

Hong Kong develops microfluidic flow cytomicolecular analyser to promote extensive application of precision medicine

15 August 2025 | News

Uses microfluidic chip technology to greatly enhance detection capabilities without the need to add extra laser sets



A research team from Hong Kong Baptist University (HKBU) has successfully developed a “Sequential Measurement Based Multi-Parameter Microfluidic Flow Cytomicolecular Analyser” (referred to as the “Microfluidic Flow Cytomicolecular Analyser”), which leverages innovative technology to significantly improve testing efficiency. It also reduces costs to only one-tenth to one-fifth of similar products in the market so as to benefit more patients.

The project was recently awarded funding under the “Research, Academic and Industry Sectors One-plus Scheme” (RAISe+ Scheme) launched by the Innovation and Technology Commission of the Hong Kong Special Administrative Region Government to support the commercialisation of its research outcomes.

Currently, flow cytometers are widely used in the field of biomedicine and are considered the gold standard for diagnosing blood diseases such as leukaemia. However, high-end flow cytometers are extremely expensive, with prices reaching several million Hong Kong dollars.

Flow cytometers can detect physical properties of cells, protein expression (including immunophenotyping), total nucleic acid content, functional status and nanoparticles. Among these, immunological assays (antibody-labelled proteins) and nucleic acid quantification (DNA/RNA dyes) are the two most widely used molecular testing methods in clinical and research applications. The Microfluidic Flow Cytomicolecular Analyser developed by HKBU integrates the functions of detecting particles and molecules such as cells, proteins and nucleic acids. To ensure testing efficiency, it utilises artificial intelligence to establish data analysis models, enabling the instant processing of tens of thousands of cell data.