

**Developmental regulation and localization of Carnitine Palmitoyltransferases
(CPTs) in rat brain**

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Acylcarnitines (nmol/mL)	Ages (days)					
	P0	P7	P14	P21	P28	P50
Total	22.65 ± 1.64 ^{bbbb cc}	31.06 ± 2.695 ^{fff g}	69.87 ± 3.923 ^{kkkk llll}	52.87 ± 9 ^{m nn}	28.81 ± 3.286	22.06 ± 2.68
C0	12.13 ± 0.90 ^{bbbb cccc}	17.9 ± 1.505 ^{fff gg}	40.15 ± 2.216 ^{kkkk llll}	34.99 ± 4.49 ^{mmm nnnn}	16.62 ± 2.336	12.99 ± 1.32
C2	6.68 ± 0.69 ^{bbb}	7.864 ± 1.019 ^{fff}	23.91 ± 2.248 ^{kkk lll}	13.6 ± 4.041	8.496 ± 0.977	7.48 ± 1.05
C3	0.459 ± 0.06	0.278 ± 0.036 ^g	0.621 ± 0.053	0.693 ± 0.153	0.39 ± 0.029	0.325 ± 0.08
C3-DC	0.064 ± 0.005	0.071 ± 0.018	0.096 ± 0.006 ^l	0.098 ± 0.008 ⁿ	0.061 ± 0.01	0.045 ± 0.006
C4	0.395 ± 0.04	0.408 ± 0.032	0.753 ± 0.081	0.786 ± 0.211	0.655 ± 0.218	0.303 ± 0.12
C4-OH	0.145 ± 0.023 ^{bb}	0.146 ± 0.027 ^{ff}	0.389 ± 0.024 ^{kkk lll}	0.229 ± 0.072	0.098 ± 0.014	0.1 ± 0.032
C4-DC	0.016 ± 0.002 ^{bb}	0.024 ± 0.002 ^f	0.043 ± 0.003 ^{ll}	0.03 ± 0.005	0.025 ± 0.006	0.018 ± 0.003
C5:1	0.015 ± 0.004	0.014 ± 0.004	0.029 ± 0.009 ^{ll}	0.013 ± 0.006	0.006 ± 0.001	0 ± 0
C5	0.07 ± 0.017 ^{bbb}	0.15 ± 0.016 ^f	0.278 ± 0.035 ^{jj kkk ll}	0.115 ± 0.044	0.08 ± 0.01	0.09 ± 0.019
C5-OH	0.034 ± 0.005 ^b	0.048 ± 0.01	0.076 ± 0.007 ^{k ll}	0.05 ± 0.009	0.033 ± 0.003	0.025 ± 0.009
C5-DC/C10-OH	0.013 ± 0.001	0.011 ± 0.003	0.016 ± 0.002	0.019 ± 0.006	0.01 ± 0.002	0.008 ± 0.003
C6	0.069 ± 0.009 ^{bb}	0.095 ± 0.009 ⁱⁱ	0.145 ± 0.013 ^{jk llll}	0.08 ± 0.018 ⁿ	0.079 ± 0.017 ^o	0.013 ± 0.003
C8:1	0.045 ± 0.004 ^e	0.065 ± 0.005 ^{g h iii}	0.066 ± 0.004	0.034 ± 0.01	0.031 ± 0.008	0.015 ± 0.003
C8	0.061 ± 0.012	0.079 ± 0.012 ⁱ	0.101 ± 0.021 ^{ll}	0.053 ± 0.013	0.048 ± 0.006	0.018 ± 0.005
C10:1	0.055 ± 0.004	0.056 ± 0.007	0.055 ± 0.005	0.059 ± 0.013 ⁿ	0.066 ± 0.011 ^{oo}	0.018 ± 0.003
C10	0.034 ± 0.007 ^{aaa bbb}	0.158 ± 0.023 ^{g hhh iii}	0.165 ± 0.014 ^{jk kkk llll}	0.083 ± 0.023 ⁿ	0.041 ± 0.005	0.005 ± 0.003
C12:1	0.011 ± 0.002	0.014 ± 0.001	0.013 ± 0.001	0.011 ± 0.001	0.015 ± 0.003	0.005 ± 0.003
C12	0.038 ± 0.006 ^{aaa bbb}	0.206 ± 0.02 ^{ggg hhh iii}	0.195 ± 0.023 ^{jjj kkk llll}	0.066 ± 0.015	0.053 ± 0.005	0.013 ± 0.003
C12:1-OH	0.019 ± 0.002	0.014 ± 0.004	0.011 ± 0.001	0.015 ± 0.003	0.015 ± 0.007	0.003 ± 0.003
C12-OH	0.008 ± 0.001	0.013 ± 0.001 ⁱⁱ	0.011 ± 0.002 ^l	0.011 ± 0.001 ⁿ	0.01 ± 0	0.003 ± 0.003
C14:2	0.018 ± 0.001	0.013 ± 0.003	0.025 ± 0.006	0.029 ± 0.002 ⁿ	0.019 ± 0.006	0.008 ± 0.003
C14:1	0.051 ± 0.009 ^{eee}	0.048 ± 0.003 ⁱⁱ	0.035 ± 0.005	0.036 ± 0.006	0.048 ± 0.005 ^{oo}	0.013 ± 0.003
C14	0.11 ± 0.005 ^{aaa bbb}	0.354 ± 0.026 ^{ggg hhh iii}	0.401 ± 0.043 ^{jjj kkk llll}	0.119 ± 0.027	0.091 ± 0.005	0.03 ± 0.006
C14:1-OH	0.02 ± 0.002	0.034 ± 0.009 ^{f ii}	0.011 ± 0.002	0.019 ± 0.002	0.019 ± 0.003	0.005 ± 0.003
C14-OH	0.019 ± 0.002	0.024 ± 0.006	0.025 ± 0.004	0.024 ± 0.002	0.011 ± 0.001	0.01 ± 0
C16:1	0.069 ± 0.007 ^{b eee}	0.074 ± 0.004 ^{ff g h iii}	0.035 ± 0.002	0.045 ± 0.01	0.043 ± 0.005	0.02 ± 0.004
C16	0.778 ± 0.053 ^{aaa bb e}	1.559 ± 0.108 ^{ggg hh iii}	1.436 ± 0.19 ^{jj kk llll}	0.676 ± 0.128	0.814 ± 0.034 ^{oo}	0.183 ± 0.028
C16:1-OH	0.031 ± 0.004 ^e	0.03 ± 0.004 ^l	0.024 ± 0.002 ^k	0.036 ± 0.006 ⁿⁿ	0.044 ± 0.004 ^{ooo}	0.01 ± 0
C16-OH	0.024 ± 0.006	0.018 ± 0.003	0.028 ± 0.006	0.016 ± 0.006	0.009 ± 0.001	0.01 ± 0
C18:2	0.156 ± 0.01 ^{aa cc dd ee}	0.031 ± 0.005 ^{bb}	0.024 ± 0.006 ^l	0.029 ± 0.004 ⁿ	0.056 ± 0.005	0.068 ± 0.013
C18:1	0.523 ± 0.054 ^{eee}	0.769 ± 0.052 ^{fff g h iii}	0.344 ± 0.029	0.48 ± 0.097 ⁿⁿ	0.424 ± 0.032 ^{oo}	0.103 ± 0.014
C18	0.438 ± 0.023 ^{c eeee}	0.425 ± 0.02 ⁱⁱⁱ	0.305 ± 0.016 ^{ll}	0.291 ± 0.051 ⁿⁿ	0.371 ± 0.031 ^{oooo}	0.103 ± 0.013
C18:2-OH	0.02 ± 0.005 ^e	0.021 ± 0.001 ⁱⁱ	0.015 ± 0.004	0.011 ± 0.002	0.014 ± 0.003	0.003 ± 0.003
C18:1-OH	0.024 ± 0.004	0.026 ± 0.004	0.02 ± 0.003	0.02 ± 0.002	0.014 ± 0.001	0.013 ± 0.003
C18-OH	0.018 ± 0.001	0.023 ± 0.006	0.021 ± 0.002	0.013 ± 0.003	0.011 ± 0.002	0.013 ± 0.003

Supplemental Table 1. Blood acylcarnitines levels measured at post-natal day 0, 7, 14, 21, 28 and 50 (N=5/group).

Acylcarnitines ($\mu\text{mol}/\text{mg}$)	Cortex					
	P0	P7	P14	P21	P28	P50
Total	46.32 \pm 2.224 ^{bbbbb ccccc dd}	61.19 \pm 0.92 ^{ff ggg}	87.94 \pm 5.375 ^{lll}	101.1 \pm 6.769 ^{mm nnnn}	75.64 \pm 6.245	51.43 \pm 1.887
C0	23.74 \pm 2.43 ^{bbb cccc dd}	35.76 \pm 0.258 ^{f gg}	57.53 \pm 5.864 ^{ll}	64.47 \pm 5.037 ⁿⁿⁿ	49.41 \pm 6.718 ^o	28.09 \pm 0.555
C2	17.52 \pm 0.858 ^{d eee}	14.95 \pm 0.415	15.09 \pm 0.311	18.23 \pm 1.039 ^{mm nnn}	13.52 \pm 0.397	12.25 \pm 0.83
C3	0.408 \pm 0.028 ^{bb ccc}	0.538 \pm 0.079 ^{gg}	0.729 \pm 0.072 ^{k lll}	0.851 \pm 0.04 ^{mmm nnn}	0.473 \pm 0.035	0.343 \pm 0.025
C3-DC	0.089 \pm 0.004 ^{b cc dd}	0.101 \pm 0.009 ^{gg hh}	0.159 \pm 0.021 ^{ll}	0.181 \pm 0.014 ⁿⁿⁿ	0.17 \pm 0.015 ^{ooo}	0.071 \pm 0.005
C4	1.272 \pm 0.293 ^c	2.844 \pm 0.458	3.047 \pm 0.416 ^l	3.646 \pm 0.859 ^{m nn}	1.25 \pm 0.075	0.867 \pm 0.114
C4-OH	0.271 \pm 0.063	0.276 \pm 0.029	0.417 \pm 0.06 ^k	0.35 \pm 0.061	0.188 \pm 0.004	0.237 \pm 0.028
C4-DC	0.048 \pm 0.003 ^{ccc d}	0.052 \pm 0.005 ^{gg}	0.072 \pm 0.01	0.105 \pm 0.012 ⁿⁿⁿ	0.086 \pm 0.006 ^{oo}	0.042 \pm 0.005
C5:1	0.008 \pm 0.003 ^{bbbbb ccccc}	0.01 \pm 0.002 ^{fff ggg}	0.026 \pm 0.002 ^{kk ll}	0.03 \pm 0.003 ^{mmm nn}	0.012 \pm 0.001	0.013 \pm 0.002
C5	0.354 \pm 0.08 ^{bb ccc}	0.813 \pm 0.192	1.295 \pm 0.114 ^{ll}	1.423 \pm 0.259 ^{m nnn}	0.693 \pm 0.06	0.32 \pm 0.042
C5-OH	0.106 \pm 0.02 ^{bb cccc dddd}	0.123 \pm 0.013 ^{ff gggg hhhh}	0.375 \pm 0.007 ^{jjj}	0.78 \pm 0.097 ^{m nnnn}	0.541 \pm 0.027 ^{ooo}	0.214 \pm 0.02
C5-DC/C10-OH	0.02 \pm 0.005 ^{cc}	0.055 \pm 0.007 ^{gg}	0.101 \pm 0.011	0.198 \pm 0.059	0.141 \pm 0.03	0.073 \pm 0.009
C6	0.105 \pm 0.011 ^{a bbbb}	0.302 \pm 0.02 ^{f hh ii}	0.49 \pm 0.064 ^{jjj kkk lll}	0.225 \pm 0.052 ⁿ	0.089 \pm 0.007	0.05 \pm 0.002
C8:1	0.024 \pm 0.002 ^{aa bbb}	0.062 \pm 0.006 ^{gggg hhh iii}	0.067 \pm 0.01 ^{jjj kkk lll}	0.015 \pm 0.003	0.016 \pm 0.004	0.007 \pm 0.002
C8	0.053 \pm 0.003 ^{aaa bbb}	0.249 \pm 0.046 ^{gg hhh iii}	0.232 \pm 0.035 ^{jj kkk lll}	0.078 \pm 0.011	0.045 \pm 0.004	0.036 \pm 0.002
C10:1	0.076 \pm 0.006 ^{a cc dd ee}	0.119 \pm 0.01 ^{gggg hhhh iii}	0.093 \pm 0.016 ^{jjj kkk lll}	0.028 \pm 0.001	0.024 \pm 0.002	0.017 \pm 0.002
C10	0.024 \pm 0.003 ^{aa bbbb}	0.151 \pm 0.01 ^{h i}	0.231 \pm 0.043 ^{jj kkk lll}	0.077 \pm 0.014	0.047 \pm 0.006	0.043 \pm 0.008
C12:1	0.029 \pm 0.004	0.062 \pm 0.008	0.073 \pm 0.007	0.077 \pm 0.027	0.046 \pm 0.012	0.063 \pm 0.011
C12	0.05 \pm 0.008 ^{bbbbb ccc}	0.454 \pm 0.063 ^{ff}	1.241 \pm 0.031 ^{k ll}	1.011 \pm 0.285	0.576 \pm 0.085	0.461 \pm 0.053
C12:1-OH	0.007 \pm 0.002 ^{cc e}	0.017 \pm 0.002	0.024 \pm 0.003	0.031 \pm 0.006	0.022 \pm 0.004	0.025 \pm 0.003
C12-OH	0.017 \pm 0.005 ^{bb}	0.032 \pm 0.003	0.055 \pm 0.005 ^l	0.029 \pm 0.012	0.028 \pm 0.002	0.022 \pm 0.003
C14:2	0.013 \pm 0.003 ^{bbbbb cc}	0.033 \pm 0.003 ^{ff}	0.081 \pm 0.006 ^{kk}	0.062 \pm 0.017	0.031 \pm 0.002	0.045 \pm 0.007
C14:1	0.058 \pm 0.009 ^{cc}	0.131 \pm 0.017 ^{gg}	0.399 \pm 0.03	0.717 \pm 0.194	0.526 \pm 0.128	0.526 \pm 0.071
C14	0.2 \pm 0.03 ^{bbbbb cccc ddd e}	0.672 \pm 0.08 ^{ff g}	1.525 \pm 0.033	1.415 \pm 0.164	1.21 \pm 0.219	0.915 \pm 0.169
C14:1-OH	0.01 \pm 0.002 ^d	0.022 \pm 0.001	0.03 \pm 0.006	0.029 \pm 0.007	0.036 \pm 0.008	0.032 \pm 0.004
C14-OH	0.39 \pm 0.03 ^{aaaa cccc dddd eeee}	0.642 \pm 0.033 ^{ffff gggg hhhh iii}	0.318 \pm 0.015 ^{jjj kkk lll}	0.07 \pm 0.023	0.047 \pm 0.01	0.045 \pm 0.007
C16:1	0.13 \pm 0.013 ^{cccc ddd eeee}	0.328 \pm 0.043 ^{ggg hh iii}	0.759 \pm 0.1 ^{j l}	1.709 \pm 0.158	1.515 \pm 0.261	1.693 \pm 0.25
C16	0.355 \pm 0.031 ^{cc dd ee}	0.647 \pm 0.07 ^{g h i}	0.86 \pm 0.072	1.71 \pm 0.095	1.678 \pm 0.235	1.807 \pm 0.437
C16:1-OH	0.018 \pm 0.003 ^{ccc ddd ee}	0.03 \pm 0.005 ^{gg hh i}	0.05 \pm 0.003	0.077 \pm 0.006	0.082 \pm 0.015	0.072 \pm 0.009
C16-OH	0.272 \pm 0.037 ^{aaaa e}	0.602 \pm 0.044 ^{f gggg hhhh iii}	0.409 \pm 0.047 ^{jjj kkk lll}	0.142 \pm 0.027	0.116 \pm 0.013	0.098 \pm 0.027
C18:2	0.133 \pm 0.011 ^{bbbbb ccc dd}	0.447 \pm 0.065 ^{fff}	0.998 \pm 0.07 ^{kk lll}	0.749 \pm 0.12	0.556 \pm 0.06	0.438 \pm 0.054
C18:1	0.337 \pm 0.035 ^{ccc ddd eee}	0.411 \pm 0.048 ^{ggg hh iii}	0.773 \pm 0.051 ^{jj k ll}	1.96 \pm 0.181	1.901 \pm 0.198	2.099 \pm 0.416
C18	0.155 \pm 0.015 ^{cccc dd}	0.166 \pm 0.021 ^{gggg h}	0.225 \pm 0.018 ^{jj k}	0.481 \pm 0.05 ⁿ	0.387 \pm 0.022	0.299 \pm 0.052
C18:2-OH	0.011 \pm 0.001 ^{bb}	0.032 \pm 0.003	0.072 \pm 0.015	0.043 \pm 0.004	0.051 \pm 0.013	0.042 \pm 0.005
C18:1-OH	0.016 \pm 0.002 ^{cc ddd}	0.024 \pm 0.004 ^{g hh}	0.05 \pm 0.005	0.081 \pm 0.018	0.097 \pm 0.015	0.052 \pm 0.005
C18-OH	0.017 \pm 0.003 ^{bb cc}	0.029 \pm 0.004	0.045 \pm 0.007	0.045 \pm 0.007	0.036 \pm 0.004	0.031 \pm 0.003

Supplemental Table 2. Developmental acylcarnitine profile in the rat cortex at post-natal day (PND) 0, 7, 14, 21, 28, 50 ((N=5/group)).

Acylcarnitines	Hippocampus					
	P0	P7	P14	P21	P28	P50
Total	112.4 ± 21.93 ^c	121.1 ± 10.32 ^g	140 ± 17.61 ^l	191.7 ± 17.44 ^{mmm nnn}	99.04 ± 3.557	69.25 ± 2.208
C0	36.81 ± 10.02 ^{b cccc}	65.98 ± 7.758 ^{gg}	89.9 ± 13.22 ^{ll}	128.9 ± 13.41 ^{mmm nnnn}	59.69 ± 3.38	34.42 ± 1.708
C2	64.89 ± 10.61 ^{b ddd eee}	43.48 ± 3.843	37.19 ± 4.809	44.17 ± 3.79	26.43 ± 0.714	24.57 ± 0.342
C3	0.639 ± 0.118 ^{cc}	0.722 ± 0.051 ^g	0.896 ± 0.085	1.17 ± 0.09 ^{mmm nnn}	0.59 ± 0.048	0.549 ± 0.048
C3-DC	0.129 ± 0.025 ^c	0.213 ± 0.025	0.26 ± 0.034	0.281 ± 0.036 ⁿ	0.194 ± 0.026	0.126 ± 0.02
C4	2.846 ± 0.551	2.387 ± 0.323	1.968 ± 0.166	1.878 ± 0.428	1.468 ± 0.123	1.542 ± 0.145
C4-OH	0.438 ± 0.105	0.394 ± 0.05	0.542 ± 0.057	0.434 ± 0.104	0.214 ± 0.028	0.239 ± 0.013
C4-DC	0.183 ± 0.038 ^e	0.096 ± 0.013	0.129 ± 0.026	0.185 ± 0.012 ⁿ	0.102 ± 0.015	0.07 ± 0.004
C5:1	0.027 ± 0.01	0.017 ± 0.002	0.019 ± 0.001	0.024 ± 0.005	0.015 ± 0.003	0.018 ± 0.002
C5	0.609 ± 0.065 ^{eeee}	0.958 ± 0.114 ^{gg}	1.091 ± 0.131 ^l	1.658 ± 0.173 ^{mmm nnnn}	0.778 ± 0.102	0.445 ± 0.049
C5-OH	0.183 ± 0.039 ^{b cccc dddd}	0.166 ± 0.01 ^{ff gggg hhhh}	0.385 ± 0.008 ^{jjj}	0.93 ± 0.055 ^{mmmm nnnn}	0.526 ± 0.046 ^{oo}	0.28 ± 0.029
C5-DC/C10-OH	0.047 ± 0.017 ^{cc}	0.051 ± 0.005 ^{gg}	0.096 ± 0.009	0.135 ± 0.019 ⁿⁿ	0.082 ± 0.014	0.044 ± 0.006
C6	0.182 ± 0.056 ^{aa b}	0.426 ± 0.059 ^{hhh iii}	0.395 ± 0.03 ^{kk lll}	0.252 ± 0.042	0.126 ± 0.012	0.087 ± 0.007
C8:1	0.069 ± 0.01 ^{dd eee}	0.087 ± 0.004 ^{gg hhhh iii}	0.089 ± 0.01 ^{jj kkk lll}	0.039 ± 0.009	0.024 ± 0.004	0.013 ± 0
C8	0.082 ± 0.026 ^{aaaa bb}	0.296 ± 0.042 ^{gg hhhh iii}	0.231 ± 0.009 ^{kk lll}	0.137 ± 0.019	0.049 ± 0.007	0.039 ± 0.006
C10:1	0.205 ± 0.03 ^{bb ccc ddd eee}	0.16 ± 0.018 ^{gg hhh iii}	0.112 ± 0.014 ^{k l}	0.054 ± 0.005	0.023 ± 0.005	0.023 ± 0.002
C10	0.034 ± 0.005 ^{aa bbb c}	0.155 ± 0.04 ^{h l}	0.185 ± 0.018 ^{kk ll}	0.149 ± 0.015 ⁿ	0.056 ± 0.011	0.054 ± 0.006
C12:1	0.081 ± 0.022	0.075 ± 0.013	0.063 ± 0.008	0.047 ± 0.007	0.032 ± 0.002	0.041 ± 0.008
C12	0.128 ± 0.042 ^{a bbbb cc d}	0.427 ± 0.095 ^f	0.747 ± 0.079 ^{k lll}	0.58 ± 0.063 ⁿ	0.435 ± 0.034	0.278 ± 0.033
C12:1-OH	0.012 ± 0.012	0.017 ± 0.002	0.025 ± 0.003	0.025 ± 0.003	0.015 ± 0.002	0.017 ± 0.004
C12-OH	0.012 ± 0.012 ^{bb}	0.034 ± 0.003	0.053 ± 0.006 ^{j k ll}	0.021 ± 0.004	0.019 ± 0.002	0.01 ± 0.002
C14:2	0.034 ± 0.005	0.034 ± 0.003	0.054 ± 0.006	0.04 ± 0.005	0.03 ± 0.006	0.032 ± 0.005
C14:1	0.15 ± 0.082 ^{cc d}	0.125 ± 0.02 ^{gg h}	0.229 ± 0.05	0.532 ± 0.058	0.471 ± 0.084	0.384 ± 0.074
C14	0.36 ± 0.148 ^{bb cccc dd}	0.678 ± 0.121 ^{gg h}	1.243 ± 0.052	1.622 ± 0.138 ⁿ	1.387 ± 0.184	0.893 ± 0.165
C14:1-OH	0.025 ± 0.015	0.013 ± 0.003	0.013 ± 0.002	0.012 ± 0.002	0.027 ± 0.001	0.035 ± 0.007
C14-OH	1.15 ± 0.19 ^{a bbbb ccc ddd eee}	0.696 ± 0.046	0.379 ± 0.031	0.091 ± 0.015	0.058 ± 0.009	0.04 ± 0.008
C16:1	0.21 ± 0.046 ^{ccc dd}	0.278 ± 0.04 ^{gg h}	0.337 ± 0.027 ^{jj k}	1.169 ± 0.246	0.937 ± 0.129	0.703 ± 0.095
C16	0.842 ± 0.272 ^{cc}	0.962 ± 0.088 ^{gg}	1.16 ± 0.065 ^j	2.357 ± 0.376	1.856 ± 0.216	1.671 ± 0.253
C16:1-OH	0.059 ± 0.03	0.038 ± 0.004	0.041 ± 0.006	0.081 ± 0.012	0.061 ± 0.01	0.052 ± 0.004
C16-OH	0.615 ± 0.05 ^{bbb ccc ddd eee}	0.534 ± 0.04 ^{fff ggg hhh iii}	0.254 ± 0.017 ^{j kkk lll}	0.111 ± 0.017	0.054 ± 0.005	0.038 ± 0.006
C18:2	0.249 ± 0.065 ^{b cc}	0.422 ± 0.049	0.559 ± 0.044 ^l	0.609 ± 0.077 ⁿ	0.369 ± 0.05	0.239 ± 0.051
C18:1	0.588 ± 0.151 ^{ccc dd}	0.593 ± 0.073 ^{ggg hh}	0.738 ± 0.078 ^{jj k}	2.506 ± 0.406	1.94 ± 0.222	1.511 ± 0.21
C18	0.381 ± 0.071 ^{cccc d}	0.453 ± 0.036 ^{ggg}	0.448 ± 0.046 ^{jjj}	1.328 ± 0.203 ⁿⁿ	0.881 ± 0.079	0.726 ± 0.083
C18:2-OH	0.068 ± 0.016 ^{d ee}	0.055 ± 0.005	0.049 ± 0.009	0.034 ± 0.004	0.026 ± 0.003	0.02 ± 0
C18:1-OH	0.055 ± 0.017	0.034 ± 0.003	0.039 ± 0.002	0.065 ± 0.007	0.044 ± 0.004	0.034 ± 0.004
C18-OH	0.034 ± 0.005	0.039 ± 0.007	0.039 ± 0.006	0.064 ± 0.011 ⁿ	0.04 ± 0.006	0.026 ± 0.002

Supplemental Table 3. Developmental acylcarnitine profile in the rat hippocampus at PND 0, 7, 14, 21, 28, 50 ((N=5/group)).

Acylcarnitines (pmol/mg)	Midbrain					
	P0	P7	P14	P21	P28	P50
Total	57.06 ± 1.21 ^{b cccc d}	87.87 ± 8.902 ^{ggg}	116.9 ± 7.971 ^l	165 ± 17.12 ^{mmm nnnn}	108.1 ± 7.45	70.25 ± 4.029
C0	28.52 ± 3.316 ^{b cccc}	49.66 ± 6.723 ^{ggg}	78.51 ± 5.879 ^l	113.2 ± 16.41 ^{m nnn}	68.73 ± 6.645	37.38 ± 2.397
C2	20.35 ± 2.669	26.74 ± 1.677 ⁱ	22.53 ± 1.996	24.58 ± 3.751	18.35 ± 1.467	15.39 ± 0.629
C3	0.344 ± 0.066 ^{ccc}	0.364 ± 0.043 ^{ggg}	0.648 ± 0.05	1.055 ± 0.119 ⁿⁿ	0.766 ± 0.153	0.411 ± 0.013
C3-DC	1.131 ± 0.405 ^{bb c d ee}	1.064 ± 0.178 ^{ff g h ii}	0.169 ± 0.019	0.233 ± 0.029	0.222 ± 0.049	0.126 ± 0.025
C4	1.571 ± 0.122 ^c	3.399 ± 0.812	3.988 ± 0.434	5.315 ± 1.311 ⁿⁿ	2.393 ± 0.216	1.151 ± 0.108
C4-OH	0.028 ± 0.02 ^c	0.06 ± 0.058	0.095 ± 0.077 ^{kk ll}	0.143 ± 0.078	0.118 ± 0.03	0.064 ± 0.032
C4-DC	0.013 ± 0.003 ^{bb cccc ddd}	0.01 ± 0.006 ^{ggg hh}	0.022 ± 0.006 ^j	0.035 ± 0.01 ⁿⁿⁿ	0.02 ± 0.018 ^o	0.016 ± 0.006
C5:1	0.029 ± 0.002 ^{b cccc}	0.01 ± 0.002 ^{fff gggg hh}	0.022 ± 0.001 ^{ljj}	0.035 ± 0.001 ^{mmm nnn}	0.02 ± 0.001	0.016 ± 0.002
C5	0.477 ± 0.086 ^{cccc}	0.576 ± 0.088	0.959 ± 0.069 ^{ij l}	1.574 ± 0.159 ^{mmm nnn}	0.772 ± 0.09	0.412 ± 0.052
C5-OH	0.122 ± 0.009 ^{b cccc dddd}	0.155 ± 0.018 ^{f gggg hhhh}	0.38 ± 0.031 ^{ljj kk}	1.063 ± 0.069 ^{mmm nnn}	0.641 ± 0.056 ^{ooo}	0.294 ± 0.026
C5-DC/C10-OH	0.028 ± 0 ^c	0.047 ± 0.008	0.051 ± 0.019	0.099 ± 0.021 ⁿ	0.05 ± 0.007	0.034 ± 0.009
C6	0.161 ± 0.004 ^b	0.258 ± 0.039 ^{h i}	0.342 ± 0.051 ^{kkk ll}	0.206 ± 0.04	0.1 ± 0.008	0.077 ± 0.006
C8:1	0.033 ± 0.007 ^{bb}	0.053 ± 0.003 ^{gg hhh iii}	0.064 ± 0.002 ^{ljj kkk ll}	0.023 ± 0.008	0.019 ± 0.003	0.015 ± 0.001
C8	0.06 ± 0.004 ^{aa bb}	0.201 ± 0.02 ^{gg hh iii}	0.187 ± 0.027 ^{kk ll}	0.085 ± 0.026	0.065 ± 0.01	0.044 ± 0.007
C10:1	0.098 ± 0.031 ^{c e}	0.117 ± 0.013 ^{gg hh ii}	0.084 ± 0.003	0.031 ± 0.009	0.042 ± 0.007	0.03 ± 0.006
C10	0.038 ± 0.002 ^b	0.14 ± 0.012	0.186 ± 0.028	0.133 ± 0.048	0.121 ± 0.023	0.08 ± 0.014
C12:1	0.038 ± 0.005	0.066 ± 0.008	0.066 ± 0.006	0.089 ± 0.019	0.114 ± 0.023	0.132 ± 0.064
C12	0.112 ± 0.005 ^{bb c}	0.398 ± 0.047	1.129 ± 0.148	1.12 ± 0.11	0.915 ± 0.061	0.879 ± 0.323
C12:1-OH	0.016 ± 0.003	0.014 ± 0.001	0.03 ± 0.003	0.037 ± 0.005	0.023 ± 0.003	0.045 ± 0.022
C12-OH	0.021 ± 0.002	0.028 ± 0.005	0.04 ± 0.007	0.031 ± 0.005	0.03 ± 0.005	0.026 ± 0.008
C14:2	0.04 ± 0.006	0.034 ± 0.002	0.063 ± 0.005	0.055 ± 0.009	0.06 ± 0.006	0.103 ± 0.042
C14:1	0.139 ± 0.006	0.122 ± 0.012	0.359 ± 0.023	0.941 ± 0.176	0.942 ± 0.18	1.012 ± 0.387
C14	0.433 ± 0.026 ^{c d}	0.624 ± 0.054 ^{g h}	1.56 ± 0.051	1.904 ± 0.458	1.924 ± 0.21	1.455 ± 0.363
C14:1-OH	0.019 ± 0.003	0.018 ± 0.002	0.034 ± 0.005	0.054 ± 0.006	0.049 ± 0.006	0.05 ± 0.017
C14-OH	0.534 ± 0.157	0.689 ± 0.059	0.334 ± 0.044	0.115 ± 0.017	0.054 ± 0.007	0.059 ± 0.015
C16:1	0.28 ± 0.019 ^{ccc dd ee}	0.282 ± 0.022 ^{ggg hh iii}	0.66 ± 0.09 ^{ij kk ll}	2.569 ± 0.09	2.332 ± 0.405	2.483 ± 0.511
C16	0.54 ± 0.053 ^{ccc dd ee}	0.662 ± 0.041 ^{ggg hh iii}	1.258 ± 0.085 ^{ij k l}	3.366 ± 0.604	3.089 ± 0.328	3.044 ± 0.307
C16:1-OH	0.328 ± 0.073 ^{a bbb cc dd eee}	0.481 ± 0.015 ^{fff ggg hhh iii}	0.049 ± 0.012	0.135 ± 0.021	0.112 ± 0.022	0.097 ± 0.01
C16-OH	0.23 ± 0.021	0.288 ± 0.033	0.333 ± 0.058	0.226 ± 0.05	0.107 ± 0.017	0.406 ± 0.209
C18:2	0.594 ± 0.072	0.43 ± 0.04	0.69 ± 0.133	0.873 ± 0.089	0.692 ± 0.12	2.317 ± 1.049
C18:1	0.299 ± 0.03 ^{ccc ddd}	0.285 ± 0.03 ^{ggg hhh}	0.934 ± 0.063 ^{ij kk}	4.023 ± 0.439	4.017 ± 0.659	1.851 ± 0.736
C18	0.027 ± 0.01 ^{ccc dd}	0.025 ± 0.003 ^{ggg hh}	0.414 ± 0.065	0.922 ± 0.179 ⁿⁿ	0.737 ± 0.063	0.288 ± 0.151
C18:2-OH	0.027 ± 0.002	0.021 ± 0.003	0.041 ± 0.011	0.043 ± 0.009	0.034 ± 0.007	0.051 ± 0.014
C18:1-OH	0.046 ± 0.005 ^c	0.026 ± 0.002 ^{gg hh}	0.043 ± 0.009 ^{ij k}	0.113 ± 0.013 ⁿ	0.104 ± 0.021	0.054 ± 0.01
C18-OH	0.082 ± 0.01	0.132 ± 0.017 ^{f h}	0.05 ± 0.007	0.098 ± 0.013	0.057 ± 0.009	0.081 ± 0.025

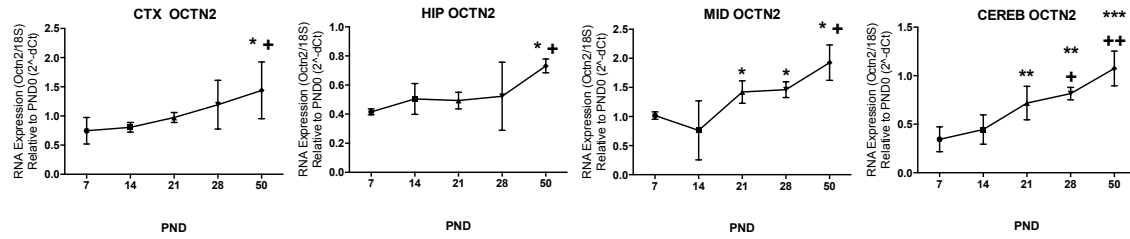
Supplemental Table 4. Developmental acylcarnitine profile in the rat midbrain at PND 0, 7, 14, 21, 28, 50 ((N=5/group)).

Acylcarnitines (pmol/mg)	Cerebellum					
	P0	P7	P14	P21	P28	P50
Total	77.67 ± 18.19 ^{aaa bb}	177.7 ± 7.597 ^{gg hhh iii}	143.6 ± 11.92 ^{k lll}	105.9 ± 5.67	86.26 ± 3.833	67.56 ± 5.009
C0	21.93 ± 5.736 ^{aaa bbb cc d}	97.28 ± 6.814 ^{g hh iii}	89.29 ± 9.24 ^{kk lll}	64.8 ± 6	52.67 ± 4.261	40.04 ± 2.98
C2	48.84 ± 10.86 ^{c dd ee}	66.35 ± 2.166 ^{f ggg hhhh iii}	39.28 ± 3.12 ^l	24.81 ± 0.747	20.82 ± 0.83	16.06 ± 1.395
C3	0.448 ± 0.123 ^{aaa bbbb}	1.109 ± 0.121 ^{hh iii}	1.216 ± 0.07 ^{kkk llll}	0.757 ± 0.054	0.543 ± 0.039	0.435 ± 0.069
C3-DC	0.096 ± 0.038 ^{aa bbbb}	0.237 ± 0.022	0.342 ± 0.027 ^{jj kk llll}	0.197 ± 0.012	0.168 ± 0.014	0.123 ± 0.024
C4	1.675 ± 0.497 ^{aa bb}	5.175 ± 0.702 ^{hhh iii}	4.616 ± 0.288 ^{kk lll}	3.602 ± 0.749 ⁿ	1.639 ± 0.125	1.057 ± 0.066
C4-OH	0.285 ± 0.076 ^{aaa bb}	0.738 ± 0.065 ^{ggg hhh iii}	0.629 ± 0.073 ^{jj kkk ll}	0.263 ± 0.026	0.161 ± 0.018	0.256 ± 0.023
C4-DC	0.058 ± 0.012 ^{aaaa b c}	0.193 ± 0.018 ^{f g hhh iii}	0.128 ± 0.014	0.12 ± 0.015	0.086 ± 0.007	0.08 ± 0.005
C5:1	0 ± 0 ^{aaa bbbb ccc d}	0.02 ± 0.002	0.023 ± 0.003 ^{k l}	0.019 ± 0.002	0.011 ± 0.002	0.01 ± 0.004
C5	0.753 ± 0.132	0.525 ± 0.16 ^g	0.434 ± 0.013 ^{jj}	1.125 ± 0.074 ⁿ	0.729 ± 0.167	0.48 ± 0.047
C5-OH	0.116 ± 0.032 ^{cccc ddd}	0.258 ± 0.031 ^{gggg h}	0.339 ± 0.047 ^{jjj}	0.746 ± 0.097 ^{n n n n}	0.514 ± 0.034 ^o	0.253 ± 0.028
C5-DC/C10-OH	0.031 ± 0.012	0.033 ± 0.003	0.055 ± 0.008	0.06 ± 0.014	0.035 ± 0.006	0.054 ± 0.017
C6	0.181 ± 0.028	0.193 ± 0.044	0.11 ± 0.017	0.137 ± 0.037	0.083 ± 0.018	0.065 ± 0.009
C8:1	0.064 ± 0.019 ^{a c dd ee}	0.113 ± 0.003 ^{ff ggg hhh iii}	0.058 ± 0.007 ^{j k ll}	0.016 ± 0.002	0.012 ± 0.002	0.007 ± 0.001
C8	0.058 ± 0.012 ^{aaa}	0.272 ± 0.05 ^{ff gggg hhhh iii}	0.116 ± 0.016	0.095 ± 0.015	0.049 ± 0.013	0.028 ± 0.004
C10:1	0.129 ± 0.025 ^{ccc ddd eeee}	0.155 ± 0.01 ^{f gggg hhhh iii}	0.09 ± 0.009 ^{k ll}	0.037 ± 0.003	0.025 ± 0.007	0.013 ± 0.002
C10	0.031 ± 0.012 ^{aa b c}	0.138 ± 0.004 ^l	0.122 ± 0.019	0.13 ± 0.017	0.084 ± 0.031	0.049 ± 0.006
C12:1	0.04 ± 0.005	0.072 ± 0.005	0.053 ± 0.003	0.046 ± 0.006	0.063 ± 0.016	0.05 ± 0.011
C12	0.076 ± 0.027 ^{bbb cc}	0.343 ± 0.03 ^f	0.75 ± 0.093	0.543 ± 0.127	0.418 ± 0.065	0.415 ± 0.067
C12:1-OH	0.048 ± 0.03	0.006 ± 0.002	0.01 ± 0.002	0.009 ± 0.003	0.011 ± 0.003	0.021 ± 0.006
C12-OH	0.024 ± 0.014	0.024 ± 0.003	0.029 ± 0.003	0.015 ± 0.005	0.013 ± 0.002	0.019 ± 0.005
C14:2	0.024 ± 0.014	0.037 ± 0.004	0.045 ± 0.003	0.04 ± 0.005	0.054 ± 0.007	0.051 ± 0.012
C14:1	0.058 ± 0.012 ^{c d ee}	0.155 ± 0.017	0.282 ± 0.044	0.359 ± 0.076	0.376 ± 0.086	0.406 ± 0.063
C14	0.15 ± 0.042 ^{bbb ccc ddd e}	0.564 ± 0.037 ^f	1.267 ± 0.14	1.149 ± 0.213	1.141 ± 0.168	0.823 ± 0.092
C14:1-OH	0 ± 0 ^{a b ccc ddd eeee}	0.02 ± 0.002	0.022 ± 0.004	0.029 ± 0.005	0.033 ± 0.004	0.036 ± 0.005
C14-OH	0.851 ± 0.231 ^{ccc ddd eee}	0.587 ± 0.065 ^{g h i}	0.459 ± 0.034	0.059 ± 0.013	0.033 ± 0.001	0.073 ± 0.02
C16:1	0.135 ± 0.035 ^{cc d eee}	0.293 ± 0.01 ^{g ii}	0.467 ± 0.042	0.919 ± 0.111	0.812 ± 0.153	1.04 ± 0.223
C16	0.393 ± 0.101 ^{cc dd ee}	0.92 ± 0.035	1.139 ± 0.074	2.151 ± 0.157	2.049 ± 0.265	2.006 ± 0.566
C16:1-OH	0.031 ± 0.012	0.039 ± 0.007	0.031 ± 0.003	0.056 ± 0.01	0.046 ± 0.004	0.07 ± 0.012
C16-OH	0.415 ± 0.1 ^{cc ddd ee}	0.487 ± 0.027 ^{ggg hhhh iii}	0.348 ± 0.014 ^{j kkl}	0.087 ± 0.01	0.058 ± 0.003	0.113 ± 0.039
C18:2	0.108 ± 0.039 ^{ccc dd ee}	0.299 ± 0.002 ^g	0.356 ± 0.029	0.669 ± 0.071	0.567 ± 0.048	0.585 ± 0.147
C18:1	0.295 ± 0.097 ^{cc dd ee}	0.513 ± 0.038 ^{g hh ii}	0.83 ± 0.028 ^{k l}	2.117 ± 0.195	2.288 ± 0.28	2.335 ± 0.625
C18	0.242 ± 0.073 ^{b cc dd}	0.443 ± 0.017	0.564 ± 0.022	0.623 ± 0.059	0.576 ± 0.059	0.406 ± 0.08
C18:2-OH	0.04 ± 0.005 ^d	0.039 ± 0.007	0.033 ± 0.003	0.02 ± 0.002	0.015 ± 0.003	0.033 ± 0.007
C18:1-OH	0.031 ± 0.012	0.038 ± 0.006	0.031 ± 0.003	0.035 ± 0.006	0.039 ± 0.005	0.044 ± 0.008
C18-OH	0.012 ± 0.012	0.038 ± 0.006	0.041 ± 0.003	0.03 ± 0.004	0.029 ± 0.005	0.023 ± 0.007

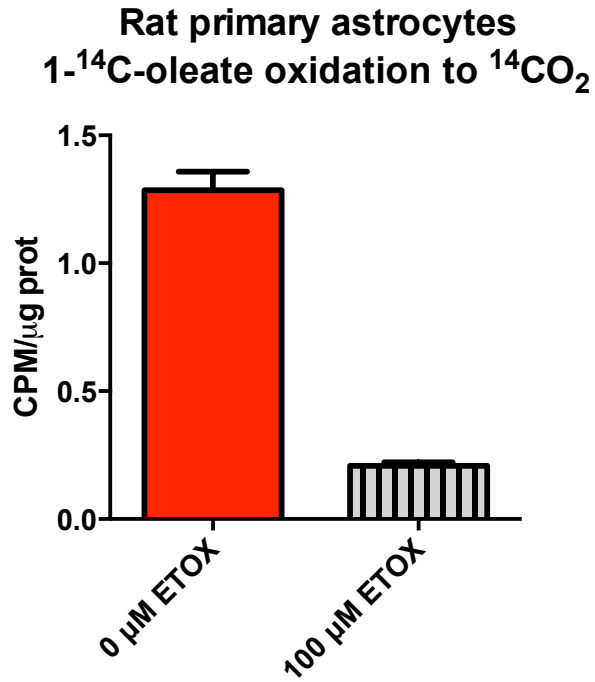
Supplemental Table 5. Developmental acylcarnitine profile in the rat cerebellum at PND 0, 7, 14, 21, 28, 50 (N=5/group).

**Developmental regulation and localization of Carnitine Palmitoyltransferases
(CPTs) in rat brain**

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Supplemental Figure 1. Developmental RNA expression of carnitine transporter in rat brain. OCTN2 RNA expression was significantly greater at PND 50 relative to PND7 and PND 14 in the cortex, hippocampus and midbrain. RNA expression of OCTN2 increases with age such that PND7 OCTN2 expression is significantly less than PND 21, 28, and 50 in the cerebellum (n=5 per group * =p<0.05, ** =p<0.01 relative to PND7, + =p<0.05, ++ =p<.01 relative to PND14).



Supplemental Figure 2. CPT1a-dependent fatty acid oxidation in cultured rat

astrocytes. Oxidation of $[1\text{-}^{14}\text{C}]$ oleate to $^{14}\text{CO}_2$ in cultured rat astrocytes was measured in the presence or absence of CPT1a inhibitor etomoxir (100 μM, ETOX). Assay was conducted in the presence of 0.12 μCi $[1\text{-}^{14}\text{C}]$ oleate in modified Neurobasal medium containing 5mM glucose, 25 μM glutamine, 50 μM pyruvate, and 0.2% (w/v) bovine serum albumin (BSA). **N=5 per group.**