Supplemental Table 1. The primers used for real-time PCR are shown with the reference used to obtain the sequence. Some primers were chosen with software from Primer Express. The average C_T for the gene for normal dogs is shown. The average calculated level of each gene relative to α-actin was calculated using the formula: Ratio of gene to α-actin = $2^{(CT\ of\ gene - CT\ of\ \alpha\text{-}actin)}$. The calculated level of that gene relative to α-actin for untreated MPS VII dogs at 6 months is shown. The ratio of the gene in MPS VII to normal dogs is shown.

Gene [source of sequence]	5' Primer (5' to 3')	3' Primer (5' to 3')	Normal C_T	Normal % actin	MPS VII % actin	Ratio MPS VII to normal
α-actin [1]	CTCCATCATGAAGT GTGACGTT	ATCTCCTTCTGCAT CCTGTCAG	20.5	100.00%	100.00%	1.0
Collagen 1 α2 [2]	CTATCAATGGTGG TACCCAGTTT	TGTTTTGAGAGGC ATGGTTG	18.0	288.751%	365.181%	1.3
Collagen III [1]	ATAGAGGCTTTGAT GGACGAA	CCTCGCTCACCAG GAGC	26.0	2.071%	1.591%	0.8
Elastin [3]	GCTGCAGCCGCTA AAGCAG	AGGACACCTCCAA GGCCAG	32.3	.030%	.040%	1.3
Cathepsin B [2]	CGGCCTTCACCGT GTACT	GTGACGTGCTGGT ACACTCC	23.4	9.164%	168.630%	18.4
Cathepsin D [3]	TCAGAATCCCTCT GCACAAGTTC	GGGCCCCCCAACT CTGT	27.5	.579%	12.058%	20.8
Cathepsin K [4]	AGGTGGATG AAATCTCTCGG	TTCTTGAGTTGGC CCTCC AG	29.7	.132%	.825%	6.3
Cathepsin L [3]	CGCCGCAGTTTTT GAAACA	GCTGAGGCTATTC CCAAGCA	25.8	1.757%	3.405%	1.9

Gene [source of sequence]	5' Primer (5' to 3')	3' Primer (5' to 3')	Normal C_T	Normal % actin	MPS VII % actin	Ratio MPS VII to normal
Cathepsin S [3]	AAAGCGAGCTGCCACATGT	TTAAGGCATCTTCACTGCCAAA	26.2	1.1%	25.289%	16.4
Cathepsin V [3]	CTTAACCTGGTGGACTGCTATCAG	CTGGAAGGCGTTATCCATGAG	36.7	.001%	.002%	1.5
Cathepsin W [3]	CTCGTCCTCACCACCCAATT	AGTAGCCCTCCTCACCCCATT	30.6	.086%	.933%	10.8
Cathepsin X [3] (same as Cathepsin L)	GAGCGCGGCTGGATGA	CCTCGACGGCAAGGTTGTA	27.8	.484%	.947%	1.9
Cystatin C [3]	TGGCAGCTTTGAGTACTGATATGAG	TTTGCTTACAACACTGCCAATTTT	39.5	<.001%	<.001%	Too low
Matrix metallo-proteinase 1 (MMP-1) [5]	TTCGGGGAGAAGTGATGTTC	GCAGTTGAACCAGCTATTAGC	>40	<.001%	<.001%	Too low
MMP-2 [5]	ATGGCAAATACGGCTTCTGC	TGCAGCTCTCATGCTTGTTG	23.6	7.665%	35.381%	4.6
MMP-3 [6]	ATGGCATCCAGTCCCTGTAT	AAAGAACAGGAACTCTCCCC	38.4	.001%	.003%	3.5
MMP-8 [3]	CCATCCTTGCCTGACGGTAT	AAACGAGGTCCTTGTCCACATC	37.0	.001%	.009%	9.8

Gene [source of sequence]	5' Primer (5' to 3')	3' Primer (5' to 3')	Normal C_T	Normal % actin	MPS VII % actin	Ratio MPS VII to normal
MMP-9 [5]	CGCTATGGCTACA CTCAAGT	AAGTGATGTCGTT GTGGTGC	33.4	.038%	.065%	1.7
MMP-12 [5]	GCTCGGAGGTACC TGGAAAAC	CCCACCAACTCCC ATTTTTG	30.2	0.069%	10.249%	147.6
MMP-13 [5]	CTGAGGAAGACTT CCAGCTT	TTGGACCACTTGA GAGTTCG	39.1	0.0003%	.012%	39.6
Tissue inhibitor metallo-proteinase 1 (TIMP1) [2]	TGCATCCTGCTGTT GCTG	AACTTGGCCCTGA TGACG	28.2	0.507%	0.842%	1.7
TIMP2 [2]	ATGGGCTGTGAGT GCAAGAT	CACTCATCCGGAG ACGAGAT	23.2	16.136%	60.704%	3.8
A disintegrin and metalloproteinase with a thrombospondin type 1 motif 4 (ADAMTS4) [4]	TACTACTATGTGCT GGAGCC	AGTGACCACATTG TTGTATCC	29.9	0.088%	0.869%	9.8
ADAMTS5 [4]	GGCATCATTCATGT GACAC	GCATCGTAGGTCT GTCCTG	38.5	0.0002%	0.0002%	1.1
Osteopontin (OPN) [3]	TCCCACTGACATTC CAGCAA	TCACCTCGGCCAT CATATGA	25.3	2.179%	87.187%	40.0

Gene [source of sequence]	5' Primer (5' to 3')	3' Primer (5' to 3')	Normal C_T	Normal % actin	MPS VII % actin	Ratio MPS VII to normal
Interleukin-6 (IL-6)-like cytokines						
IL-6 [1]	GCTCCTGGTGATG GCTACTG	TGTTTGCAGAGGT GAGTGGT	32.9	0.011%	.073%	6.5
Leukemia inhibitory factor (LIF) [3]	CCCTTCCTATCACC CCTGTCAA	GTTGGTTCCTGAT CTGGTTCAT	32.9	0.014%	.036%	2.6
IL-11 [3]	TGCACAGCTGAGA GACAAATTTC	GGTGGGAAGAGA GTCCAGGTT	31.8	0.039%	.044%	1.1
Oncostatin M (OSM) [3]	GACTGAGCCCACT CCAACCA	TGCGCTGAAAGGT GTCTAAGG	35.3	0.006%	.159%	28.4
Ciliary neurotrophic factor (CNTF) [3]	AACACAAAATCCC CCCCAAT	GAGGCCACCATCT CCAAAGA	28.4	0.504%	.556%	1.1
Cardiotrophin 1 (CTF1) [3]	GCCAAGATCCATC AGACACACA	CTCCCTGGTGCTG CACATATT	26.7	1.659%	1.554%	0.9
Cardiotrophin-like cytokine 1 (CLCF1) [3]	TGCGGCTGACCCA GAACTAT	TGAGGCCGCGCAA GTAG	33.2	0.029%	0.008%	0.4
Receptors for IL6-like cytokines						
Glycoprotein 130 (GP130) [3]	TCGGTCCAAGTCT TCTCAAGATC	GGCCGCTCCTCAG AATCTAA	24.6	5.249%	1.431%	1.4

Gene [source of sequence]	5' Primer (5' to 3')	3' Primer (5' to 3')	Normal C_T	Normal % actin	MPS VII % actin	Ratio MPS VII to normal
Oncostatin M (OSM) receptor [3]	TCGACCAGCGTGC TTACCA	GGGACGTGCCCAC ACTGT	26.9	1.038%	5.578%	5.4
Leukemia inhibitory factor (LIF) receptor [3]	GCACAGATTGGCC AAACGA	TTGCAACATTTTCC CCATCA	30.1	0.591%	0.460%	0.8
Ciliary neurotrophic factor (CNTF) receptor [3]	GGACCCAGCCCTC AAGAAC	TGGTGGAGAACAG GTGCATGT	26.3	1.602%	1.012%	0.6
IL-11 Receptor [3]	GGCTGCCCCATGC TGTAC	TCCAAGTGCCAGC ATCCA	24.0	9.517%	7.189%	0.8
Other cytokines						
Transforming growth factor (TGF) [1]	TTGATGTCACTGG AGTCGTGA	GGAACTGAACCCG TTAATGTCTA	25.8	2.472%	3.912%	1.6
Tumor necrosis factor (TNF) [1]	GAAGAGCTCCCAA ATTGCCT	GCTACAACATGAG CTACTGGC	35	0.005%	0.058%	12.6
Interferon (IFN-) [7]	TCAACCCCTTCTC GCCACT	GCTGCCTACTTGG TCCCTGA	>40	<.001%	<.001%	Too low
IL-1 [8]	CCTGAACAACAGT TCTCT	GAGTTAGACAGCA CCAGG	>40	<.001%	<.001%	Too low
Toll-like receptors						

Gene [source of sequence]	5' Primer (5' to 3')	3' Primer (5' to 3')	Normal C_T	Normal % actin	MPS VII % actin	Ratio MPS VII to normal
TLR4 [9]	CTTTTATTCAAAGT CTGGCTGGCTT	GTCAAAGCTTTCC AACTTCCTTTCA	30.5	0.065%	0.750%	11.6
TLR5 [10]	TGGGCGAGCTCTA TGACTCT	CTGAACGTCTGGT CCTGGAT	27.4	0.418%	0.208%	0.5
Retroviral vector sequences						
WPRE of retroviral vector [11]	GGCTGTTGGGCAC TGACAAT	ACGTCCCGCGCAG AATC	>40	<.001%	<.001%	Too low

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