

Supplemental Document

Table S1. Effect of exogenous C0C2 on steady-state parameters in skinned myocardium

Steady-state parameters in skinned myocardium		
	WT (n=4)	cMyBPC ^{-/-} (n=4)
F _{min} (mN/mm ²) baseline	1.01±0.16	0.85±0.13
F _{min} (mN/mm ²) +C0C2	1.17±0.16	1.70±0.34*
F _{max} (mN/mm ²) baseline	16.07±1.36	15.28±3.01
F _{max} (mN/mm ²) +C0C2	16.71±1.63	15.60±2.86

Quantification of Ca²⁺-independent force (F_{min}) in pCa 9.0 and maximum Ca²⁺ activated force (F_{max}) in pCa 4.5, before and after a 10 minute 1.0μM C0C2 incubation. F_{min}: Ca²⁺-independent force measured at pCa 9.0; F_{max}: Ca²⁺-activated maximal force measured at pCa 4.5. n=number of hearts per group. Values are expressed as mean ± S.E.M; * indicates significant difference (p<0.05) by paired t-test when comparing respective pre- and post- C0C2 incubation.

Table S2. Effect of exogenous COC2 on stretch-activation parameters in skinned myocardium

Dynamic stretch-activation parameters in skinned myocardium		
	WT (n=4)	cMyBPC ^{-/-} (n=4)
k_{rel} (s ⁻¹) baseline	481.16±68.95	947.72±41.85
k_{rel} (s ⁻¹) +COC2	459.12±69.74	733.64±50.37*
Δk_{rel} (%)	-4.84±4.47	-22.44±5.14
k_{df} (s ⁻¹) baseline	3.35±0.53	7.07±0.28
k_{df} (s ⁻¹) +COC2	3.21±0.46	4.60±0.39*
Δk_{df} (%)	-3.89±3.81	-33.90±7.95#

Stretch-activation parameters measured before and after a 10 minute 1.0μM COC2 incubation at pCa 6.1. k_{rel} : rate of XB detachment; k_{df} : rate of XB recruitment. n=number of hearts per group. Values are expressed as mean ± S.E.M; * indicates significant difference (p<0.05) by paired t-test when comparing respective pre- and post- COC2 incubation. # indicates significant difference in % change of stretch-activation rate constant between WT and cMyBPC^{-/-} groups.

Figure S1

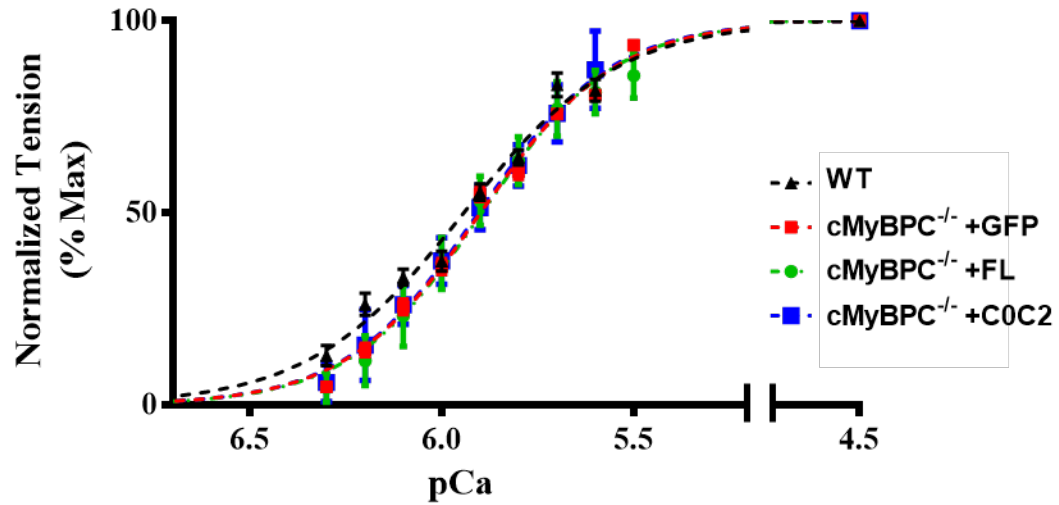


Figure S1: Myofilament Ca²⁺ sensitivity (pCa₅₀) in cardiac preparations from AAV-9 injected groups. Force-pCa relationships were constructed by plotting normalized forces generated at a range of pCa to assess pCa₅₀ in WT hearts and cMyBPC^{-/-} hearts injected with AAV9-GFP, or -FL, or -C0C2 cMyBPC. No significant differences in pCa₅₀ were observed between the groups. 12 myocardial preparations from 4 hearts were used for all the groups.

Figure S2:

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Figure S2: cMyBPC cDNA sequence. Murine FL cMyBPC cDNA Sequence used in AAV9-vectored constructs. The N-terminal C0C2 sequence is highlighted in grey.

Figure S3

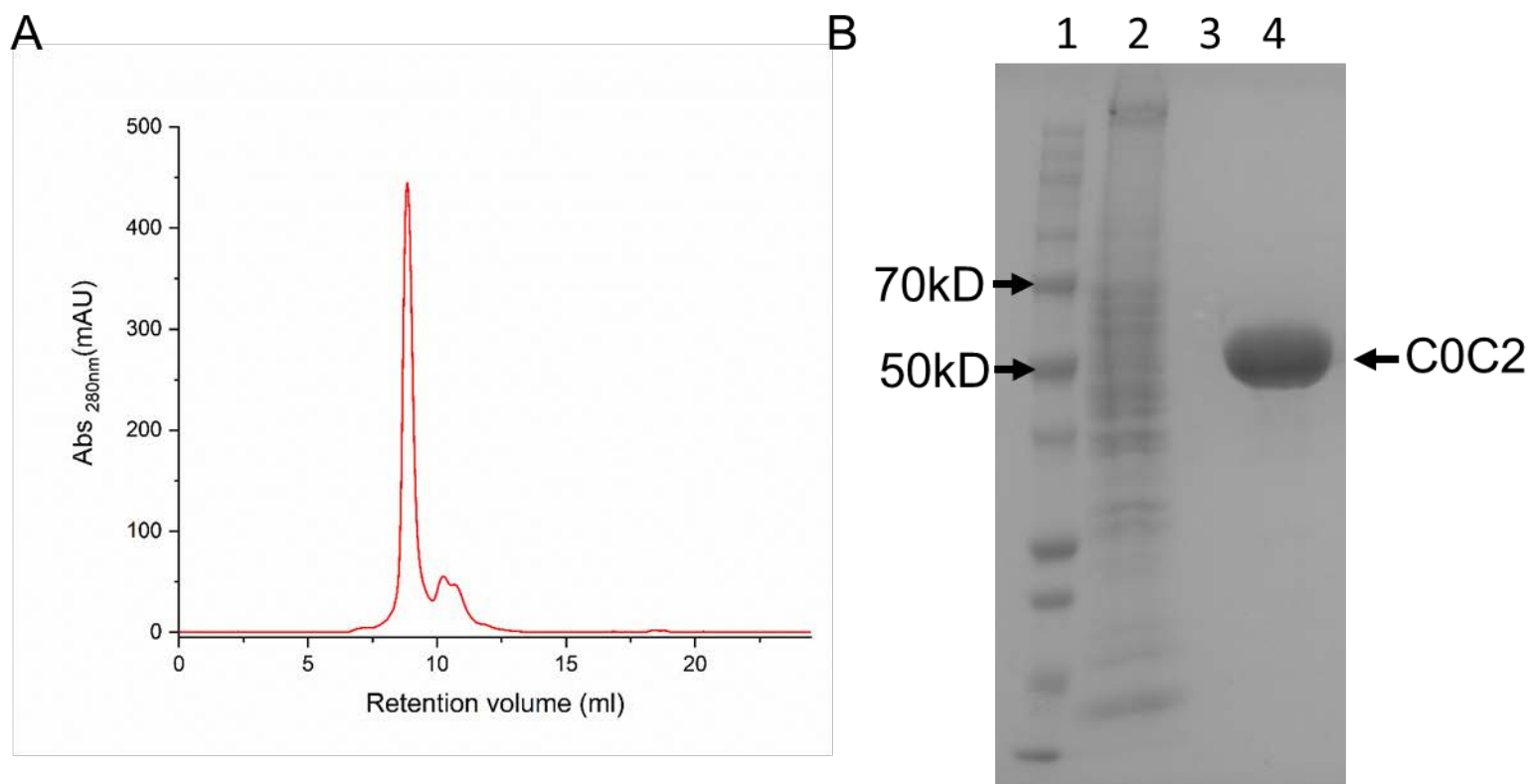


Figure S3: Recombinant C0C2 purification. **(A)** Representative size-exclusion chromatography (SEC) profile of recombinant C0C2 purification. A single major peak is found at the elution volume corresponding to monomeric C0C2 (~49kD). **(B)** Representative Coomassie staining image of SDS-page gel with molecular weight ladder (lane 1), total protein lysate before purification (lane 2), and protein sample from peak fraction collected from SEC (lane 4). Lane 3 was left blank to allow for SEC sample to run unimpeded. The higher concentration of lane 3 loading confirms the absence of major trace contaminants after purification.

Figure S4

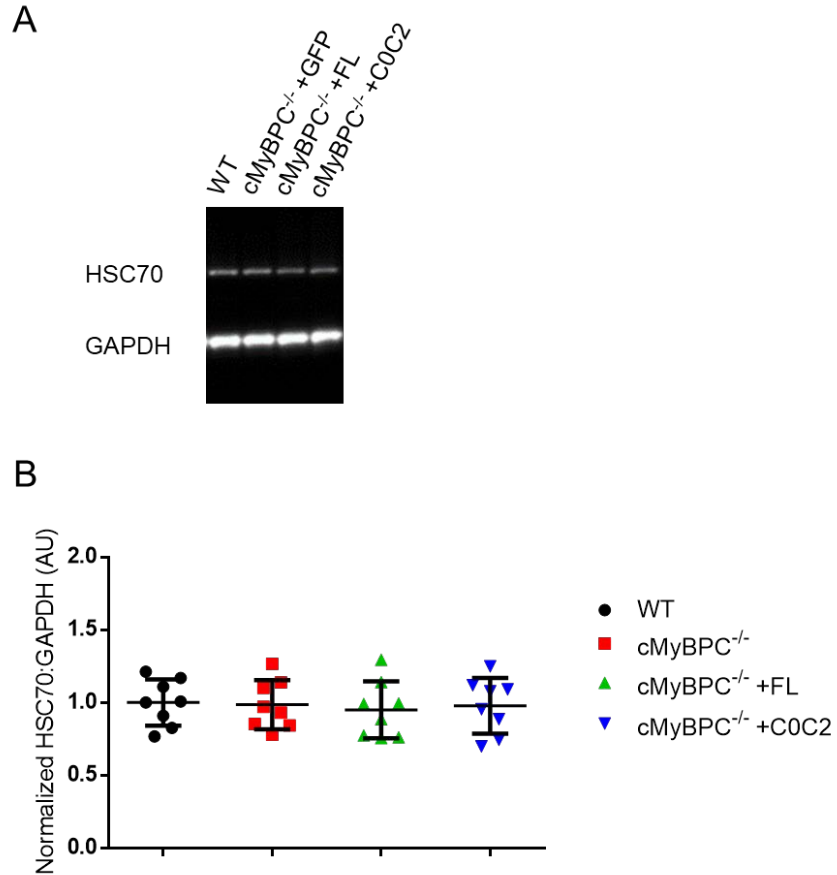


Figure S4: Quantification of relative HSC70 expression. (A) Representative Western blot showing the expression of HSC70 and GAPDH in WT (lane 1), AAV9-GFP treated cMyBPC^{-/-} (lane 2), AAV9-FL treated cMyBPC^{-/-} hearts (lane 3), and AAV9-C0C2 treated cMyBPC^{-/-} hearts (lane 4). (B) Quantification of HSC70:GAPDH in WT, AAV9-GFP treated cMyBPC^{-/-}, AAV9-FL treated cMyBPC^{-/-} hearts, and AAV9-C0C2 treated cMyBPC^{-/-} hearts. n=8 per group.