

**Supplementary Movie 1: Larval gut motility and Particle Image Velocimetry.** (Top) DIC movie of larval zebrafish gut motility with PIV vectors overlaid in red. The magnitude of the vector represents the instantaneous velocity of a small section of the gut and the angle represents the direction it is traveling. Total time: 22 seconds. (Bottom) Averaging the anterior posterior component of the velocity along the dorsal-ventral direction generates a single curve at each time point. QSTMaps are the surfaces generated by these curves over time.