

Abstract Submitted
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Left ventricle of mammalian hearts optimized for high hydrodynamic efficiency LIANG GE, University of California San Francisco, ALI AZADANI, ELAINE TSENG — Mammalian hearts have four chambers: two atria (left and right) and two ventricles (left and right). The left ventricle (LV) is the primary pumping engine that pumps blood to all end organs of the body. The energetic efficiency of LV is therefore crucial for life. An important factor that contributes to the overall LV pumping efficiency is the hydrodynamic cost of blood flow within the LV chamber. LV blood flow is created by the cyclical expansion/contraction motion of LV wall and its hydrodynamic cost is certainly affected by the geometry and motion of LV wall. In this work we investigated the relationship between the hydrodynamic cost of LV filling/ejecting and LV geometry/motion and showed that the geometry and motion of mammalian hearts were optimized to minimize the hydrodynamic cost of LV blood flow.

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