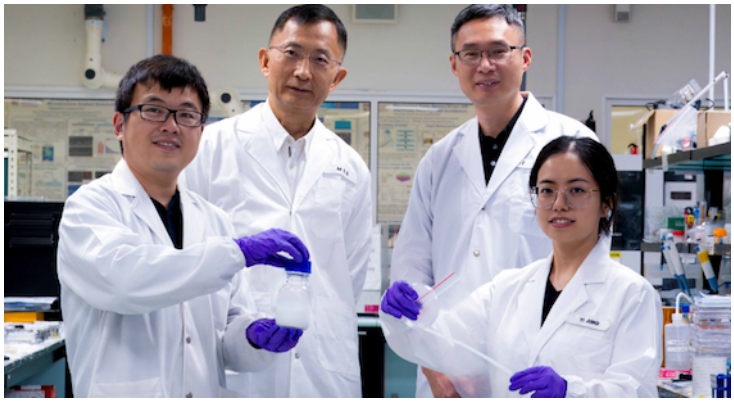
BioSpectrum
the business of Bio & Health Sciences
ASIA EDITION

Singapore, China explore use of spider-silk inspired electrode to shape future of medical devices

February 2, 2024 | News

Offering new possibilities for the next generation of biomedical devices



An international team of scientists from Singapore's Nanyang Technological University, Chinese Academy of Sciences, Nanjing Medical University has developed a flexible electrode that wraps around muscles, nerves and hearts to deliver electrical stimulation to tissues or record electrical activity. Inspired by spider silk, the electrode contracts to conform to biological tissues, is non-toxic and performs better than conventional stretchable electrodes.

Mimicking the properties of spider silk, the electrode contracts when wet to wrap around biological tissues. It is also non-toxic and more sensitive than conventional stretchable electrodes.

The scientists showed that the electrode could detect electrical signals from abnormal heart rhythms in rats.

Reported in *Nature*, the innovation could shape the next generation of medical devices that monitor irregular heartbeat, repair nerves, close wounds and reduce scarring. The innovation could open the door to biomedical devices for monitoring irregular heartbeat, nerve repair, wound closure and scar reduction.

The scientists are currently working on enhancing the long-term stability of the electrode and optimising its performance. In the future, they plan to conduct clinical trials to ensure the safe use of the electrode.