



*"1 out of 8 women in US will be diagnosed with life threatening breast disease in their lifetime"*  
*According to American cancer society*

## Making Breast Health Monitoring

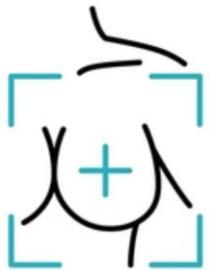
Simple, Accurate, Accessible, Safe

*Revolutionary "breast health risk"*

*Monitoring system for Early Detection*

**Introduction**

# Breast Disease



## Mammography (MMG)

2D standard MMG is the most common modality of screening women for Breast health

A considerable time gap between annual screenings

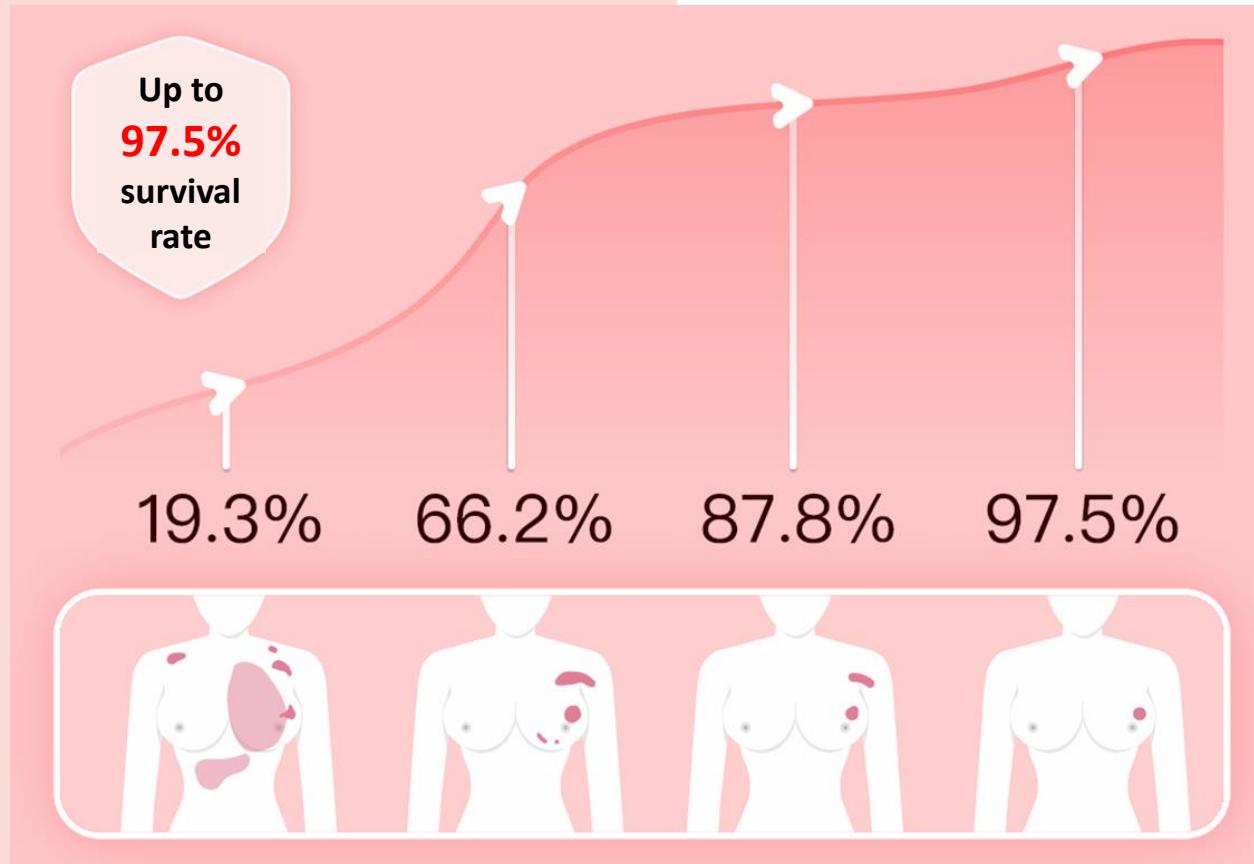
# Why Early Detection

**~82%** of patients were already symptomatic when they are diagnosed, with most in middle and late-stage breast

**~91%** of breast disease were of invasive type when first spotted by self-detection by chance

Some aggressive malignant cells double in size in 25 days, Regular annual medical examinations cannot detect quickly enough, resulting in over 82% of patients needed intensive treatment, causing damages to the body and required long-term recurrence preventive therapy

# Breast Disease



# Why Early Detection

Over 2+ billion women worldwide are at risk of Major Breast Health Issues.

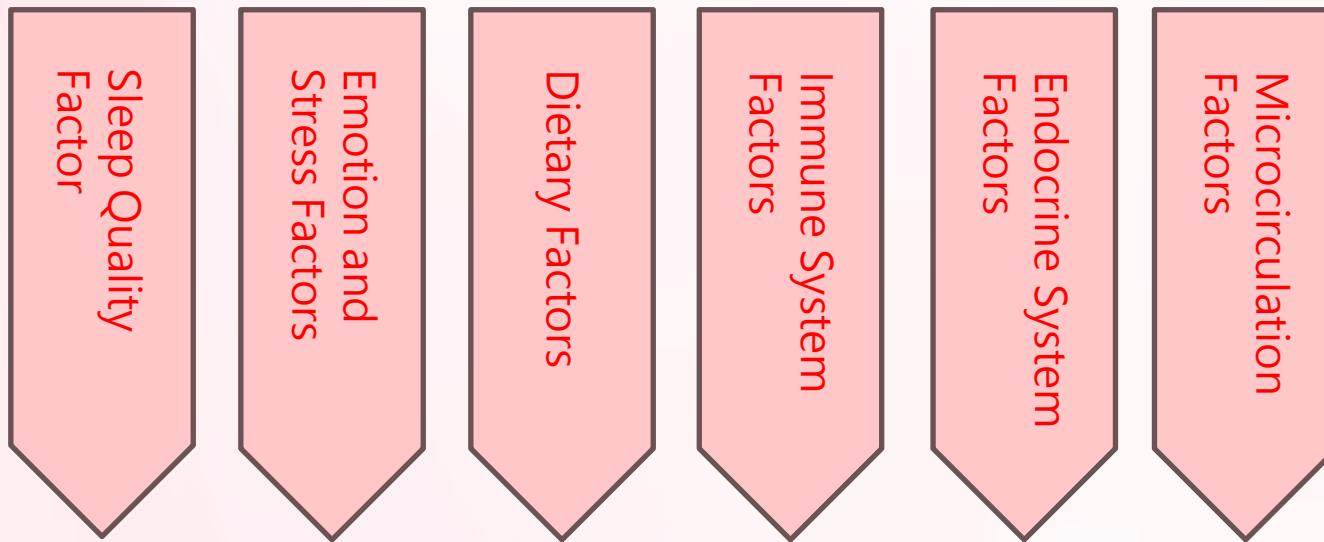
Early detection can improve breast severe disease survival rate up to 97.5%.

HOWEVER...

Breast Awareness or other screening technologies are proven unable to achieve early detection.

# Breast Disease

# Early Symptoms



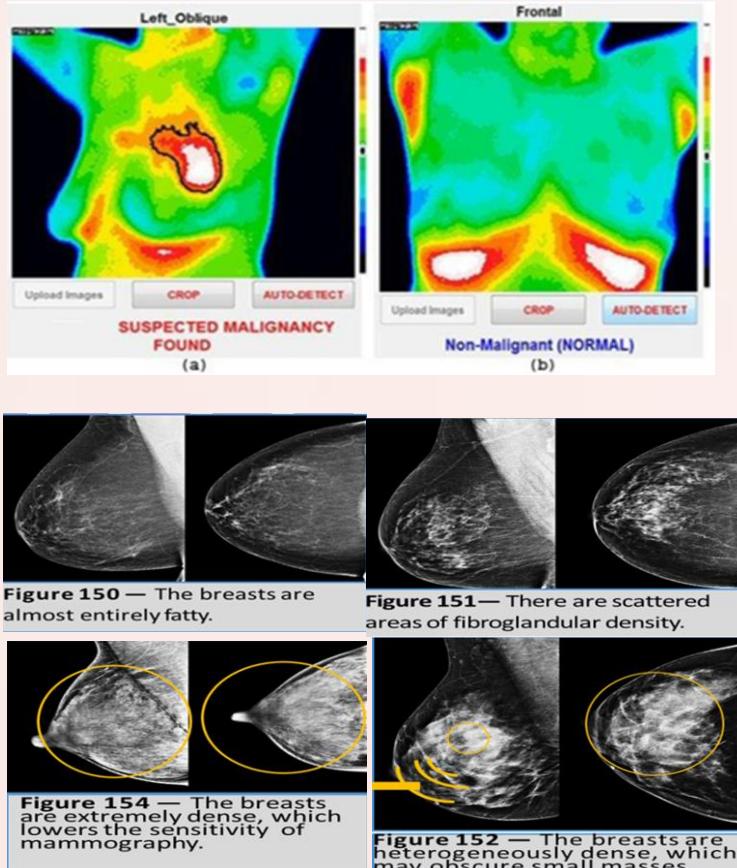
Increase Breast Health Risk Index  
0.0 → 1.0

# Breast Disease

# Early Symptoms

Most Common Breast Diseases			
	Breast Disease Types	Symptoms	Breast Cancer Risk
1	Breast Fat Necrosis	This is a benign lesion characterized by nodules of fatty deposits in the breast, often caused by accidental or surgical injury.	Fat necrosis <span style="background-color: blue; color: white;">does not increase breast cancer risk</span>
2	Benign Breast Hyperplasia	This is one of the most common reasons. Due to changes in female hormone levels, breast cell proliferation and life extension lead to breast hyperplasia, and then the formation of nodules, some of which may be malignant.	Having atypical hyperplasia <span style="background-color: red; color: white;">slightly increases breast cancer risk</span> in some people
3	Breast Infection	This is a benign lesion. If a woman secretes a lot of milk during lactation and cannot expel the milk in time, bacterial infection or inflammatory stimulation may cause nodules in the breast. It is characterized by the formation of tender nodules in the breast, accompanied by nipple discharge, and is more common in lactating women.	Women with mastitis have <span style="background-color: red; color: white;">higher risk of breast cancer</span>
4	Fibrocystic Breast	This is a benign lesion characterized by the formation of multifocal nodules in the breast, the nodules vary in size and tough texture, and it is more common in women over the age of 35.	Women with fibrocystic breast and a family history of breast cancer have a <span style="background-color: red; color: white;">slightly higher risk of breast cancer</span>
5	Fibroadenoma	This is a benign tumor consisting of fibrous and glandular tissue, characterized by the formation of painless nodules in the breast, mostly round or oval, elastic, usually more common in young women under the age of 40 common. Fibroadenoma is a long-term risk factor for breast cancer.	Women with complex fibroadenomas, proliferative disorders, or a family history of breast cancer are at increased risk.
6	Breast Simple Cyst	It is generally benign and is characterized by the formation of fluid-filled cysts in the breast. The cysts are highly active and often appear before menstruation and subside after menstruation. They are more likely to occur in women over 30 years old or near menopause.	Both fibrosis and simple cysts <span style="background-color: blue; color: white;">will not increase breast cancer risk</span>
7	Breast Complicated and Complex Cyst	Complex cysts, characterized by a mixture of fluid and solid components, and complex breast cysts, characterized by cysts with thick walls, thick septa, intracystic masses, or other discrete solid components.	For complex cysts, the possibility of cancer is less than 2%. Complex breast cysts, <span style="background-color: red; color: white;">up to 20% more likely to become cancerous</span>
8	Intraductal Papilloma	Usually benign, characterized by the formation of nodules under the areola, accompanied by painless bloody nipple fluid, and occurs in women over the age of 45.	A single papilloma <span style="background-color: blue; color: white;">does not increase the risk of breast cancer</span> , however, multiple papillomas <span style="background-color: red; color: white;">slightly increase breast cancer risk</span>
9	Breast Cancer	Breast cancer is a malignant condition usually caused by the uncontrolled proliferation of breast cells and is characterized by the formation of irregularly shaped, ill-defined, firm nodules in the breast. Occurs in women who are perimenopausal or approaching menopause.	

# Existing Screening technology



- Only close to 3 million cells or structural changes larger than 1-2 mm in size may be detected, which is in the middle and late stages.
- Since the existing screening methods rely on image technology, it is necessary to judge symptoms visually through the experience of Radiologist.
- Asian women with dense breasts are more likely to get false negative results.
- Because mammograms are x-rays, they expose the breasts to radiation and should not be done frequently.

# Early detection devices requirement

Annual bodychecks are insufficient to cover the risk



Difficulties of Home-based Cancer Risk Warning

- ❖ In the past, Home-based breasts self-examinations are conducted by touching or observing changes in size, shape or appearance of breasts, which lacks accuracy and sensitivity



**WE NEED A HOME-BASED SCREENING DEVICE FOR EARLY DETECTION OF BREAST SEVERE DISEASE**

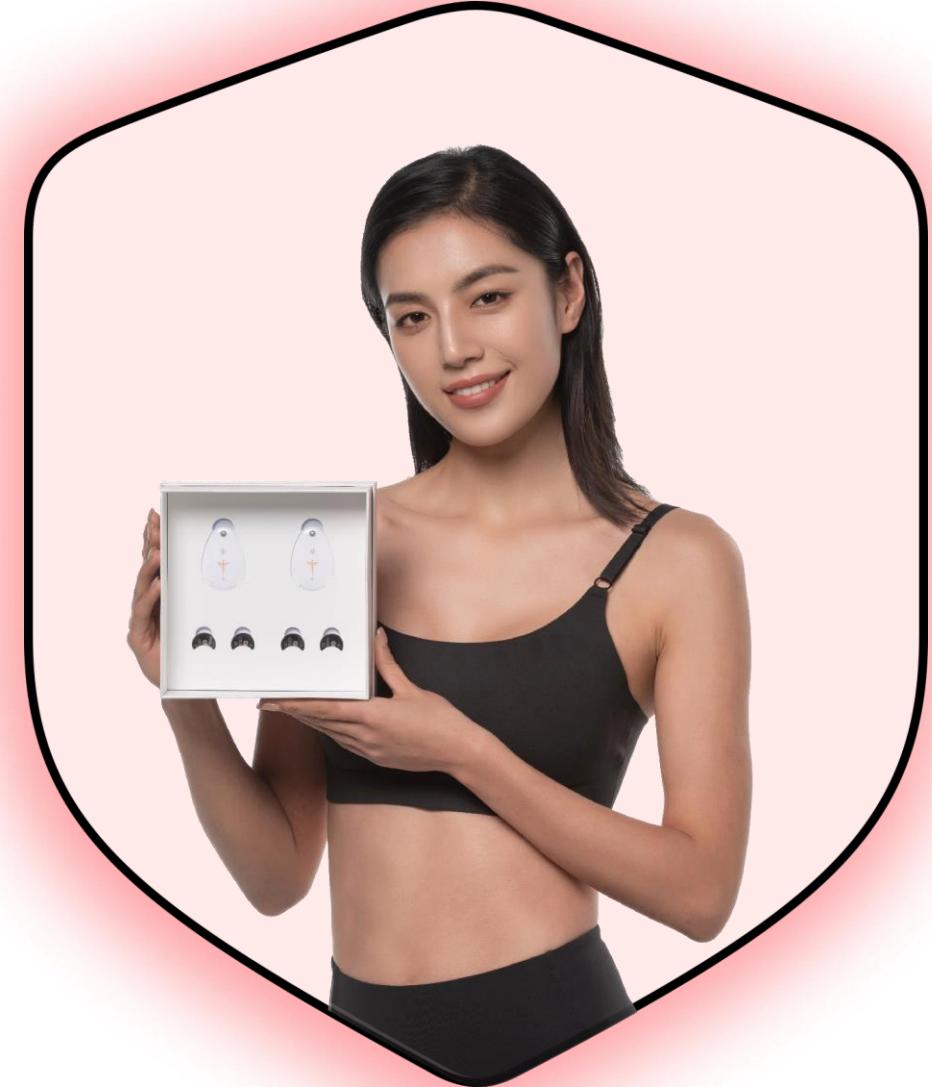


# Our Solution



## Breast Guardian

Breast Guardian is the world's first breast health monitoring platform that successfully combines IoT device, cloud algorithm and big data technology. It uses the bio-rhythm heat pattern to predict breast health and assess related health risks, allowing you to conduct self and scientific breast health monitoring every month and build your own lifelong breast health database.

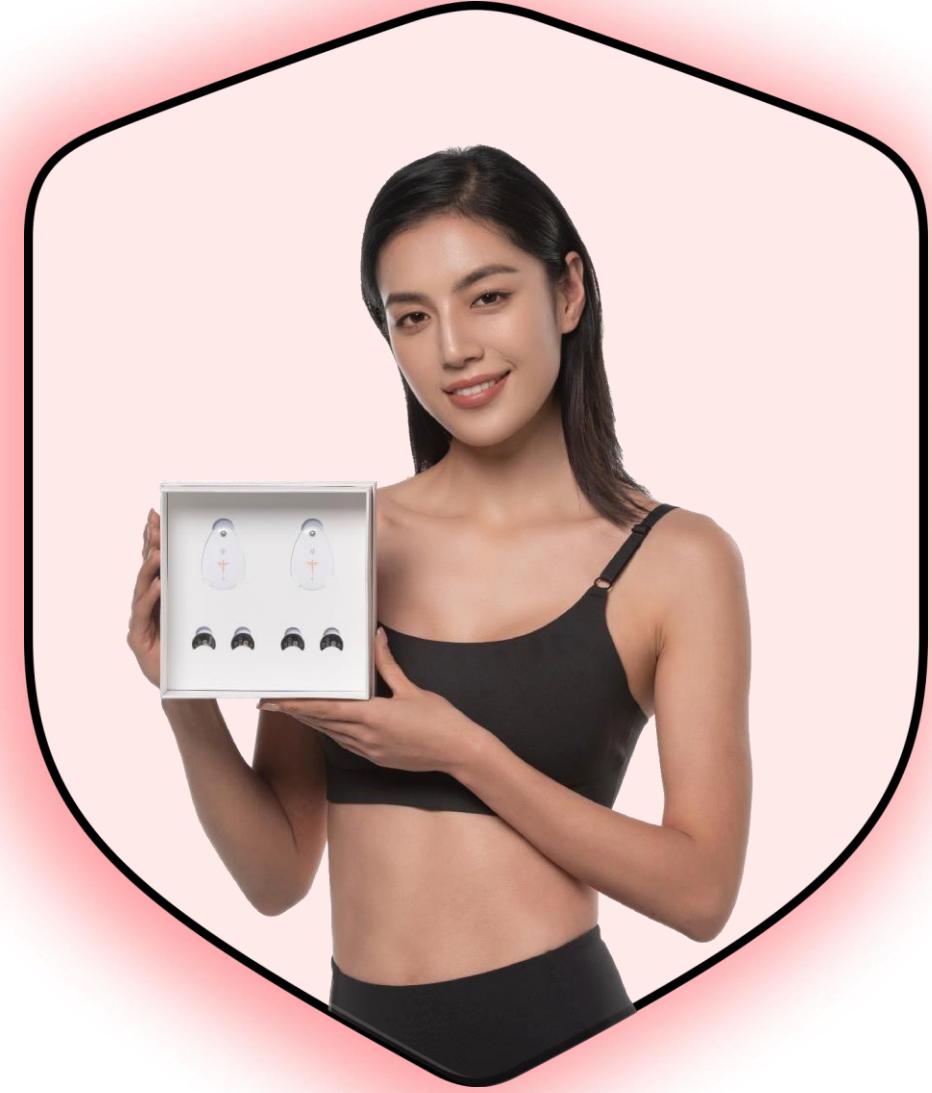


# Our Solution



## Breast Guardian

- ✓ Based on Nobel Prize-winning research theory
- ✓ Clinically Proven Accuracy Rate up to 85.9%
- ✓ Easy-to-Use, Non-invasive, No Pain, No radiation
- ✓ Suitable for women over 20 years old, especially with breast diseases
- ✓ Class II Medical Device Grade



# Company Milestones

2014

Establish  
Cellular  
Metabolic  
Heat Model

Based on  
Nobel Prize  
Research  
Theory

2017

Obtain  
Clinical Study  
by Certified  
CRO Auditor

2019

Develop  
AI Smart  
B.C. Monitor  
System

2021

Obtain 9 Patents  
and International  
Medical Device  
certification

2022

Product launch in  
Hong Kong,  
Asia, China,  
Europe, America



PhD in Math  
from Harvard  
Principal,  
Group Leader



PhD Biology,  
Dean  
Research  
group leader



Ph.D. in  
computer  
science, 3.0  
Team leader



Ph.D. in  
Mathematics,  
4.0 team  
leader



Ph.D. in  
Biology,  
4.0 team  
leader



Ph.D. in  
Physics, Data  
Center  
Director



Ph.D. in  
computer  
science, 3.0  
Team Leader

Member of the HK Gov ITF project  
Research team of HK BioRhythm,  
Cancer Detection in Curable Stages

**International  
Renowned  
PhD R&D  
Team  
Eight Years of  
Research  
and  
Development**



J&J, Bristol-  
Myers Squibb,  
and SmithKline  
Vice/President



Ph.D. in  
Biology, UK  
Director of  
Medicine



Tenured  
professor at the  
University of  
Chicago, O&G



Chairman  
(Global)



CEO  
(China)



Group  
CFO



Group  
COO

**Uniqueness:** Obtained 9 patent certifications,  
World's first breast health detection system

**Accuracy:** Accuracy rate 85.9% proven by  
Certified Medical Clinical Research Institute

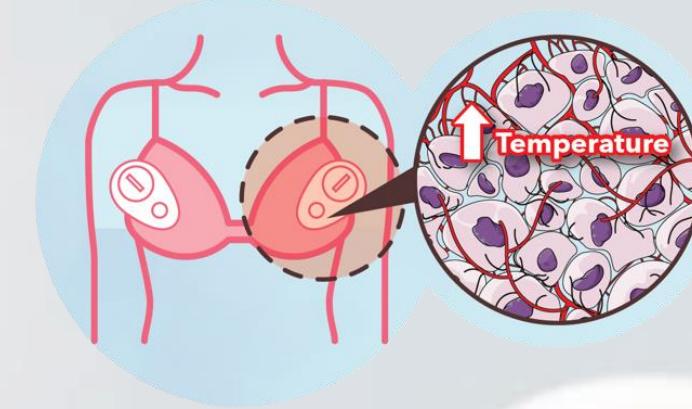
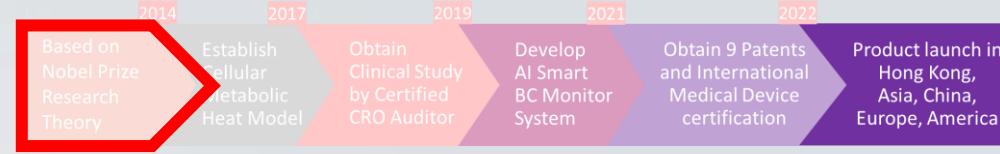
**Reliability:** Certified by International Authority.  
Class II Medical Device Grade

**Recognition:** Selected and Used by Hong Kong  
medical channels (including medical  
examination centers, O&G/Oncology doctors)

# Our Science behind



**Engineered Scientifically with  
Nobel-Prize-Awarded Theories:  
*Recognize Cancerous Local Heat Pattern***



## **The Warburg Effect**

(Otto Heinrich Warburg, 1931 Nobel Prize winner)  
Cancer cells mainly use aerobic glycolysis and have a **higher metabolic rate** than normal cells, hence generating **more heat energy**

## **Angiogenesis**

(Judah Folkman, a pioneer of angiogenesis research)  
The increased and constant blood flow **increases** tumors' **local temperature**

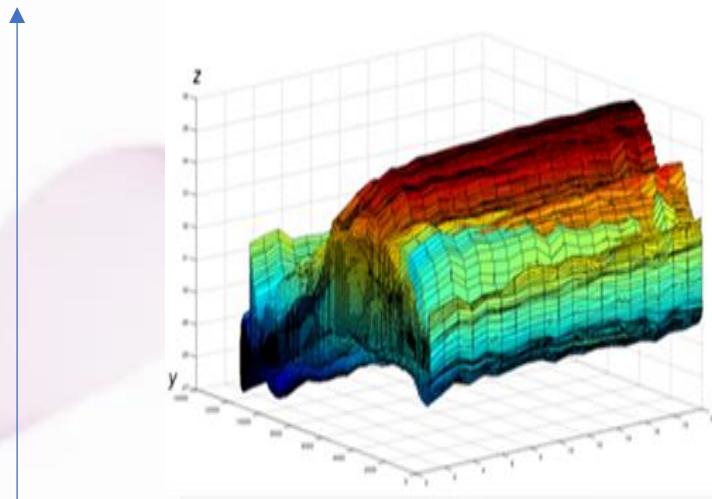
## **Cancerous Local Metabolic Heat Pattern**

The increase in regional temperature becomes an independent heat pattern

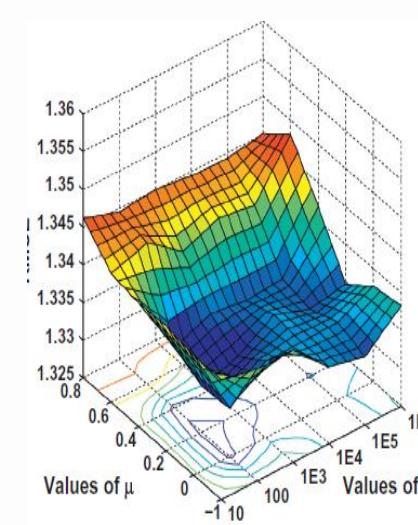
# Cellular Metabolic Heat Model



Image feature analysis methods-multi-dimensional data visualization methods



Relationship between blood perfusion rate and metabolic heat production



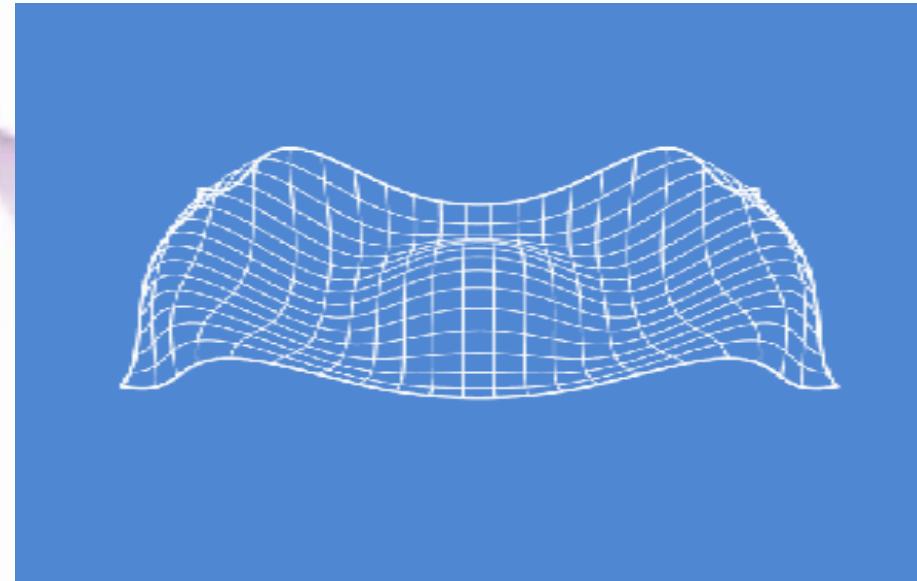
The relationship amongst blood perfusion rate, metabolic heat production and water molecular dissipation

Figure 4: Single temp. point area vector representation

# Cellular Metabolic Heat Model



Express cells (mitochondrial wear & tear) tissue metabolic rhythm **dissipation structure**



- Point amplitude
- Point frequency
- Point radiation
- Point energy
- Point energy field
- .....

Figure 5: Single temp. point dissipation structure expression (temperature field)

# Our Clinical Study



Designed for home-based, high-frequency tests

For yearly routine checks in hospitals or medical centers

Our System <sup>(1)</sup>		Ultrasound <sup>(2)</sup>	X Ray <sup>(3,4)</sup>	PET-CT <sup>(7)</sup>	MRI <sup>(4,5,6)</sup>
Sensitivity	<b>97.7%</b>	80.1%	85.7% <sup>(3)</sup>	77-90%	97.5% <sup>(4)</sup>
Specificity	76.6%	88.4%	88.8% <sup>(3)</sup>	69-80%	83.8% <sup>(4)</sup>
False Positive	23.4%	11.6%	11.2% <sup>(3)</sup>	20-31%	16.2% <sup>(4)</sup>
False Negative	2.3%	19.9%	14.3% <sup>(3)</sup>	10-23%	2.5% <sup>(4)</sup>
Positive Predictive Value	76.8%	86.0%	76.0% <sup>(4)</sup>	97%	71.4% <sup>(6)</sup>
Negative Predictive Value	97.7%	80.0%	99.0% <sup>(4)</sup>	<60%	99% <sup>(5)</sup>
Accuracy	<b>85.9%</b>	46.9%	63.5% <sup>(4)</sup>	83-86%	88-96% <sup>(4)</sup>

Above clinical study report conducted by  
TigerMED (Contract Research Organization)  
Ref. No.: RXSC\_201500C

Breast Biorhythm Monitoring System are highly comparable with traditional diagnostic methods

# Our Data Tech behind



## Cloud-based Bio-marker Library

All biological data (“Bio-Markers”) collected through the Proprietary AI Analytics System will be stored in our Bio-Marker Library (and encrypted with blockchain technology). As data volume expands, our researchers apply big-data analysis and machine learning to refine and enhance the depth and breadth of the Proprietary Analytics System, making it an ever-improving tool for cancer risk assessment.



## Personalized mobile application

Channeling data between data-collectors and our Big Data Analytics System, offering seamless user experience, and on its way to becoming the only personal health “Super-APP” on the market



## Proprietary Big Data Analytics System

Developed by our academic experts and medical professionals, and proven by clinical trials, the system offers reliable data-monitoring and analyzing features, to conduct time-series analysis (personal level) and cross-comparatives (community level), and sending users' risk-level categorizations and warning well in advance

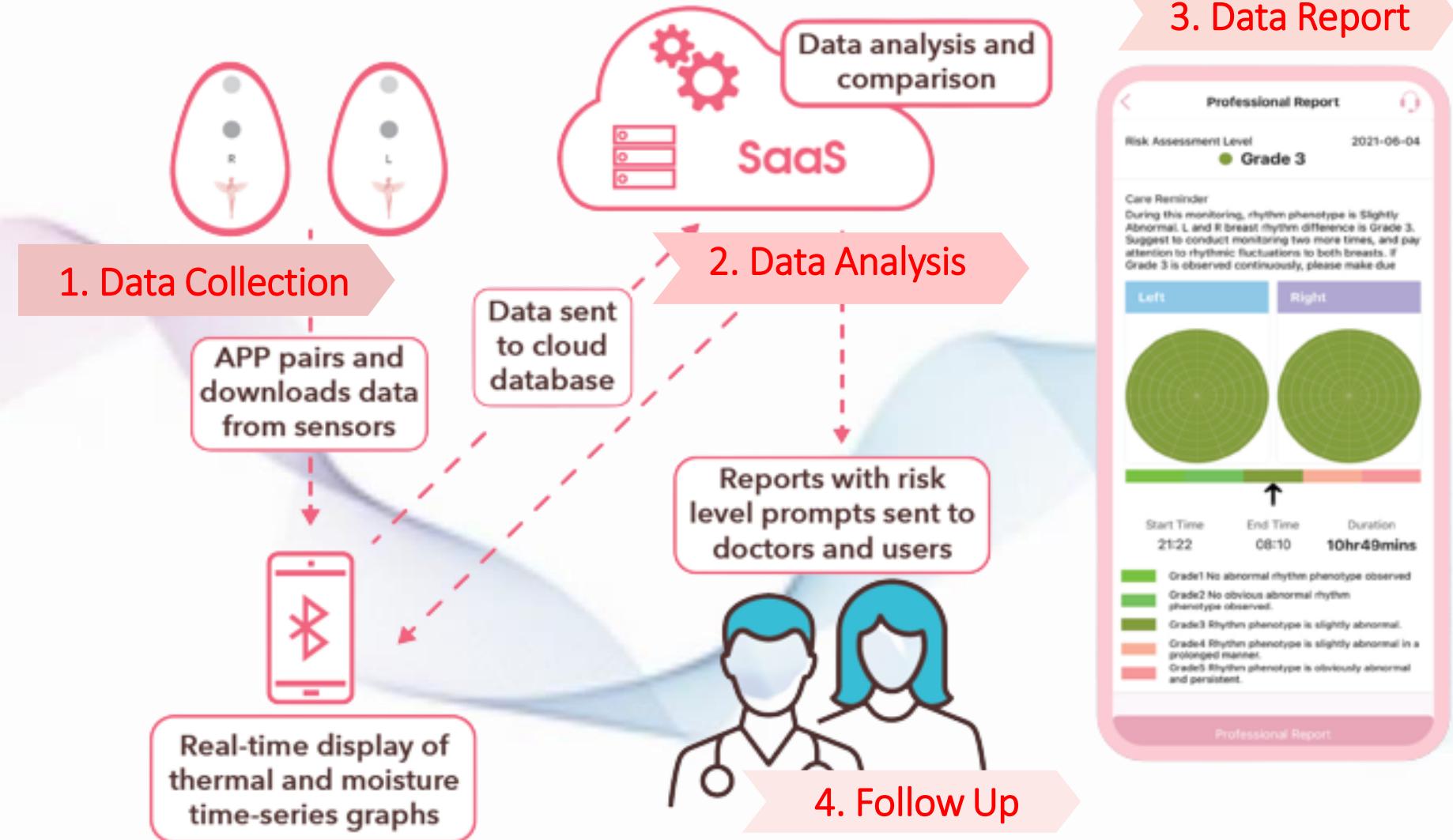
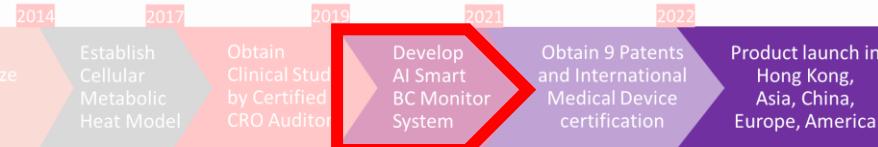


## Advanced IoT data-collectors

Record micro-signs of users, including contact temperature, ambient heat release temperature, humidity, and their subtle variations



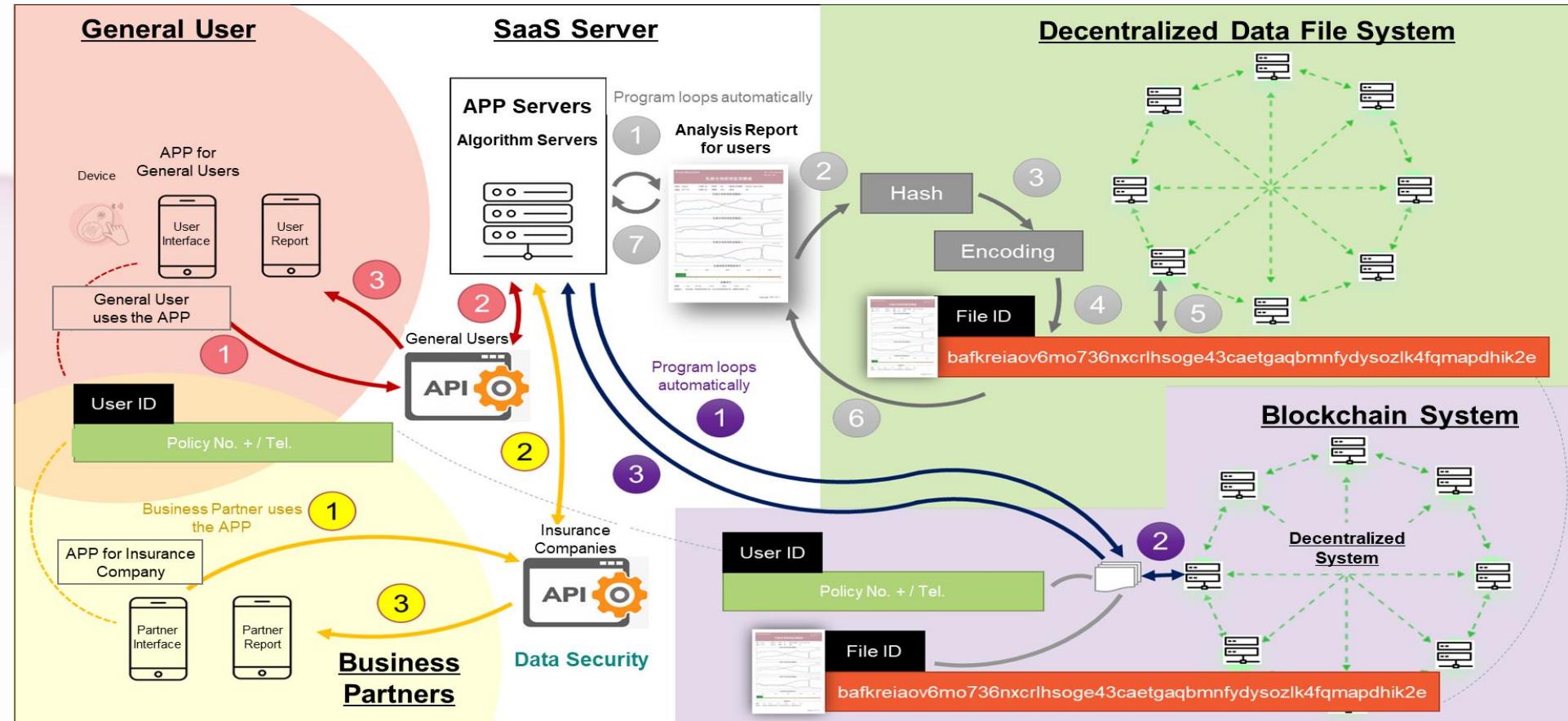
# Our Data Tech behind



# Our Data Tech behind



Closed-loop data security management



Early screening enabled by Big Data algorithm

# Our Patent and Cert

2014 2017 2019 2021 2022

Based on  
Nobel Prize  
Research  
Theory

Establish  
Cellular  
Metabolic  
Heat Model

Obtain  
Clinical Study  
by Certified  
CRO Auditor

Develop  
AI Smart  
BC Monitor  
System

Obtain 9 Patents  
and International  
Medical Device  
certification

Product launch in  
Hong Kong,  
Asia, China,  
Europe, America

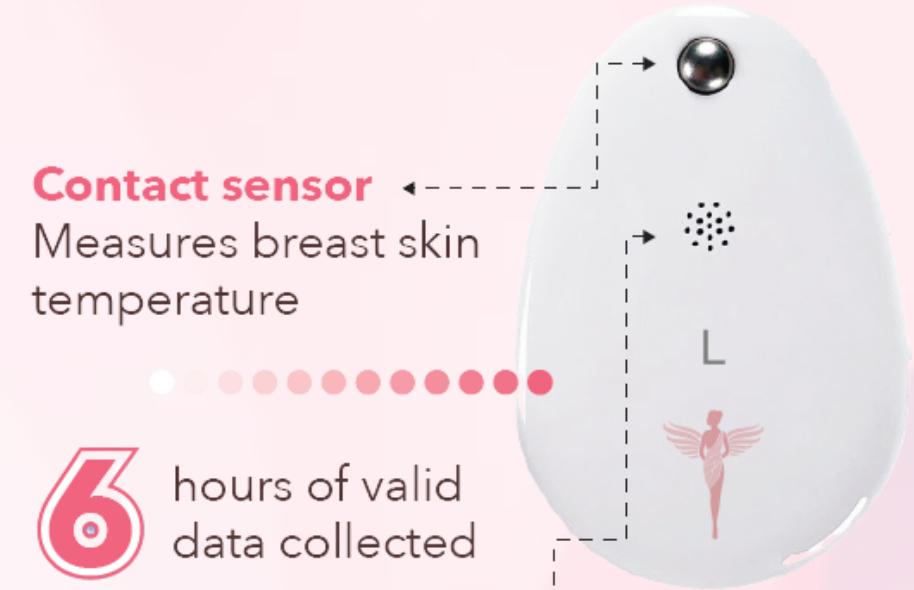


- 9 core patents
- NMPA Class II Medical Device Certification
- CRO Clinical Study Report
- CE European electronic product safety certification

# Our Product Spec



Components inside the package	<ul style="list-style-type: none"> <li>• 1 pair of sensors</li> <li>• 1 piece of bra / 28 pcs of Plasters</li> <li>• 2 coin cell battery</li> </ul>
Report	12 Reports valid for 12 Months
Report type	Professional report (risk grade 1-5)
Recommended use	<p>Monthly monitoring: For the 1<sup>st</sup> month, wear device at least 3 times For the subsequent months, wear device once a month</p>
Certification	<ol style="list-style-type: none"> <li>1. CE : Directive 2014/30/EU EMC</li> <li>2. CE : Directive 2014/53/EU RED</li> <li>3. NMPA : i. 20222070784; ii. 20222210785</li> </ol>



# Our System flow

2014

2017

2019

2021

2022

Based on  
Nobel Prize  
Research  
Theory

Establish  
Cellular  
Metabolic  
Heat Model

Obtain  
Clinical Study  
by Certified  
CRO Auditor

Develop  
AI Smart  
BC Monitor  
System

Obtain 9 Patents  
and International  
Medical Device  
certifications

Product launch in  
Hong Kong,  
Asia, China,  
Europe, America

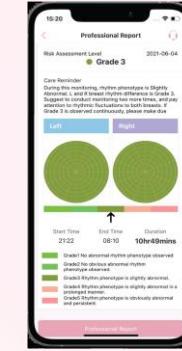
## 1. Data Collection



## 2. Data Analysis



## 3. Data Report

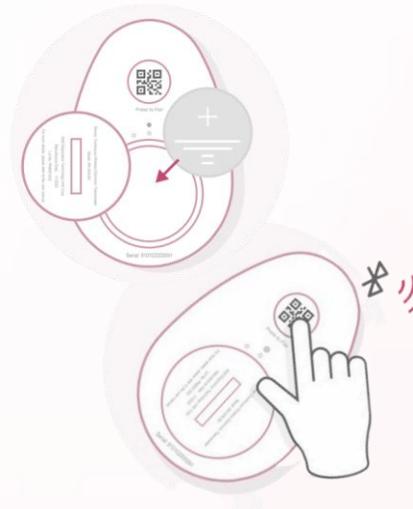


## 4. Follow Up



- Users wear the device while sleeping (capture 6 hours valid data each time)
- Smart sensors continuously collect and transmit the data consist of temperature and humidity of the breast via Bluetooth to mobile phone
- Users' mobile phone sends data to the cloud database
- After preliminary processing of the data various analysis and comparison are performed to generate a test report.
- Reports are sent to users / doctors to be displayed in APP and provide risk level prompts
- (Consumer version) Our CS team to follow up with customer via IM/hotline
- (Doctor version) Doctors portal will be available for Doctor to follow up for their patients

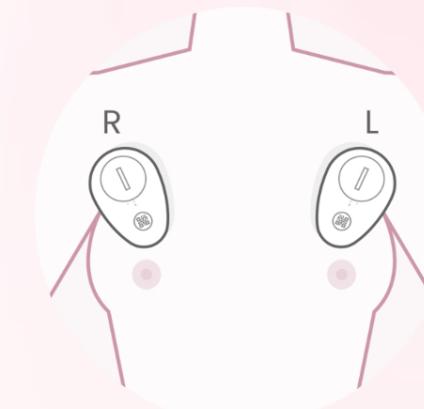
# How To Use



Step 1: Insert the battery cell and press and hold the switch until the blue light is on



Step 2: Scan the QR Code on the box, download the Breast Guardian and connect the device via Bluetooth to the APP.

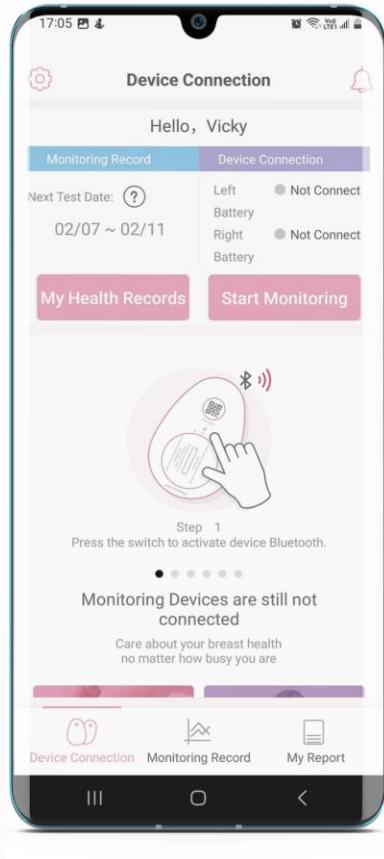


Step 3 : Make sure that the device with the letter L/R is pasted with our plasters on the left/right breast, and the silver detection point should be aligned with the left/right nipple respectively.

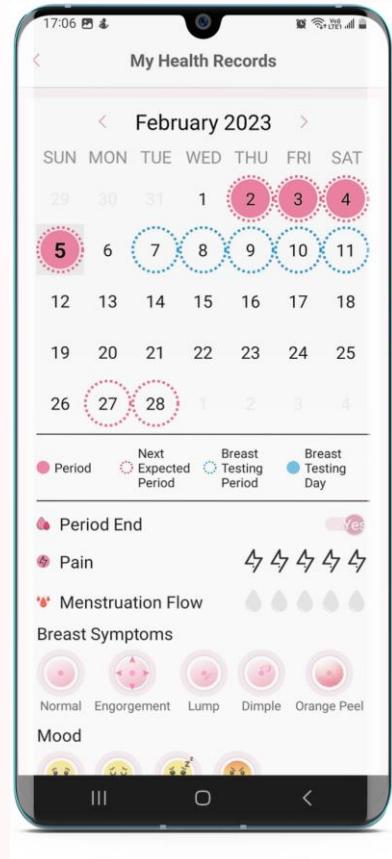


Step 4 : Two daily screening to generate monthly report. The Report will show the grading of the health risk.

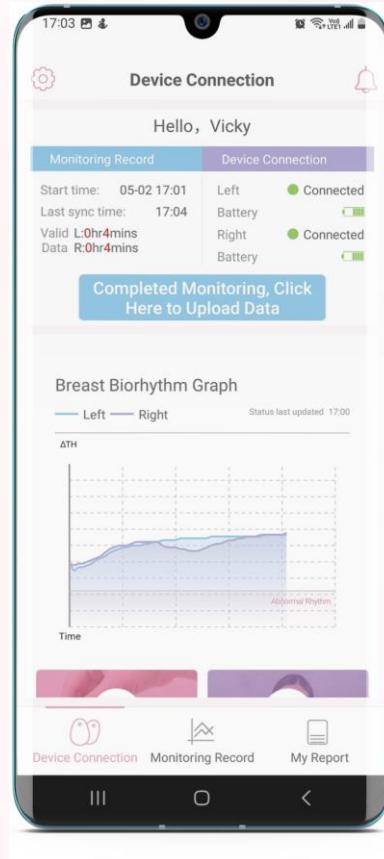
# “8 hrs Test” APP Flow



First time  
Device Setup



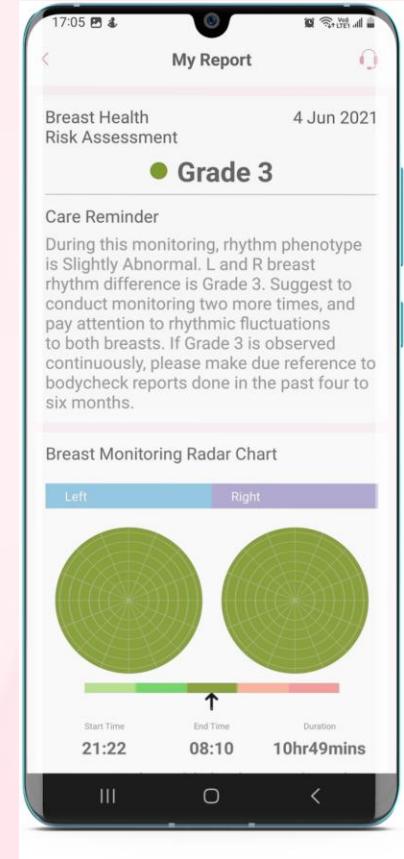
Screening  
schedule  
Setup



Device  
connection

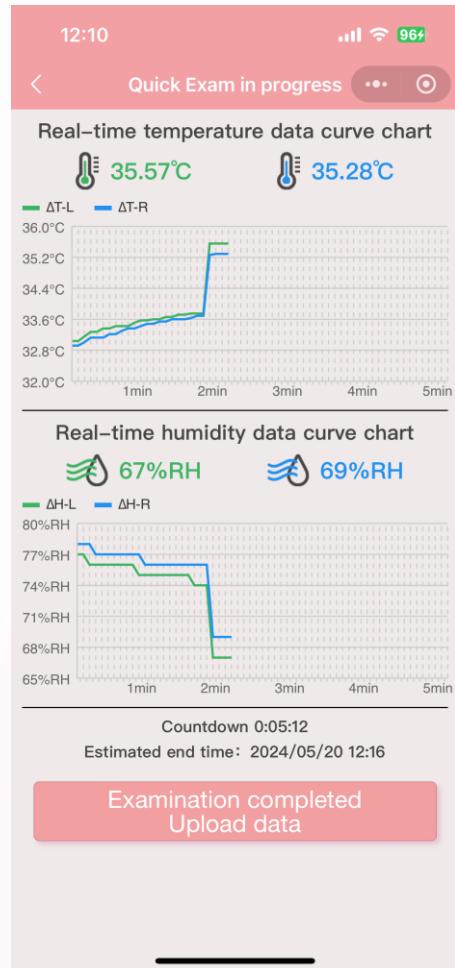


My Monthly  
Report Record

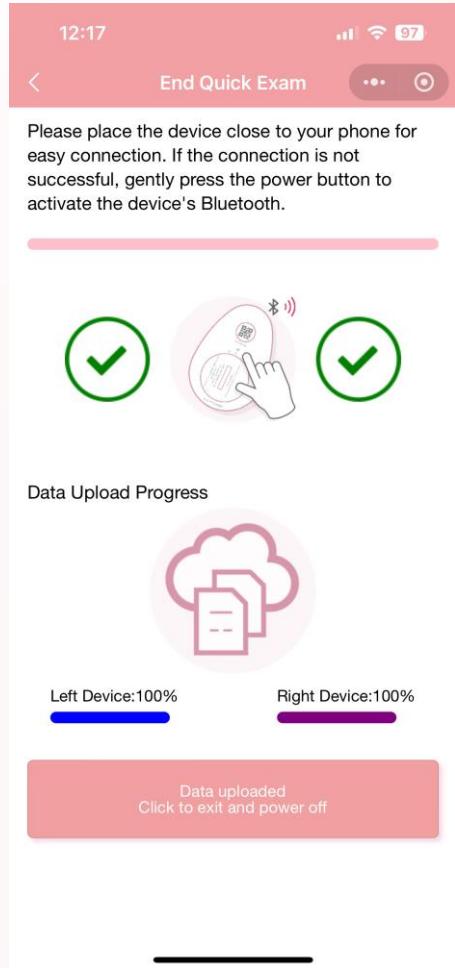


Report detail

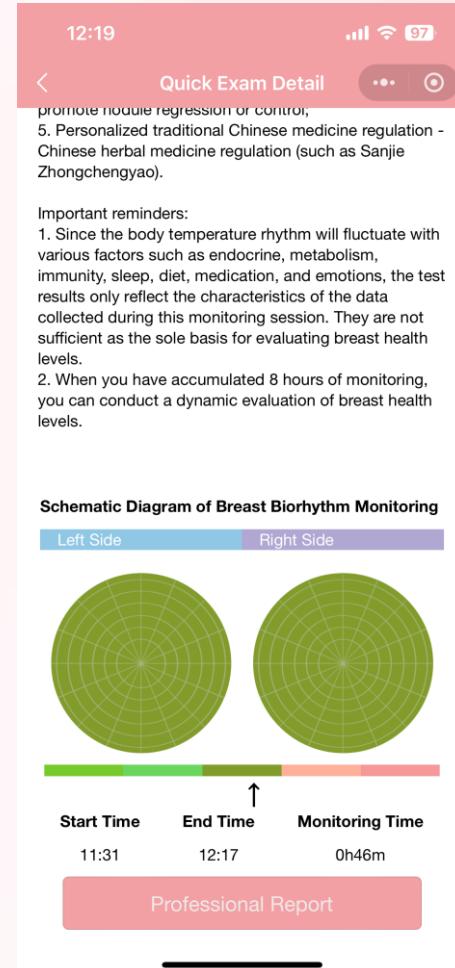
# “1 hr Test” APP Flow



# Real Time Report



## Upload data



View  
Report



Send to  
User

# “Holter Portal” Web Flow (Enterprise Version)

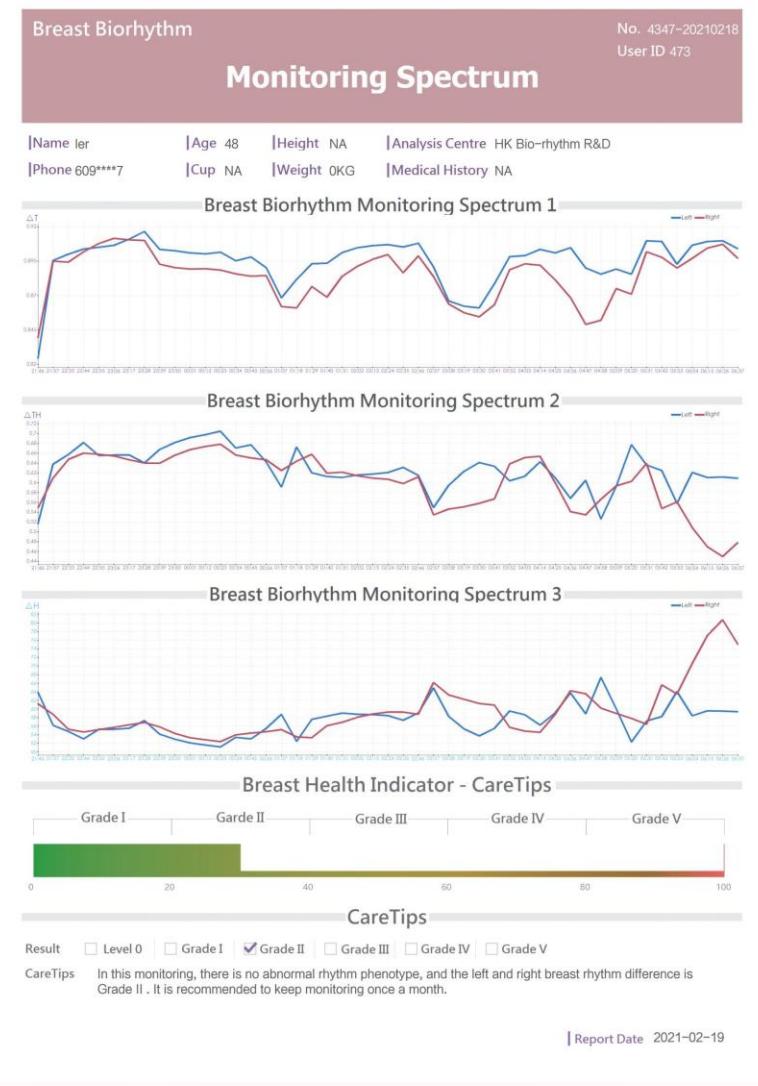
The image displays two side-by-side screenshots of a web application interface. On the left, the login screen for the "Biorhythm (Breast)" portal is shown. It features a logo at the top, followed by input fields for a user ID ("13300002002") and password ("\*\*\*\*\*"), and a large blue "Login" button at the bottom. On the right, the "Client Management" page of the "Biorhythm Holter Portal" is displayed. The header includes the portal logo, the title "Biorhythm Holter Portal", and navigation links for "Home", "Client Management", "Device Table", and "Holter Report". Below the header is a search bar with fields for "Name", "Mobile Phone", and "Our Reference", along with "Search" and "Add" buttons. The main content is a table listing client data, including columns for ID, Name, Mobile phone, Age, Height, Weight, Race, and Actions. The table contains eight rows of data, each with a "Start Mon" button in the "Actions" column.

	ID	Name	Mobile phone	Age	Height	Weight	Race	Actions
<input type="checkbox"/>	205	Den7	98765427	0	0	0	Asians	<button>Start Mon</button>
<input type="checkbox"/>	204	Den6	98765426	0	0	0	Asians	<button>Start Mon</button>
<input type="checkbox"/>	203	Den5	98765425	0	0	0	Asians	<button>Start Mon</button>
<input type="checkbox"/>	201	Den1	98765421	0	0	0	Asians	<button>Start Mon</button>
<input type="checkbox"/>	183	Den4	98765434	0	0	0	Asians	<button>Start Mon</button>
<input type="checkbox"/>	182	Den3	98765433	0	0	0	Asians	<button>Start Mon</button>
<input type="checkbox"/>	181	Hei Tam	90000003	55	158	55	Asians	<button>Start Mon</button>

Login to Portal

Confidential

# “8 Hrs Home Use” APP Report (B2C)



Grade 1	There was no abnormal rhythm phenotype fluctuation. It is recommended to monitor once a month.
Grade 2	There was no obvious abnormality in the fluctuation of the rhythm phenotype. It is recommended to insist on monitoring at least once a month and pay attention to the changes in the rhythm of the left and right breasts.
Grade 3	The rhythm phenotype was slightly abnormal. It is recommended to monitor it twice to pay attention to the fluctuation of the rhythm of the left and right breasts. If it is still grade 3 after 2 consecutive monitorings according to the correct method, you need to refer to the physical examination report within 4-6 months.
Grade 4	The rhythm phenotype was mildly abnormal for a long time. It is recommended to continue to monitor twice this month, each monitoring for 24 hours. If it is grade 4 for two consecutive times, it is recommended to find a professional doctor for examination within one month.
Grade 5	The abnormal rhythm phenotype was more obvious and persistent. It is recommended to monitor 3 times in a month, and each monitoring lasts for 24 hours. If it is grade 5 for three consecutive times, it is recommended to go to the hospital for examination immediately.

# Our Company

HK Bio-Rhythm R&D Limited Company, established in 2019, is a leading life technology company that engages in the research and development of a series of home health products using IoT, artificial intelligence and big data technology.

Our team consists of members from various research institutions and ex-employees from multinational pharmaceutical companies such as Novartis, Johnson & Johnson, Sino-US SmithKline and other famous international medical institutions.

Our research work is based on the innovative application of "Cellular Thermodynamics" and "Modern Biorhythm" producing a series of high-quality, wearable healthcare equipment and intelligent monitoring systems.



*PhD in Math  
from Harvard  
Principal,  
Group Leader*



*PhD Biology,  
Dean  
Research  
group leader*



*Ph.D. in  
computer  
science,3.0  
Team leader*



*Ph.D. in  
Mathematics,  
4.0 team  
leader*



*Ph.D. in  
Biology,  
4.0 team  
leader*



*Ph.D. in  
Physics,Data  
Center  
Director*



*Ph.D. in  
computer  
science,3.0  
Team Leader*



*J&J, Bristol-  
Myers Squibb,  
and SmithKline  
Vice/President*

*Ph.D. in  
Biology, UK  
Director of  
Medicine*

*Tenured  
professor at the  
University of  
Chicago, O&G*

**Chairman  
(Global)**

**CEO  
(China)**

**Group  
CFO**

**Group  
COO**

**Member of the HK Gov ITF project  
Research team of HK BioRhythm,  
Cancer Detection in Curable Stages**



Thank You!