**Supplementary file 2A. Determination of GAT1 variants binding specificities by Protein Binding Microarray.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **GAT1 allele** | **Microarray** | **Top 8mer** | **E-score** | **PWM** |
| GAT1-wt | ME | TATCGATA | 0.48924 |  |
| GAT1-wt | HK | TGATATCA | 0.48725 |
| GAT1-1 | ME | TAAATTTA | 0.42353 |  |
| GAT1-1 | HK | ATCTAGAT | 0.42561 |
| GAT1-3 | ME | ATGTACAT | 0.44819 |  |
| GAT1-3 | HK | ATCTAGAT | 0.46281 |

**Supplementary file 2B. GAT1 protein fragment sequences used in PBM and EMSA assays.**

|  |
| --- |
| > **GAT1 (WT)**  MHVFFPLLFRPSPVLFIACAYIYIDIYIHCTRCTVVNITMSTNRVPNLDPDLNLNKEIWD  LYSSAQKILPDSNRILNLSWRLHNRTSFHRINRIMQHSNSIMDFSASPFASGVNAAGPGN  NDLDDTDTDNQQFFLSDMNLNGSSVFENVFDDDDDDDDVETHSIVHSDLLNDMDSASQRA  SHNASGFPNFLDTSCSSSFDDHFIFTNNLPFLNNNSINNNHSHNSSHNNNSPSIANNTNA  NTNTNTSASTNTNSPLLRRNPSPSIVKPGSRRNSSVRKKKPALKKIKSSTSVQSSATPPS  NTSSNPDIKCSNCTTSTTPL**W**RKDPKGLPLCNACGLFLKLHGVT**R**PLSLKTDIIKKRQRS  STKINNNITPPPSSSLNPGAAGKKKNYTASVAASKRKNSLNIVAPLKSQDIPIPKIASPS  IPQYLRSNTRHHLSSSVPIEAETFSSFRPDMNMTMNMNLHNASTSSFNNEAFWKPLDSAI  DHHSGDTNPNSNMNTTPNGNLSLDWLNLNL\*  > **GAT1 (*gat1-1; W321L*)**  MHVFFPLLFRPSPVLFIACAYIYIDIYIHCTRCTVVNITMSTNRVPNLDPDLNLNKEIWD  LYSSAQKILPDSNRILNLSWRLHNRTSFHRINRIMQHSNSIMDFSASPFASGVNAAGPGN  NDLDDTDTDNQQFFLSDMNLNGSSVFENVFDDDDDDDDVETHSIVHSDLLNDMDSASQRA  SHNASGFPNFLDTSCSSSFDDHFIFTNNLPFLNNNSINNNHSHNSSHNNNSPSIANNTNA  NTNTNTSASTNTNSPLLRRNPSPSIVKPGSRRNSSVRKKKPALKKIKSSTSVQSSATPPS  NTSSNPDIKCSNCTTSTTPL**L**RKDPKGLPLCNACGLFLKLHGVTRPLSLKTDIIKKRQRS  STKINNNITPPPSSSLNPGAAGKKKNYTASVAASKRKNSLNIVAPLKSQDIPIPKIASPS  IPQYLRSNTRHHLSSSVPIEAETFSSFRPDMNMTMNMNLHNASTSSFNNEAFWKPLDSAI  DHHSGDTNPNSNMNTTPNGNLSLDWLNLNL\*  **> GAT1 (*gat1-3, R345G*)**  MHVFFPLLFRPSPVLFIACAYIYIDIYIHCTRCTVVNITMSTNRVPNLDPDLNLNKEIWD  LYSSAQKILPDSNRILNLSWRLHNRTSFHRINRIMQHSNSIMDFSASPFASGVNAAGPGN  NDLDDTDTDNQQFFLSDMNLNGSSVFENVFDDDDDDDDVETHSIVHSDLLNDMDSASQRA  SHNASGFPNFLDTSCSSSFDDHFIFTNNLPFLNNNSINNNHSHNSSHNNNSPSIANNTNA  NTNTNTSASTNTNSPLLRRNPSPSIVKPGSRRNSSVRKKKPALKKIKSSTSVQSSATPPS  NTSSNPDIKCSNCTTSTTPLWRKDPKGLPLCNACGLFLKLHGVT**G**PLSLKTDIIKKRQRS  STKINNNITPPPSSSLNPGAAGKKKNYTASVAASKRKNSLNIVAPLKSQDIPIPKIASPS  IPQYLRSNTRHHLSSSVPIEAETFSSFRPDMNMTMNMNLHNASTSSFNNEAFWKPLDSAI  DHHSGDTNPNSNMNTTPNGNLSLDWLNLNL\* |

**Supplementary file 2C. Oligonucleotides used to generate duplex DNA for EMSAs**

|  |  |  |
| --- | --- | --- |
| **Oligo name** | **Sequence** | **Note** |
| MEP2\_motif1\_F | 5’-CTTTAA**GATAA**GAAA**GATAAGATAA**GACAT-3’ | Target motif1 of MEP2 |
| MEP2\_motif1\_R | 5’-ATGTCTTATCTTATCTTTCTTATCTTAAAG-3’ |
| MEP2\_motif1\_neg\_F | 5’-CTTTAAACGCCGAAAACGCCACGCCGACAT-3’ | Negative motif1 of MEP2 |
| MEP2\_motif1\_neg\_R | 5’-ATGTCGGCGTGGCGTTTTCGGCGTTTAAAG-3’ |
| MEP2\_motif2\_F | 5’-AGTCAAAGCCA**GATAAGATAA**GAAATGTAA-3’ | Target motif2 of MEP2 |
| MEP2\_motif2\_R | 5’-TTACATTTCTTATCTTATCTGGCTTTGACT-3’ |
| MEP2\_motif2\_neg\_F | 5’-AGTCAAAGCCAACGCCACGCCGAAATGTAA-3’ | Negative motif2 of MEP2 |
| MEP2\_motif2\_neg\_R | 5’-TTACATTTCGGCGTGGCGTTGGCTTTGACT-3’ |
| DAL80\_motif1\_F | 5’-CCCGTTTGTCGTT**GATAA**CGAGTTTCCACC-3’ | Target motif1 of DAL80 |
| DAL80\_motif1\_R | 5’-GGTGGAAACTCGTTATCAACGACAAACGGG-3’ |
| DAL80\_motif1\_neg\_F | 5’-CCCGTTTGTCGTTACGCCCGAGTTTCCACC-3’ | Negative motif1 of DAL80 |
| DAL80\_motif1\_neg\_R | 5’-GGTGGAAACTCGGGCGTAACGACAAACGGG-3’ |