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A*STAR co-develops diagnostic tool for brain injury

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A*STAR Institute of Microelectronics (IME) and SFC Fluidics to co-develop an automated portable biosensor device for diagnosing traumatic brain injury (TBI)



Singapore: A*STAR's Institute of Microelectronics (IME) and SFC Fluidics, a US-based microfluidics and biomedical device development company, will be collaborating to develop a portable diagnostic tool for rapid tri-aging of traumatic brain injury (TBI) victims and to improve treatment strategies. TBI is one of the most common causes of death and disability in the world, usually resulting from blasts, falls, knocks, traffic accidents, and assaults.

The proposed diagnostic tool is a fully-integrated, automated biosensor device that requires only a drop of blood to detect up to three biomarkers released by the brain after sustaining injury. The biomarker readings will be displayed on an easy-to-read screen, along with an indicator alerting the care giver to the severity of the injury.

Unlike conventional diagnostic tools such as neurological tests and computed tomography (CT) scans, the biosensor device does not require any trained personnel for sample handling. The portable feature of the device facilitates rapid on-site diagnosis of the injury. Caregivers will be able to respond quickly with the proper course of treatment to prevent injury aggravation.

The biosensor device leverages and integrates IME's silicon-based microfluidic sensor and biosensor technology and bio-electrochemical assay development capability. IME has built up strong capabilities in biomedical microsystems and has established deep collaborations with the clinical community and key industry partners in Singapore to advance silicon-based point-of-care diagnostics devices.

"This collaboration exemplifies the extension of more-than-Moore" technologies to healthcare. Building on our core capabilities in silicon-based microfluidics and biosensor technology, we can help our partner create innovative diagnostic tools to improve TBI treatment," says Professor Dim-Lee Kwong, executive director, IME. "Working with SFC provides a good opportunity for us to deepen our knowledge in healthcare applications to enable high quality and affordable healthcare solutions."

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