

Abstract Submitted
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Pumping Dynamics in The Embryonic Heart Tube MORTEZA GHARIB, ARIAN FOROUHAR, SCOTT FRASER, Caltech — The embryonic vertebrate heart is a compliant dynamic tube that develops into a multi-chambered multi-valve geometry at later stages. Even at these early stages, the tubular embryonic heart pumps blood to sustain the circulatory system. The prevailing understanding of the pumping mechanism at these stages describes the heart tube as a peristaltic pump. Through advanced confocal imaging techniques, we examined the movement of cells in the embryonic heart tube and the flow of blood through the heart and obtained results that contradict peristalsis as a pumping mechanism in the embryonic heart. We propose a more likely explanation of early cardiac dynamics in which the pumping action results from suction due to elastic wave propagation in the heart tube.

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