Table S1. Mean and standard deviation (SD) for fraction of starter cells labeled in each bin across the cortical thickness of barrel cortex. P-Values were calculated with pairwise comparisons and adjusted for multiple comparisons. Significant values are marked in red. Related to Figure 1.

Bin	WT		Reeler			
---	mean	SD	mean	SD	p-value	adj.p-value
1	0.50	0.21	0.37	0.23	0.3290	0.6580
2	9.04	3.05	2.08	0.59	0.0063	0.0550
3	17.18	1.04	4.80	0.57	0.0000	0.0000
4	12.88	1.67	7.62	2.06	0.0013	0.0146
5	10.42	1.53	7.54	1.15	0.0061	0.0550
6	9.84	0.86	6.47	0.55	0.0000	0.0004
7	8.24	1.19	6.87	0.71	0.0087	0.0606
8	6.18	1.06	6.44	1.13	0.7093	0.7093
9	4.82	0.99	6.45	1.10	0.0307	0.1363
10	3.79	0.85	6.07	1.37	0.0087	0.0606
11	2.88	0.54	6.69	1.00	0.0043	0.0433
12	2.36	0.57	6.51	1.56	0.0003	0.0039
13	1.77	0.46	6.00	1.34	0.0001	0.0013
14	2.23	0.90	5.53	0.69	0.0001	0.0011
15	1.78	0.33	5.76	0.32	0.0000	0.0000
16	1.29	0.49	4.42	1.14	0.0003	0.0039
17	1.20	0.43	3.85	0.95	0.0003	0.0039
18	1.41	0.39	2.97	0.31	0.0000	0.0007
19	1.55	0.42	2.41	0.62	0.0273	0.1363
20	0.66	0.34	1.17	0.75	0.1995	0.5986

Table S2. Mean and standard deviation (SD) for fraction of starter cells labeled in each bin across the cortical thickness of barrel cortex. P-Values were calculated with pairwise comparisons and adjusted for multiple comparisons. Significant values are marked in red. Related to Figure 2.

	WT		Reeler			
Bin	mean	SD	mean	SD	p-value	adj.p-value
1	2.83	4.55	0.32	0.35	0.6012	1.0000
2	14.96	8.82	1.46	1.02	0.0066	0.0726
3	20.93	5.26	3.68	2.47	0.0006	0.0099
4	16.70	3.91	5.73	3.22	0.0001	0.0017
5	14.74	4.55	8.78	2.29	0.0093	0.0932
6	9.91	2.35	7.42	3.68	0.1578	0.4783
7	5.94	3.95	6.56	2.25	0.7254	1.0000
8	4.69	2.23	7.20	2.07	0.0503	0.3518
9	1.87	0.88	6.58	1.08	0.0000	0.0000
10	1.84	1.41	8.47	4.17	0.0048	0.0573
11	0.95	0.90	8.55	3.28	0.0006	0.0100
12	1.16	1.16	8.29	2.75	0.0000	0.0007
13	0.41	0.61	7.39	3.12	0.0019	0.0270
14	0.53	0.51	6.17	2.99	0.0021	0.0270
15	0.34	0.58	4.74	1.71	0.0017	0.0257
16	0.25	0.65	2.64	2.08	0.0236	0.1886
17	0.43	1.15	2.85	2.40	0.0115	0.1036
18	1.08	2.07	1.87	0.91	0.0894	0.4525
19	0.43	1.15	1.12	0.87	0.1196	0.4783
20	0.00	0.00	0.16	0.24	0.0754	0.4525

Table S3. Mean and standard deviation (SD) for input magnitude from global areas. P-Values were calculated with pairwise comparisons and adjusted for multiple comparisons. Significant values are marked in red. Related to Figure 4.

	WT		Reeler			
Area	**mean**	**SD**	**mean**	**SD**	**p-value**	**adj.p-value**
All inputs	34.26	9.49	21.74	7.58	0.0183	0.0183
Ipsilateral cortical inputs	25.59	7.74	10.56	4.49	0.0008	0.0032
Contralateral cortical inputs	1.68	1.03	4.86	2.26	0.0175	0.0355
All cortical inputs	27.27	8.64	15.42	6.11	0.0118	0.0355
Thalamic inputs	6.36	2.13	5.93	2.10	0.7124	1.0000
All subcortical inputs	6.99	2.24	6.32	2.18	0.5819	0.5819

Table S4. Mean and standard deviation (SD) for input fraction from individual areas. P-Values were calculated with pairwise comparisons and adjusted for multiple comparisons. Significant values are marked in red. Related to Figure 5.

Area	WT		Reeler			
	mean	SD	mean	SD	p-value	adj.p-value
Orbital area	0.36	0.13	0.13	0.09	0.0023	0.0854
Primary motor c.	2.33	0.76	1.24	0.69	0.0158	0.5534
Secondary motor c.	5.55	2.72	1.06	1.46	0.0041	0.1469
Motor c.	7.88	3.28	2.29	2.07	0.0070	0.0350
Anterior cingulate c.	0.68	0.51	0.18	0.13	0.0407	1.0000
Retrosplenial area	1.26	1.04	0.25	0.15	0.0410	1.0000
Primary somatosensory c. limb	0.96	0.49	1.42	0.69	0.1736	1.0000
Primary somatosensory c. trunk	3.92	3.10	4.90	1.49	0.4637	1.0000
Primary somatosensory c. body	4.87	3.24	6.32	1.33	0.3056	0.6113
Secondary somatosensory c.	26.27	6.99	19.47	3.98	0.0450	1.0000
Dorsal auditory c.	1.99	1.06	1.66	1.28	0.4557	1.0000
Primary auditory c.	5.43	1.64	0.96	0.85	0.0012	0.0443
Ventral auditory c.	2.21	1.13	1.40	1.15	0.2055	1.0000
Auditory c.	9.63	3.40	4.02	3.01	0.0070	0.0350
Posterior parietal associaton c.	13.02	7.95	7.87	3.49	0.1423	1.0000
Anteromedial visual c.	1.52	1.68	0.40	0.73	0.0724	1.0000
Primary visual c.	4.36	1.84	4.77	2.33	0.7251	1.0000
Anterolateral visual c.	3.00	1.89	1.83	1.34	0.2046	1.0000
Visual c.	8.88	4.19	6.99	3.85	0.3962	0.6113
Contralateral motor cortex	0.14	0.08	0.16	0.07	0.6612	1.0000
Contralateral barrel cortex	3.55	1.04	20.22	6.20	0.0003	0.0134
Contralateral secondary somatosensory c.	0.12	0.09	0.67	0.25	0.0008	0.0298
Contralateral primary somatosensory body c.	0.27	0.24	0.38	0.32	0.7104	1.0000
Anteroventral nucleus	0.26	0.27	0.45	0.57	0.4496	1.0000
Anteromedial nucleus	0.45	0.39	0.72	0.27	0.1704	1.0000
Ventral anterior-lateral complex	1.09	0.50	2.11	1.01	0.0341	1.0000
Ventral posteromedial complex	11.87	5.51	18.57	5.99	0.0262	0.8916
Ventral posterolateral complex	0.16	0.13	0.76	0.23	0.0006	0.0233
Posterior complex	3.33	1.45	3.08	1.59	0.4557	1.0000
Lateral dorsal nucleus	0.13	0.18	0.36	0.25	0.1098	1.0000
Lateral posterior nucleus	0.24	0.20	0.23	0.12	0.9147	1.0000
Rhomboid nulceus	0.11	0.07	0.16	0.13	0.4547	1.0000
Intralaminar nucleus	1.33	0.39	1.74	0.33	0.0572	1.0000
Lateral hypothalamic area	0.22	0.12	0.18	0.12	0.4721	1.0000
Zona Incerta	0.22	0.11	0.17	0.12	0.8048	1.0000
Substantia innominata	0.13	0.06	0.13	0.10	0.9016	1.0000
Diagonal band	0.12	0.05	0.07	0.04	0.0823	1.0000
Bed nuclei of the stria terminalis	0.04	0.05	0.04	0.05	1.0000	1.0000
Globus pallidus	0.63	0.28	0.66	0.26	0.8299	1.0000
Claustrum	0.05	0.02	0.03	0.03	0.2314	1.0000
Amygdala	0.04	0.05	0.02	0.03	0.4951	1.0000
Periaqueductal gray	0.05	0.03	0.07	0.05	0.4469	1.0000
Ventral tegmental area	0.07	0.03	0.10	0.06	0.2039	1.0000
Midbrain reticular nucleus	0.10	0.13	0.16	0.10	0.1282	1.0000
Raphe Nuclei	0.04	0.05	0.02	0.03	0.3663	1.0000

Table S5. Mean and standard deviation (SD) for fraction of cells transfected with AAV-retro-EGFP at either the injection site (right barrel cortex) or the contralateral hemisphere (left barrel cortex) labeled in each bin across the cortical thickness. Related to Figure S4.

	Injection site				Contralateral side			
	WT		Reeler		WT		Reeler	
Bin	mean	SD	mean	SD	mean	SD	mean	SD
1	0.30	0.16	1.30	0.79	0.00	0.00	0.23	0.18
2	12.38	5.19	5.83	6.34	7.20	3.99	1.70	0.87
3	17.13	6.07	6.30	5.11	29.65	8.23	2.26	0.78
4	12.94	3.49	5.06	2.09	22.06	4.01	3.15	1.89
5	9.70	1.18	5.03	0.87	11.27	3.01	2.34	0.51
6	8.46	0.95	4.89	1.29	3.44	3.20	2.58	1.23
7	6.92	0.50	5.13	1.47	0.84	0.96	2.91	1.38
8	5.59	0.36	5.66	1.66	0.84	0.41	3.85	1.77
9	3.59	1.90	5.88	1.68	1.70	0.22	5.50	1.57
10	3.03	2.85	5.74	2.52	0.94	1.14	5.74	1.45
11	3.41	3.15	6.20	1.83	0.98	0.55	6.11	2.42
12	3.54	2.97	6.26	1.90	0.49	0.45	6.65	3.97
13	2.84	2.32	5.98	1.21	1.21	0.20	8.06	0.59
14	2.68	1.56	5.95	0.81	1.82	0.87	8.46	0.61
15	2.87	0.52	5.26	1.01	3.93	2.11	8.82	1.69
16	2.34	1.08	5.00	1.00	3.93	1.99	7.33	2.02
17	1.49	1.01	4.56	1.26	4.43	2.70	5.21	0.84
18	0.67	0.41	4.53	1.03	3.34	1.96	6.50	1.99
19	0.11	0.13	4.31	1.09	1.78	1.78	8.48	3.52
20	0.02	0.03	1.14	0.77	0.14	0.22	4.12	2.64

Table S6. Mean and standard deviation (SD) for fraction of projection neurons labeled in each bin across the cortical thickness. P-Values were calculated with pairwise comparisons and adjusted for multiple comparisons. Significant values are marked in red. Related to Figure 7.

	Motor cortex						S1body cortex						Secondary somatosensory cortex					
	WT		Reeler				WT		Reeler				WT		Reeler			
Bin	mean	SD	mean	SD	p-value	adj.p-value	mean	SD	mean	SD	p-value	adj.p-value	mean	SD	mean	SD	p-value	adj.p-value
1	0.00	0.00	0.55	1.13	0.1730	1.0000	0.00	0.00	2.30	1.08	0.0011	0.0180	0.00	0.00	0.88	0.59	0.0011	0.0127
2	0.07	0.13	4.97	3.92	0.0407	0.6510	1.85	2.07	8.91	4.02	0.0023	0.0350	0.10	0.11	5.14	1.29	0.0021	0.0207
3	1.88	1.11	16.86	9.07	0.0046	0.0866	2.98	2.16	11.17	2.58	0.0000	0.0006	0.96	0.52	7.12	1.71	0.0000	0.0006
4	10.79	3.66	13.85	3.84	0.1522	1.0000	5.17	2.50	10.82	2.15	0.0007	0.0125	2.28	0.90	9.67	3.21	0.0006	0.0083
5	16.04	1.86	11.55	6.82	0.1376	1.0000	7.72	6.84	11.30	3.42	0.2391	1.0000	4.72	1.57	13.06	4.41	0.0018	0.0199
6	13.78	3.07	9.49	5.03	0.0779	1.0000	11.18	6.09	7.77	3.42	0.2205	1.0000	10.68	3.55	10.73	1.70	0.9756	1.0000
7	14.70	3.08	9.47	4.18	0.0207	0.3729	8.98	6.44	9.29	2.40	0.9077	1.0000	17.38	2.19	7.92	1.64	0.0000	0.0000
8	13.74	2.69	4.88	3.16	0.0001	0.0021	10.10	5.51	7.25	2.77	0.2456	1.0000	13.15	2.52	5.84	1.72	0.0000	0.0006
9	9.39	2.67	5.78	3.40	0.0470	0.7050	7.96	2.84	6.01	0.57	0.1207	0.8447	6.89	1.49	5.29	1.37	0.0587	0.3241
10	7.13	2.70	5.61	5.37	0.2086	1.0000	8.93	5.31	3.79	1.65	0.0439	0.4831	5.27	0.78	4.06	1.30	0.0540	0.3241
11	5.32	2.12	2.03	1.97	0.0209	0.3729	9.75	9.96	3.61	1.17	0.0728	0.6556	3.83	1.00	3.33	1.82	0.5375	1.0000
12	3.35	1.07	5.28	5.14	0.7104	1.0000	5.55	2.81	2.59	0.84	0.0314	0.4396	4.30	1.40	3.45	1.11	0.2284	0.6851
13	1.86	1.58	1.85	1.46	0.9972	1.0000	4.38	2.83	2.19	1.31	0.0871	0.6966	6.62	0.65	2.97	0.80	0.0000	0.0000
14	1.18	0.95	1.16	1.47	0.7938	1.0000	5.93	1.48	2.71	1.14	0.0006	0.0123	7.86	1.01	2.90	1.24	0.0000	0.0001
15	0.52	0.89	1.30	1.51	0.6012	1.0000	4.10	1.95	2.46	0.88	0.0639	0.6391	6.59	2.29	3.38	0.82	0.0091	0.0816
16	0.14	0.20	1.29	1.36	0.2194	1.0000	2.41	2.12	1.81	0.93	0.5061	1.0000	4.76	1.40	3.29	0.77	0.0318	0.2227
17	0.00	0.00	1.52	2.56	0.0754	1.0000	0.73	0.84	2.22	1.42	0.0339	0.4396	2.53	0.86	3.49	1.09	0.0917	0.3668
18	0.02	0.06	1.24	1.45	0.0739	1.0000	0.24	0.31	1.95	0.99	0.0019	0.0309	1.05	0.35	3.04	0.61	0.0000	0.0001
19	0.05	0.09	0.81	1.24	0.3716	1.0000	0.47	0.57	1.41	0.71	0.0330	0.4396	0.54	0.20	2.87	0.76	0.0006	0.0082
20	0.05	0.09	0.51	1.35	0.7221	1.0000	1.55	2.16	0.46	0.67	0.1506	0.9035	0.49	0.29	1.58	0.93	0.0208	0.1665

	Primary auditory cortex						Primary visual cortex						Contralateral S1-BF					
	WT		Reeler				WT		Reeler				WT		Reeler			
Bin	mean	SD	mean	SD	p-value	adj.p-value	mean	SD	mean	SD	p-value	adj.p-value	mean	SD	mean	SD	p-value	adj.p-value
1	0.00	0.00	0.00	0.00	1.0000	1.0000	0.00	0.00	0.10	0.19	0.1730	1.0000	0.00	0.00	0.03	0.06	0.1730	0.8093
2	0.00	0.00	4.70	4.54	0.0114	0.1704	0.22	0.47	0.38	0.67	0.5514	1.0000	0.67	0.82	0.44	0.22	0.7002	1.0000
3	0.41	0.47	14.00	10.61	0.0146	0.1903	0.49	1.09	0.61	0.67	0.4951	1.0000	3.37	2.90	0.80	0.23	0.0012	0.0127
4	1.11	0.71	10.65	6.35	0.0072	0.1219	2.06	2.74	3.13	2.27	0.3062	1.0000	19.64	4.50	1.38	0.58	0.0000	0.0005
5	4.10	1.61	19.19	10.18	0.0075	0.1219	5.78	7.02	5.47	2.22	0.9139	1.0000	24.71	6.66	2.56	0.71	0.0001	0.0016
6	8.39	2.82	15.28	11.59	0.1717	1.0000	19.20	11.94	9.65	4.60	0.0847	0.6777	20.24	4.85	3.78	0.95	0.0001	0.0012
7	18.87	7.10	11.92	6.78	0.0857	0.8567	34.26	11.80	12.80	5.49	0.0009	0.0157	6.51	4.73	5.32	1.26	0.5417	1.0000
8	19.25	5.01	8.64	8.87	0.0175	0.2098	21.63	9.88	11.32	3.98	0.0339	0.3393	1.25	0.97	7.13	1.48	0.0000	0.0000
9	17.47	5.23	1.80	2.47	0.0019	0.0386	8.03	7.35	12.19	2.06	0.0973	0.6812	1.60	1.79	7.92	0.71	0.0000	0.0005
10	13.71	5.57	2.12	2.52	0.0021	0.0393	3.87	3.17	10.96	2.64	0.0007	0.0120	4.53	4.42	7.20	0.49	0.1619	0.8093
11	6.40	3.49	6.46	11.94	0.1248	1.0000	1.85	1.93	6.40	1.78	0.0006	0.0118	6.18	2.82	7.80	1.25	0.1912	0.8093
12	2.94	1.11	0.36	0.96	0.0052	0.0940	1.03	1.15	6.35	1.56	0.0000	0.0002	4.77	3.22	7.82	1.32	0.0496	0.2974
13	1.44	1.08	1.26	2.30	0.2395	1.0000	0.65	0.97	5.38	4.07	0.0032	0.0442	2.34	1.71	6.87	1.48	0.0002	0.0025
14	1.72	1.55	1.10	1.52	0.4249	1.0000	0.45	0.50	3.42	2.65	0.0248	0.2981	1.97	1.26	7.33	1.29	0.0000	0.0001
15	1.10	1.02	0.00	0.00	0.0114	0.1704	0.04	0.09	3.85	0.94	0.0014	0.0226	1.80	1.81	6.85	1.52	0.0001	0.0016
16	1.08	0.99	0.06	0.16	0.0236	0.2593	0.12	0.22	3.51	1.71	0.0017	0.0257	0.37	0.68	7.36	1.22	0.0019	0.0135
17	0.79	0.69	1.13	2.29	0.3598	1.0000	0.00	0.00	1.36	1.32	0.0307	0.3379	0.00	0.00	6.85	0.95	0.0011	0.0127
18	0.53	0.58	0.18	0.33	0.2291	1.0000	0.00	0.00	1.46	1.26	0.0114	0.1476	0.05	0.13	5.59	0.88	0.0014	0.0127
19	0.63	0.66	0.24	0.64	0.1196	1.0000	0.14	0.38	1.50	2.52	0.0658	0.5925	0.00	0.00	4.96	0.71	0.0011	0.0127
20	0.06	0.11	0.89	2.36	0.7221	1.0000	0.18	0.23	0.18	0.25	0.8875	1.0000	0.49	0.29	1.58	0.93	0.0011	0.0127