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Supplemental material

Lack of somatotopy among corticospinal tract fibers passing through the primate craniovertebral junction and cervical spinal cord: pathoanatomical substrate of central cord syndrome and cruciate paralysis
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Case	Level	ANOVA		Linear regression		Robust linear fit
		F	p-value	r^2	p-value	p-value
SDM 54 M1 arm/hand	PT	1.0063	0.3716	0.0319	0.1577	0.1075
	C5	1.2031	0.3068	0.0285	0.1659	0.1963
	C8	0.2280	0.7970	0.0043	0.6491	0.7970
SDM 61 M1 arm/hand	PT	0.6762	0.5120	0.0189	0.2599	0.1500
	C5	0.0333	0.9672	0.0012	0.7996	0.7034
	C8	0.2561	0.7752	0.0029	0.7248	0.8759
SDM 90 M1 shoulder	PT	2.1187	0.1271	0.0396	0.0749	0.0115
	C5	0.7041	0.4976	0.0175	0.2363	0.4239
	C8	0.5210	0.5964	0.0012	0.7831	0.7490
SDM 82 M1 leg	PT	0.7576	0.4721	0.0181	0.2219	0.3046
	C5	0.2045	0.8156	0.0044	0.5980	0.6808
	C8	1.0055	0.3719	0.0270	0.1983	0.1617
SDM 77 M2 arm	PT	4.3776	**0.0164**	0.1135	**0.0046**	**0.0060**
	C5	3.4346	0.0377	0.0772	0.0165	1.0000
	C8	3.7604	0.0282	0.0638	0.0323	1.0000
SDM 54 M2 arm	PT	1.4060	0.2527	0.0427	0.0960	0.1692
	C5	0.3610	0.6984	0.0073	0.4961	0.5349
	C8	1.4160	0.2509	0.0007	0.8373	0.9973
SDM 54 LPMCd	PT	2.7423	0.0726	0.0366	0.1365	0.1509
	C5	0.2748	0.7607	0.0032	0.6524	1.0000
	C8	0.3126	0.7333	0.0042	0.6752	0.2649
SDM 57 LPMCd	C5	0.0693	0.9331	0.0019	0.7287	0.5400
	C8	2.0096	0.1425	0.0592	**0.0490**	**0.0403**

Supplemental Table 1

Robust linear regression iteratively reweights least squares to assign a weight to each data point. This method is less sensitive to large changes in small parts of the data. As a result, robust linear regression is less sensitive to outliers than standard linear regression.

SDM 90 M1 shoulder. This case did not show any significant effects with either ANOVA or conventional regression analysis, while the robust analysis did show a significant gradient from medial to lateral. This result may have been due to the robust analysis underweighting high counts and a large number of zero counts in the medial subsector. This was a M1 shoulder area injection, so that if somatotopy existed a peak count in the central subsector would be expected, but this was not found (see Fig. 7H,I). Note that neither ANOVA nor gradient analysis returned significant effects in the spinal sections C5 and C8.

SDM 77 M2 arm. The ANOVA showed significance in all 3 sections (PT, C5 and C8). There was a significant gradient from lateral to medial subsectors of the PT. However, at the C5 and C8 levels, the generally small number of labelled axons in this case precluded any meaningful statistical conclusions, as was confirmed with robust linear regression analysis.

SDM 57. LPMCd Arm/shoulder. This case showed a significant effect at the C8 level for the robust analysis. Once again, given that this injection was mostly in the arm shoulder region of LPMCd, the lamination hypothesis would have predicted a peak in the central subsector, but the peak was actually in the medial subsector. This effect was very weakly significant and was absent for another case with an injection in the LPMCd arm area (SDM 54).