

# Region and species dependent mechanical properties of adolescent and young adult brain tissue

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Cb = Cerebellum, Ctx = Cortex, Md = Medulla oblongata, Po = Pons, Th = Thalamus (sagittal plane), CRC = Corona Radiata (coronal plane), CCC = Corpus callosum (coronal plane), CCS = Corpus callosum (sagittal plane).  $\mu$  is the shear modulus (Pa) of the neo-Hookean based viscoelastic model,  $g_1$ ,  $g_2$ , and  $g_\infty$  are the reduced relaxation functions,  $t_1$  and  $t_2$  are the time constants in seconds.

		<b>6 week old mouse</b>						
		$\mu$	$g_1$	$t_1$	$g_2$	$t_2$	$g_\infty$	R2
<b>Cbl</b>	<b>MEAN</b>	2475	0.492	0.021	0.221	0.304	0.287	0.977
	<b>STD</b>	390	0.014	0.000	0.007	0.007	0.013	0.011
<b>Ctx</b>	<b>MEAN</b>	4831	0.520	0.023	0.218	0.303	0.262	0.978
	<b>STD</b>	1012	0.021	0.004	0.023	0.009	0.017	0.008
<b>Md</b>	<b>MEAN</b>	3813	0.553	0.020	0.221	0.278	0.225	0.977
	<b>STD</b>	860	0.036	0.001	0.015	0.003	0.029	0.013
<b>Po</b>	<b>MEAN</b>	5656	0.593	0.022	0.209	0.278	0.198	0.980
	<b>STD</b>	1092	0.025	0.002	0.010	0.003	0.023	0.013

<b>10 weeks old mouse</b>								
		$\mu$	<b>g1</b>	<b>t1</b>	<b>g2</b>	<b>t2</b>	<b>g<math>\infty</math></b>	<b>R2</b>
<b>Cbl</b>	<b>MEAN</b>	2807	0.536	0.022	0.209	0.328	0.255	0.967
	<b>STD</b>	544	0.026	0.002	0.010	0.028	0.030	0.011
<b>Ctx</b>	<b>MEAN</b>	6752	0.555	0.024	0.206	0.353	0.240	0.963
	<b>STD</b>	1736	0.024	0.001	0.011	0.004	0.023	0.036
<b>Md</b>	<b>MEAN</b>	4651	0.584	0.024	0.200	0.353	0.216	0.963
	<b>STD</b>	714	0.022	0.001	0.011	0.003	0.019	0.013
<b>Po</b>	<b>MEAN</b>	6564	0.599	0.021	0.206	0.351	0.196	0.970
	<b>STD</b>	1690	0.012	0.001	0.013	0.020	0.014	0.009

<b>12 weeks old mouse</b>								
		$\mu$	<b>g1</b>	<b>t1</b>	<b>g2</b>	<b>t2</b>	<b>g<math>\infty</math></b>	<b>R2</b>
<b>Cbl</b>	<b>MEAN</b>	3142	0.508	0.025	0.203	0.299	0.290	0.982
	<b>STD</b>	1082	0.019	0.002	0.017	0.004	0.020	0.004
<b>Ctx</b>	<b>MEAN</b>	7668	0.553	0.026	0.202	0.396	0.246	0.981
	<b>STD</b>	478	0.012	0.004	0.003	0.032	0.010	0.005
<b>Md</b>	<b>MEAN</b>	4317	0.571	0.022	0.203	0.283	0.227	0.983
	<b>STD</b>	566	0.017	0.000	0.006	0.002	0.015	0.003
<b>Po</b>	<b>MEAN</b>	6509	0.621	0.018	0.201	0.284	0.178	0.980
	<b>STD</b>	1514	0.032	0.001	0.019	0.003	0.025	0.010

<b>20-25 week old rat</b>								
		$\mu$	<b>g1</b>	<b>t1</b>	<b>g2</b>	<b>t2</b>	<b>g<math>\infty</math></b>	<b>R2</b>
<b>Cbl</b>	<b>MEAN</b>	2611	0.515	0.020	0.187	0.302	0.298	0.971
	<b>STD</b>	497	0.031	0.001	0.016	0.003	0.021	0.009
<b>Ctx</b>	<b>MEAN</b>	5715	0.534	0.020	0.207	0.304	0.258	0.980
	<b>STD</b>	2089	0.030	0.001	0.013	0.011	0.021	0.007
<b>Md</b>	<b>MEAN</b>	4602	0.620	0.019	0.176	0.280	0.204	0.974
	<b>STD</b>	1736	0.036	0.002	0.016	0.034	0.027	0.010
<b>Po</b>	<b>MEAN</b>	4933	0.643	0.018	0.173	0.299	0.184	0.977
	<b>STD</b>	1005	0.034	0.002	0.016	0.016	0.026	0.007

<b>22 week old pig</b>								
		$\mu$	<b>g1</b>	<b>t1</b>	<b>g2</b>	<b>t2</b>	<b>g<math>\infty</math></b>	<b>R2</b>
<b>Cbl</b>	<b>MEAN</b>	2827	0.504	0.017	0.169	0.302	0.327	0.959
	<b>STD</b>	631	0.032	0.001	0.015	0.002	0.039	0.012
<b>Ctx</b>	<b>MEAN</b>	3200	0.496	0.019	0.167	0.295	0.337	0.953
	<b>STD</b>	565	0.041	0.001	0.023	0.004	0.059	0.023
<b>Md</b>	<b>MEAN</b>	5307	0.532	0.018	0.201	0.246	0.267	0.979
	<b>STD</b>	1673	0.031	0.001	0.006	0.025	0.032	0.007
<b>Po</b>	<b>MEAN</b>	6192	0.518	0.017	0.196	0.263	0.286	0.977
	<b>STD</b>	2235	0.062	0.002	0.009	0.007	0.068	0.010
<b>Th</b>	<b>MEAN</b>	2806	0.524	0.021	0.200	0.281	0.276	0.969
	<b>STD</b>	288	0.028	0.003	0.012	0.005	0.025	0.014
<b>CR</b>	<b>MEAN</b>	5623	0.634	0.017	0.187	0.262	0.179	0.975
	<b>STD</b>	988	0.028	0.001	0.013	0.002	0.020	0.009
<b>CCC</b>	<b>MEAN</b>	5344	0.611	0.021	0.196	0.283	0.193	0.977
	<b>STD</b>	1358	0.027	0.001	0.008	0.003	0.023	0.006

<b>CCS</b>	<b>MEAN</b>	4894	0.560	0.018	0.189	0.273	0.251	0.969
	<b>STD</b>	983	0.051	0.002	0.009	0.010	0.052	0.007

Experimental parameters, number of indentations per region and age group

<b>Age (weeks)</b>	<b>Cerebellum</b>	<b>Cortex</b>	<b>Medulla</b>	<b>Pons</b>
<b>6</b>	15	15	16	23
<b>10</b>	30	30	30	30
<b>12</b>	10	10	11	11