Supplementary Table 1

| **ADOLESCENT (P42-45)** | ***Prelimbic Layer 5/6*** | | ***Prelimbic Layer 2/3*** | | ***Infralimbic Layer 5/6*** | | ***Infralimbic Layer 2/3*** | |
|---|---|---|---|---|---|---|---|---|
| **NAcc-Projecting** | **Air** | **Toluene** | **Air** | **Toluene** | **Air** | **Toluene** | **Air** | **Toluene** |
| # of neurons | 11 | 12 | 7 | 7 | 8 | 9 | 6 | 7 |
| Rheobase (pA) | 120.5 ± 5.7 | **222.9 ± 20.5*** | 153.6 ± 6.5 | 189.3 ± 24.3 | 256.3 ± 30.1 | **147.2 ± 14.1*** | 237.5 ± 32.1 | 164.3 ± 26.1 |
| Threshold (mV) | -35.8 ± 0.9 | -35.1 ± 1.1 | -33.9 ± 1.0 | -36.8 ± 1.0 | -35.4 ± 1.3 | -35.7 ± 1.1 | -33.5 ± 1.3 | -34.5 ± 0.9 |
| Peak (mV) | 71.5 ± 2.1 | 73.0 ± 1.3 | 72.5 ± 2.3 | 74.2 ± 1.9 | 73.0 ± 2.3 | 75.8 ± 1.7 | 71.3 ± 2.3 | 74.7 ± 0.7 |
| AHP (mV) | -15.0 ± 1.4 | -13.3 ± 1.1 | -18.5 ± 1.2 | **-13.2 ± 1.4*** | -15.2 ± 0.6 | **-13.3 ± 0.6*** | -15.6 ± 1.4 | -14.8 ± 1.7 |
| ½ Duration (mV) | 0.78 ± 0.05 | **0.91 ± 0.03*** | 0.91 ± 0.04 | 0.89 ± 0.05 | 0.85 ± 0.05 | 0.92 ± 0.03 | 0.93 ± 0.08 | 0.92 ± 0.04 |
| Membrane Resistance (MΩ) | 53.7 ± 6.1 | **38.3 ± 3.1*** | 45.6 ± 9.6 | 41.0 ± 4.8 | 40.0 ± 5.7 | 51.3 ± 4.3 | 35.1 ± 4.8 | 44.8 ± 6.3 |
| IH Amplitude (mV) | -4.6 ± 0.5 | **-2.2 ± 0.3*** | -2.8 ± 0.7 | -1.8 ± 0.4 | -3.2 ± 0.4 | -4.0 ± 0.6 | -2.1 ± 0.2 | -3.0 ± 0.5 |

| **ADOLESCENT (P42-45)** | ***Prelimbic Layer 5/6*** | | ***Prelimbic Layer 2/3*** | | ***Infralimbic Layer 5/6*** | | ***Infralimbic Layer 2/3*** | |
|---|---|---|---|---|---|---|---|---|
| **NAcs-Projecting** | **Air** | **Toluene** | **Air** | **Toluene** | **Air** | **Toluene** | **Air** | **Toluene** |
| # of neurons | 8 | 8 | 7 | 7 | 9 | 10 | 7 | 8 |
| Rheobase (pA) | 134.4 ± 21.6 | 168.8 ± 15.5 | 150.0 ± 15.4 | 196.4 ± 20.7 | 141.7 ± 20.8 | **242.5 ± 31.0*** | 207.1 ± 26.6 | 181.3 ± 42.7 |
| Threshold (mV) | -34.9 ± 1.0 | -35.8 ± 1.6 | -33.3 ± 1.9 | -32.0 ± 1.9 | -31.5 ± 1.2 | -30.7 ± 1.0 | -31.7 ± 1.5 | -30.1 ± 1.1 |
| Peak (mV) | 72.8 ± 2.1 | 72.7 ± 1.9 | 75.3 ± 1.9 | 68.9 ± 2.6 | 69.7 ± 2.3 | 71.4 ± 2.1 | 70.8 ± 2.7 | 68.7 ± 2.7 |
| AHP (mV) | -17.7 ± 1.4 | -14.9 ± 1.6 | -16.8 ± 1.3 | -14.5 ± 1.7 | -17.7 ± 1.3 | -16.5 ± 1.2 | -18.3 ± 0.9 | -17.4 ± 0.6 |
| ½ Duration (mV) | 0.93 ± 0.05 | 0.98 ± 0.07 | 1.06 ± 0.04 | 1.36 ± 0.24 | 1.05 ± 0.05 | **1.29 ± 0.1*** | 1.11 ± 0.05 | 1.14 ± 0.06 |
| Membrane Resistance (MΩ) | 48.9 ± 7.5 | 64.2 ± 8.1 | 64.4 ± 2.5 | 51.8 ± 6.0 | 57.3 ± 11.4 | 62.0 ± 16.5 | 61.3 ± 10.6 | 79.6 ± 13.1 |
| IH Amplitude (mV) | -4.2 ± 0.6 | -3.4 ± 0.5 | -4.0 ± 0.7 | -3.3 ± 0.7 | -4.7 ± 0.5 | **-2.9 ± 0.3*** | -2.8 ± 0.3 | -4.3 ± 0.9 |

| **ADULT (P99-102)** | ***Prelimbic Layer 5/6*** | | ***Prelimbic Layer 2/3*** | | ***Infralimbic Layer 5/6*** | | ***Infralimbic Layer 2/3*** | |
|---|---|---|---|---|---|---|---|---|
| **NAcc-Projecting** | **Air** | **Toluene** | **Air** | **Toluene** | **Air** | **Toluene** | **Air** | **Toluene** |
| # of neurons | 8 | 8 | 6 | 6 | 7 | 7 | 7 | 6 |
| Rheobase (pA) | 175.0 ± 23.0 | 240.6 ± 32.7 | 254.2 ± 26.2 | 241.7 ± 26.4 | 264.3 ± 43.3 | 178.6 ± 31.1 | 192.9 ± 41.4 | 275.0 ± 36.5 |
| Threshold (mV) | -33.7 ± 1.4 | -34.2 ± 1.3 | -33.6 ± 1.7 | -33.2 ± 1.2 | -35.5 ± 0.5 | -34.2 ± 1.6 | -33.4 ± 1.9 | -31.7 ± 2.2 |
| Peak (mV) | 74.4 ± 2.9 | 70.3 ± 2.6 | 65.4 ± 3.0 | 73.1 ± 2.0 | 74.4 ± 1.0 | 74.7 ± 2.4 | 66.9 ± 1.4 | 68.7 ± 3.3 |
| AHP (mV) | -15.1 ± 1.6 | -13.2 ± 2.0 | -14.3 ± 1.5 | -12.2 ± 1.4 | -13.4 ± 1.1 | -13.5 ± 1.9 | -14.4 ± 1.2 | -14.4 ± 1.1 |
| ½ Duration (mV) | 1.11 ± 0.16 | 1.18 ± 0.14 | 1.25 ± 0.14 | 1.03 ± 0.08 | 0.99 ± 0.04 | 0.96 ± 0.05 | 1.13 ± 0.06 | 1.05 ± 0.08 |
| Membrane Resistance (MΩ) | 55.3 ± 12.7 | 69.6 ± 13.6 | 46.9 ± 9.3 | 51.5 ± 5.0 | 47.0 ± 5.1 | 67.0 ± 9.4 | 74.9 ± 21.1 | 67.1 ± 7.3 |
| IH Amplitude (mV) | -3.7 ± 0.7 | -2.8 ± 0.5 | -2.4 ± 0.6 | -2.2 ± 0.4 | -3.0 ± 0.6 | -3.2 ± 0.4 | -2.2 ± 0.6 | -1.7 ± 0.4 |

| **ADULT (P99-102)** | ***Prelimbic Layer 5/6*** | | ***Prelimbic Layer 2/3*** | | ***Infralimbic Layer 5/6*** | | ***Infralimbic Layer 2/3*** | |
|---|---|---|---|---|---|---|---|---|
| **NAcs-Projecting** | **Air** | **Toluene** | **Air** | **Toluene** | **Air** | **Toluene** | **Air** | **Toluene** |
| # of neurons | 7 | 6 | 6 | 6 | 9 | 7 | 7 | 6 |
| Rheobase (pA) | 128.6 ± 6.5 | 108.3 ± 25.6 | 170.8 ± 22.8 | 191.7 ± 24.7 | 133.3 ± 17.7 | 171.4 ± 20.0 | 153.6 ± 24.7 | 183.3 ± 23.0 |
| Threshold (mV) | -33.7 ± 0.9 | -35.8 ± 2.0 | -33.4 ± 1.5 | -33.1 ± 0.5 | -32.8 ± 1.8 | -31.9 ± 1.5 | -34.5 ± 1.5 | -34.0 ± 0.9 |
| Peak (mV) | 74.3 ± 1.6 | 72.5 ± 1.6 | 77.1 ± 3.1 | 74.3 ± 3.3 | 70.3 ± 2.2 | 76.5 ± 2.9 | 70.0 ± 3.4 | 76.1 ± 2.1 |
| AHP (mV) | -15.6 ± 0.9 | -16.0 ± 2.7 | -16.7 ± 0.8 | -14.7 ± 1.5 | -16.5 ± 1.4 | -15.1 ± 2.2 | -15.2 ± 1.5 | -15.4 ± 1.0 |
| ½ Duration (mV) | 1.02 ± 0.08 | 0.90 ± 0.06 | 1.03 ± 0.06 | 0.98 ± 0.08 | 1.15 ± 0.05 | 1.06 ± 0.11 | 1.24 ± 0.08 | 1.02 ± 0.07 |
| Membrane Resistance (MΩ) | 95.5 ± 32.4 | 105.4 ± 40.4 | 44.7 ± 5.4 | 49.2 ± 2.3 | 90.7 ± 19.4 | 58.7 ± 10.3 | 62.2 ± 5.0 | 63.3 ± 13.1 |
| IH Amplitude (mV) | -3.6 ± 0.5 | -5.2 ± 2.0 | -2.1 ± 0.3 | -1.6 ± 0.2 | -4.5 ± 0.9 | -3.2 ± 0.5 | -2.6 ± 0.7 | -2.1 ± 0.6 |

Supplementary Table 2

| **ADOLESCENT (P49-52)** | ***Prelimbic Layer 5/6*** | | ***Prelimbic Layer 2/3*** | | ***Infralimbic Layer 5/6*** | | ***Infralimbic Layer 2/3*** | |
|---|---|---|---|---|---|---|---|---|
| **NAcc-Projecting 7DWD** | **Air** | **Toluene** | **Air** | **Toluene** | **Air** | **Toluene** | **Air** | **Toluene** |
| # of neurons | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| Rheobase (pA) | 133.3 ± 17.9 | 132.3 ± 17.8 | 154.2 ± 24.5 | 208.3 ± 26.4 | 191.7 ± 23.9 | 145.8 ± 15.0 | 204.2 ± 21.8 | 200.0 ± 28.1 |
| Threshold (mV) | -35.3 ± 0.6 | -35.3 ± 1.4 | -34.8 ± 1.0 | -34.7 ± 1.9 | -37.2 ± 1.9 | -32.7 ± 1.9 | -32.2 ± 1.9 | -34.0 ± 1.8 |
| Peak (mV) | 79.4 ± 3.2 | 79.7 ± 3.8 | 81.2 ± 1.4 | 83.2 ± 2.6 | 83.0 ± 2.4 | 83.3 ± 1.6 | 76.2 ± 5.2 | 81.8 ± 2.8 |
| AHP (mV) | -12.2 ± 1.1 | -14.1 ± 1.5 | -18.2 ± 1.6 | -16.8 ± 0.7 | -14.4 ± 1.5 | -17.0 ± 1.3 | -16.0 ± 2.1 | -14.4 ± 1.6 |
| ½ Duration (mV) | 0.96 ± 0.04 | 0.96 ± 0.04 | 0.96 ± 0.05 | 0.88 ± 0.05 | 0.99 ± 0.07 | 0.96 ± 0.06 | 1.06 ± 0.05 | 0.90 ± 0.06 |
| Membrane Resistance (MΩ) | 72.9 ± 11.5 | 57.7 ± 17.5 | 51.1 ± 5.4 | 45.1 ± 4.9 | 50.5 ± 10.7 | 64.4 ± 6.4 | 46.8 ± 7.3 | 47.6 ± 5.7 |
| IH Amplitude (mV) | -4.1 ± 0.9 | -3.0 ± 0.5 | -3.5 ± 0.6 | -2.5 ± 0.4 | -4.6 ± 0.7 | -4.7 ± 0.5 | -3.6 ± 0.2 | -2.7 ± 0.4 |

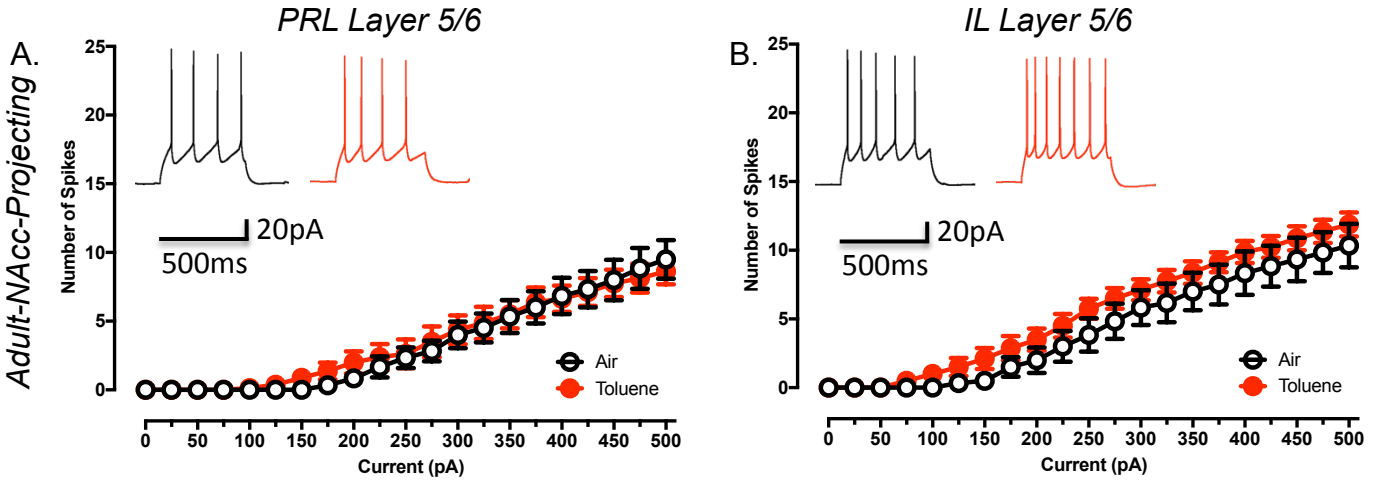
| **ADOLESCENT (P49-52)** | ***Prelimbic Layer 5/6*** | | ***Prelimbic Layer 2/3*** | | ***Infralimbic Layer 5/6*** | | ***Infralimbic Layer 2/3*** | |
|---|---|---|---|---|---|---|---|---|
| **NAcs-Projecting 7DWD** | **Air** | **Toluene** | **Air** | **Toluene** | **Air** | **Toluene** | **Air** | **Toluene** |
| # of neurons | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| Rheobase (pA) | 129.2 ± 19.8 | 129.2 ± 20.8 | 208.3 ± 21.1 | 183.3 ± 12.4 | 183.3 ± 22.1 | 145.8 ± 19.8 | 229.2 ± 31.2 | 158.3 ± 12.4 |
| Threshold (mV) | -39.3 ± 1.4 | -35.0 ± 1.6 | -34.2 ± 1.9 | -33.5 ± 2.0 | -35.7 ± 2.0 | -34.0 ± 1.2 | -36.8 ± 1.2 | -33.9 ± 1.1 |
| Peak (mV) | 76.5 ± 3.5 | 73.5 ± 2.4 | 79.8 ± 4.0 | 71.3 ± 2.3 | 76.0 ± 2.3 | 75.1 ± 2.7 | 80.7 ± 3.9 | 69.4 ± 3.9 |
| AHP (mV) | -15.2 ± 1.5 | -18.2 ± 0.7 | -15.9 ± 0.8 | -18.1 ± 1.7 | -14.4 ± 0.8 | -16.8 ± 1.2 | -16.8 ± 1.1 | -16.5 ± 0.9 |
| ½ Duration (mV) | 1.07 ± 0.06 | 0.98 ± 0.08 | 1.03 ± 0.05 | 0.92 ± 0.04 | 1.00 ± 0.03 | 0.97 ± 0.06 | 0.97 ± 0.06 | 1.03 ± 0.05 |
| Membrane Resistance (MΩ) | 44.3 ± 6.6 | 52.3 ± 5.0 | 37.4 ± 4.2 | **59.9 ± 4.9*** | 32.0 ± 1.3 | **57.8 ± 5.7*** | 39.0 ± 6.1 | **58.7 ± 3.6*** |
| IH Amplitude (mV) | -4.9 ± 0.5 | -4.2 ± 0.2 | -3.5 ± 0.3 | -4.0 ± 0.4 | -3.7 ± 0.5 | -4.2 ± 0.6 | -3.1 ± 0.3 | -3.8 ± 0.3 |

Supplementary Table 3

| **ADOLESCENT (P42-45)** | ***Prelimbic Layer 5/6*** | | ***Prelimbic Layer 5/6*** | |
|---|---|---|---|---|
| **NAcc-Projecting ZD7288** | **Air** | **Air+ZD** | **Toluene** | **Toluene+ZD** |
| # of neurons | 6 | 6 | 6 | 6 |
| Rheobase (pA) | 129.2 ± 15.0 | **58.3 ± 12.4*** | 145.8 ± 7.7 | 129.2 ± 15.0 |
| Threshold (mV) | -32.9 ± 2.4 | -35.0 ± 1.8 | -32.4 ± 1.7 | -32.3 ± 1.7 |
| Peak (mV) | 75.7 ± 1.6 | 75.3 ± 3.4 | 77.1 ± 4.8 | 75.6 ± 4.9 |
| AHP (mV) | -16.8 ± 0.6 | -15.8 ± 1.3 | -15.5 ± 1.8 | -11.6 ± 1.6 |
| ½ Duration (mV) | 0.85 ± 0.03 | 0.91 ± 0.07 | **1.00 ± 0.06**$^{\#}$ | 1.16 ± 0.11 |
| IH Amplitude (mV) | -3.1 ± 0.4 | **-0.8 ± 0.3*** | **-1.8 ± 0.4**$^{\#}$ | -0.9 ± 0.3 |

| **ADOLESCENT (P42-45)** | ***Prelimbic Layer 5/6*** | | ***Prelimbic Layer 5/6*** | | ***Infralimbic Layer 5/6*** | | ***Infralimbic Layer 5/6*** | |
|---|---|---|---|---|---|---|---|---|
| **NAcc-Projecting SB** | **Air** | **Air+SB** | **Toluene** | **Toluene+SB** | **Air** | **Air+SB** | **Toluene** | **Toluene+SB** |
| # of neurons | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| Rheobase (pA) | 120.8 ± 11.9 | 112.5 ± 12.5 | 116.7 ± 17.9 | 100.0 ± 18.3 | 179.2 ± 23.6 | 175.0 ± 21.4 | 129.1 ± 22.8 | 137.5 ± 20.2 |
| Threshold (mV) | -34.3 ± 1.7 | -34.8 ± 2.0 | -36.1 ± 1.6 | -35.9 ± 1.4 | -34.3 ± 1.7 | -33.5 ± 1.5 | -29.7 ± 2.3 | -28.2 ± 2.0 |
| Peak (mV) | 81.0 ± 1.2 | 82.0 ± 1.1 | **70.2 ± 2.0**$^{\#}$ | 66.7 ± 2.9 | 78.2 ± 1.0 | 76.2 ± 1.5 | 76.0 ± 3.9 | 72.3 ± 2.1 |
| AHP (mV) | -15.5 ± 0.7 | -16.5 ± 1.0 | -15.4 ± 1.6 | -17.1 ± 1.5 | -16.1 ± 1.3 | -16.7 ± 1.5 | -17.8 ± 1.0 | **-20.2 ± 0.9*** |
| ½ Duration (mV) | 0.84 ± 0.02 | 0.84 ± 0.03 | **1.13 ± 0.05**$^{\#}$ | 1.18 ± 0.07 | 0.97 ± 0.05 | 1.00 ± 0.03 | 0.97 ± 0.04 | 0.99 ± 0.03 |
| IH Amplitude (mV) | -4.1 ± 0.3 | -4.7 ± 0.6 | **-3.2 ± 0.2**$^{\#}$ | -3.7 ± 0.4 | -3.3 ± 0.8 | -3.3 ± 0.7 | -3.2 ± 0.5 | -3.5 ± 0.6 |

Supplementary Figure 1




Supplementary Figure 1. A single 20-minute toluene exposure that produces high levels of sedation during adulthood has no effect on the intrinsic excitability of NAc projecting mPFC neurons. Figures show the effect of toluene exposure on firing of layer 5/6 prelimbic (A- Air: n=6, Toluene: n=8) and infralimbic (B- Air: n=6, Toluene: n=8) mPFC neurons projecting to the core of the NAc. Traces in each figure show examples of current-evoked firing (evoked with a 250 pA current step) from air (left trace) or toluene (right trace) exposed adult rats 24 hours following exposure to 10,500 ppm toluene vapor. Data are presented as mean and SEM.