

Supplementary Materials

Table S1. Parameters of pericardium sample irradiation.

Sample nr	Wavelength (nm)	Pulse Energy (mJ)	Repetition rate (Hz)	Number of pulses in single exposure
1	532	215	1	1
2				
3				
4				
5	532	215	1	2
6				
7				
8				
9	532	215	1	5
10				
11				
12				
13	532	215	1	10

Table S2. Parameters of pericardium and aortic valve sample irradiation.

Sample nr	Wavelength (nm)	Pulse Energy (mJ)	Repetition rate (Hz)	Number of pulses in single exposure
1	532	240	1	1
2				3
3				5
4				10
5	532	240	1	1
6				3
7				5
8				10
9	532	240	1	1
10				3
11				5
12				10
13	532	240	1	1
14				3
15				5
16				10

Table S3. Parameters of tissue sample irradiation: 1a-8b and 0a-0b – aorta, 8c – aortic valve, 8d – aortic valve leaflet.

Sample nr	Wavelength (nm)	Pulse Energy (mJ)	Repetition rate (Hz)	Number of pulses in single exposure	
1a	532	40	5	500	
1b					
2a				1000	
2b					
3a	532	20	5	500	
3b					
4a				1000	
4b					
5a				2000	
5b					
6a					500
6b					
7a					1000
7b					
8a		10			
8b					2000
8c					
8d					
0a	Native tissue (without irradiation)				
0b					

Table S4. Parameters of pericardium sample exposure to near Gaussian beam.

Sample nr	Pulse Energy (mJ)	Laser spot size (mm)	Fluency (J/cm ²)	Repetition rate (Hz)	Number of pulses in single exposure
1	240	4.8	1.3	1	4
2		2.3	5.7		4
3		2.3	5.7		2
4		2.3	5.7		2
5		0.8	48		2

Table S5. Parameters of tissue sample irradiation at 1064 nm: AA - aortic aorta, XA - aorta, XZ - aortic valve of the aorta.

Sample nr	Wavelength (nm)	Pulse Energy (mJ)	Fluency (J/cm ²)	Repetition rate (Hz)	Number of pulses in single exposure
AA1	1064	65	0.17	5	100
AA2					50
XA3					10
XA4					200
XA5					500
XA6				1	100
XZ7				5	100
XZ8				5	100
AA9					100

AA10	1	100
AA11		200
AA12		200
AA13	5	500
AA14		50
AA15		10

Table S6. Parameters of tissue sample irradiation at 532 nm: AA - aortic root XA - aorta, XZ - aortic valve.

Sample nr	Wavelength (nm)	Pulse Energy (mJ)	Fluency (J/cm ²)	Repetition rate (Hz)	Number of pulses in single exposure
AA16	532	62	0.12	5	500
AA17					200
AA18					100
AA19					100
AA20			0.06	1	50
AA21					10
XZ22					100
AX23				5	500
AX24					200
AX25					100
AX26					100
AX27				1	50
AX28					10
AX29					500
AX30				5	200
AX31					100
AX32					100
AX33			32	1	50
AX34					10
AX35					500
AA36				5	200
AA37					100
AA38					100
AA39				1	50
AA40					10

Table S7. Parameters of tissue sample irradiation: AA – aorta, ZA - aortic valve.

Sample nr	Pulse Energy (mJ)	Fluency (J/cm ²)	Repetition rate (Hz)	Number of pulses in single exposure
-1-	-2-	-3-	-4-	-5-
AA0	Native tissue			
AA1	15	76	1	600
AA2				1000
ZA3				

ZA4				
ZA5		Reference sample – native valve		
AA6		Reference sample – native tissue		
AA7				
ZA8	15	76	2	2000
ZA9				
ZA10				
AA11	15	76	5	2000
ZA12				
AA13	15	76	5	3000
ZA14				
AA15	11	56	5	3000
ZA16				
AA17				
AA18				
AA19				
AA20				
AA21				
AA22				
AA23	11	56	5	3000
AA24				
AA25				
AA26				
AA27				
AA28				
ZA29				
AA30				
AA31				
AA32				
AA33	11	56	5	10000
AA34				
AA35				
ZA36				
AA37				
AA38				
AA39	10.5	53.5	5	3000
AA40				
AA41				
AA42				
AA43	10.5	53.5	5	5000