Anaesthetic-dependent changes in gene expression following acute and chronic exposure in the rodent brain

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| Gene Symbol | Acute Avg (log2) | Chronic Avg (log2) | Fold Change | ANOVA p-value |
|-------------|------------------|--------------------|-------------|---------------|
| **Control** |                  |                    |             |               |
| Tph1        | 4.67             | 12.68              | -258.71     | 0.0259        |
| Pde6g       | 4.68             | 7.29               | -6.12       | 0.0142        |
| Neurod4     | 4.2              | 6.46               | -4.8        | 0.0191        |
| Gnat2       | 4.43             | 6.1                | -3.19       | 0.0368        |
| Pde6c       | 4.98             | 6.53               | -2.94       | 0.0042        |
| Gngt1       | 5.07             | 6.33               | -2.4        | 0.0008        |
| Hoxa5       | 3.32             | 4.55               | -2.34       | 0.0030        |
| Hoxa6       | 3.55             | 4.65               | -2.14       | 0.0020        |
| Tnfaip2     | 5.22             | 6.29               | -2.09       | 0.0049        |
| Igf3; Igf-6 | 5.72             | 6.78               | -2.08       | 0.0091        |
| Guca1a      | 3.48             | 4.52               | -2.05       | 0.0191        |
| Vom1r50     | 4.99             | 5.99               | -2          | 0.0325        |
| Vom2r1      | 4.12             | 3.11               | 2.01        | 0.0010        |
| Cyp4v3      | 9.05             | 8.04               | 2.02        | 0.0036        |
| Olr1700     | 4.1              | 3.02               | 2.11        | 0.0123        |
| Tshb        | 6.6              | 5.5                | 2.15        | 0.0423        |
| Slamf1      | 5                | 3.85               | 2.22        | 0.0015        |
| Fcrl2       | 6.7              | 4.69               | 4.01        | 0.0090        |
| **Isoflurane** |              |                    |             |               |
| Plekhh3     | 5.32             | 6.51               | -2.28       | 0.0038        |
| Nuak2       | 3.41             | 4.58               | -2.25       | 0.0009        |
| Ttc30a      | 3.81             | 4.98               | -2.25       | 3.78E-05      |
| XAF1        | 4.76             | 5.83               | -2.09       | 0.0061        |
| C3          | 6.13             | 7.14               | -2.02       | 0.0189        |
| LOC102555445| 5.61             | 4.61               | 2           | 0.0467        |
| Ccl17       | 3.56             | 2.55               | 2.01        | 0.0322        |
| Itprip1     | 6.91             | 5.88               | 2.04        | 0.0164        |
| Lmod2       | 3.87             | 2.84               | 2.05        | 0.0223        |
| Pi15        | 5.39             | 4.35               | 2.06        | 0.0112        |
| Gdf9        | 4.83             | 3.75               | 2.11        | 0.0374        |
| Csmd2       | 7.58             | 6.51               | 2.11        | 0.0034        |
| Grifin      | 5.56             | 4.45               | 2.17        | 0.0113        |
| Frmd7       | 4.16             | 3                  | 2.24        | 0.0455        |
| Wdr49       | 5.51             | 4.3                | 2.32        | 0.0027        |
| RT1-M6-2    | 5.31             | 3.79               | 2.86        | 0.0199        |
| Asb15       | 11.52            | 3.58               | 246.3       | 4.22E-05      |
| **Ketamine** |                  |                    |             |               |
| Sycp2l      | 4.43             | 5.69               | -2.4        | 0.0405        |
| Avp         | 13               | 14.14              | -2.2        | 0.0093        |
| Mcm5        | 3.62             | 4.72               | -2.14       | 0.0048        |
| Bpfib3      | 3.74             | 4.81               | -2.1        | 0.0069        |
| gene         | Acute | Chronic | Fold Change | p-value |
|--------------|-------|---------|-------------|---------|
| Inca1        | 3.7   | 4.73    | -2.04       | 0.0013  |
| Vom2r1       | 4.32  | 3.27    | 2.07        | 0.0066  |
| Olr586       | 4.41  | 3.3     | 2.15        | 0.0064  |
| Ifna1611     | 5.15  | 3.92    | 2.34        | 1.66E-06|
| Ly49s7; Klra5| 4.25  | 3.01    | 2.35        | 0.0247  |

**Propofol**

| gene         | Acute | Chronic | Fold Change | p-value |
|--------------|-------|---------|-------------|---------|
| Hoxa6        | 3.46  | 4.56    | -2.14       | 0.0342  |
| Zfp72        | 5.41  | 6.5     | -2.12       | 0.0473  |
| LOC102553524 | 5.75  | 6.82    | -2.09       | 0.0012  |
| Bmp4         | 9.87  | 8.84    | 2.04        | 0.0215  |
| Klkb1        | 4.64  | 3.34    | 2.47        | 0.0107  |

**Supplementary Table 1** Acute treatments vs Chronic treatments - Detailed average expression levels, fold change and p-values for significant probe sets. Non functionally characterised genes have been removed from analysis.
| Gene Symbol | Acute Control Avg (log2) | Acute Treatment Avg (log2) | Fold Change | ANOVA p-value |
|-------------|-------------------------|---------------------------|-------------|---------------|
| **Isoflurane** | | | | |
| Asb15       | 3.8                     | 11.65                     | -230.12     | 0.0001        |
| Tshb        | 6.02                    | 7.38                      | -2.57       | 0.0002        |
| Rdh5        | 5.98                    | 7.17                      | -2.28       | 0.019         |
| She         | 5.23                    | 6.35                      | -2.17       | 0.0012        |
| LOC100360997| 4.9                     | 6.01                      | -2.15       | 0.0047        |
| Sox18       | 5.24                    | 6.32                      | -2.11       | 0.0004        |
| LOC100911790| 3.89                    | 4.92                      | -2.04       | 0.0256        |
| Aox1        | 4.8                     | 5.83                      | -2.03       | 0.0291        |
| Spin2a      | 3.68                    | 4.7                       | -2.02       | 0.0021        |
| Cyr61       | 5.18                    | 6.19                      | -2.01       | 0.0286        |
| Wdr49       | 4.62                    | 5.63                      | -2.01       | 0.0023        |
| Ccnd3       | 5.23                    | 4.22                      | 2           | 1.75E-05      |
| Nr4a3       | 9.87                    | 8.81                      | 2.09        | 0.0124        |
| Dusp1       | 14.79                   | 13.73                     | 2.1         | 0.0183        |
| Pdk4        | 7.21                    | 6.14                      | 2.1         | 0.0085        |
| Olr1055     | 4.24                    | 3.17                      | 2.1         | 0.0121        |
| Nr4a1       | 13.53                   | 12.45                     | 2.12        | 0.0257        |
| RGD1560527  | 4.93                    | 3.84                      | 2.14        | 0.0028        |
| Hspb1       | 5.97                    | 4.87                      | 2.14        | 0.0183        |
| RGD1560821  | 5.4                     | 4.24                      | 2.23        | 0.0013        |
| Nfkbia      | 9.99                    | 8.82                      | 2.26        | 0.0026        |
| Egr2        | 8.62                    | 7.38                      | 2.35        | 0.0095        |
| Npas4       | 9.44                    | 8.09                      | 2.55        | 2.84E-05      |
| NONMMUG006795 | 4.72                | 3.31                      | 2.65        | 0.0208        |
| Rpl39i      | 4.18                    | 2.54                      | 3.12        | 0.0164        |
| Arc         | 10.36                   | 8.61                      | 3.36        | 0.0005        |
| Fcrl2       | 5.94                    | 3.66                      | 4.86        | 2.83E-05      |
| **Ketamine** | | | | |
| Tph1        | 4.99                    | 11.96                     | -125.39     | 0.0336        |
| Cyr61       | 5.53                    | 6.94                      | -2.67       | 0.0038        |
| Vom2r25     | 2.94                    | 4.3                       | -2.57       | 0.0004        |
| LOC680910   | 5.88                    | 7.2                       | -2.5        | 0.0076        |
| LOC685699   | 4.45                    | 5.75                      | -2.47       | 0.0018        |
| Ly49s7; Klra5; LOC100911234 | 3.46 | 4.66 | -2.29 | 0.0068 |
| Apold1      | 6.44                    | 7.63                      | -2.27       | 7.90E-05      |
| Olr59       | 8.04                    | 9.21                      | -2.24       | 0.0309        |
| Igkc; LOC500183 | 5.81     | 6.97 | -2.24 | 0.0259 |
| Klkb1       | 3.56                    | 4.72                      | -2.24       | 0.0016        |
| Dkk2        | 4.16                    | 5.32                      | -2.23       | 0.0009        |
| Ly49i7; LOC100911272 | 3.5 | 4.65 | -2.22 | 0.0354 |
| Casz1       | 4.89                    | 5.99                      | -2.15       | 0.0006        |
| Ahsp        | 3.93                    | 5.01                      | -2.12       | 0.0003        |
| Fign        | 4.87                    | 5.93                      | -2.09       | 0.0078        |
| Ifit3       | 4.64                    | 5.69                      | -2.07       | 0.0009        |
| Foxf1       | 6.21                    | 7.23                      | -2.03       | 0.0026        |
|Gene Symbol| Expression Level 1| Expression Level 2| Fold Change| p-value |
|-----------|------------------|------------------|-------------|---------|
|NONMMUG036691| 3.24| 4.25| -2.01| 0.0301|
|LOC307727| 3.53| 2.52| 2.02| 0.0036|
|Wfikkn1| 6.31| 5.28| 2.04| 0.0066|
|LOC100912354| 5.47| 4.42| 2.06| 0.0076|
|Mboat4| 5.17| 4.11| 2.08| 0.0001|
|Nr4a1| 13.57| 12.51| 2.09| 0.0003|
|LOC502908| 5.62| 4.53| 2.13| 0.0349|
|Gdf9| 5.06| 3.96| 2.14| 0.0422|
|Tm6sf2| 5.84| 4.65| 2.29| 0.0011|
|Pdzd3| 4.65| 3.45| 2.29| 0.0004|
|Ang; Rnase4| 12.09| 10.85| 2.37| 0.0265|
|Egr2| 8.93| 7.63| 2.46| 0.0026|
|Fos| 10.04| 8.69| 2.55| 0.001|
|Npas4| 9.65| 8.23| 2.69| 3.50E-06|
|Slc39a12| 8.39| 6.87| 2.88| 0.0205|
|Arc| 10.72| 8.59| 4.38| 6.90E-07|
|Fcrl2| 6.57| 4.32| 4.75| 6.70E-05|
|**Propofol**| | | | |
|Asb15| 3.96| 11.98| -259.24| 0.0102|
|Cyr61| 5.56| 6.82| 2.4| 0.0003|
|Nt5c3a| 12.24| 13.45| -2.33| 0.0005|
|Klkb1| 3.23| 4.41| -2.27| 0.0008|
|Rbp3| 3.26| 4.4| -2.19| 0.0183|
|Ighg; Igh-6| 5.89| 6.99| -2.15| 0.0182|
|LOC685699| 4.24| 5.34| -2.15| 0.0158|
|Scgn| 5.05| 6.11| -2.08| 0.0002|
|Tor4a| 5.84| 6.87| -2.03| 0.022|
|Vwa3b| 4.05| 5.06| -2.01| 0.0019|
|Nr4a3| 10.07| 9.07| 2| 0.0019|
|Pax5| 4.01| 3| 2.02| 0.0034|
|Nr4a1| 13.75| 12.72| 2.05| 0.0005|
|LOC499219| 4.71| 3.65| 2.09| 0.0412|
|Olr1539; Olr1537| 4.81| 3.72| 2.14| 0.0048|
|Hspb1| 6.64| 5.49| 2.22| 0.0038|
|Il13ra2| 5.22| 4.04| 2.26| 0.0071|
|LOC100361731| 3.81| 2.6| 2.31| 0.0242|
|Tm6sf2| 5.94| 4.67| 2.41| 4.36E-05|
|Egr2| 8.9| 7.52| 2.6| 0.002|
|Npas4| 9.77| 7.91| 3.62| 3.89E-07|
|Arc| 10.89| 9.02| 3.65| 9.87E-06|
|Fcrl2| 6.87| 4.97| 3.75| 0.0377|
|Zfp72| 7.27| 4.66| 6.13| 0.0229|

**Supplementary Table 2** Acute Control vs Acute Treatments - Detailed average expression levels, fold change and p-values for significant probe sets. Non functionally characterised genes have been removed from analysis.
| Gene Symbol | Chronic Control Avg (log2) | Chronic Isoflurane Avg (log2) | Fold Change | ANOVA p-value |
|-------------|---------------------------|-------------------------------|-------------|---------------|
| **Isoflurane** |                           |                               |             |               |
| Cga         | 7.22                      | 9.35                          | -4.37       | 0.0015        |
| Tshb        | 5.04                      | 7.16                          | -4.35       | 0.0022        |
| Bmp4        | 8.78                      | 10.26                         | -2.78       | 0.0324        |
| Cyr61       | 5.41                      | 6.84                          | -2.7        | 0.0004        |
| Hes5        | 6.34                      | 7.64                          | -2.46       | 0.0002        |
| Id1         | 10.82                     | 11.94                         | -2.17       | 0.0001        |
| Hes1        | 7.67                      | 8.73                          | -2.08       | 0.0001        |
| Olr1319; Olr1320; Olr1323; Olr1325; Olr1327; Olr1328; Olr1321; Olr1318 | 3.06 | 4.12 | -2.07 | 0.0001 |
| Spetex-2E   | 5.08                      | 6.09                          | -2.02       | 0.0377        |
| Defa5       | 5.1                       | 4.08                          | 2.02        | 0.001         |
| Nfkbia      | 10.02                     | 8.99                          | 2.05        | 0.0024        |
| Fos         | 9.46                      | 8.42                          | 2.06        | 0.0289        |
| RGD1562035  | 5.03                      | 3.96                          | 2.09        | 0.0067        |
| ENSMUSG00000098857 | 6.28 | 5.15 | 2.18 | 0.016 |
| Gntg1       | 6.9                       | 5.75                          | 2.22        | 0.0176        |
| Npas4       | 9.49                      | 8.23                          | 2.39        | 8.25E-06      |
| LOC102555445| 6.24                      | 4.8                           | 2.71        | 0.0403        |
| LOC100909947| 7.08                      | 5.43                          | 3.14        | 0.0414        |
| **Ketamine** |                           |                               |             |               |
| Tshb        | 4.96                      | 7.09                          | -4.39       | 0.0009        |
| Cga         | 7.29                      | 8.99                          | -3.26       | 0.0019        |
| Hoxa2       | 4.18                      | 5.5                           | -2.5        | 0.0194        |
| Serpine1    | 3.93                      | 5.18                          | -2.39       | 7.41E-05      |
| Foxf1       | 6.17                      | 7.4                           | -2.35       | 8.15E-05      |
| Apold1      | 7                         | 8.1                           | -2.14       | 0.0009        |
| LOC500300   | 4.31                      | 5.4                           | -2.13       | 0.0007        |
| Aurkb       | 4.1                       | 5.17                          | -2.09       | 0.0347        |
| LOC691196   | 3.33                      | 4.36                          | -2.04       | 0.0083        |
| Ifit3       | 4.93                      | 5.94                          | -2.02       | 0.0004        |
| Atf3        | 4.41                      | 5.42                          | -2.01       | 2.05E-05      |
| Hoxc4       | 6.54                      | 5.47                          | 2.11        | 0.0002        |
| Olr802      | 4.46                      | 3.38                          | 2.12        | 0.022         |
| LOC100912565| 4.65                      | 3.52                          | 2.19        | 1.18E-05      |
| Defa5       | 5.18                      | 3.99                          | 2.29        | 0.0012        |
| LOC308990   | 5.08                      | 3.84                          | 2.35        | 0.0032        |
| Arc         | 10.03                     | 8.57                          | 2.74        | 0.0002        |
| Npas4       | 9.8                       | 8.2                           | 3.03        | 4.24E-07      |
| **Propofol** |                           |                               |             |               |
| Asb15       | 4.17                      | 8.42                          | -19.01      | 0.0109        |
| Tshb        | 5.28                      | 7.04                          | -3.36       | 0.001         |
| Cga         | 7.36                      | 9.03                          | -3.18       | 0.0038        |
| Serpine1    | 4.17                      | 5.48                          | -2.48       | 3.45E-05      |
| Probe Set               | Avg Exp | Exp Ctrl | Fold Change | p-value |
|------------------------|---------|----------|-------------|---------|
| LOC500300              | 3.92    | 5.08     | -2.23       | 0.0401  |
| Cyr61                  | 5.46    | 6.58     | -2.18       | 0.0001  |
| Pate-f; LOC100911894   | 3.82    | 4.94     | -2.17       | 0.0191  |
| Lrrc39                 | 4.23    | 5.33     | -2.14       | 0.0013  |
| Lrrc32                 | 6.4     | 7.41     | -2.02       | 0.0012  |
| Junb                   | 10.53   | 9.51     | 2.03        | 0.0022  |
| LOC102553881; LOC102553382 | 8.67   | 7.62     | 2.06        | 0.001   |
| LOC685289; LOC102553520; LOC685275 | 6.43  | 5.38     | 2.08        | 0.0079  |
| Dusp12                 | 10.52   | 9.42     | 2.14        | 0.0122  |
| Arc                    | 10.05   | 8.84     | 2.32        | 0.0024  |
| Npas4                  | 9.88    | 7.64     | 4.7         | 2.62E-07|

**Supplementary Table 3** Chronic Control vs Chronic Treatments - Detailed average expression levels, fold change and p-values for significant probe sets. Non functionally characterised genes have been removed from analysis.