Table S1: Primer list

|  |  |  |
| --- | --- | --- |
| **Genes** | **Forward primer** | **Reverse primer** |
| **Housekeeping** |  |  |
| Cyclophillin | **ATGTGGTCTTTGGGAAGGTG** | **GAAGGAATGGTTTGATGGGT** |
| GAPDH | **TGAACGGGAAGCTCACTGG** | **TCCACCACCCTGTTG CTGTA** |
| HPRT1 | **GCAGTACAGCCCCAAAATGG** | **AACAAAGTCTGGCCTGTATCCAA** |
| TBP | **TTCGTGCCAGAAATGCTGAA** | **TGCACACCATTTTCCCAGAAC** |
| **Clock** |  |  |
| Bmal1 | **CCGATGACGAACTGAAACACCT** | **TGCAGTGTCCGAGGAAGATAGC** |
| Cry1 | **AAGTCATCGTGCGCATTTCA** | **TCATCATGGTCGTCGGACAGA** |
| Cry2 | **TGGATAAGCACTTGGAACGGAA** | **TGTACAAGTCCCACAGGCGGTA** |
| DBP | **CCTTTGAACCTGATCCGGCT** | **TGCCTTCTTCATGATTGGCTG** |
| Per1 | **CGCACTTCGGGAGCTCAAACTTC** | **GTCCATGGCACAGGGCTCACC** |
| Per2 | **CACCCTGAAAAGAAAGTGCGA** | **CAACGCCAAGGAGCTCAAGT** |
| Rev-erbα | **ACAGCTGACACCACCCAGATC** | **CATGGGCATAGGTGAAGATTTCT** |
| **Metabolic** |  |  |
| Fas | **CTTGGGTGCCGATTACAACC** | **GCCCTCCCGTACACTCACTC** |
| Glut2 | **GTCCAGAAAGCCCCAGATACC** | **TGCCCCTTAGTCTTTTCAAGCT** |
| Glut4 | **GGGCTGTGAGTGAGTGCTTTC** | **CAGCGAGGCAAGGCTAGA** |
| HSL | **CACACAGCATGGATTTACGCA** | **ACCTGCAAAGACGTTGGACAG** |
| LPL | **CAAAACAACCAGGCCTTCGA** | **AGCAATTCCCCGATGTCCA** |
| Pdk4 | **TGGTTTTGGTTACGGCTTGC** | **TGCCAGTTTCTCCTTCGACA** |
| Pgc1α | **TGCCATTGTTAAGACCGAG** | **GGTCATTTGGTGACTCTGG** |
| Pparα | **TCACACAATGCAATCCGTTT** | **GGCCTTGACCTTGTTCATGT** |
| Srebp1c | **ACAAGATTGTGGAGCTCAAGG** | **TGCGCAAGACAGCAGATTTA** |
| Ucp1 | **AATCAGCTTTGCTTCCCTCA** | **GCTTTGTGCTTGCATTCTGA** |
| Ucp3 | **GCACTGCAGCCTGTTTTGCTGA** | **ATAGTCAGGATGGTACCGAGCA** |
| Sirt1 | **TGTTTCCTGTGGGATACCTGA** | **TGAAGAATGGTCTTGGGTCTTT** |
| Sirt3 | **GACATACGGGCTGACGTGAT** | **AGTCGGGGCACTGATTTCTG** |
| Fgf21 | **ACCGCAGTCCAGAAAGTCTC** | **GGCCTCAGACTGGTACACAT** |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | ***Ad libitum*** | **SEM** | **6-meal** | **SEM** | ***P* value** | **Shift** |
| **Locomotor Activity** | **a** | 379.7 | 37.9 | 358.6 | 8.9 | =0.60 |  |
| **b** | 221.5 | 7.1 | 193.4 | 9.7 | **=0.02** |  |
| **c** | 19.3 (ZT) | 0.2 | 17.3 (ZT) | 0.4 | **<0.001** | **~ 2h** |
| **Respiratory exchange ratio** | **a** | 0.95 | 0.003 | 0.93 | 0.01 | =0.054 |  |
| **b** | 0.0214 | 0.001 | 0.0206 | 0.001 | =0.73 |  |
| **c** | 19.9 (ZT) | 0.1 | 10.1 (ZT) | 0.8 | **<0.001** | **~ 10h** |
| **Temperature** | **a** | 36.8 | 0.1 | 36.25 | 0.07 | **=0.02** |  |
| **b** | 0.48 | 0.1 | 0.34 | 0.02 | =0.46 |  |
| **c** | 17.8 (ZT) | 0.3 | 17.4 (ZT) | 0.5 | =0.56 |  |
| **Heat production** | **a** | 5.3 | 0.04 | 5.1 | 0.14 | =0.16 |  |
| **b** | 1.1 | 0.05 | 0.6 | 0.01 | **<0.001** |  |
| **c** | 19.1 (ZT) | 0.1 | 16.8 (ZT) | 0.4 | **<0.001** | **~2h** |

Table S2: t-test analysis for behavioral and physiological parameters.

Table S3: t-test analysis on significant cosinor parameters for the clock and clock-controlled genes and protein in SCN.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Genes SCN** | | ***Ad libitum*** | | **6-meal** | | ***P* value** |
| **Mean** | **SEM** | **Mean** | **SEM** |
| ***Avp*** | **a** | 42.03 | 3.85 | 42.79 | 2.94 | =0.879 |
| **b** | -- | -- | 11.31 | 4.15 |  |
| **c** | -- | -- | 12.6 | 1.40 |  |
| ***Per1*** | **a** | 7.70 | 0.70 | 8.94 | 0.45 | =0.15 |
| **b** | 4.12 | 0.99 | 4.74 | 0.70 | =0.61 |
| **c** | 6.6 | 0.9 | 5.6 | 0.56 | =0.35 |
| ***Per2*** | **a** | 7.82 | 0.72 | 7.94 | 0.65 | =0.90 |
| **b** | 3.24 | 1.02 | 3.75 | 0.92 | =0.70 |
| **c** | 10.4 | 1.2 | 10.7 | 0.93 | =0.80 |
| **Protein SCN** |  |  |  |  |  |  |
| **AVP** | **a** | 65.25 | 4.45 | 64.54 | 5.65 | =0.92 |
| **b** | -- | -- | -- | -- |  |
| **c** | -- | -- | -- | -- |  |

Table S4: Two-way ANOVA analysis for gene expression in SCN.

|  |  |  |  |
| --- | --- | --- | --- |
| **Genes SCN** | **2 Way ANOVA Table (*P* value)** | | |
| **Feeding** | **Time** | **Interaction** |
| ***Avp*** | =0.880 | =0.069 | =0.587 |
| ***Per1*** | =0.164 | **<0.001** | =0.767 |
| ***Per2*** | =0.909 | **<0.001** | =0.878 |
| **Protein SCN** |  | | |
| **AVP** | =0.791 | **<0.001** | =0.876 |