

Supplemental Table 1. Putative regulators of canine body size and their conserved function across other vertebrate species.

Gene Symbol(s)	<i>CDK4</i>	<i>GHR</i>	<i>GPC3-GPC4</i> locus	<i>HMGA2</i>	<i>IGF1</i>	<i>IGF1R</i>	<i>NCAPG-LCORL</i> locus	<i>SMAD2</i>	<i>STC2</i>
Association(s) with growth-related morbidity*	none reported	Laron syndrome; idiopathic short stature	Simpson-Golabi-Behmel syndrome	gigantism; proportionate short stature; osteopoikilosis	<i>IGF1</i> deficiency	<i>IGF1</i> , resistance to	dystocia, size-related (cattle)	none reported	none reported
Cattle	--	yes	--	yes	--	--	yes	--	--
Chicken	--	yes	--	yes	--	yes	yes	--	--
Dog	yes	yes	yes	yes	yes	yes	yes	yes	yes
Horse	--	--	--	yes	--	--	yes	--	--
Human	--	yes	yes	yes	yes	yes	yes	--	--
Mouse	yes	--	--	yes	yes	--	--	--	yes
Pig	--	--	--	yes	--	--	--	--	--
References	1,2	3-9	1,4,5,10-17	1,4,5,18-32	1,4,5,19, 33-36	5,36,37	3,18,20,29,30, 38-42	4,5,19	4,5,43-45

*Unless otherwise stated, all conditions are human and named according to OMIM (www.omim.org).

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Supplemental Table 2. GO terms associated with canine body size candidate genes

GO Term	Cluster	Genes	Fold Enrichment	P-value
Biological Process				
positive regulation of cellular protein metabolic process	4	IGF1, CDK4, GHR	19.35	0.008
positive regulation of protein metabolic process	4	IGF1, CDK4, GHR	18.56	0.008
positive regulation of signal transduction	5	GPC3, IGF1, GHR	15.29	0.012
positive regulation of cell communication	5	GPC3, IGF1, GHR	13.71	0.015
enzyme linked receptor protein signaling pathway	7	IGF1R, SMAD2, GHR	13.19	0.016
positive regulation of cell proliferation	1	IGF1R, IGF1, CDK4	10.89	0.023
regulation of cellular protein metabolic process	4	IGF1, CDK4, GHR	9.51	0.030
positive regulation of macromolecule biosynthetic process	2	IGF1R, IGF1, SMAD2, CDK4	9.19	0.005
protein amino acid phosphorylation	3	IGF1R, SMAD2, CDK4, GHR	9.01	0.006
positive regulation of cellular biosynthetic process	2	IGF1R, IGF1, SMAD2, CDK4	8.78	0.006

positive regulation of biosynthetic process	2	IGF1R, IGF1, SMAD2, CDK4	8.65	0.006
phosphorylation	3	IGF1R, SMAD2, CDK4, GHR	7.52	0.009
phosphorus metabolic process	3	IGF1R, SMAD2, CDK4, GHR	6.18	0.016
phosphate metabolic process	3	IGF1R, SMAD2, CDK4, GHR	6.18	0.016
regulation of apoptosis	6	IGF1R, IGF1, GHR	5.61	0.078
regulation of programmed cell death	6	IGF1R, IGF1, GHR	5.55	0.079
regulation of cell death	6	IGF1R, IGF1, GHR	5.53	0.080
<hr/> Cellular Component <hr/>				
extracellular space	5	GPC3, IGF1, GHR	7.00	0.050
extracellular region part	5	GPC3, IGF1, GHR	4.99	0.092
<hr/> Molecular Function <hr/>				
enzyme binding	7	IGF1R, SMAD2, GHR	8.27	0.039