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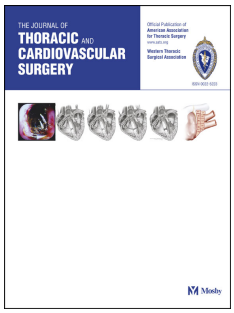

Someday, a Scientific Dream Will Become Reality

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Title: Someday, a Scientific Dream Will Become Reality

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Cars have wheels but not legs, and airplanes have wings that do not flap. Biologically inspired systems mimicking natural materials or living matters have been attracting great attention for years. Unique surfaces mimicking antifouling shark skins or self-cleaning lotus leaves are famous and utilized, but must we mimic nature all the time?

Recent artificial mechanical hearts have successfully increased survival by longer than 5 years in many patients, and a new era of non-pulsatile ventricular assist devices (VADs), which are quite unnatural, has come. Small-sized implantable rotary blood pumps have popularized the clinical usage of VADs as a destination therapy. Based upon recent developments in regenerative medicine, the bio-artificial heart has become one of the most sought targets for treating a large number of patients with heart diseases. In 1992, a polymeric actuator was proposed as the artificial muscle. A hydrogel changed its shape in response to electric stimulation and demonstrated a worm-like motion(1). Recently, skeletal muscles have been