

# CORPORATE PRESENTATION

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ANNUAL GENERAL MEETING 2019

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# A Global Healthcare Problem

**Cancer is the second leading cause of death globally** and is responsible for an **estimated 9.6 million deaths in 2018**

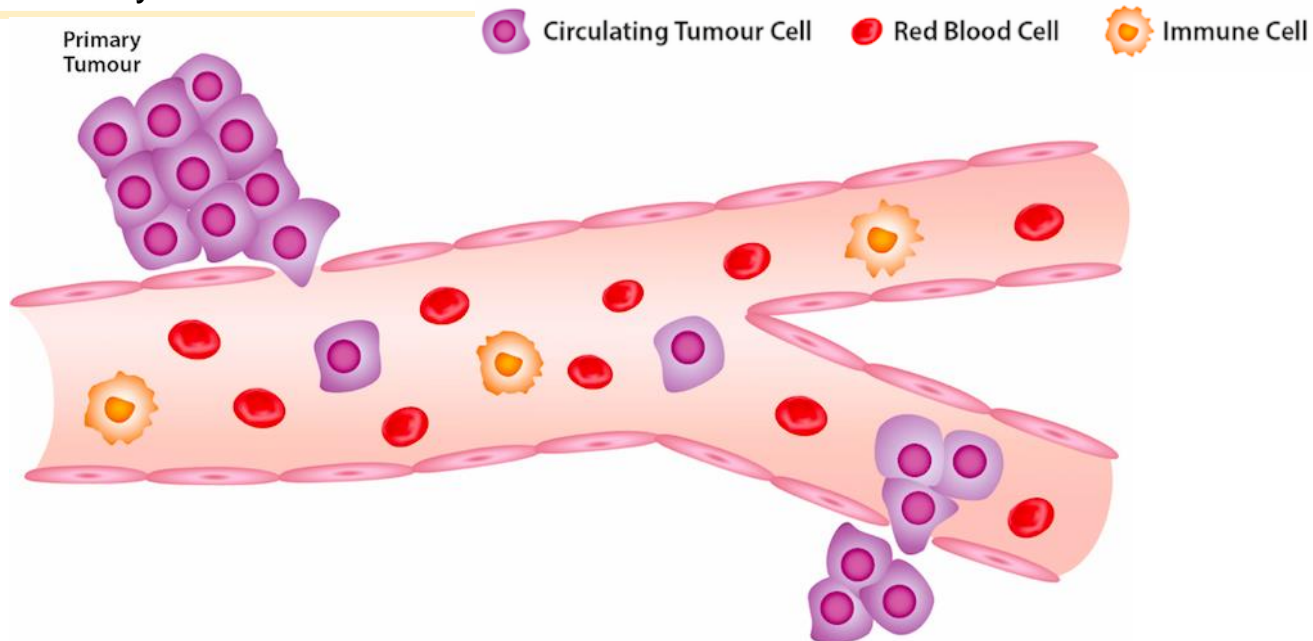
Globally, **about 1 in 6 deaths is due to cancer**

## Most common cancers:

- Lung
- Breast
- Colorectal
- Prostate
- Skin cancer (non-melanoma)
- Stomach

## Metastasis is responsible for an estimated 90% of cancer deaths

It is the process by which cancer cells spread through the blood and lymph systems from the place where they first formed to other parts of the body



Since circulating tumour cells (“CTCs”) are derived from the tumour, an analysis of CTCs may serve as a substitute for an analysis of the tumour

## Cancer is difficult to diagnose and manage due to its heterogeneity at morphological, genetic and clinical levels

### Traditional Diagnostic Methods



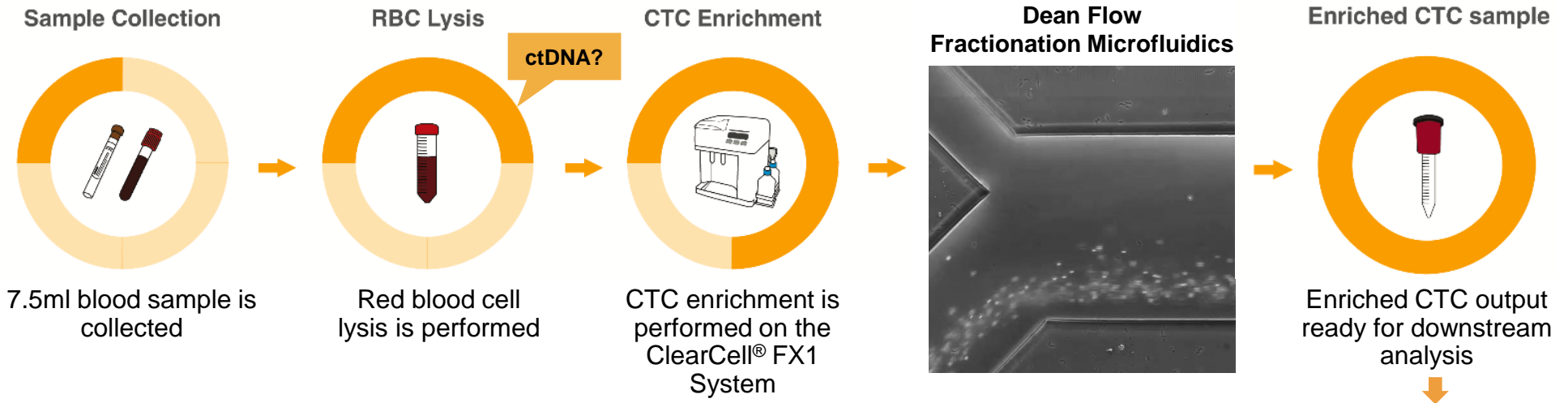
Involve a tissue biopsy, or the surgical removal of tissue from a patient's body and the tissue sample obtained is sent to a laboratory for examination.

- This type of analysis is dependent on the availability of a recently obtained tissue sample. **It may not always be possible to obtain a tissue sample, for example where a tumour is not readily accessible for biopsy or a patient's condition is such that a biopsy is not suitable.**
- In some cases, **the quality and amount of tissue obtained from a tissue biopsy may be insufficient for diagnostic testing.**
- Moreover, **a tissue biopsy is an invasive procedure and not typically performed on a recurring basis, limiting its usefulness for routine periodic patient monitoring to evaluate potential progression of the disease.**
- As the length of time since the original biopsy or diagnosis was conducted increases, **the usefulness of the original biopsy for making treatment decisions declines.**
- Further, **cells in different parts of the same tumour can have different molecular features or properties.** In a tissue biopsy, only a few thin slices of tumour tissue are evaluated.
- **The pathologist's report only reflects the parts of the tumour that were analysed** and, if the cells in other parts of the tumour have different features, such as biomarkers corresponding to specific treatments, they can be missed.

# Novel Patented Technology

**Up to 70% of medical decisions are based on laboratory tests\***

*Biolidics has strong potential to revolutionise the cancer diagnostics market*



## Potential Downstream Applications

- **Immunofluorescence**

Fluorescently-labelled antibodies specific to CTCs and leukocytes can be used to identify and enumerate CTCs or detect cancer-specific biomarkers. CTC counts provide prognostic information, particularly, the metastatic aggressiveness of the tumour. An increase in CTC counts may suggest tumour relapse after therapeutic intervention.

- **Fluorescent in situ hybridisation (“FISH”)**

CTCs isolated using our ClearCell® FX1 System can be analysed using FISH, a technique that allows pathologists to identify chromosomal abnormalities in cells, including gene translocation, amplification and deletions.

- **Genetic analysis**

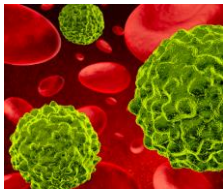
Gene mutations and aberrant gene expression are commonly found in cancer cells. Some cancer mutations are drug-actionable targets that can be used to select effective treatment strategies.

- **In vitro or in vivo tumour models**

As the CTCs isolated using our ClearCell® FX1 System have high integrity and viability, they can be cultured in vitro for cancer R&D of novel therapeutics. In addition, CTCs can be implanted into animal models (patient-derived xenografts) that can be potentially used to screen for suitable drugs by monitoring tumour size and spread in the host animal.

# Global Liquid Biopsy Prospects

## Increased Prevalence of Cancer



The global market for cancer diagnostics, in which we operate, is expected to grow at a compound annual growth rate of 7.6%, to reach an estimated value of US\$168.6 billion by 2020.

- In Asia, dietary changes coupled with the increasing and aging population, have resulted in an increase in the rates of cancer.
- While survival rates for many cancer types has improved significantly in recent years, cancer remains the second biggest cause of death globally, responsible for 8.8 million deaths worldwide in 2015.
- In particular, in the Asia Pacific region, countries such as Japan, Australia, China, India, Singapore and Thailand are markets that offer potential substantial opportunities for the adoption of cancer diagnostics.

## Increased Awareness and Adoption of Liquid Biopsy



In line with the increased awareness and adoption of precision medicine, the liquid biopsy market is expected to grow from approximately US\$0.6 billion in 2016 to US\$1.7 billion in 2021, at a compound annual growth rate of 23.4%.

- Liquid biopsy techniques have been observed to facilitate personalised medicine and targeted therapies.
- Of these techniques, the analysis of CTCs, as employed in our ClearCell® FX1 System, has been noted to be the most highly developed technique
- The increased awareness and adoption of liquid biopsy has also been bolstered by regulatory approvals and increased coverage by insurance companies of such tests. In addition, publications on liquid biopsies have grown significantly since 2012, increasing five-fold through 2014, also helping to build physician and general acceptance of such diagnostic methods.

## Wide Range of Potential Applications for Liquid Biopsy



In particular, the largest potential market for liquid biopsy is predicted to be for early cancer screening to test the general population for cancer – this market for early cancer screening alone could eventually be worth as much as US\$9.0 billion annually.

- Currently, the use of liquid biopsy is generally limited to metastatic patients with specific traits, forming less than 5.0% of all patients, with the bulk of such activity being driven by clinical trials.
- While liquid biopsies have currently been commercialised for therapy selection and treatment monitoring, their use can be expanded to recurrence monitoring and early cancer screening.
- Cancer prevention and screening have also emerged as important issues in every country's health programmes in Asia, further increasing the need and market for such services. In addition to oncology, liquid biopsies can also be commercially applied in other areas such as for pre-natal testing and transplant care.

## Increased Funding



Both the US and China have launched their own precision medicine initiatives, with China seeking to invest as much as US\$9.0 billion over the next 15 years.

- Scientific R&D in the area of precision medicine has been supported by both public and private sector initiatives. The focus on precision medicine will, in turn, also increase the focus on and demand for liquid biopsies.
- In particular, investors in Asia have made substantial investments in liquid biopsy companies, and an estimated total of more than US\$5.0 billion has been invested in the liquid biopsy field up to March 2018, supporting and driving rapid advancements in this area.
- Increased public and private funding will increase standards within this field and at the same time, also increase awareness of the benefits and efficacy of, and hence, demand within the healthcare industry for, liquid biopsies.

Type of Cancer	Forecasted Revenue in 2019*	Forecasted Revenue in 2023*
Lung	US\$22.7 million	US\$59.6 million
Breast	US\$17.5 million	US\$59.0 million
Colorectal	US\$23.2 million	US\$57.0 million
Prostate	US\$16.8 million	US\$41.4 million

The Liquid Biopsy Market in China is estimated to grow from US\$195.4 million in 2019 to **US\$499.9 million in 2023\***



## Biolidics' Laboratory Partner in China to Offer Laboratory Developed Tests ("LDTs") Using Biolidics' ClearCell® FX1 System and CTChip® FR1 biochip

According to a report by American Cancer Society Cancer published on 6 July 2017, **cancer is the leading cause of death in China, with 4.3 million new cancer cases and 2.8 million cancer deaths estimated each year. As of 2017, China has more than 31,000 hospitals** according to statista.com.

**Demand for such LDT services is expected to lead to increase in demand for ClearCell® FX1 System and higher usage of CTChip® FR1 biochips which are required to perform the test.**



Sale of our ClearCell® FX1 System



Sale of the accompanying CTChip® FR1 biochip and other consumables



Development of a wide range of clinical or laboratory developed tests

Each CTChip® FR1 biochip can be only used for one-time liquid biopsy test



Higher sales of ClearCell® FX1 System



Higher sales of the accompanying CTChip® FR1 biochip and other consumables

Higher usage of ClearCell® FX1 System for clinical or laboratory developed tests





# Strategic Collaboration with Sysmex

## Announced on 20 February 2019

- Biolidics and Japan-based Sysmex Corporation (“Sysmex”) to jointly collaborate and develop laboratory assays in the field of circulating tumor cells
- Key objective of the strategic collaboration is to promote laboratory assays developments, applications and market developments for the potential commercialisation of these laboratory assays

Sysmex is listed on the Tokyo Stock Exchange with a market capital of approximately S\$17 billion as at 18 February 2019.

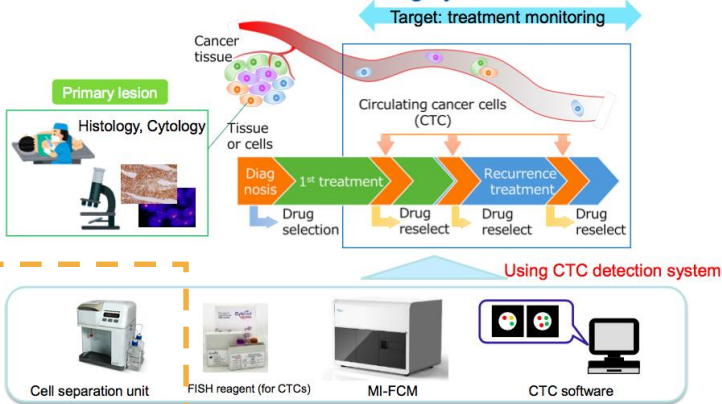
Sysmex delivers total solutions in the domain of healthcare testing, supplying products and services to customers in more than 190 countries.

Globally, Sysmex has the number 1 market share in the hematology, hemostasis and urinalysis fields.

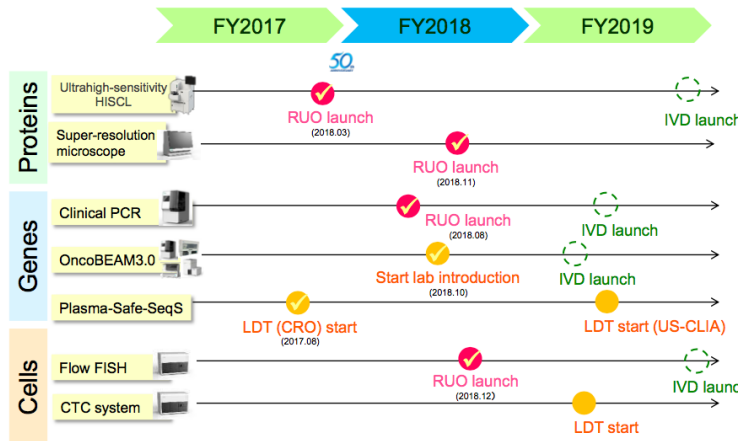
### (3) Cell Measurement Platform / Application Circulating Tumor Cell (CTC) Detection



#### Realization of cancer monitoring by CTC detection



### Plan for the Expansion of Technology Platforms (update)



Updated from the 15th Technology Presentation (March 2018)

## The 16th R&D Meeting

March 8, 2019  
SYSMEX CORPORATION

# Corporate Milestones Since IPO

## Dec 18 - IPO

- IPO on SGX-Catalist Board on 19 Dec 18

## Mar 19 - Achieves improved performance in FY2018

- Healthy balance sheet with cash and cash equivalents of S\$11.5 million and no debt
- Strong technology leadership and solid financial foundation to develop new clinical and commercial applications of the ClearCell® FX1 System as a liquid biopsy platform technology

**Focus on the development of a wide range of clinical or laboratory developed tests**

Drives higher usage of ClearCell® FX1 System for clinical or laboratory developed tests

## Feb 19 - Strategic collaboration with Sysmex

- Biolidics and Sysmex to jointly collaborate and develop laboratory assays in the field of circulating tumor cells
- A global leader in the hematology, hemostasis and urinalysis fields, Sysmex delivers total solutions in the domain of healthcare testing, supplying products and services to customers in more than 190 countries
- Key objective of the strategic collaboration is to promote laboratory assays developments, applications and market developments for the potential commercialisation of these laboratory assays

## Apr 19 – Biolidics’ lab partner in China to offer LDTs using Biolidics’ ClearCell® FX1 System and CTChip® FR1 biochips

- Cancer is the leading cause of death with 4.3 million new cancer cases reported each year in more than 31,000 hospitals
- Each LDT will require one CTChip® FR1 biochip to perform the test, hence this service will be accretive to Biolidics’ financial performance
- Target to widen network of laboratory partnerships in China with ClearCell® FX1 System as a liquid biopsy platform technology

# Summary

## 1. Strong Prospects for Liquid Biopsy Market

- ✓ Increased prevalence of cancer
- ✓ Advantages of a simple blood test (minimally invasive) vs. tissue biopsy (invasive). Recurring and need to be monitored over time
- ✓ The global market for cancer diagnostics, in which we operate, is expected to grow at a compound annual growth rate of 7.6%, to reach an estimated value of US\$168.6 billion by 2020
- ✓ In line with the increased awareness and adoption of precision medicine, the liquid biopsy market is expected to grow from approximately US\$0.6 billion in 2016 to US\$1.7 billion in 2021, at a compound annual growth rate of 23.4%
- ✓ In particular, the largest potential market for liquid biopsy is predicted to be for early cancer screening to test the general population for cancer – this market for early cancer screening alone could eventually be worth as much as US\$9.0 billion annually

## 2. Clear Strategy for Commercial Applications

- ✓ Developing the ClearCell® FX1 System as a platform technology with new business models such as laboratory developed tests
- ✓ Strategic collaborations with industry leaders (such as Sysmex Corporation) to expand our clinical services applications and clinical services customer segment

## 3. Novel Patented Technology

- ✓ Our technologically proven platform for enrichment of CTCs can be integrated with other analytical tests for diagnosis, prognosis, treatment selection and treatment monitoring
- ✓ Secured collaboration agreements with academic institutions
- ✓ Our patent portfolio comprises several issued patents and various pending patent applications relating to our ClearCell® FX1 System and CTChip® FR1 biochip

## 4. Foray into China's Liquid Biopsy Market

- ✓ Hunan Agen Medicine Laboratory Technology Co., Ltd. to offer laboratory-developed cancer tests using Biolidics' ClearCell® FX1 System and CTChip® FR1 biochip
- ✓ Biolidics has entered into agreement with Holistic Integrative Pharmacy Institute, Hangzhou Normal University for the provision of our ClearCell® FX1 System and CTChip® FR1 biochips to them to facilitate the development of CTC diagnostic services
- ✓ Professor Xie Tian is a strategic shareholder of Biolidics and he is also currently the Dean of the Department of Medical Oncology, Holistic Integrative Oncology Institutes and Holistic Integrative Cancer Center of Traditional Chinese and Western Medicine in Hangzhou Normal University

## 5. Enhancing Internal Capabilities

- ✓ Opportunity to capitalise on economies of scale by leveraging on manufacturing technology with greater product sales
- ✓ Enhance our procurement capabilities to achieve more cost-effective purchases of certain components

## 6. Track Record in the Medical Technology Field

- ✓ Key directors have working experience and strong track record in the medical technology field
- ✓ Our quality assurance capabilities have been recognised through our ISO 13485 certification, CE-IVD, US FDA Class I registration and NMPA (formerly CFDA) Class I registration (for the MGI EasyCell System)

# THANK YOU



ANNUAL GENERAL MEETING 2019

# Overview



## Corporate Profile

- Incorporated in 2009 and based in Singapore, **Biolidics Limited** (“Biolidics” or “the Company”) is a medical technology company focusing on the development of cell enrichment systems which, when combined with other analytical tests, have a wide range of applications for cancer diagnosis, prognosis, treatment selection and treatment monitoring.
- **Biolidics** has developed and commercialised a fully automated CE-IVD medical device, the ClearCell® FX1 System, which relies on a novel patented technology to separate and enrich cancer cells from blood.

### ClearCell® FX1 System



### CTChip® FR1 biochip

Each CTChip® FR1 biochip can be only used for one-time liquid biopsy test



## Stock Information

- Listed on the Catalyst Board of SGX-ST - 19 December 2018
- Total issued and paid-up shares - 242.5 million



## Novel Patented Technology

**Biolidics** ClearCell® FX1 System allows users of the system to perform liquid biopsies to test for the presence of cancer cells (specifically circulating tumour cells, or CTCs) in blood samples or perform further analysis on cancer cells.



- ✓ **Liquid biopsies have many applications throughout the various stages of a patient's cancer journey**, from cancer screening and staging to personalised treatment, and post-cancer monitoring



## Strategic Shareholders

- **Clearbridge Health Limited**, an integrated healthcare group listed on Catalyst
- SEEDS Capital Pte. Ltd., wholly-owned by SPRING Equity Investments Pte. Ltd., which is in turn wholly-owned by **Enterprise Singapore, a statutory board under the Ministry of Trade and Industry Singapore**
- **Professor Xie Tian**, who is currently the Dean of the Department of Medical Oncology, Holistic Integrative Oncology Institutes and Holistic Integrative Cancer Center of Traditional Chinese and Western Medicine in Hangzhou Normal University and a recipient of the Wu Jieping Medical Innovation Award in 2014, an award which honours top medical personnel in China, and the Prize for Scientific and Technological Innovation from the Ho Leung Ho Lee Foundation in 2016, an award that recognises scientific and technical personnel with outstanding contributions to the development of science and technology in China

## Mr. Jeremy Yee

### *Non-Executive Non-Independent Chairman*

- Currently the Executive Director and Chief Executive Officer of Clearbridge Health Limited, a company listed on SGX-ST
- Since 2002, more than 15 years of experience in the consumer healthcare industry with various C-level roles in management, corporate development, operations, finance.
- From 1994 to 2002, his career was in the banking and finance industry

## Mr. Ivan Lew

### *Executive Director and CEO*

- Responsible for the overall management, operations, strategic planning and business development of our Company
- More than 20 years of working experience since 1997
- Since 2011, C-level appointments across various industries in both listed companies and private enterprises
- Notable roles included Vice President of group business development and head of performance and strategy at Sembcorp Industries Ltd; CEO and director of business development at Ramky International (Singapore) Pte. Ltd; CEO of C&G (Asia) Engineering Pte Ltd
- Most recently CEO of Shaw Investment APAC Pte. Ltd.

## Mr. Johnson Chen

### *Non-Executive Non-Independent Director*

- Currently the Non-Executive Non-Independent Chairman of Clearbridge Health Limited
- Also the Executive Director of 1Bridge Partners Limited and the Chairman, Executive Director and Chief Executive Officer of CapBridge Pte. Ltd
- Experience in management consultancy, technology, venture capital and investment

## Mr. Huang Junquan

### *COO*

- Responsible for overseeing the operations of our Company
- Since 2006, more than 11 years of experience in various roles and responsibilities in the biomedical, research institutions, and public sectors in Australia and Singapore
- Most recently Regulatory Specialist with the Health Sciences Authority medical device branch

## Mr. Tan Wei Chee

### *Financial Controller*

- Responsible for our Company's finance and management reporting, internal controls and human resources
- From 2009 to 2015, he was an audit manager at Deloitte & Touche LLP, Singapore, where he was responsible for the application of International Financial Reporting Standards and Singapore Financial Reporting Standards