

Supplementary Data

Table 1: Comparison of permeability values for quadrupedal specimens. Values are shown as mean \pm standard deviation with corresponding porosity (where applicable).

Study	Species	Permeability ($\cdot 10^{-9}$ m ²)	Porosity
Bovine Specimens	Bovine	7.83 \pm 0.33	0.84 \pm 0.01
[1]	Bovine, vertebral body	0.10 \pm 0.80	0.82
[2]	Bovine, proximal tibia	3.20 \pm 10.20	0.75 \pm 0.03
[2]	Bovine, proximal tibia	0.70 \pm 8.30	0.75 \pm 0.04
[3]	Bovine, proximal tibia	0.001	Φ
[3]	Bovine, proximal tibia	0.008	Φ
[3]	Bovine, proximal tibia	0.002	Φ
[4]	Bovine, distal femur	0.40 \pm 3.5	0.65 \pm 0.09
[4]	Bovine, distal femur	0.40 \pm 2.7	0.65 \pm 0.09
[4]	Bovine, distal femur	0.20 \pm 1.55	0.63 \pm 0.09
[5]	Porcine, femoral head	0.049 \pm 0.30	0.49 \pm 0.07
[5]	Porcine, femoral head	0.022 \pm 0.10	0.49 \pm 0.07

Table 2: Experimental data (bovine proximal tibia) from Nauman et al. [2] in longitudinal (long) and transverse (trans) directions where the viscosity μ is equal to 0.001 Pa·s, and k^{exp} corresponds to \mathbf{k}

Φ	k_{int}^{exp} (10^{-9} m ²)	Testing Direction
0.67	4.59	long
0.70	5.09	long
0.72	0.95	trans
0.72	3.47	long
0.72	0.39	trans
0.72	0.52	trans
0.72	0.81	trans
0.74	0.55	trans
0.74	5.30	long
0.74	0.61	trans
0.75	7.45	long
0.76	5.34	long
0.76	4.69	long
0.76	0.73	trans
0.76	0.36	trans
0.77	5.51	long
0.77	2.76	trans
0.77	6.03	long
0.78	5.90	long
0.79	7.18	long
0.80	0.95	trans
0.81	5.47	trans
0.81	3.95	long

References

- [1] Lim Tae-Hong and Jung Hwa Hong. Poroelastic properties of bovine vertebral trabecular bone. *Journal of Orthopaedic Research*, 18(4):671, 2000.
- [2] E. A. Nauman, K. E. Fong, and T. M. Keaveny. Dependence of intertrabecular permeability on flow direction and anatomic site. *Annals of Biomedical Engineering*, 27(4):517–524, 1999.
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- [4] Sean S Kohles, Julie B Roberts, Maureen L Upton, Christopher G Wilson, Lawrence J Bonassar, and Alyssa L Schlichting. Direct perfusion measurements of cancellous bone anisotropic permeability. *Journal of Biomechanics*, 34(9):1197–1202, 2001.
- [5] PW Hui, PC Leung, and Andy Sher. Fluid conductance of cancellous bone graft as a predictor for graft-host interface healing. *Journal of Biomechanics*, 29(1):123–132, 1996.