

Table S2.

Enriched gene set	Gene symbol	Gene name
Aortic disease	<i>AEBP1</i>	AE binding protein 1
	<i>COL12A1</i>	collagen type XII alpha 1 chain
	<i>COL5A1</i>	collagen type V alpha 1 chain
	<i>CRIP2</i>	cysteine rich protein 2
	<i>CTSZ</i>	cathepsin Z
	<i>FBN1</i>	fibrillin 1
	<i>FOXE3</i>	forkhead box E3
	<i>SPON1</i>	spondin 1
Premature birth	<i>COL5A1</i>	collagen type V alpha 1 chain
	<i>COL5A2</i>	collagen type V alpha 2 chain
	<i>CYP26C1</i>	cytochrome P450 family 26 subfamily C member 1
	<i>EPHX1</i>	epoxide hydrolase 1
	<i>GSTM1</i>	glutathione S-transferase mu 1
	<i>GSTP1</i>	glutathione S-transferase pi 1
	<i>IGF1</i>	insulin like growth factor 1

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	<i>IL10RA</i>	interleukin 10 receptor subunit alpha
	<i>KCNJ1</i>	potassium voltage-gated channel subfamily J member 1
	<i>NDP</i>	NDP, norrin cystine knot growth factor
	<i>PTGER2</i>	prostaglandin E receptor 2
	<i>PTGER3</i>	prostaglandin E receptor 3
	<i>SFTPA1</i>	surfactant protein A1
	<i>TFAP2B</i>	transcription factor AP-2 beta
	<i>TRAPPC2</i>	trafficking protein particle complex 2
	<i>TSHR</i>	thyroid stimulating hormone receptor
Musculoskeletal diseases	<i>AMPD1</i>	adenosine monophosphate deaminase 1
	<i>ANKRD11</i>	ankyrin repeat domain 11
	<i>ANTXR2</i>	ANTXR cell adhesion molecule 2
	<i>BGLAP</i>	bone gamma-carboxyglutamate protein
	<i>COL5A1</i>	collagen type V alpha 1 chain
	<i>DLX5</i>	distal-less homeobox 5
	<i>DMD</i>	dystrophin

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<i>DNAJB6</i>	DnaJ heat shock protein family (Hsp40) member B6
<i>EXT1</i>	exostosin glycosyltransferase 1
<i>EZR</i>	ezrin
<i>FBN1</i>	fibrillin 1
<i>FGFR2</i>	fibroblast growth factor receptor 2
<i>FKRP</i>	fukutin related protein
<i>FRAS1</i>	Fraser extracellular matrix complex subunit 1
<i>HLA-DQA1</i>	major histocompatibility complex, class II, DQ alpha 1
<i>IGF1</i>	insulin like growth factor 1
<i>IL17A</i>	interleukin 17A
<i>KAT6B</i>	lysine acetyltransferase 6B
<i>MBNL2</i>	muscleblind like splicing regulator 2
<i>MTM1</i>	myotubularin 1
<i>NELL1</i>	neural EGFL like 1
<i>PADI4</i>	peptidyl arginine deiminase 4
<i>PAX8</i>	paired box 8
<i>RYR1</i>	ryanodine receptor 1

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	<i>SMARCAL1</i>	SWI/SNF related, matrix associated, actin dependent regulator of chromatin, subfamily a like 1
	<i>TBX1</i>	T-box 1
	<i>TNXB</i>	tenascin XB
	<i>TRAPPC2</i>	trafficking protein particle complex 2
	<i>TRIM21</i>	tripartite motif containing 21
	<i>TSHR</i>	thyroid stimulating hormone receptor