

425 Supplementary Figure 1: Detailed sinus chamber dimensions are shown from the a) top view, b)
426 side view and (c) 3D model of the aortic valve chamber.

427 Supplementary Figure 2: Left coronary waveforms for isolated BPV and ViV configurations
428 along with native aortic flow waveform. The coronary circuit was designed to provide
429 physiological coronary flows throughout the cardiac cycle through the use of a pneumatically
430 controlled Starling resistor. Namely, this resistor was collapsed or expanded during specific
431 intervals to match the changes in coronary flow during myocardial isovolumetric contraction and
432 relaxation, respectively. A small compliance chamber was used to modulate the compressive
433 forces. (Moore et al¹⁵)

434 Supplementary Figure 3: Image of a) transparent acrylic valve chamber with depiction of laser
435 sheet and camera viewing plane. The coronary sinus that was studied is outlined in red. b) Raw
436 camera image of sinus, with annotated valve leaflets, used for PIV calculations.

437

BPV without Coronary Flow



BPV with Coronary Flow



CoreValve ViV without Coronary Flow



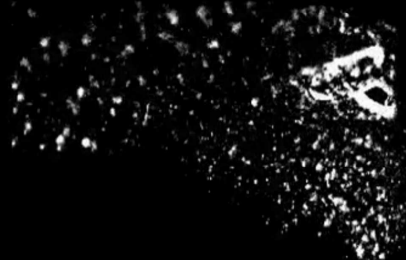
CoreValve ViV with Coronary Flow



Sapien ViV without Coronary Flow



Sapien ViV with Coronary Flow



BPV without Coronary Flow



CoreValve ViV without Coronary Flow



Sapien ViV without Coronary Flow



BPV with Coronary Flow



CoreValve ViV with Coronary Flow



Sapien ViV with Coronary Flow

