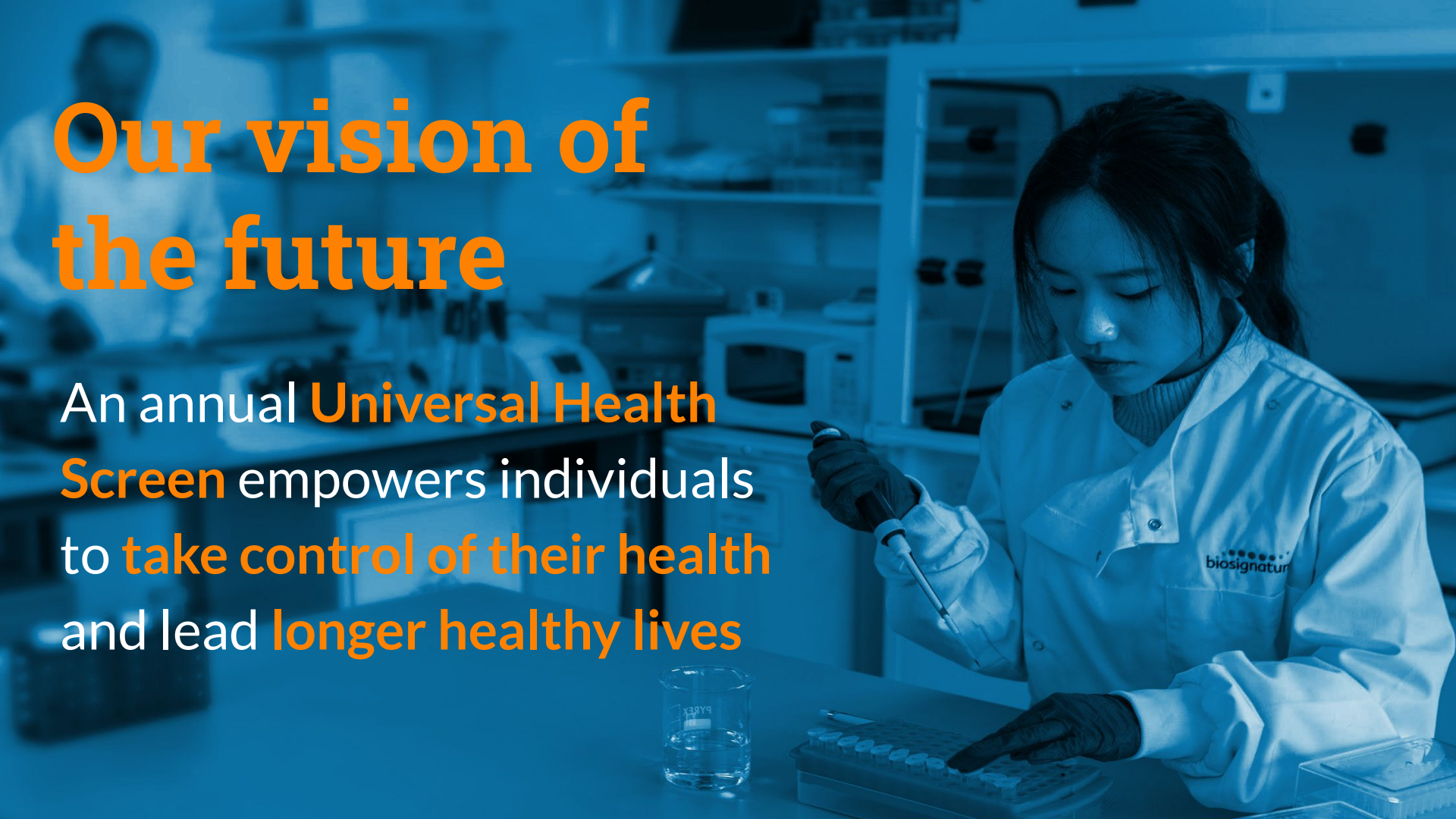
biosignatures

Health information to live by!

21 September 2020 : Overview with a focus on China

Our vision of the future

An annual **Universal Health Screen** empowers individuals to **take control of their health** and lead **longer healthy lives**



Our product

A **Cloud hosted toolset** that delivers **health insights** into **digital health provider** systems via an **ecosystem of partners.**

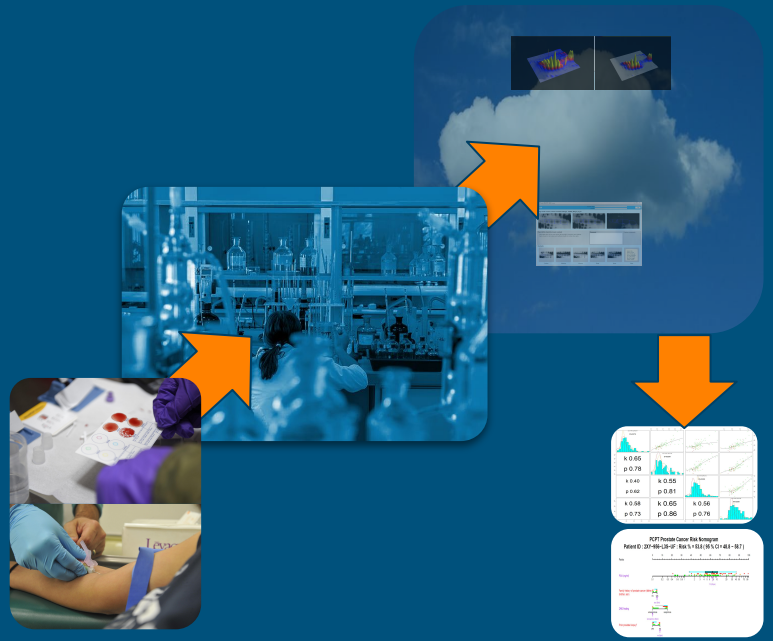
The product supports **multiple, complex lab tests**; providing a unified **'single source'** view to **digital health providers** and a **route to market** for labs and **test developers.**

It enables **delivery to consumer** of our **novel protein isoform based blood tests** alongside third party tests.

Biosignatures solution

- Provides only the **Protocols** and **Cloud analytics**, earning a small **fee per sample.**
- Enables **high quality**, **distributed**, **QC assured**, **high complexity** sample processing and **reporting.**
- Delivers a **single source**, uniform interface for **digital health providers.**
- Is amenable to **multi-omics** data flows
- Will deliver **validated** new **protein isoform** focused tests.

Sample and data flow



Digital Health Providers

平安好医生
要健康 上平安好医生

Case example:

Ping An Good Doctor

Key Financial and Operational Data

(Highlights for the first half of 2020)

Registered Users:
346.2 million
An Increase of
56.9 million
during the past 12 months

MAU: **67.3** million
7.3%
Year-on-year growth

Average Daily Consultations:
831 thousand
26.7%
Year-on-year growth

MPU: **3.0** million
32.3%
Year-on-year growth

Online Medical Services Revenue:
694.9 (RMB) million
106.8%
Year-on-year growth

Revenue:
2,746.6 (RMB) million
20.9%
Year-on-year growth

The ecosystem economics

Request generated by digital health provider

$30 +

Consumer blood sample collection

- Pack sent to home
- Sample taken by consumer
- Pack posted to lab

$50 +

Wet lab blood sample processing

- Blood sample reception
- Guided protocols applied
- Resultant images ingest to cloud

$5 +

Multiplex protein property measures

- Images processed
- QC checks
- Multiple protein property measures created

$15 =

Health Insights Reporting

- Measures generate multiple reports
- Health professional reports
- Multiple diseases

Biosignatures Cloud Platform

Ping An Good Doctor

平安好医生

要健康 上平安好医生

$100+margin

Multiple tests from the same sample

Chronic obstructive pulmonary disease (COPD)

- COPD is the **third leading cause of death in China**
- It has been estimated that the condition **affects more than 13% of Chinese adults aged over 40,** with up to **two thirds asymptomatic**
- Annual **cost to the Chinese economy is estimated at $266 billion**

Alzheimer's Disease

- Someone in the world develops Dementia every three seconds
- **9.5m are thought to be living with the condition** in China
- The 2020 estimated **cost to the Chinese economy is $69 billion.**
- By 2030, it is expected that **the global cost will exceed US$2trillion**

Rheumatoid Arthritis

...continues to be a **major health burden** that **affects quality of life** and **consumes healthcare resources**, particularly in low- and middle-income countries such as developing countries in Asia

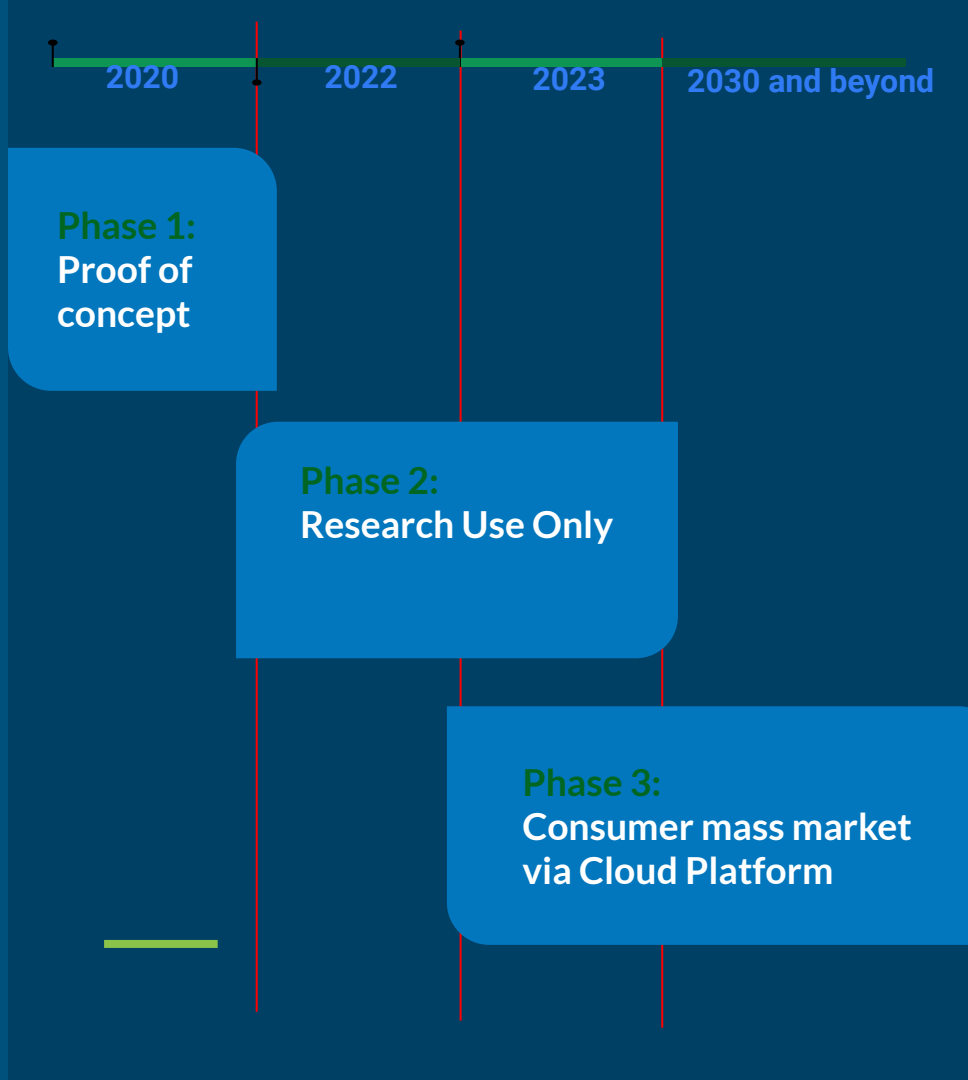
(Extract from the updated Asia-Pacific League of Associations for Rheumatology (APLAR) recommendations, updated 2018)

- RA affects up to 1% of the global population
- **Pre-symptomatic disease identification** can enable early commencement of treatments that lead to a **delay in disease progression**

Biosignatures test pipeline: Subset 1

Clinical & Business Case Development	Published Evidence Review	Assay Performance Verification	Assay Performance in Clinical Samples	Health Insights Performance Assessment
Chronic Obstructive Pulmonary Disease (COPD)	Q3 2020	Q1 2021	Q3 2021	Q4 2022
Alzheimer's Disease	Completed	Q4 2020	Q2 2021	Q4 2022
Rheumatoid Arthritis	Completed	Q4 2020	Q2 2021	Q4 2022
Cancer: Prostate	Completed	Completed	Completed	Q4 2023
Cancer: Pancreatic	Q3 2020	Q1 2021	Q3 2021	Q4 2023

Cloud product roadmap



About Biosignatures

Over the past two decades the team has; developed **software used by researchers globally**, designed and led **multiple clinical studies**, optimised **wet lab processing** procedures in our own lab and **generated large datasets** for our **AI systems** — all under **ISO certified** quality management systems.

The team understands that success requires a deep level of **understanding**, **cooperation**, and **communication** across many domains — **an ecosystem of skilled partners working together**.

The vision: people live longer, healthier lives

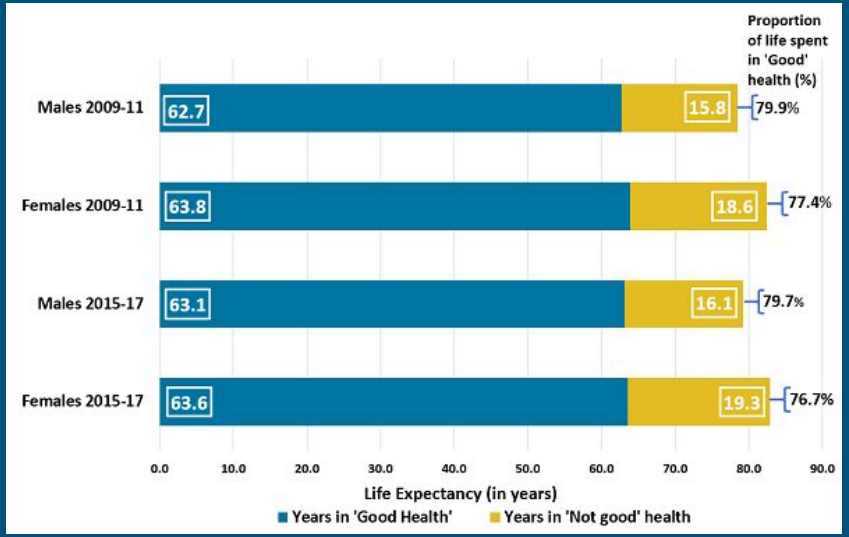
Cloud hosted toolset that delivers **health insights** into **digital health provider** systems via an **ecosystem of partners.**

A **standardised interface** enabling **rapid addition of the latest tests** and delivering **unified reports.**

Globally the market supports in excess of **1 billion tests per year.**

Biosignatures earns **$5 per test** out of the **$100 - $300 'to consumer' price.**

"Healthy life expectancy (HLE) is an estimate of the number of years lived in "Very good" or "Good" general health, based on how individuals perceive their general health."



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Global serum glycoform profiling for the investigation of dystroglycanopathies & Congenital Disorders of Glycosylation

Wendy E. Heywood [a,b,*], Emily Bliss [a,b], Philippa Mills [a,b], Jale Yuzugulen [a], Gabriela Carreno [a], Peter T. Clayton [a,b], Francesco Muntoni [c], Viki C. Worthington [d], Silvia Torelli [c], Neil J. Sebire [e], Kevin Mills [a,b,1], Stephanie Grunewald [a,b,1]

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4. Discussion and conclusions

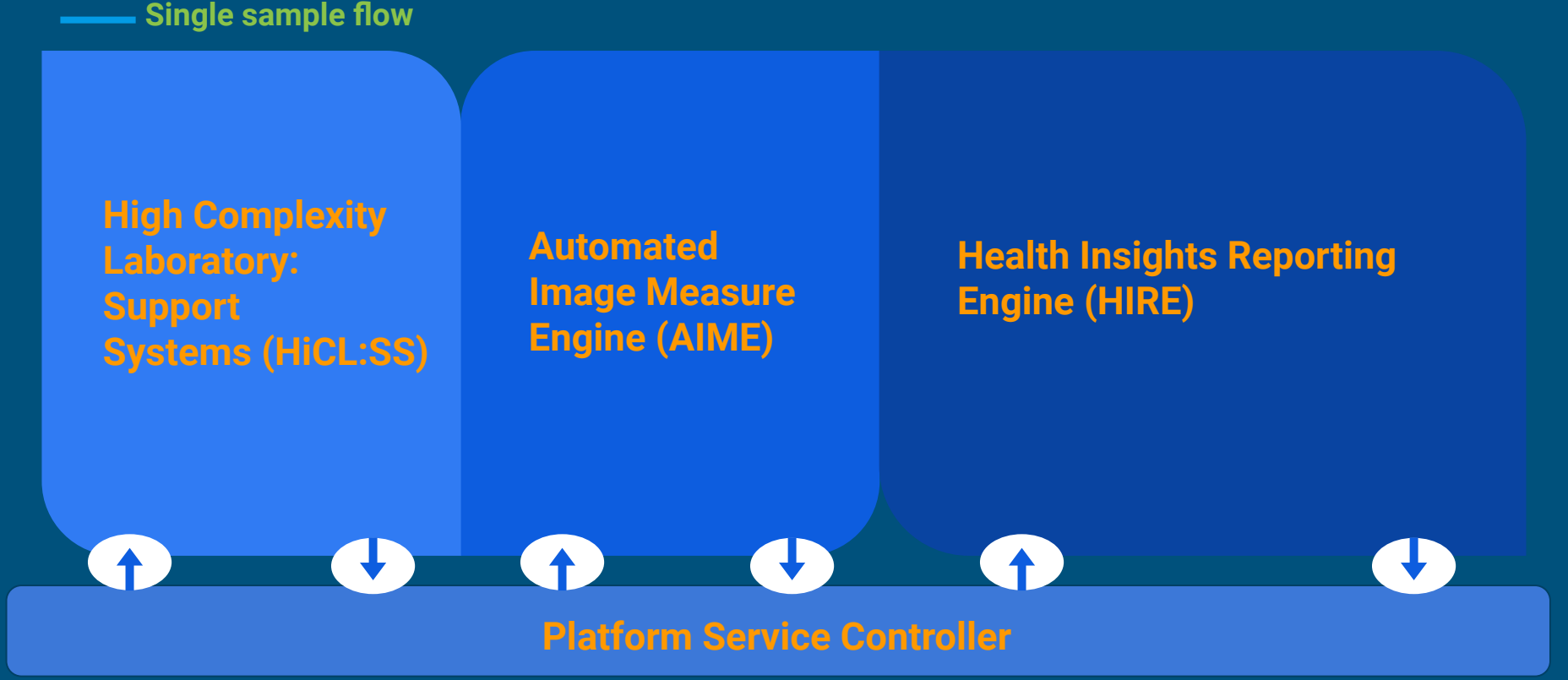
Go to:

This work does not propose replacement of current techniques for the diagnosis of CDG in routine practice (serum IEF of transferrin and apo CIII). However, in complex cases or those with IEF patterns which are difficult to interpret, 2D DIGE has been demonstrated to be an effective tool for the investigation of not only PMM2-CDG, CDG-II and combined *N*- & *O*-linked disorders but also for the investigation of some muscular dystrophies. Analysing multiple glycoproteins has revealed subtle glycosylation effects that may only be identified on lower abundant glycoproteins. For the muscular dystrophies, baseline tests so far mainly rely on muscle biopsy to stain for α-dystroglycan a method that could potentially be complemented by glycoproteome profiling.

Realistically addressable market for a Universal Health Screen

TAM Estimates From Private Health Policies (2014-2015 data)				Revenue projection	
Populations	Total Pop:	% Pop with policies	Number of policies	$5	$100
UK	65.76 m	10.60%	6.97 m	35 m	697 m
US	332.64 m	67.20%	223.53 m	1,118 m	22,353 m
China	1,394.02 m	23.11%	322.16 m	1,611 m	32,216 m
World (low est)	7,684.29 m	10.60%	814.53 m	4,073 m	81,453 m
World (high est)	7,684.29 m	67.20%	5,163.84 m	25,819 m	516,384 m

Cloud workflow as components



Indications

Proteomic Profiling of Human Plasma for Cancer Biomarker Discovery

Zhao Huang[1, 2], Linguang Ma[1], Canhua Huang[2], Qifu Li[1]* and Edouard C. Nice[3]*

[1] Key Laboratory of Tropical Diseases and Translational Medicine of Ministry of Education & Department of Neurology, the Affiliated Hospital of Hainan Medical College, Haikou, China

[2] State Key Laboratory for Biotherapy and Cancer Center, West China Hospital, Sichuan University, and Collaborative Innovation Center of Biotherapy, Chengdu, China

[3] Department of Biochemistry and Molecular Biology, Monash University, Clayton, Australia and Visiting Professor, Sichuan University and West China Hospital

Proteomics and 2-DE

Searching for serum tumor markers for colorectal cancer using a 2-D DIGE approach

Yanlei Ma, Jiayuan Peng, Long Huang, Weijie Liu, Peng Zhang, Huanlong Qin

First published:07 August 2009 | https://doi.org/10.1002/elps.200900082 | Citations: 29

Identification of novel serological tumor markers for human prostate cancer using integrative transcriptome and proteome analysis

Zhao-dong Han · Yan-qiong Zhang · Hui-chan He · Qi-shan Dai · Guo-qiang Qin · Jia-hong Chen · Chao Cai · Xin Fu · Xue-cheng Bi · Jian-guo Zhu · Dong-jiang Liao · Xin-peng Lu · Zi-yao Mo · Yun-ping Zhu · Wei-de Zhong

www.rsc.org/molecularbiosystems **PAPER**

New prognosis biomarkers identified by dynamic proteomic analysis of colorectal cancer†

Ya Peng,‡[ab] Xiayu Li,‡[bc] Minghua Wu,[cd] Jing Yang,[d] Minji Liu,[b] Wengling Zhang,[d] Bo Xiang,[d] Xiaoyan Wang,[c] Xiaoling Li,[d] Guiyuan Li[cd] and Shourong Shen*[bc]

Quantitative proteome analysis reveals annexin A3 as a novel biomarker in lung adenocarcinoma

YF Liu,[1,2] ZQ Xiao,[1] MX Li,[1,2,3] MY Li,[1] PF Zhang,[1] C Li,[1] F Li,[1,2] YH Chen,[4] H Yi,[1] HX Yao[1,2] and Z-C Chen[1,2]*

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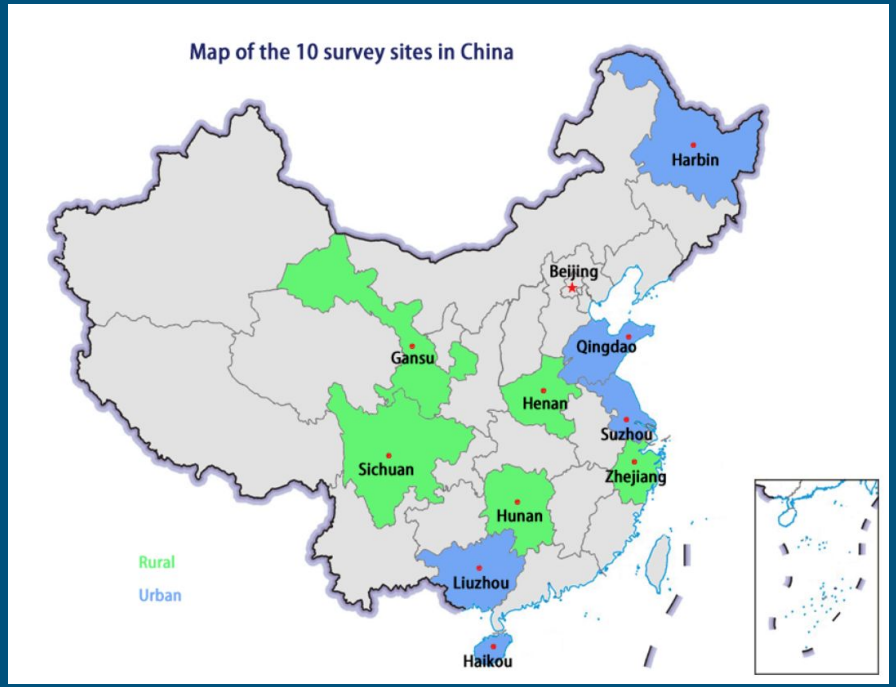
[4] Molecular and Computational Biology, University of Southern California, Los Angeles, CA, USA

Biobanks

The China Kadoorie Biobank (CKB), known previously as the Kadoorie Study of Chronic Disease in China (KSCDC), is set up to investigate the main genetic and environmental causes of common chronic diseases in the Chinese population. During 2004-8, over 510,000 adults were recruited from 10 geographically defined regions of China, with extensive data collection by questionnaire and physical measurements, and with long-term storage of blood samples for future study. All the participants are now being closely monitored for death and other health-related outcomes through linkage with established registries and health insurance databases in the study areas. Every few years, periodic re-surveys are also to be conducted in about 25,000 surviving participants, with a repeat interview, measurements and blood collection (as in the baseline survey) to help assess changes of risk exposures in the study population. This large, well-established, study will be a uniquely powerful and rich resource for investigating the main causes of many common chronic diseases over the next few decades, and the information generated will advance our understanding of disease aetiology not only in China but also in other countries.



Lab services