

The future of healthcare

Precision medicine has been hailed as the “biggest change in medicine today and going forward” by Trade and Industry Minister Chan Chun Sing. In a speech delivered at the opening of GlaxoSmithKline’s latest pharmaceutical production facilities last month, he said: “In the past, many people would have produced simple molecules in large quantities. It was what the industry called a ‘low-mix, high-volume’ business. But increasingly, we are in the ‘high-mix, low-volume’ business.” **BY JAIRA KOH**



BUT WHAT REALLY IS PRECISION MEDICINE?

It is the area of medicine that tailors drug treatments to individual patients based on their genes, lifestyle, and environment. It also encompasses the use of large datasets to suss out trends in these areas, to facilitate the prediction, diagnosis and treatment of disease.



THE MARKET

The global precision medicine market is expected to hit US\$216.75 billion by 2028, on the back of a 10.6 per cent compounded annual growth rate (CAGR), says Research And Markets.

The Asia-Pacific market, the world’s fastest-growing, was valued at US\$11 billion last year, says Ken Research. This figure is expected to climb at a CAGR of 16 per cent until 2023, and reach US\$20.9 billion on the back of population growth, lengthened life spans, ageing societies and technological advances.

WHAT SINGAPORE NEEDS TO DO

Mr Chan listed three elements essential to Singapore’s success in the precision medicine space:



QUALITY ASSURANCE

■ With customised, small-batch medicine, “quality and trust are of utmost importance”. “We are no longer competing on the basis of how cheap we can make our production, because cost is not a constraining factor,” said Mr Chan. Instead, exacting standards are. The common industry standard of having below 3.4 occurrences of manufacturing defects for every million units is “nowhere near sufficient” for precision medicine. “When it comes down to a batch of one, it has to be that precise – that targeted.”



BIG, OPEN DATASETS

■ Singapore must remain connected with the rest of the world and create an environment open to data exchange, he said. “When data flows, data is analysed at scale. That is where we are able to drive precision medicine.”



A DYNAMIC WORKFORCE

■ The minister added that each time the economy undergoes transformation, workers must be retrained to keep pace with production and manufacturing needs. Workers left behind in such transformations will resist change.

RESEARCH IN SINGAPORE

At the National University of Singapore, a seed-grant call for precision medicine and personalised therapeutics was launched in February; S\$100,000 will be disbursed for each approved proposal.

The SingHealth Duke-NUS Institute of Precision Medicine is researching into individual patients’ genetic, molecular and clinical profiles and identifies populations likely to benefit from specific treatments; it has discovered gene mutations and associations between heart disease and genetic variants, and developed tests for eye disease and inherited cardiac conditions.

COMPANIES IN PRECISION MEDICINE

■ **Novena Global Lifecare** has set up a healthcare fund with Sinopharm Capital and Cedarlake Capital. The fund, with a US\$150 million target size, will invest in companies involved in medical services, biomedicine and precision medicine in South-east Asia.

■ **Verita Healthcare Group** uses customers’ blood samples to compare physical and cellular ageing markers against a statistically representative database.

■ **Clearbridge Health** offers a hereditary-cancer gene test; its wellness-management service measures and tracks individuals’ metabolism.

■ **Aslan Pharmaceuticals** has said it will work with BioGenetics to commercialise a drug for bile duct and gastric cancers, which are prevalent in Asia.

■ **GlaxoSmithKline** runs two continuous manufacturing facilities. In continuous manufacturing, the volume of active pharmaceutical ingredients produced can be adjusted according to demand, and is more flexible than traditional batch processing.