**Extended Data Figure 1-4:**

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| **Gene name** | **Assay ID** | **Functional relevance** |
| ADORA2A | Mm00802075\_m1 | Adenosine A2a Receptor; upregulated in the AMG of susceptible offspring after maternal immune activation; GPCR involved in immune function 8 |
| CD68 | Mm03047343\_m1 | Macrophage antigen CD68; lysosomal phagocytic marker |
| CDKN1A | Mm04205640\_g1 | Cyclin dependent kinase inhibitor 1A; upregulated after morphine exposure9 |
| DRD1 | Mm01353211\_m1 | Dopamine receptor D1 |
| ERBIN (ERBB2IP) | Mm01301876\_m1 | Erbb2 Interacting Protein; maintains excitatory-inhibitory balance in the AMG10 |
| FKBP5 | Mm01300962\_m1 | FKBP prolyl isomerase 5; stress response |
| GNG8 | Mm00515877\_g1 | Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-8; downregulated in AMG after early life stress, involved in morphine addiction and synaptic function11 |
| GRIN1 | Mm00433790\_m1 | Glutamate Ionotropic Receptor NMDA Type Subunit 1; synaptic plasticity |
| HES1 | Mm01342805\_m1 | Hes Family BHLH Transcription Factor 1; involved in social behavior12 |
| HTR1A | Mm0043406\_s1 | Serotonin Receptor 1A |
| HTR2A | Mm00555764\_m1 | Serotonin Receptor 2A |
| IL1B | Mm00434228\_m1 | Interleukin 1 beta; cytokine mediator of the inflammatory response |
| MAP4K1 | Mm01152700\_m1 | Mitogen-Activated Protein Kinase Kinase Kinase Kinase 1; upregulated after early life stress13 |
| MAP4K2 | Mm01231599\_m1 | Mitogen-Activated Protein Kinase Kinase Kinase Kinase 1; upregulated after early life stress13 |
| MAPK10 | Mm00436578\_m1 | Mitogen-Activated Protein Kinase 10 |
| NP65 (NPTN) | Mm00485990\_m1 | Neuroplastin 65; involved in synaptic plasticity and cognition14 |
| NR3C1 (GR) | Mm00433832\_m1 | Nuclear Receptor Subfamily 3 Group C Member 1; glucocorticoid receptor |
| NTS | Mm00481140\_m1 | Neurotensin; offspring sex-dependent expression changes after maternal immune activation15 |
| OXT | Mm01329577\_m1 | Oxytocin |
| PPP1R1B | Mm00454892\_m1 | DARPP-32; upregulated in the AMG of susceptible offspring after maternal immune activation16 |
| RELN | Mm00465200\_m1 | Reelin; offspring sex-dependent expression changes after maternal immune activation15 |
| SGK1 | Mm00441380\_m1 | Serum/Glucocorticoid Regulated Kinase 1; upregulated after morphine exposure9 |
| TLR7 | Mm00446590\_m1 | Toll Like Receptor 7 |