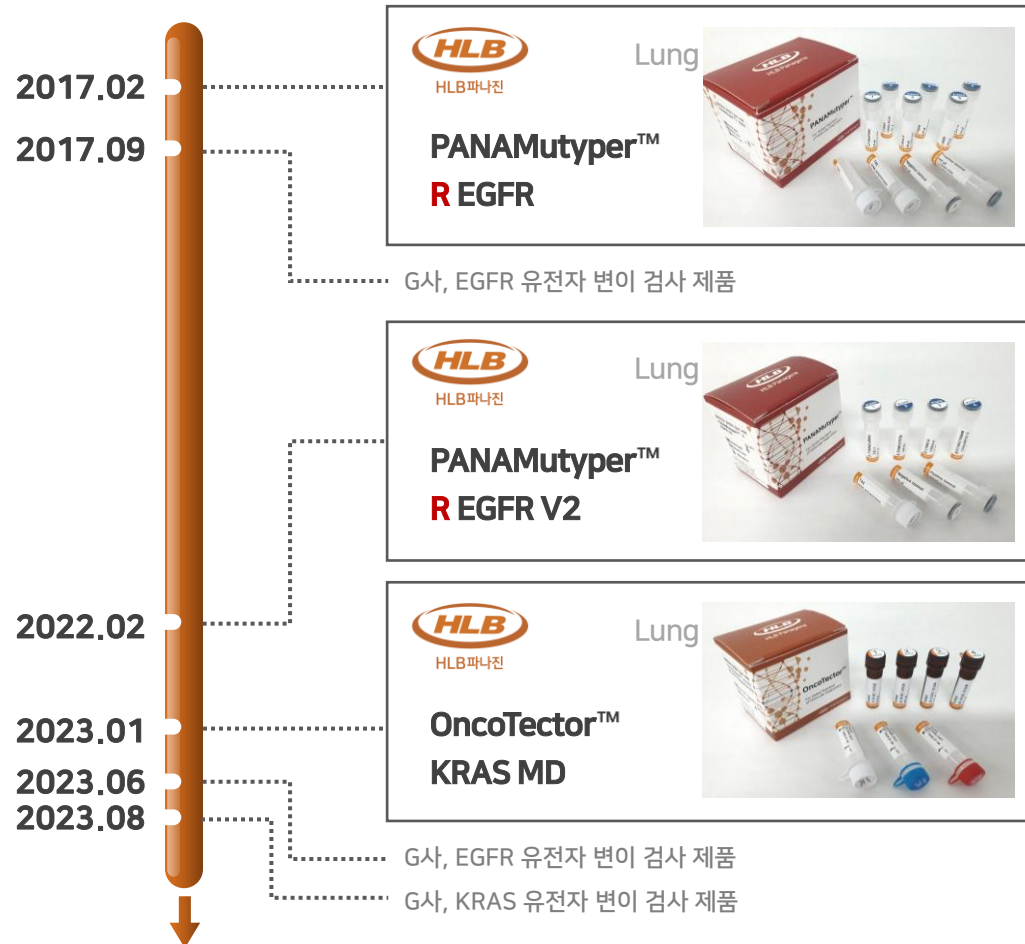
AML: Acute Myeloid Leukemia
ASM: Aggressive Systemic Mastocytosis
BC: Breast Cancer
CLL: Chronic Lymphocytic Leukemia
CML: Chronic Myeloid Leukemia
CRC: Colorectal Cancer
FL: Follicular Lymphoma

GC: Gastroesophageal Cancer
GIST: Gastrointestinal Stromal Tumors
MDS: Myelodysplastic Syndromes
mCRPC: Metastatic Castrate Resistant Prostate Cancer
NSCLC: Non-Small Cell Lung Cancer
TC: Thyroid Cancer
UC: Urothelial Cancer

Target Gene	Biomarker	Indication	Platform
ALK	Rearrangement	NSCLC	FISH, NGS
BCR-ABL	Gene fusion	CML	PCR
BRAF	Mutation	Melanoma, mCRC, NSCLC, TC	PCR, NGS
BRCA1/BRCA2	Mutation	Various cancers	PCR, NGS
EGFR	Mutation	NSCLC	PCR, NGS
ESR1	Mutation	BC	NGS
EZH2	Mutation	FL	PCR
FGFR2	Gene fusion	Cholangiocarcinoma	NGS
FGFR3	Gene fusion, Mutation	UC	PCR
FLT3	Mutation	AML	PCR
HER2	Amplification, Mutation	BC, GC, NSCLC	CISH, FISH, NGS
HRR genes	Mutation	mCRPC	NGS
IDH1	Mutation	AML, Cholangiocarcinoma, MDS	PCR, NGS
IDH2	Mutation	AML	PCR
KIT	Mutation	ASM	PCR
KRAS	Mutation	CRC, NSCLC	PCR, NGS
MET	Mutation	NSCLC	NGS
Microsatellite	MSI-High	Solid tumor	NGS
NRAS	Mutation	CRC	PCR, NGS
NTRK1/NTRK2/NTRK3	Gene fusion	Solid tumor	NGS
PDGFRA	Mutation	GIST	PCR
PDGFRB	Rearrangement	MDS	FISH
PIK3CA	Mutation	BC	PCR, NGS
POMC/PCSK1/LEPR	Mutation	Obesity	NGS
RET	Gene fusion	NSCLC, Solid tumor, TC	NGS
ROS1	Gene fusion	NSCLC	NGS
TP53	Deletion	CLL	FISH

Commercialization Case of CDx (Molecular Diagnosis)

MFDS "CDx genetic testing reagent approval"



Korea's first "liquid biopsy Kit"

2017.10.18

MedicalTimes

파나진 '액체 생검 키트' 신의료기술 인정

「파나뮤타이퍼 EGFR」 글로벌 제품과 경쟁

파나진(대표이사 김성기)은 '파나뮤타이퍼 EGFR(PANAMutyper EGFR) 유전자 돌연변이 검사키트'와 'PNA클램프 BRAF(PNAClamp BRAF) 유전자 돌연변이 검사키트'가 한국보건 의료연구원 신의료기술 인정을 받았다고 밝혔다. (중략) 이번 신의료기술 인정으로 파나진은 국내 최초로 제품을 출시하게 됐다.

The first "Original CDx approval" in Korea

2023.07.01

MEDI:GATE NEWS

파나진, 유한양행 '렉라자' 오리지널 동반진단 (Original CDx) 허가 획득

파나뮤타이퍼 R EGFR 통해 표적 유전자 변이 검출 가능



PANAMutyper™ R EGFR



Commercialization Reference

“High competitiveness compared to competitors”

HLB PANAGENE OncoTector™ KRAS MD

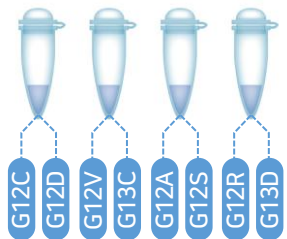
“Q” Company



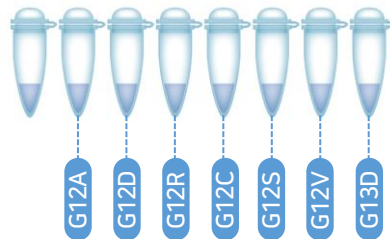
VS



4 tubes 8 Targets



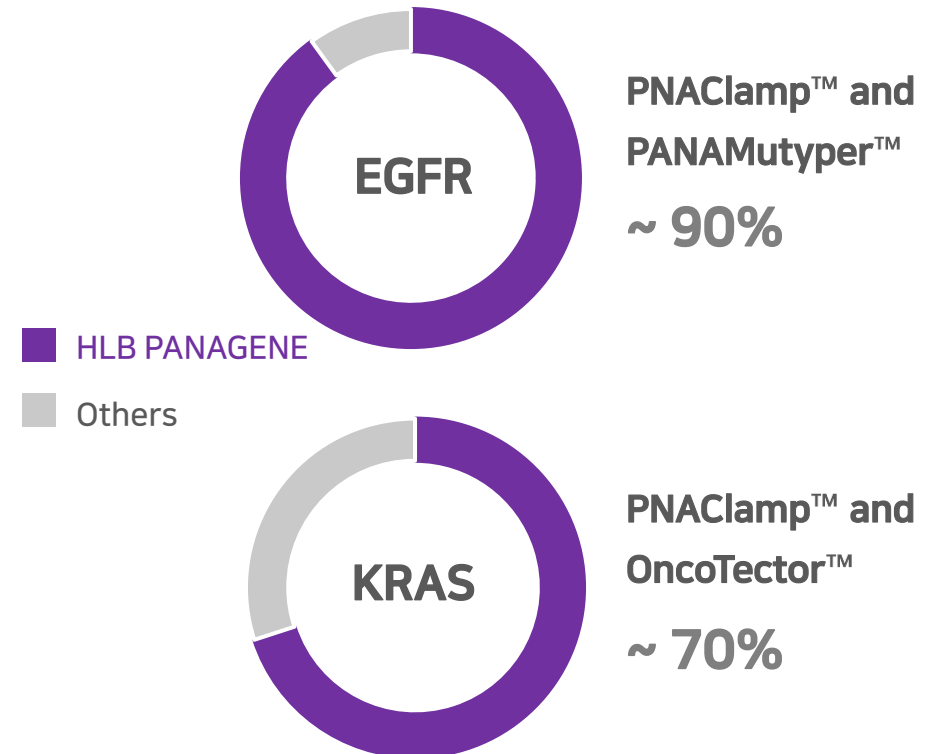
8 tubes 7 Targets



High user convenience, competitive edge in the market

“High market share in Korea”

In use at 80 sites including major hospitals in Korea

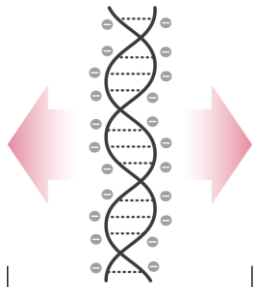


HLB PANAGENE's molecular diagnostic technology

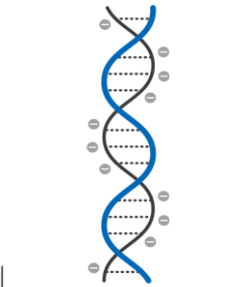
"Utilizing PNA materials"



Strong binding affinity



DNA:DNA duplex
Repulsion

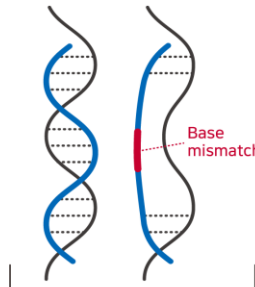


PNA:DNA duplex
No repulsion

High binding specificity



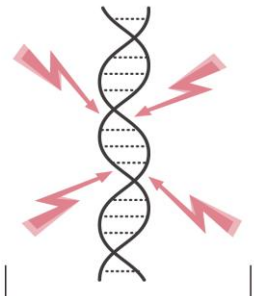
DNA probe
Small Tm difference



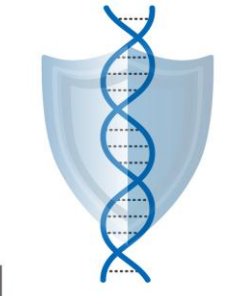
PNA probe
Large Tm difference

* Tm: melting temperature

High stability

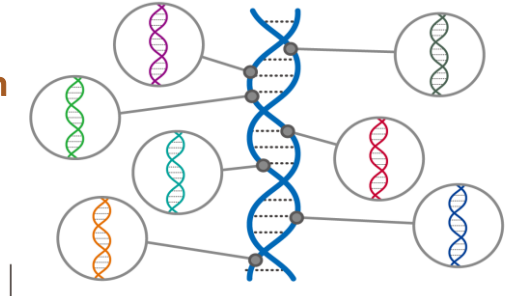


DNA - **Enzymatic degradation**

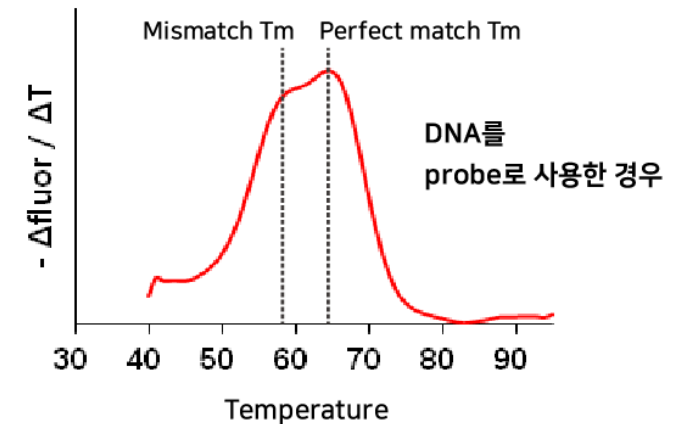
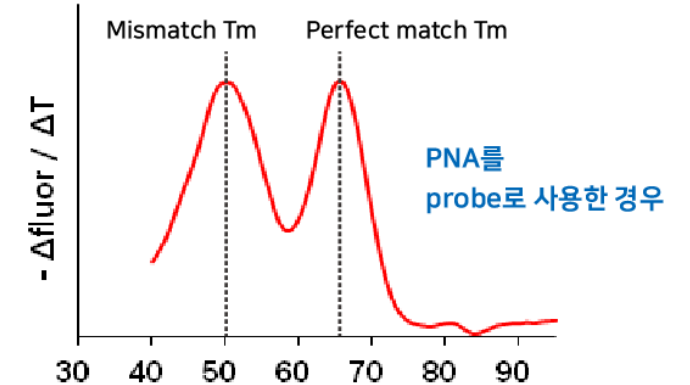
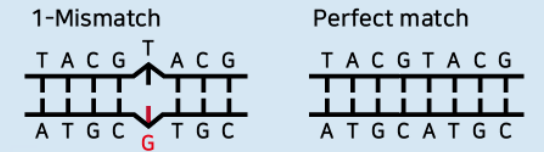


PNA - **Resistant to DNase/Proteinase**

Secondary modification available

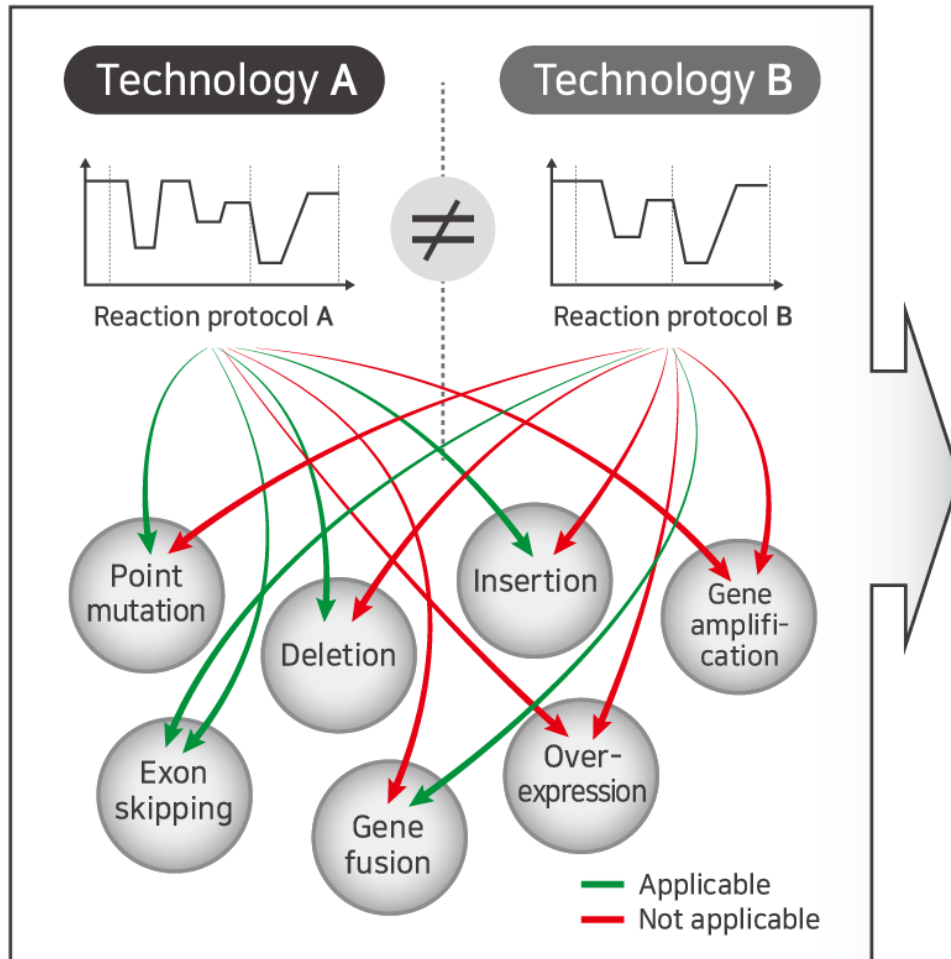


Additional modification of PNA backbone to **change physical properties**

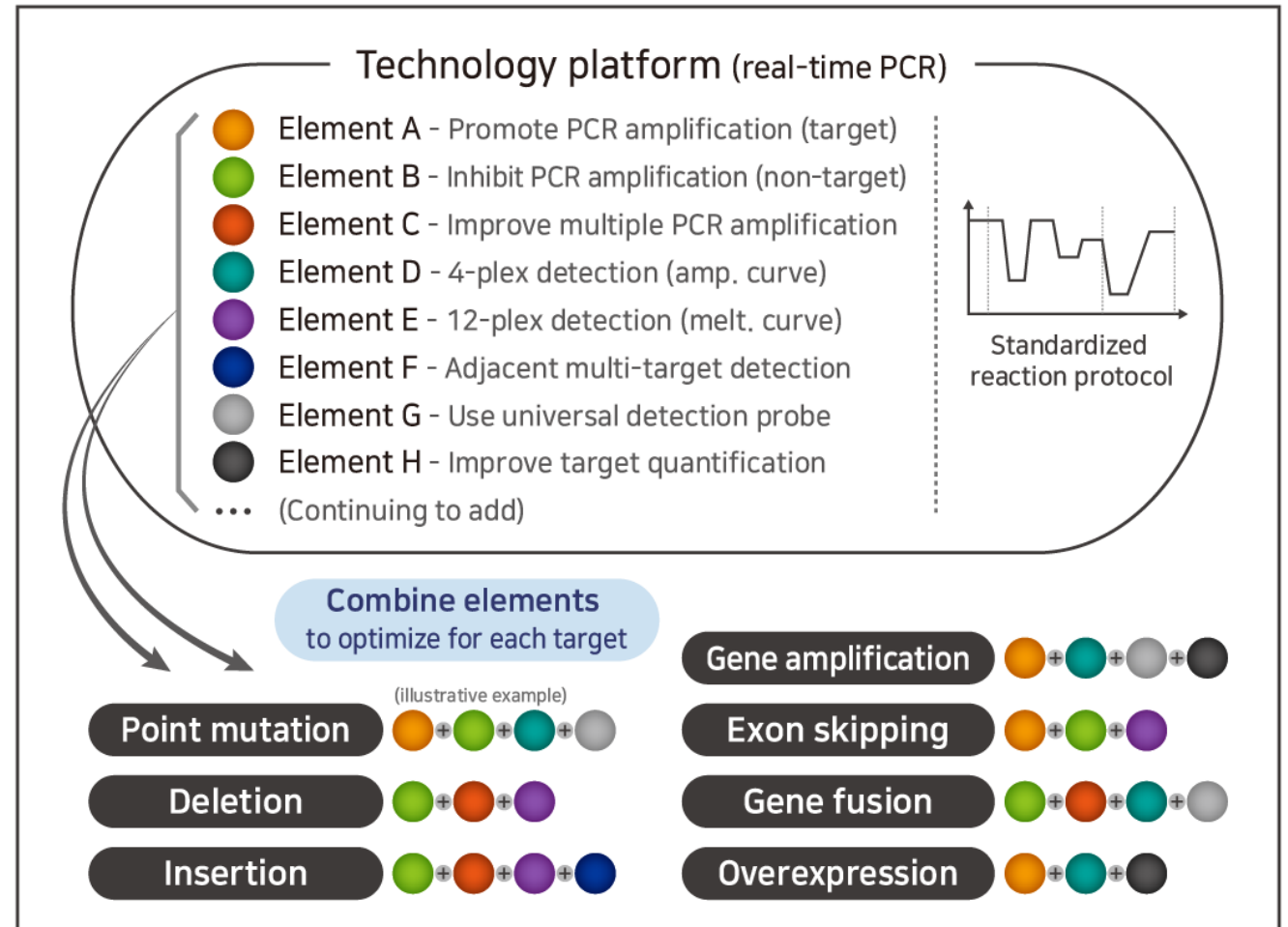


HLB PANAGENE's molecular diagnostic technology

Current Technology-driven Strategy



"Our Target-driven Strategy"



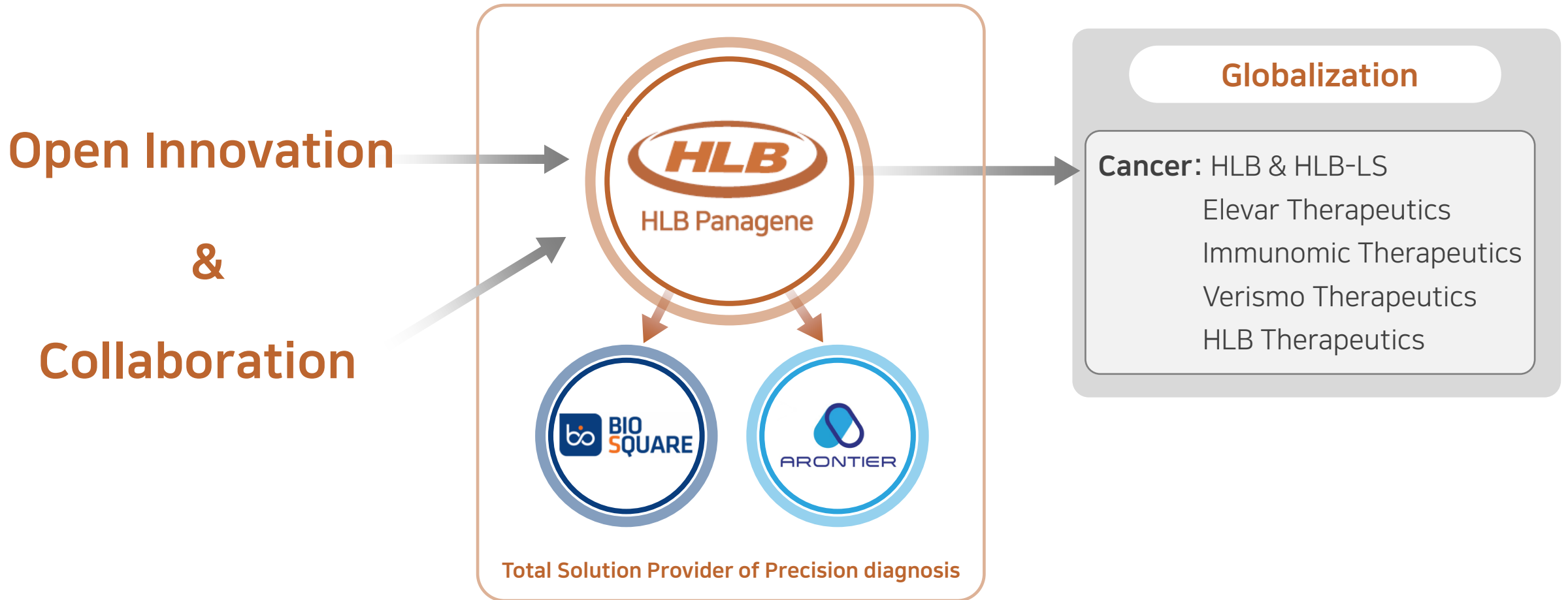
Molecular Diagnostic product Lines



	Products	Targets	Related diseases	Status	CE	MFDS
Oncology	PNAClamp™	EGFR	Lung cancer	Completed	CE	
		KRAS	Colon / Lung / Thyroid cancer	Completed	CE	
		NRAS	Colon / Lung cancer / Melanoma	Completed	CE	
		BRAF	Thyroid / Colon / Lung cancer / Melanoma	Completed	CE	
		PIK3CA	Breast cancer	Completed	CE	
		IDH1	Glioblastoma multiforme	Completed	CE	
		IDH2	Glioblastoma multiforme	Completed	CE	
		JAK2	Myelofibrosis / Polycythemia Vera	Completed	CE	
		BCR-ABL	Chronic myelogenous leukemia	Completed	CE	
		c-KIT	Glioblastoma / Myeloproliferative Neoplasm	Completed	CE	
		TERT	Thyroid / Lung cancer	Completed	CE	
	PANA Mutyper™	EGFR (ver. 1)	Lung cancer	Completed	CE	
		EGFR (ver. 2)	Lung cancer	Completed	CE	
		KRAS	Colon / Lung / Thyroid cancer	Completed	CE	
		NRAS	Colon / Lung cancer / Melanoma	Completed	CE	
		ROS1	Lung cancer	Completed	CE	
	OncoTector™	KRAS	Lung cancer	Completed	CE	
		BRAF	Thyroid / Colon / Lung cancer / Melanoma	Completed	CE	
Infectious Disease	PANA qPCR™	TB/NTM	Tuberculosis	Completed	CE	
	PANA RealTyper™	HPV genotyping	Cervical cancer	Completed	CE	
		HPV screening	Cervical cancer	Completed	CE	
		HPV 32 genotyping	Cervical cancer	Completed	CE	
		STD	Sexually transmitted disease	Completed	CE	
		CRE	Resistance to antibiotics	Completed	CE	

HLB PANAGENE's Open Innovation

Promoting various forms of Open Innovation and Collaboration



Company Profile

General status

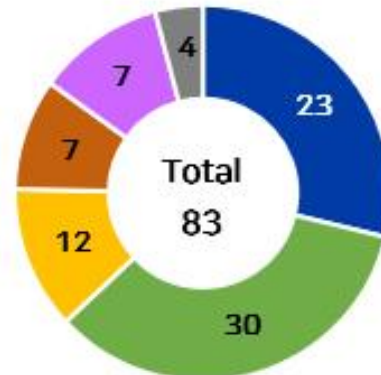
(Year of 2025)

Name	HLB Panagene	Ticker	046210 (KOSDAQ)
Foundation	April, 2001	Listed date	October, 2008
CEO	In-Keun Jang	No. of issued shares	43,657,588
Address	54, Techno 10-ro, Yuseong-gu, Daejeon, South Korea	Capital	₩20.5 billion
Homepage	www.hlbpanagene.com	Par value	₩500
Business	Manufacturing PNA and PNA-based molecular diagnostic product		

Employee composition

(Year of 2025)

- R&D 23 (27%)
- Manufacture 30 (36%)
- Marketing 12 (14%)
- Management 7 (9%)
- Executive 7 (9%)
- Other 4 (5%)



[Complete view of HLB Panagene]



감사합니다