

**Supplemental Table 1: Animal models of different types of rickets** 56, 70-77

Strain Name	Alternative name	Description	Phenotype	Source
Phex <sup>Hyp</sup>	B6.Cg- <i>Phex<sup>Hyp</sup>/J</i>	X-linked semi-dominant mutation It is allelic with the gyro mutation	Defects in phosphate metabolism. Reduced body size and skeletal abnormalities shortened hindlimbs and tail	Lorenz-Depiereux, 2004
Vitamin D-dependent rickets type II	VDDR II	Targeted ablation of the second zinc finger of the VDR DNA-binding domain	Hypocalcemia, hyperparathyroidism, rickets, osteomalacia, Alopecia	Yan Chun Li, 1997
Pseudovitamin D-Deficiency Rickets	PDDR	Targeted Inactivation of the 25-Hydroxyvitamin D <sub>3</sub> -1 $\alpha$ -Hydroxylase Gene (CYP27B1)	Hypocalcemic, hypophosphatemic, hyperparathyroidism.	Olivier Dardenne 2001
Hypophosphatemic Rickets	FGF-23 transgenic mice		hypophosphatemia Increased renal phosphate wasting, low serum 1,25-dihydroxyvitamin D level	Takashi Shimada 2004
Inherited Rickets	Nonsense Mutation in the <i>DMP1</i> in Corriedale Sheep		Decreased bone mass with low serum calcium and phosphate	Xia Zhao 2011
Rickets	Dmp1 KO		Decreased growth	Feng et al.,

	mice		rate, thoracic lordosis and angular limb deformities with low serum calcium and phosphate	2006
Rickets	Cation-Sensing Receptor-Deficient Mice		Widened zone of hypertrophic chondrocytes, impaired growth plate calcification, excessive osteoid	Sanford C. Garner 2001
Pseudo vitamin D-deficiency rickets, type I	Hannover Pig		Devoid renal 25-hydroxyvitamin D <sub>3</sub> -1 $\alpha$ -hydroxylase and -24-hydroxylase activities	Reinhard Kaune 1987
Rickets/osteomalacia, vitamin D toxicity	Vitamin D Binding protein null mice		Development of secondary hyperparathyroidism and the accompanying bone changes associated with vitamin D deficiency	Safadi, 1999