

Materials List for:

Assessment of Myofilament Ca^{2+} Sensitivity Underlying Cardiac Excitation-contraction Coupling

Zai Hao Zhao¹, Chun Li Jin¹, Ji Hyun Jang¹, Yu Na Wu¹, Sung Joon Kim¹, Hong Hua Jin², Lan Cui², Yin Hua Zhang^{1,2,3}

¹Department of Physiology & Biomedical Sciences, Ischemic/hypoxic Disease Institute, Seoul National University College of Medicine

²Yan Bian University Hospital

³Institute of Cardiovascular Sciences, University of Manchester

Correspondence to: Lan Cui at lancai@ybu.edu.cn, Yin Hua Zhang at yinzhang87@googlemail.com

URL: <https://www.jove.com/video/54057>

DOI: [doi:10.3791/54057](https://doi.org/10.3791/54057)

Materials

Name	Company	Catalog Number	Comments
Sprague Dawley rat	Koatech		8-12 weeks
Pentobarbital Sodium	Hanlim Pharmaceutical (Korea)	AHN901	Insurance code:645301220
NaCl	Sigma	S9625	
KCl	Sigma	P4504	
NaH_2PO_4	Sigma	S8282	
HEPES	Sigma	H3375	
Glucose	Sigma	G8270	
CaCl_2	Biosesang	C2002	
MgCl_2	Biosesang	M2001	
Mannitol	Sigma	M4125	
MgSO_4	Sigma	M5921	
Sodium Pyruvate	Sigma	P2256	
Taurine	Merck	8.08616.1000	
Na_2HPO_4	Sigma	71649	
Bovine Fetal Albumin	Sigma	A7906	
Collagenase Type 2	Worthington	LS004177	
Protease	Sigma	P6911	
Fura-2 (AM)	Molecular Probes	F1221	
Pluronic F127 20% solution in DMSO	Invitrogen	P3000MP	
Shaking Water Bath	Chang Shin Scientific	Model: C-108	
IonWizard Software Suite	IonOptix Ltd	Experimental Builder	Acquisition and Analysis of EC Coupling Data in Myocytes
Myocyte Calcium & Contractility Recording System	IonOptix Ltd		
Circulating Water Bath	BS-Tech	BW2-8	
Myocyte Fluorescence Microscope	Nikon	DIATPHOTO 200	
MyoCam-S Power	IonOptix		
Fluorescence & Video Detection	IonOptix	MyoCam-S	
CFA300			
PMT400			
Fluorescence & System Interface	IonOptix	FSI700	
Excitation Light Source	IonOptix	mSTEP	

High intensity ARC Lamp Power supply	Cairn Research		
Filter wheel controller	IonOptix	GB/MUS200	
Digital Stimulator	Medical Systems Corporation	S-98 Mutimode	
Compositions of Experimental Solutions			
Name	Company	Catalog Number	Comments
Isolation Solution (pH: 7.4, NaOH)			
NaCl	Sigma	S9625	Concentration (mmol) 135
KCl	Sigma	P4504	Concentration (mmol) 5.4
HEPES	Sigma	H3375	Concentration (mmol) 5
Glucose	Sigma	G8270	Concentration (mmol) 5
MgCl ₂	Biosesang	M2001	Concentration (mmol) 3.5
Taurine	Sigma	CB2742654	Concentration (mmol) 20
Na ₂ HPO ₄	Sigma	71649	Concentration (mmol) 0.4
Storage Solution (pH: 7.4, NaOH)			
NaCl	Sigma	S9625	Concentration (mmol) 120
KCl	Sigma	P4504	Concentration (mmol) 5.4
HEPES	Sigma	H3375	Concentration (mmol) 10
Glucose	Sigma	G8270	Concentration (mmol) 5.5
CaCl ₂	Biosesang	C2002	Concentration (mmol) 0.2
Mannitol	Sigma	M4125	Concentration (mmol) 29
MgSO ₄	Sigma	M5921	Concentration (mmol) 5
Sodium Pyruvate	Sigma	P2256	Concentration (mmol) 5
Taurine	Sigma	CB2742654	Concentration (mmol) 20
Perfusion Solution (Tyrode solution, pH: 7.4, NaOH)			
NaCl	Sigma	S9625	Concentration (mmol) 141.4
KCl	Sigma	P4504	Concentration (mmol) 4
NaH ₂ PO ₄	Sigma	S8282	Concentration (mmol) 0.33
HEPES	Sigma	H3375	Concentration (mmol) 10
Glucose	Sigma	G8270	Concentration (mmol) 5.5
CaCl ₂	Biosesang	C2002	Concentration (mmol) 1.8 For Fura 2AM loading, CaCl ₂ concentrations are 0.25 mM and 0.5 mM
MgCl ₂	Biosesang	M2001	Concentration (mmol) 1
Mannitol	Sigma	M4125	Concentration (mmol) 14.5
Collagenase Solution 1			
Isolation Solution (30mL)			
Bovine Fetal Albumin (BSA solution 5 ml)			Concentration (mmol) 1.67 mg/mL
Collagenase Type 2	Worthington	LS004177	Concentration (mmol) 1 mg/mL
Protease	Sigma	P6911	Concentration (mmol) 0.1 mg/mL
CaCl ₂	Biosesang	C2002	Concentration (mmol) 0.05 mM
Collagenase Solution 2			
Isolation Solution (20mL)			

Bovine Fetal Albumin (BSA solution 3.3 mL)			Concentration (mmol) 1.67 mg/mL
Collagenase Type 2	Worthington	LS004177	Concentration (mmol) 1 mg/mL
CaCl ₂	Biosesang	C2002	Concentration (mmol) 0.05 mM
BSA solution			
Isolation Solution (40mL)			
Bovine Fetal Albumin	Sigma	A7906	Concentration (mmol) 400 mg
CaCl ₂	Biosesang	C2002	Concentration (mmol) 1mM