

Biophysical Journal, Volume 99

Supporting Material

**Distribution of Electromechanical Delay in the Heart: Insights from a 3D
Electromechanical Model**

Viatcheslav Gurev, Jason Constantino, John Jeremy Rice, and Natalia A Trayanova

Online Supplement

C	0.95 kPa
b ₁	4.0
b ₂	3.42
b ₃	1.63

Table S1 Material parameters of the strain energy function

Time-varying elastance atrial model	
E _{LA,max}	0.0782 kPa/ml
E _{LA,min}	0.0711 kPa/ml
V _{LA,rd}	0.61 ml
V _{LA,rs}	0.56 ml
E _{RA,min}	0.03 kPa/ml
E _{RA,min}	0.0273 kPa/ml
V _{RA,rd}	0.61 ml
V _{RA,rs}	0.56 ml
Systemic Circulation	
R _{ao}	0.0056 kPa*s/ml
R _{mitral}	0.004 kPa*s/ml
R _{as}	1.92 kPa*s/ml
R _{vs}	0.41120 kPa*s/ml
C _{as}	6.52 ml/kPa
C _{vs}	86.6 ml/kPa
Pulmonic Circulation	
R _{tricus}	0.004 kPa*s/ml
R _{pa}	0.032 kPa*s/ml
R _{ap}	0.0404 kPa*s/ml
R _{vp}	0.0404 kPa*s/ml
C _{ap}	8.34 ml/kPa
C _{vp}	10.0 ml/kPa

Table S2 Adjusted parameters of the Kerckhoffs et al. circulatory model

Extracellular (ms/mm)	
Longitudinal	3.75
Tranverse	0.1428
Intracellular (mS/mm)	
Longitudinal	1.044
Tranverse	0.2

Table S3 Electrical conductivity values

Parameter	BCL=350ms	BCL=250ms
τ_1 ms	20	20
τ_2 ms	60	120
$Ca_{diastolic}$ μM	0.01	0.01
k_{on} $\mu\text{M}^{-1} \text{s}^{-1}$	25	25
k_{offL} s^{-1}	166.67	166.67
k_{offH} s^{-1}	16.67	16.67

Table S4 Adjusted parameters of the Rice et al. model.

The LV and RV pressure-volume loops for SR and EP are presented in Figure S1.

Online Supplement Figures

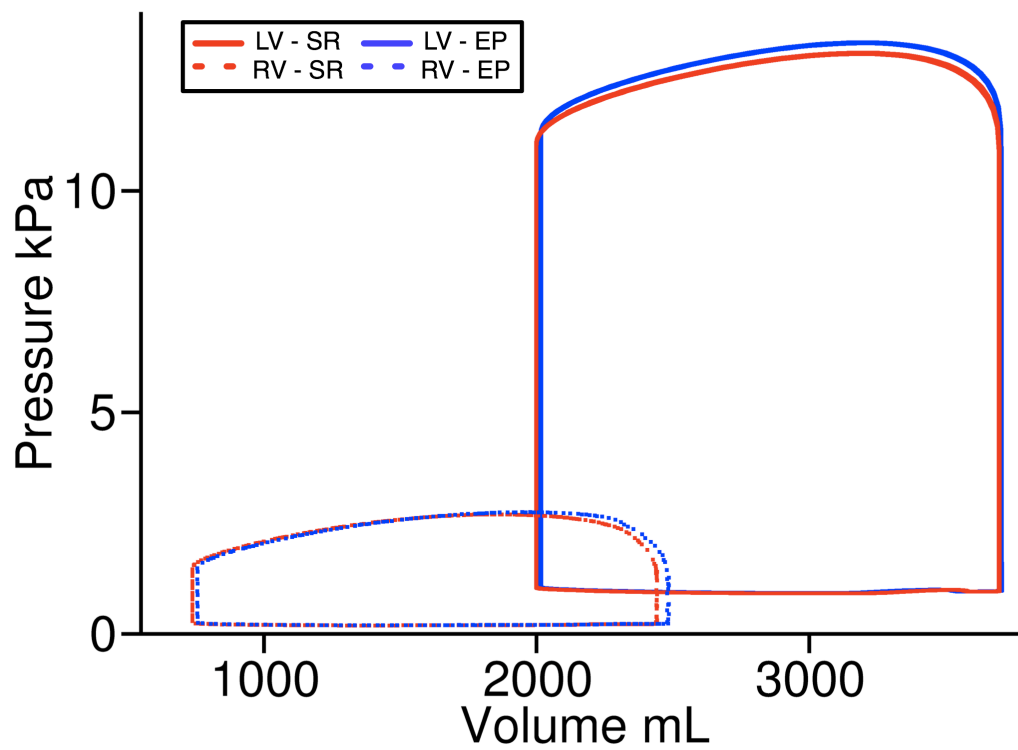
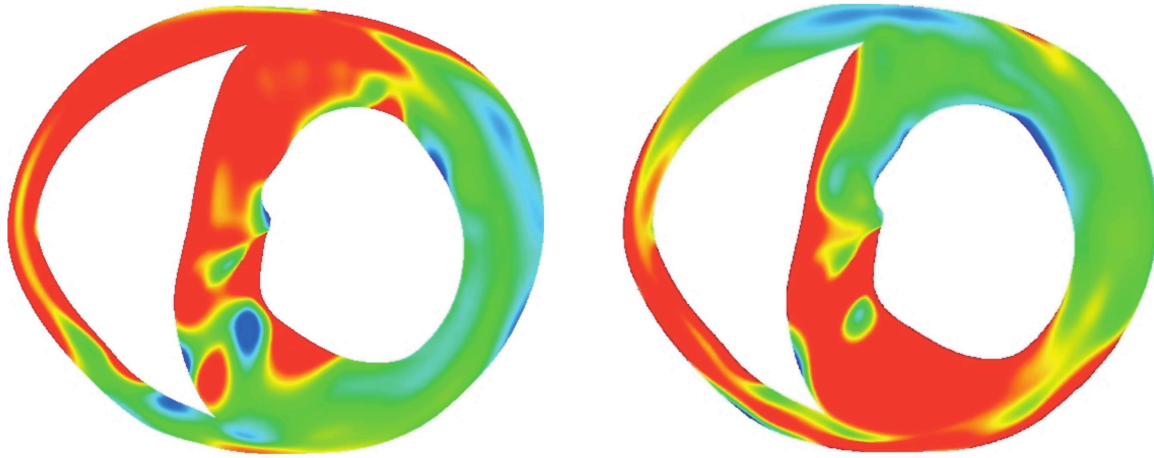


Figure S1 LV(solid) and RV(dashed) pressure-volume loops during SR (red) and following EP(blue) for BCL=350ms.

Anterior

Posterior



electromechanical delay
25 ms  40 ms

Figure S2 Transmurals maps of electromechanical delay following pacing at the anterior wall (left) and the posterior wall (right).