

# Important Note:

## Regarding Changes in Low-Frequency Electric Conductivity in Tissue DB V4.1

Unsurprisingly, the inclusion of new publications, and in particular diffusion tensor image data, leads to substantial changes in several tissue properties (up to factor 2 higher conductivity for several tissues). Noteworthy changes have occurred for following tissues:

Tissue	LF Conductivity V4.0	LF Conductivity V4.1	Comment
Bone (Cortical)	0.0035	0.0063	Inclusion of <i>Balmer 2018</i> [1]. Change within previously known variability
Brain	0.2340	0.3746	Brain (unspecific) includes structures with high heterogeneity
Brain (Grey Matter)	0.2391	0.4191	Inclusion of many new publications. Change previously known variability
Brain (White Matter)	0.2391	0.3480	Inclusion of many new publications. Change previously known variability
Dura	0.3676	0.0600	Previously used substitute "Tendon", V4.1 includes value from <i>Oozeer 2005</i> [2]
Eye (Vitreous Humor)	1.5500	2.1649	Inclusion of new publications. Change within previously known variability
Fat	0.0573	0.0776	Inclusion of new publications. Change within previously known variability
Medulla Oblongata	0.2340	0.3570	Previously used substitute "Brain", V4.1 includes actual measurement data
Midbrain	Brain	0.3500	Previously used substitute "Brain", V4.1 includes actual measurement data

[1] T. W. Balmer, S. Vesztergom, P. Broekmann, A. Stahel, and P. Büchler. Characterization of the electrical conductivity of bone and its correlation to osseous structure. *Scientific Reports*, 8(1):1{8, 2018.

[2] M. Oozeer, C. Veraart, V. Legat and J. Delbeke. Simulation of intra-orbital optic nerve electrical stimulation. *Medical and Biological Engineering and Computing*. 43(5):608-617, 2005.

Muscle	0.3553	0.4610	Inclusion of new publications. Change within previously known variability
Pons	Brain	0.5584	Previously used substitute "Brain", V4.1 includes actual measurement data
Spinal Cord	Brain	0.6110	Previously used substitute "Brain", V4.1 includes actual measurement data
Thalamus	Brain (Grey Matter)	0.4750	Previously used substitute "Brain (Grey Matter)", V4.1 includes actual measurement data

We believe these changes are justified, and represent an improvement over previously published database versions. However, since the update database may strongly affect simulation predictions, we urge you to examine the results and be aware of the incompatibility between field distributions computed with V4.1 with respect to previous versions.

It is worth mentioning that even with the inclusion of many additional measurements, the variability remains relatively high. Further investigations are needed to analyze potential for systematic differences between measurement techniques.