



H E G P

KO and KI mouse models of vascular EDS

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Mouse models of vascular Ehlers Danlos syndrome

KO mice col3a1 +/-

Liu et al. PNAS 1997



Mortality of homozygous Col3a1^{-/-} mice in the first days of life

No spontaneous phenotype of heterozygous col3a1^{+/-} mice

KI mice col3a1 +/-Gly183Arg

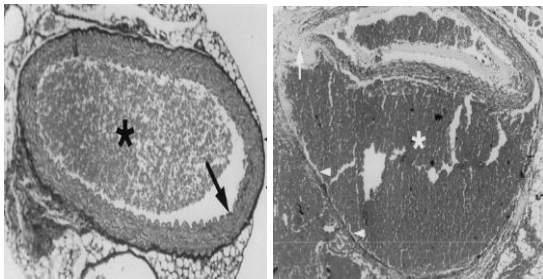
Team 3, PARCC

Both homozygous col3a1^{G183R/G183R} and heterozygous col3a1^{+/-G183R} mice are viable at birth

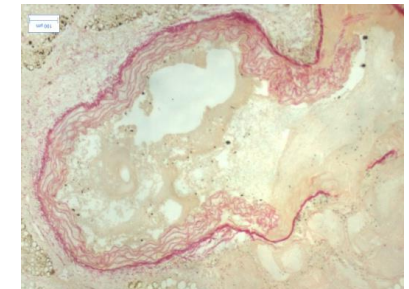
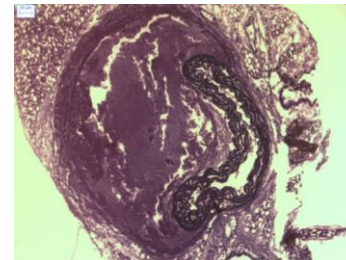
Spontaneous phenotype with aortic rupture occurring in the first weeks of life

Col3a1^{+/+}

Col3a1^{-/-}



Aorta



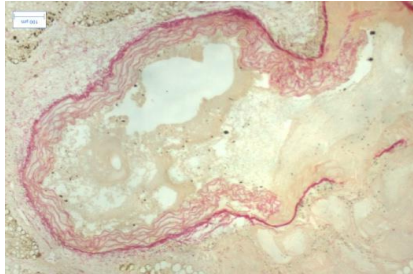
Dissection, rupture of thoracic aorta

Genotype distribution in the F1 generation from heterozygous col3a1^{+/G183R} breedings

Under representation of homozygous mutated mice

A	females		males	
	Observed	Expected	Observed	Expected
col3a1 ^{+/+}	24 (25,2%)	23.75 (25%)	34 (30,9%)	27.5 (25%)
col3a1 ^{G183R/+}	64 (67,4%)	47.5 (50%)	64 (58,2%)	55 (50%)
col3a1 ^{G183R/G183R}	7 (7,4%)	23.75 (25%)	12 (10,9%)	27.5 (25%)
khi ² , p value	0.000154752		0.002815185	

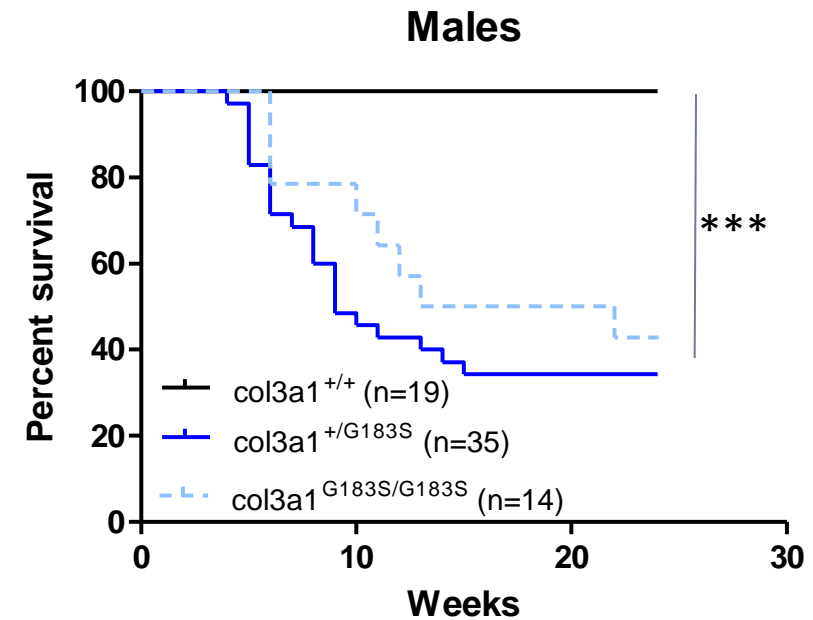
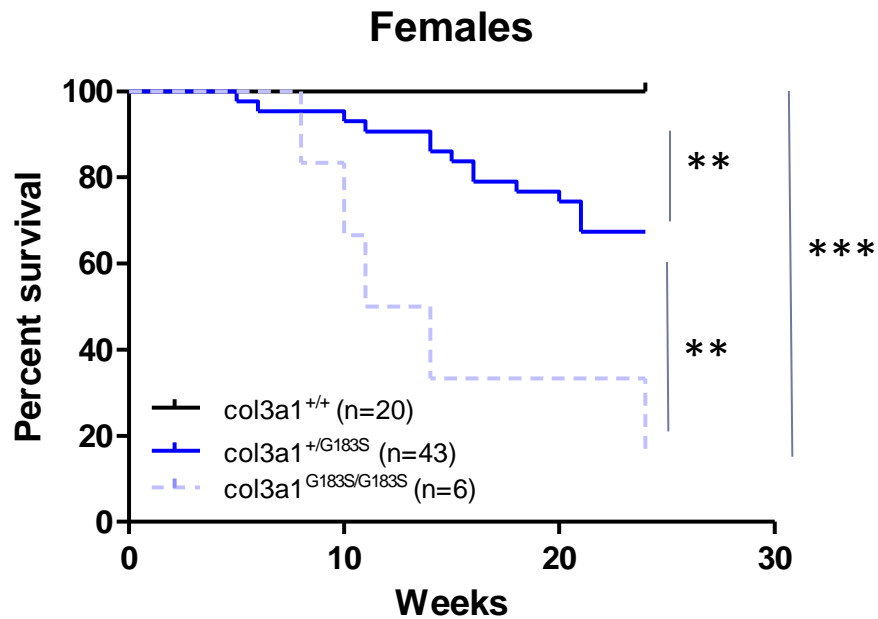
B	TOTAL M+F	Observed	Expected
	col3a1 ^{+/+}	58 (28.3%)	51.25 (25%)
col3a1 ^{G183R/+}	128 (62.4%)	102.5 (50%)	
col3a1 ^{G183R/G183R}	19 (9.2%)	51.25 (25%)	
khi ² , p value	1.25731E-06		



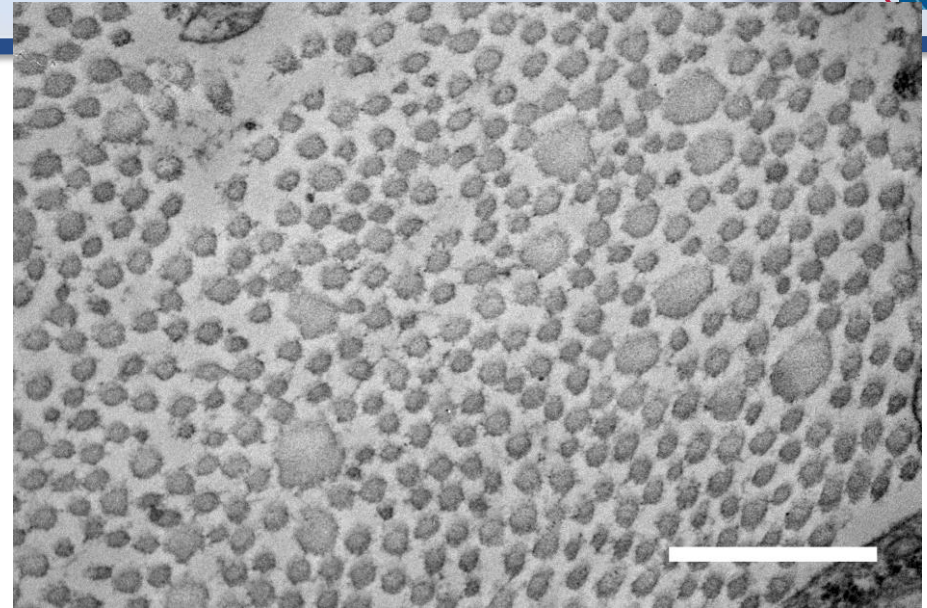
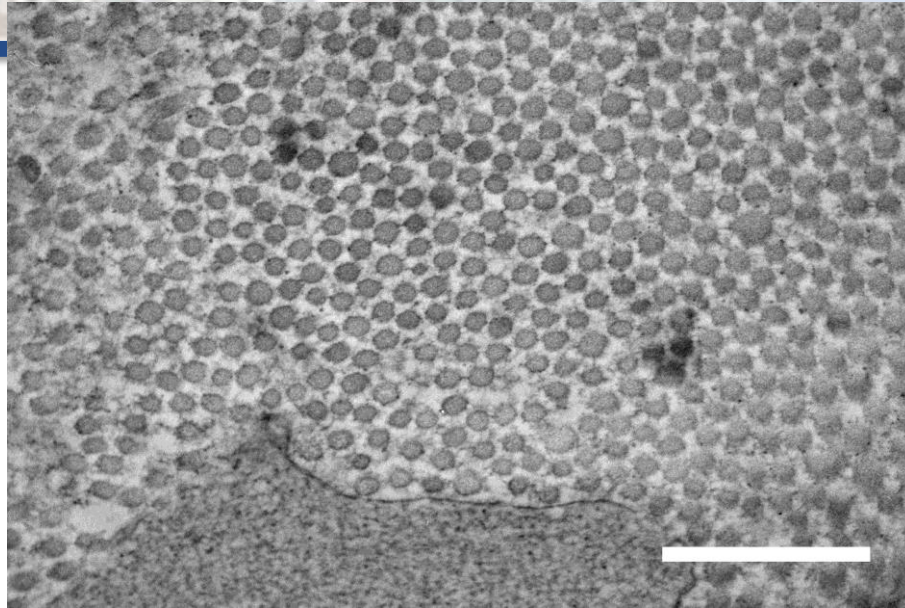
Rupture of the
Thoracic aorta

SURVIVAL CURVES

F1 GENERATION OF BREEDINGS COL3A1^{+/-m} x COL3A1^{+/-m}



A



B

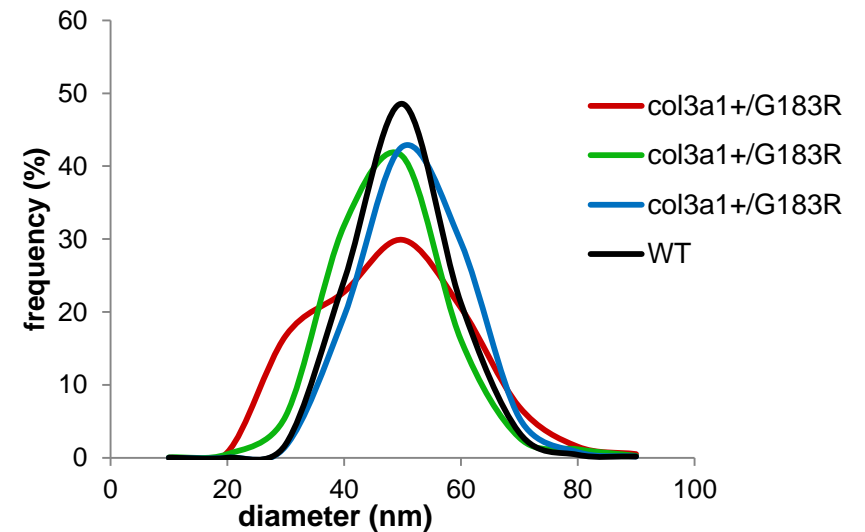
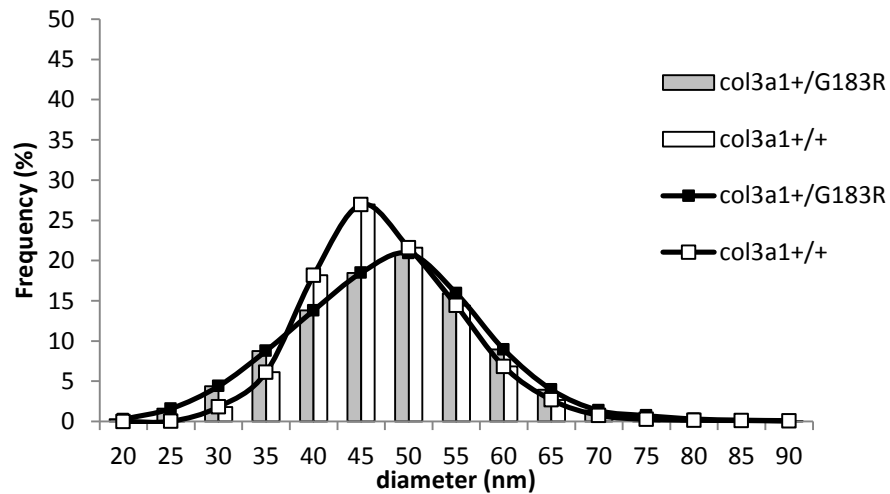


Figure 9 : Transmission electronic microscopy of extracellular matrix in *col3a1*^{+/+} and *col3a1*^{+/G183R} aorta of 24 weeks old mice. (A) collagen fibers show an important heterogeneity in diameter and higher spaces between fibers. (B) Graphs show difference between *col3a1*^{+/+} and *col3a1*^{+/G183R} collagen fibers as well as heterogeneity between *col3a1*^{+/G183R} mice

Vascular EDS : col3a1^{Gly183Arg} KI mouse model

Males heterozygous col3a1^{+/-Gly183Arg}

