

S. TAKEUCHI LAB.

Biohybrid Hand



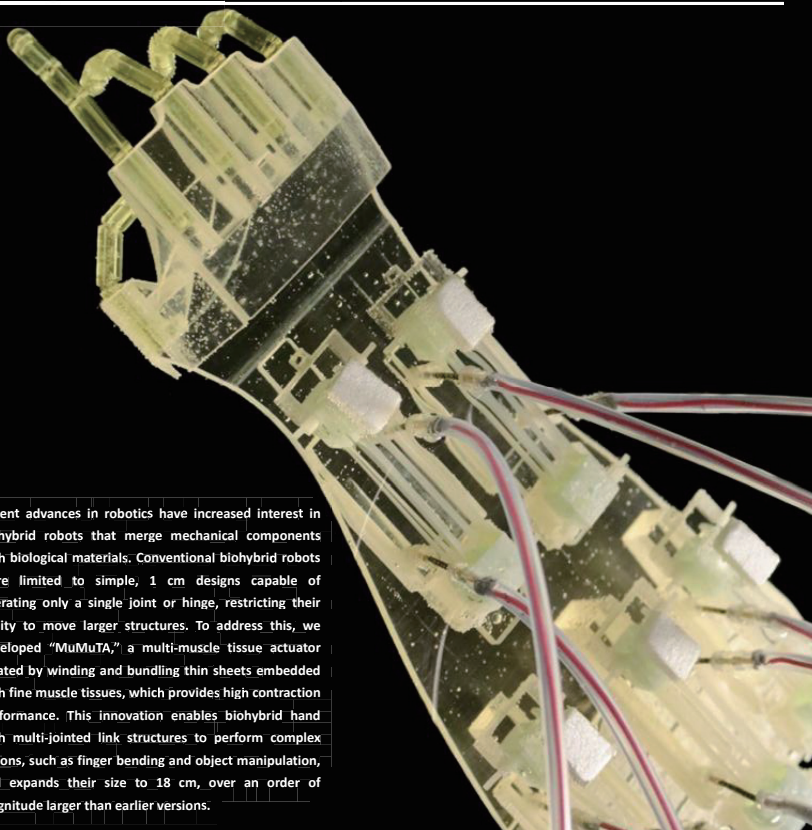
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Biohybrid Hand



Recent advances in robotics have increased interest in biohybrid robots that merge mechanical components with biological materials. Conventional biohybrid robots were limited to simple, 1 cm designs capable of operating only a single joint or hinge, restricting their ability to move larger structures. To address this, we developed "MuMuTA," a multi-muscle tissue actuator created by winding and bundling thin sheets embedded with fine muscle tissues, which provides high contraction performance. This innovation enables biohybrid hand with multi-jointed link structures to perform complex actions, such as finger bending and object manipulation, and expands their size to 18 cm, over an order of magnitude larger than earlier versions.

