

Supplementary Table S4. List of representative up-regulated genes in *Acp1^{+/+}* TAC hearts compared with *Acp1^{+/+}* sham hearts and their known biological process. Only gene expression with fold changes ≥ 1.5 (up-regulated) or ≤ -1.5 (down-regulated) and p-value < 0.05 was considered statistically significant (*Acp1^{+/+}* Sham, n=2; *Acp1^{+/+}* TAC, n=5). The last column in right indicates the validated genes using qPCR and immunoblot analysis, (n=3, p<0.05).

Gene symbol	Description	Molecular function	Biological process in the heart	p-value	Fold-change	Validation mRNA or protein level (p<0.05)
Myh7	myosin, heavy polypeptide 7, cardiac muscle, beta	ventricular cardiac muscle tissue morphogenesis	marker of heart failure, re-expressed in response to cardiac stretch	0.00464255	4.55859	mRNA ↗
Nppb	natriuretic peptide type B	regulation of blood pressure	positive regulator of pathological cardiac hypertrophy and heart failure	0.0278867	1.63502	mRNA ↗
Bnip2 (Bax)	BCL2/adenovirus E1B interacting protein 2	apoptosis	Increase level of Bax mediates cardiac cell death	0.0180247	1.66519	protein ↗
Camkk2	calcium/calmodulin-dependent protein kinase 2, beta	Signaling/protein phosphorylation	Mediator myocardial hypertrophy and heart failure	0.000992931	2.29466	protein ↗

Camk4	calcium/calmodulin-dependent protein kinase IV	Signaling/protein phosphorylation	---	0.0278867	1.63502	
Plcd3	phospholipase C, delta 3	signaling/angiogenesis	plays a role in blood pressure and hypertension	0.0145045	1.52401	
Col3a1	collagen, type III, alpha 1	skeletal system development	Collagen deposition is associated with diastolic and systolic dysfunction of the left ventricles	0.0495996	1.7752	protein ↗
Col8a1	collagen, type VIII, alpha 1	angiogenesis	---	0.00187047	1.8856	
Col5a2	collagen, type V, alpha 2	skeletal system development	---	0.0349654	2.20268	
Col8a1	collagen, type VIII, alpha 1	angiogenesis	---	0.00394766	2.54624	
Col12a1	collagen, type XII, alpha 1	cell adhesion	---	0.0135607	2.59123	
Col8a2	collagen, type VIII, alpha 2	angiogenesis	---	0.0279717	2.63823	
Col5a2	collagen, type V, alpha 2	skeletal system development	---	0.0329915	2.87415	
Col8a1	collagen, type VIII, alpha 1	angiogenesis	---	0.00161066	3.33338	