

## Supplementary material

**Table 1** The slope, t-statistic, estimated degrees of freedom (DF), and associated FDR-corrected p-values for correlation between caudate and putamen volume loss and age (cf. Fig. 2). All correlations are significant at a significance level of 0.05.

	Normal Control				Huntington's Disease			
	Slope	t-Stat	DF	p-Value	Slope	t-Stat	DF	p-Value
Left Caudate	-9.2347	-2.8497	216	4.7991e <sup>-3</sup>	-63.6013	-10.075	603	1.4442e <sup>-21</sup>
Right Caudate	-12.0076	-3.6132	214	5.0257e <sup>-4</sup>	-63.2369	-9.9663	607	1.8083e <sup>-21</sup>
Left Putamen	-30.8260	-6.4565	211	1.4495e <sup>-9</sup>	-49.6062	-8.9647	603	3.8796e <sup>-18</sup>
Right Putamen	-29.0864	-6.8354	215	3.3251e <sup>-10</sup>	-46.8855	-9.1738	602	9.6031e <sup>-19</sup>

**Table 2** The slope, t-statistic, estimated degrees of freedom (DF), and associated FDR-corrected p-values for correlation between isotropic volume fraction and age (cf. Fig. 3). \*In these regions, normal control or Huntington's disease groups show significant changes in isotropic volume fraction at a significance level of 0.05.

		Normal Control				Huntington's Disease			
		Slope (10 <sup>-3</sup> )	t-Stat	DF	p-Values	Slope (10 <sup>-3</sup> )	t-Stat	DF	p-Values
	Hand	0.4410	1.6148	194	0.1728	1.3038	6.4163	539	1.3002e <sup>-9*</sup>
Left	Face	0.3571	2.1778	210	0.0611	0.7133	4.8499	575	2.3160e <sup>-6*</sup>
Caudate	Trunk	0.3868	1.4445	203	0.2184	0.7259	3.2555	561	0.0013*
	Leg	-0.0953	-0.2988	157	0.7655	0.7553	3.7125	476	0.0003*
	Hand	0.5166	4.3121	202	0.0004*	0.8653	6.4029	555	1.3002e <sup>-9*</sup>
Left	Face	0.4167	2.3924	205	0.0470*	0.3687	3.5611	558	0.0005*
Putamen	Trunk	0.0893	1.0394	201	0.3691	0.6306	5.3025	558	2.9310e <sup>-7*</sup>
	Leg	0.3662	2.5095	182	0.0415*	0.5750	4.8706	524	2.3160e <sup>-6*</sup>

	Hand	0.6344	2.2620	188	0.0568	1.1323	5.4890	496	1.2921e <sup>-7*</sup>
Right	Face	0.3077	1.8964	206	0.1054	0.8103	5.6908	573	5.3852e <sup>-8*</sup>
Caudate	Trunk	0.3650	1.2484	204	0.2844	0.7693	3.7406	555	0.0003*
	Leg	0.1047	0.4490	194	0.6975	0.5340	3.1855	526	0.0015*
	Hand	0.5069	3.4185	200	0.0041*	0.9193	6.5131	546	1.3002e <sup>-9*</sup>
Right	Face	0.1388	0.6830	205	0.5662	0.7718	5.9120	578	1.8502e <sup>-8*</sup>
Putamen	Trunk	0.3968	3.0431	206	0.0106*	0.7675	5.6617	561	5.4746e <sup>-8*</sup>
	Leg	0.6707	3.7390	205	0.0019*	1.0549	6.8896	561	2.4118e <sup>-10*</sup>

**Table 3** The intercept and slope with their t-statistic, estimated degrees of freedom (DF), and associated FDR-corrected p-values for correlation between isotropic volume fraction and the genetic load, CAG (cf. Fig. 5).

\*indicates significant correlations (FDR corrected p-value < 0.05).

		$\beta_0$				$\beta_1$			
		Intercept	t-Stat	DF	P-Values	Slope (10 <sup>-3</sup> )	t-Stat	DF	p-Values
	Hand	0.0489	1.2676	538	0.3653	-0.8964	-0.9734	538	0.4812
Left	Face	0.0420	1.6034	575	0.2334	-0.8452	-1.3806	575	0.3704
Caudate	Trunk	-0.0275	-0.7290	561	0.6217	0.5862	0.6585	561	0.6383
	Leg	0.06341	1.5716	472	0.2334	-1.0428	-1.0868	472	0.4443
	Hand	-0.0605	-2.7329	556	0.0345*	1.7114	3.2387	556	0.0068*
Left	Face	-0.0454	-2.3334	558	0.0639	1.2007	2.5994	558	0.0307*
Putamen	Trunk	-0.0155	-0.7814	558	0.6217	0.5938	1.2595	558	0.3704
	Leg	0.0079	0.3586	524	0.8229	0.0575	0.1094	524	0.9738
	Hand	-0.0130	-0.3780	496	0.8229	0.5266	0.6459	496	0.6383
Right	Face	-0.0014	-0.0503	574	0.9599	0.3392	0.5299	574	0.6816
Caudate	Trunk	-0.0387	-1.1404	555	0.4074	1.1603	1.4335	555	0.3704
	Leg	0.0512	1.6662	526	0.2334	0.9404	-1.2840	526	0.3704

	Hand	-0.0633	-3.0764	546	0.0176*	1.7583	3.5795	546	0.0030*
Right	Face	0.0017	0.0739	579	0.9599	0.0138	0.0247	579	0.9803
Putamen	Trunk	-0.0505	-2.3971	562	0.0639	1.3746	2.7283	562	0.0263*
	Leg	-0.0624	-3.4471	561	0.0097	1.5809	3.7022	561	0.0030*

**Table 4** The slope, t-statistic, estimated degrees of freedom (DF), and associated FDR-corrected p-values for correlation of isotropic volume fraction and clinical scores (total motor scores and diagnostic confidence level, cf. Fig. 6). Except for the connection from trunk to the caudate (colored in red), isotropic volume fractions in other regions are significantly correlated with total motor scores /diagnostic confidence level.

		Total Motor Scores				Diagnostic Confidence Level			
		Slope ( $10^{-3}$ )	t-Stat	DF	p-Values	Slope	t-Stat	DF	p-Values
Caudate	Hand	0.8886	4.7418	461	4.4355e <sup>-6</sup>	0.0059	3.5451	460	0.0009
	Face	0.6563	4.6976	552	4.4355e <sup>-6</sup>	0.0041	4.0057	552	0.0002
	Trunk	0.8182	1.9485	521	<b>0.0519</b>	0.0041	2.1821	521	0.0296
	Leg	0.5393	2.6763	432	0.0088	0.0038	2.6551	432	0.0094
Putamen	Hand	0.6479	5.0405	527	1.2785e <sup>-6</sup>	0.0039	2.7872	526	0.0073
	Face	0.5353	6.1561	537	1.1525e <sup>-8</sup>	0.0043	5.4032	539	3.9358e <sup>-7</sup>
	Trunk	0.4044	5.1996	539	7.5747e <sup>-7</sup>	0.0021	3.4316	537	0.0010
	Leg	0.5330	6.0492	493	1.1528e <sup>-8</sup>	0.0042	5.8373	495	7.6851e <sup>-8</sup>