Stingray-inspired soft biobot

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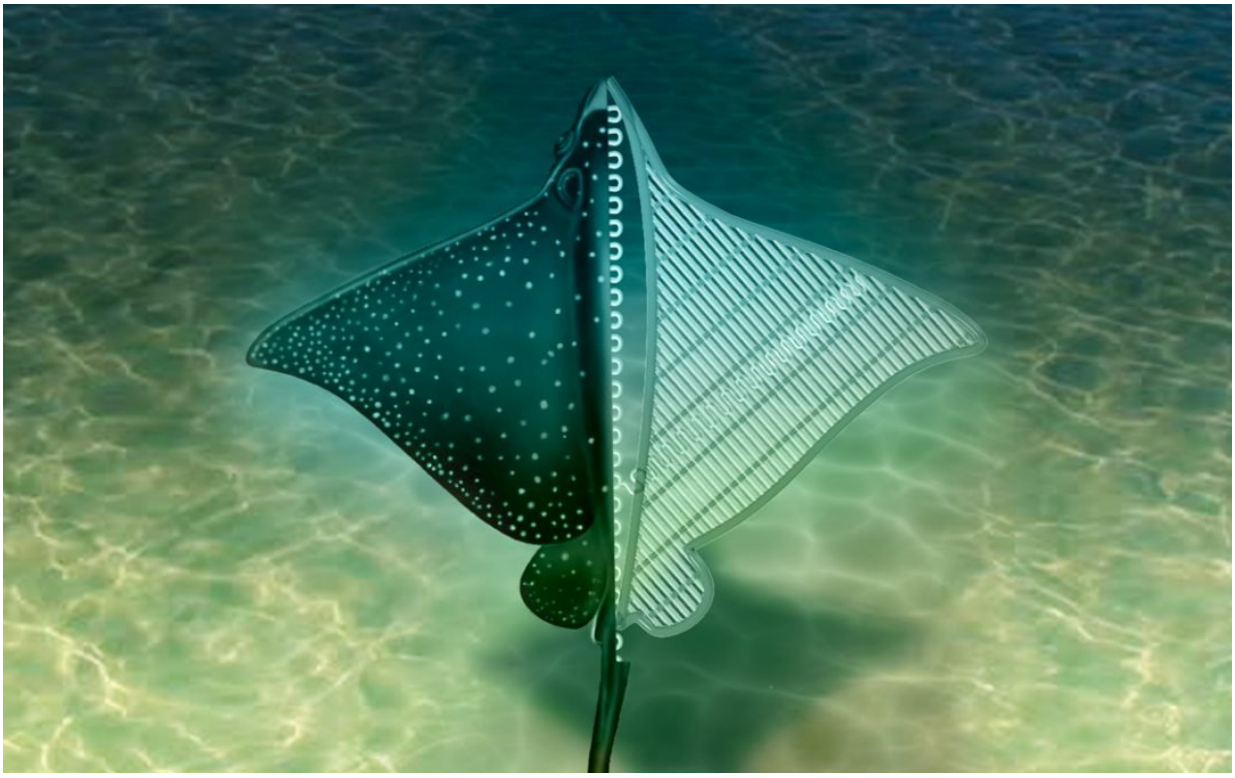

Artist's concept of a stingray soft robot. Credit: University of California, Los Angeles

UCLA bioengineering professor Ali Khademhosseini has led the development of a tissue-based soft robot that mimics the biomechanics of a stingray. The new technology could lead to advances in bio-inspired robotics, regenerative medicine and medical diagnostics.

The study was published in *Advanced Materials*.

The simple body design of stingrays, specifically, a flattened body shape and side fins that start at the head and end at the base of their tail, makes them ideal to model bio-electromechanical systems on.

The 10-millimeter long robot is made up of four layers: tissue composed of live heart cells, two distinct types of specialized biomaterials for structural support, and flexible electrodes. Imitating nature, the robotic stingray is even able to "flap" its fins when the electrodes contract the heart cells on the biomaterial scaffold.

"The development of such bioinspired systems could enable future robotics that contain both biological tissues and electronic systems," Khademhosseini said. "This advancement could be used for medical therapies such as personalized tissue patches to strengthen cardiac muscle tissue for heart attack patients."

More information: Electrically Driven Microengineered Bioinspired Soft Robots, DOI: 10.1002/adma.201704189 , onlinelibrary.wiley.com/doi/10 … /adma.201704189/full

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