

Supplementary Figure

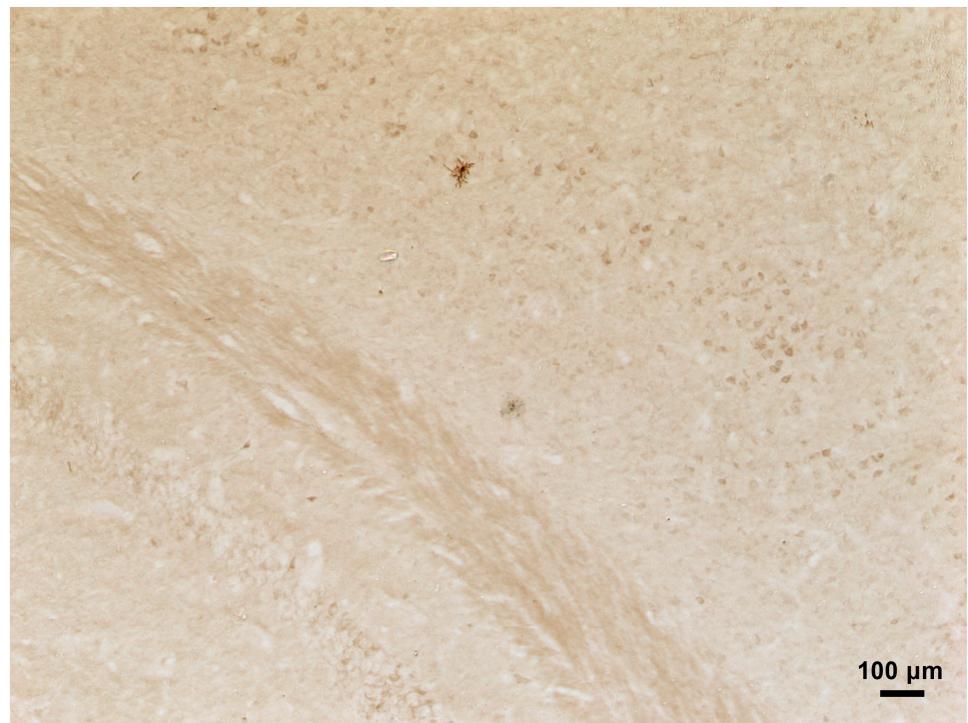


Figure S1: Microglia were depleted after a 21-day administration of PLX. Photomicrograph of Iba-1-stained microglia in the cortex. Scale bar = 100 μm .

Supplementary Tables

Table S1: Differences between estimated marginal means (Δ), corresponding p -values, and effect sizes (d) from generalized linear mixed models for percent sleep, mean bout length, and cumulative sleep during weeks 1, 2, and 3 of the microglia depletion period. Estimated nonparametric Spearman's rank correlation (ρ) and corresponding p -values for temporal pattern differences in percent sleep and mean bout length. * indicates statistically significant differences in means.

Light Period					
	Mean Δ	Δp -value	Δd	ρ	ρp -value
<i>Percent Sleep</i>					
Week 1	5.1%	0.02*	0.10	0.91	<0.0001
Week 2	2.8%	0.45	0.04	0.89	<0.0001
Week 3	2.2%	0.62	0.05	0.82	0.0006
<i>Mean Bout Length</i>					
Week 1	8.2 sec	0.01*	0.02	0.85	<0.0001
Week 2	6.9 sec	0.18	0.02	0.99	<0.0001
Week 3	8.1 sec	0.15	0.03	0.78	0.001
<i>Cumulative Sleep</i>					
Week 1	301 min	0.02*	0.01	—	—
Week 2	159 min	0.53	0.006	—	—
Week 3	130 min	0.69	0.005	—	—
Dark Period					
	Mean Δ	Δp -value	Δd	ρ	ρp -value
<i>Percent Sleep</i>					
Week 1	2.7%	0.60	0.05	0.96	<0.0001
Week 2	2.6%	0.61	0.03	0.98	<0.0001
Week 3	1.2%	0.83	0.10	0.95	<0.0001
<i>Mean Bout Length</i>					
Week 1	3.2 sec	0.63	0.06	0.90	0.0004
Week 2	5.4 sec	0.42	0.06	0.94	<0.0001
Week 3	8.0 sec	0.29	0.04	0.92	0.0002
<i>Cumulative Sleep</i>					
Week 1	143 min	0.40	0.001	—	—
Week 2	186 min	0.15	0.002	—	—
Week 3	193 min	0.20	0.002	—	—

Table S2: Differences between estimated marginal means (Δ), corresponding p -values, and effect sizes (d) from generalized linear mixed models for percent sleep, mean bout length, and cumulative sleep during days 1, 2, 3, and 4 following the administration of lipopolysaccharide (LPS1). Estimated nonparametric Spearman's rank correlation (ρ) and corresponding p -values for temporal pattern differences in percent sleep and mean bout length. * indicates statistically significant differences in means; # indicates statistically significant temporal pattern differences.

Light Period					
	Mean Δ	Δp -value	Δd	ρ	ρp -value
<i>Percent Sleep</i>					
Day 1	0.2%	0.96	0.05	0.44#	0.12#
Day 2	6.0%	0.13	0.05	0.78	0.001
Day 3	2.3%	0.53	0.02	0.13#	0.65#
Day 4	2.1%	0.56	0.04	0.68	0.01
<i>Mean Bout Length</i>					
Day 1	1.0 sec	0.60	0.02	-0.70	0.007
Day 2	2.0 sec	0.39	0.02	0.64	0.02
Day 3	8.4 sec	0.02*	0.02	0.11#	0.70#
Day 4	1.4 sec	0.78	0.01	0.51#	0.07#
<i>Cumulative Sleep</i>					
Day 1	3 min	0.99	0.0008	—	—
Day 2	55 min	0.22	0.001	—	—
Day 3	10 min	0.97	0.0002	—	—
Day 4	10 min	0.99	0.0002	—	—
Dark Period					
	Mean Δ	Δp -value	Δd	ρ	ρp -value
<i>Percent Sleep</i>					
Day 1	15.1%	0.0007*	0.05	0.58#	0.06#
Day 2	11.1%	0.02*	0.06	0.85	0.004
Day 3	13.7%	0.10	0.08	0.96	<0.0001
Day 4	10.3%	0.11	0.04	0.92	0.0005
<i>Mean Bout Length</i>					
Day 1	11.5 sec	0.001*	0.02	0.60#	0.07#
Day 2	1.0 sec	0.85	0.03	0.65	0.04
Day 3	9.3 sec	0.18	0.01	0.93	0.0001
Day 4	13.2 sec	0.01*	0.01	0.84	0.004
<i>Cumulative Sleep</i>					
Day 1	95 min	0.0004*	0.03	—	—
Day 2	65 min	0.007*	0.02	—	—
Day 3	91 min	<0.0001*	0.04	—	—
Day 4	79 min	<0.0001*	0.05	—	—

Table S3: Differences between estimated marginal means (Δ), corresponding p -values, and effect sizes (d) from generalized linear mixed models for percent sleep, mean bout length, and cumulative sleep during weeks 1 and 2 of the microglia repopulation period. Week 2 comprised 3 days. Estimated nonparametric Spearman's rank correlation (ρ) and corresponding p -values for temporal pattern differences in percent sleep and mean bout length. * indicates statistically significant differences in means.

Light Period					
	Mean Δ	Δp -value	Δd	ρ	ρp -value
<i>Percent Sleep</i>					
Week 1	2.6%	0.56	0.03	0.75	0.003
Week 2	2.4%	0.63	0.02	0.81	0.0008
<i>Mean Bout Length</i>					
Week 1	14.8 sec	0.009*	0.03	0.98	<0.0001
Week 2	16.7 sec	0.06	0.03	0.84	0.0002
<i>Cumulative Sleep</i>					
Week 1	143 min	0.94	0.002	—	—
Week 2	43 min	0.95	0.001	—	—
Dark Period					
	Mean Δ	Δp -value	Δd	ρ	ρp -value
<i>Percent Sleep</i>					
Week 1	0.0%	0.99	0.04	0.99	<0.0001
Week 2	1.7%	0.74	0.11	0.94	<0.0001
<i>Mean Bout Length</i>					
Week 1	5.8 sec	0.35	0.06	0.92	0.0005
Week 2	4.2 sec	0.55	0.07	0.90	0.0009
<i>Cumulative Sleep</i>					
Week 1	128 min	0.58	0.003	—	—
Week 2	20 min	0.88	0.01	—	—

Table S4: Differences between estimated marginal means (Δ), corresponding p -values, and effect sizes (d) from generalized linear mixed models for percent sleep, mean bout length, and cumulative sleep during days 1–7 following a second administration of lipopolysaccharide (LPS2). Estimated nonparametric Spearman’s rank correlation (ρ) and corresponding p -values for temporal pattern differences in percent sleep and mean bout length. * indicates statistically significant differences in means; # indicates statistically significant temporal pattern differences.

Light Period					
	Mean Δ	Δp -value	Δd	ρ	ρp -value
<i>Percent Sleep</i>					
Day 1	4.4%	0.51	0.02	0.99	<0.0001
Day 2	5.0%	0.42	0.03	0.54#	0.06#
Day 3	3.7%	0.41	0.04	0.89	<0.0001
Day 4	3.5%	0.46	0.01	0.52#	0.06#
Day 5	4.3%	0.39	0.04	0.92	<0.0001
Day 6	3.8%	0.46	0.03	0.94	<0.0001
Day 7	4.4%	0.43	0.03	0.71	0.005
<i>Mean Bout Length</i>					
Day 1	10.3 sec	0.06	0.03	0.90	<0.0001
Day 2	14.6 sec	0.006*	0.04	0.85	0.0009
Day 3	19.3 sec	0.0004*	0.04	0.85	0.0001
Day 4	19.7 sec	0.0009*	0.04	0.16#	0.57#
Day 5	21.7 sec	0.001*	0.03	0.98	<0.0001
Day 6	14.9 sec	0.08	0.04	0.71	0.006
Day 7	18.3 sec	0.05	0.03	0.86	0.0003
<i>Cumulative Sleep</i>					
Day 1	36 min	0.35	0.0005	—	—
Day 2	38 min	0.17	0.0006	—	—
Day 3	33 min	0.60	0.0004	—	—
Day 4	32 min	0.69	0.0004	—	—
Day 5	33 min	0.68	0.0004	—	—
Day 6	30 min	0.78	0.0004	—	—
Day 7	31 min	0.71	0.0004	—	—
Dark Period					
	Mean Δ	Δp -value	Δd	ρ	ρp -value
<i>Percent Sleep</i>					
Day 1	4.4%	0.51	0.08	0.95	<0.0001
Day 2	0.4%	0.96	0.01	0.99	<0.0001
Day 3	3.7%	0.61	0.12	0.98	<0.0001
Day 4	4.0%	0.57	0.09	0.95	<0.0001
Day 5	2.6%	0.65	0.12	0.95	<0.0001
Day 6	4.6%	0.34	0.07	0.98	<0.0001
Day 7	2.2%	0.65	0.14	0.82	0.007

<i>Mean Bout Length</i>					
Day 1	4.8 sec	0.42	0.07	0.96	<0.0001
Day 2	2.0 sec	0.76	0.05	0.96	<0.0001
Day 3	1.8 sec	0.79	0.03	0.89	0.001
Day 4	0.4 sec	0.95	0.02	0.96	<0.0001
Day 5	1.1 sec	0.87	0.05	0.87	0.003
Day 6	0.4 sec	0.94	0.005	0.92	0.0005
Day 7	0.1 sec	0.98	0.06	0.78	0.01
<i>Cumulative Sleep</i>					
Day 1	31 min	0.99	0.004	—	—
Day 2	5 min	0.99	0.001	—	—
Day 3	8 min	0.99	0.002	—	—
Day 4	15 min	0.99	0.004	—	—
Day 5	13 min	0.99	0.004	—	—
Day 6	12 min	0.99	0.005	—	—
Day 7	13 min	0.99	0.004	—	—

Table S5: Differences between estimated marginal means (Δ), corresponding p -values, and effect sizes (d) from generalized linear mixed models for percent sleep, mean bout length, and cumulative sleep during days 1, 2, 3, and 4 following the first LPS administration (LPS1) compared to sleep following the second LPS administration (LPS2). Comparisons are made within treatment group (e.g., control LPS1 vs. control LPS2). Estimated nonparametric Spearman's rank correlation (ρ) and corresponding p -values for temporal pattern differences in percent sleep and mean bout length. * indicates statistically significant differences in means; # indicates statistically significant temporal pattern differences.

Light Period					
	Mean Δ	Δp -value	Δd	ρ	ρp -value
<i>Percent Sleep</i>					
Day 1 – Control	0.4%	0.95	0.02	0.67	0.01
Day 1 – PLX	3.6%	0.48	0.05	0.39#	0.17#
Day 2 – Control	0.9%	0.84	0.02	0.52#	0.06#
Day 2 – PLX	2.2%	0.68	0.003	0.73	0.004
Day 3 – Control	0.0%	0.99	0.07	0.01#	0.98#
Day 3 – PLX	1.1%	0.78	0.006	0.67	0.01
Day 4 – Control	2.2%	0.60	0.04	0.28#	0.33#
Day 4 – PLX	3.4%	0.42	0.01	-0.05#	0.87#
<i>Mean Bout Length</i>					
Day 1 – Control	19.7 sec	< 0.0001*	0.07	-0.16#	0.58#
Day 1 – PLX	30.2 sec	< 0.0001*	0.13	-0.35#	0.23#
Day 2 – Control	6.4 sec	0.03*	0.05	0.34#	0.22#
Day 2 – PLX	17.4 sec	0.0006*	0.10	0.59#	0.07#
Day 3 – Control	0.2 sec	0.97	0.01	0.24#	0.42#
Day 3 – PLX	26.2 sec	< 0.0001*	0.10	0.64	0.02
Day 4 – Control	1.7 sec	0.68	0.01	0.22#	0.44#
Day 4 – PLX	19.5 sec	0.002*	0.10	0.64	0.02
<i>Cumulative Sleep</i>					
Day 1 – Control	1 min	0.99	0.0001	–	–
Day 1 – PLX	30 min	0.95	0.0001	–	–
Day 2 – Control	8 min	0.99	0.0001	–	–
Day 2 – PLX	28 min	0.97	0.0001	–	–
Day 3 – Control	2 min	0.99	0.0001	–	–
Day 3 – PLX	21 min	0.99	0.0001	–	–
Day 4 – Control	17 min	0.99	0.0001	–	–
Day 4 – PLX	36 min	0.89	0.0001	–	–
Dark Period					
	Mean Δ	Δp -value	Δd	ρ	ρp -value
<i>Percent Sleep</i>					
Day 1 – Control	7.6%	0.18	0.09	0.60#	0.06#
Day 1 – PLX	17.5%	0.004*	0.07	0.89	0.001

Day 2 – Control	5.9%	0.49	0.10	0.78	0.01
Day 2 – PLX	16.9%	0.01*	0.04	0.81	0.008
Day 3 – Control	5.2%	0.54	0.04	0.81	0.008
Day 3 – PLX	22.3%	0.004*	0.24	0.83	0.006
Day 4 – Control	2.3%	0.75	0.10	0.94	<0.0001
Day 4 – PLX	16.1%	0.01*	0.19	0.94	<0.0001
<i>Mean Bout Length</i>					
Day 1 – Control	11.9 sec	0.007*	0.05	0.78	0.01
Day 1 – PLX	5.0 sec	0.35	0.04	0.53#	0.12#
Day 2 – Control	5.4 sec	0.40	0.04	0.88	0.002
Day 2 – PLX	3.9 sec	0.45	0.02	0.79	0.01
Day 3 – Control	6.8 sec	0.35	0.03	0.90	0.0008
Day 3 – PLX	14.2 sec	0.04*	0.06	0.88	0.002
Day 4 – Control	0.0 sec	0.99	0.03	0.89	0.001
Day 4 – PLX	12.8 sec	0.05	0.06	0.95	<0.0001
<i>Cumulative Sleep</i>					
Day 1 – Control	52 min	0.11	0.004	–	–
Day 1 – PLX	116 min	<0.0001*	0.01	–	–
Day 2 – Control	37 min	0.38	0.003	–	–
Day 2 – PLX	107 min	<0.0001*	0.01	–	–
Day 3 – Control	30 min	0.23	0.004	–	–
Day 3 – PLX	130 min	<0.0001*	0.01	–	–
Day 4 – Control	13 min	0.99	0.001	–	–
Day 4 – PLX	109 min	<0.0001*	0.01	–	–

Table S6: Differences between estimated marginal means (Δ), corresponding p -values, and effect sizes (d) from generalized linear mixed models for number of microglia branches, microglia branch length, and endpoints per branch. * indicates statistically significant differences in means.

Microglia Skeletal Analysis			
	Mean Δ	$\Delta p\text{-value}$	Δd
<i>Microglia Cells</i>			
Treatment	0	0.60	0.01
<i>Number of Processes</i>			
Treatment	13	0.08	0.005
<i>Branch Length</i>			
Treatment	28 μm	0.40	0.002
<i>Endpoints/Microglia</i>			
Treatment	18	0.002*	0.01