**Supp. Table 1**

1. **sgRNAs**

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| Name | sgRNA target sequence + PAM |
| hEZH2 | TGCGACTGAGACAGCTCAAG *AGG* |
| hHOXD13 | CGAGGCCTACATCTCCATGG *AGG* |
| hLPXN | CCTGGATCAGCATTCCAGAA *AGG* |
| hMTOR | CAGCACCATCAACCTCCAAA *AGG* |
| hPAX2 | CAAAGTGGCGACGCCCAAAG *TGG* |
| hPHOX2B | AAACTCTTCACGGACCACGG *CGG* |
| hTSPAN12 | GATGTTAGGATATTGTGGAA *CGG* |
| mHOXD13 | TTCTCTCGGAGGTTTCCCGG *TGG* |
| mLPXN | ACAGTAGCCCTTGGGGACTG *TGG* |
| mPAX2 | TGGTGGCTCCAAGCCCAAGG *TGG* |
| mPHOX2B | AAACTCTTCACCGACCACGG *CGG* |
| mTSPAN12 | TCATGACGGGGTGAACCACG *GGG* |
| EMX1 | GAGTCCGAGCAGAAGAAGAA *GGG* |
| VEGFA | GGTGAGTGAGTGTGTGCGTG *TGG* |

1. **ssODNs**

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| Name | DNA sequence |
| hHOXD13 | 5´-GGTGTCCACTTTCGGCTCCGGGGAGCCTCGGCACGAGGCCTACATC  TCCA*GAAGCTTA*TGGAGGGGTACCAGTCCTGGACGCTGGCTAACGGGTGGAACAGCCAGGTG-3´ |
| hLPXN | 5´-CAGTGATGAATATTCCAACCCAGCTCCTCTTCCCCTGGATCAGCAT  TCCA*GAAGCTTA*GAAAGGAGACTAACCTTGATGAGACTTCGGAGATCCTTTCTATTCAGGAT-3´ |
| hPAX2 | 5´-CATCAAGCCGGGTGTGATCGGTGGCTCCAAGCCCAAAGTGGCGA  CGCCCA*GAAGCTTA*AAGTGGTGGACAAGATTGCTGAATACAAACGACAGAACCCGACTATGTTC-3´ |
| hPHOX2B | 5´-TTCTGTCTCCTCTGTCATACTCTAGTTCCTTACAAACTCTTCACGGAC  CA*GAAGCTTA*CGGCGGCCTCAACGAGAAGCGCAAGCAGCGGCGCATCCGCACCACTTTCA-3´ |
| hTSPAN12 | 5´-GATTGCTGTTTGCTGTTTCCTTATCATTGTGGGGATGTTAGGATATTG  TG*GAAGCTTA*GAACGGTGAAAAGAAATCTGTTGCTTCTTGCATGGGTATGATGTTATATT-3´ |
| mHOXD13 | 5´-ACAGCAGAACGCTCTCAAGTCGTCCCCGCACGCTTCTCTCGGAGG  TTTCC*GAAGCTTA*CGGTGGAGAAGTACATGGACGTGTCGGGCCTGGCGAGCAGCAGCGTACCG-3´ |
| mLPXN | 5´- CACCTTCCCAGCAATTGGCTTCTGGCAGGAAGCACAGTAGCCCTT  GGGGA*GAAGCTTA*CTGTGGCAATCCCAAGATCTTGTAGTTCCTGTTCCAAGTCCCCCAGCATT-3´ |
| mPAX2 | 5´-CTACGAGACTGGCAGCATCAAGCCCGGAGTGATTGGTGGCTCCAAG  CCCA*GAAGCTTA*AGGTGGCAACGCCCAAAGTGGTGGACAAGATTGCCGAATACAAGCGACAG-3´ |
| mPHOX2B | 5´- TCTAGTCTCCTCTGTCATCCTCTAGTTCCATACAAACTCTTCACCG  ACCA*GAAGCTTA*CGGCGGCCTCAACGAGAAACGCAAGCAGCGGCGCATCCGCACCACCTTCA-3´ |
| mTSPAN2 | 5´-TTCCCACGATGATAAGGAAGCAGCAGACAGCAATCATGACGGGGT  GAACC*GAAGCTTA*ACGGGGAAGTAAGTTAAGATGACCGCTTCTTCTACCCTAAGAGAGGAAGA-3´ |

1. **Primers**

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| Primer Name | Sequence |
| Primers IDAA | |
| FAM\_IDAA | 5´-6-FAM-AGCTGACCGGCAGCAAAATTG-3´ |
| hEZH2\_A | 5´-*AGCTGACCGGCAGCAAAATTG*TGCGGATTAAA  ACACAGGTGA-3´ |
| hEZH2\_B | 5´-CCTAAGCTTCCAAGTATTCACTCA-3´ |
| hHOXD13\_2A | 5´-*AGCTGACCGGCAGCAAAATTG*TTCCAAAAGTG  GGACCCCTG-3´ |
| hHOXD13\_2B | 5´-CAAGTCATCGCCGCACG-3´ |
| hLPXN\_2A | 5´-*AGCTGACCGGCAGCAAAATTG*AAAATTTACCG  GCAAGGGACT-3´ |
| hLPXN\_2B | 5´-CATTTCTTGGTAGGATTCACCACAT-3´ |
| hPAX2\_IDAA\_rev | 5´-*AGCTGACCGGCAGCAAAATTG*AGGAGCCGGTCT  CGAATCTC-3´ |
| hPHOX2B\_1A | 5´-*AGCTGACCGGCAGCAAAATTG*TCACATCGCGCTG  TTTCAAT-3´ |
| hPHOX2B\_1B | 5´-CCTCCCGAGTGTAGATGTCG-3´ |
| hTSPAN12\_1A | 5´-*AGCTGACCGGCAGCAAAATTG*TTTCAGGGTAGA  GGAAGCAGTC-3´ |
| hTSPAN12\_1B | 5´-CATACCTCATCCGGTACAGC-3´ |
| mHOXD13\_2A | *5´-AGCTGACCGGCAGCAAAATTG*TCATCCTCGGCTG  TGATCG-3´ |
| mHOXD13\_2B | 5´-CTTGTGTAGCCCTGGTAGAAGG-3´ |
| mLPXN\_1A | 5´-*AGCTGACCGGCAGCAAAATTG*TGAACGTGGGGT  GATTTCTCT-3´ |
| mLPXN\_1B | 5´-CCATCCTTGGACACCCACA-3´ |
| mPAX2\_1A | 5´-*AGCTGACCGGCAGCAAAATTG*TCCCACCCTAGTC  AAGCATC-3´ |
| mPAX2\_1B | 5´-CATTATCGCAGATGCCCTCG-3´ |
| mPHOX2B\_2A | 5´-*AGCTGACCGGCAGCAAAATTG*TCTCCCGTACCTG  GACTCTC-3´ |
| mPHOX2B\_3B | 5´-CACAAAGTTACACTCGCGCC-3´ |
| mTSPAN12\_1A | 5´-*AGCTGACCGGCAGCAAAATTG*GGGTCTAGGGGG  TGGTTTGA-3´ |
| mTSPAN12\_1B | 5´-CTTACAGGAGCTGCATAGTGACC-3´ |
| Primers TIDER/ICE | |
| hPAX2\_A | 5´-GGAGGGATGGTACCCCTTGTCC-3´ |
| hPAX2\_B | 5´-ACTGGTCATTTTAAAGGCTCCGGC-3´ |
| hPAX2\_C | 5´-*ACCACTTTAAGCTTC*TGGGCGTCGCCACTTTGG-3´ |
| hPAX2\_D | 5´-*GCGACGCCCAGAAGCTTA*AAGTGGTGGACAAGA  TTGCTGAATACAAAC-3´ |
| Primers NGS | |
| hPAX2\_NGS\_fwd | 5´-*TCGTCGGCAGCGTCAGATGTGTATAAGAGACAG*C  ACAGTCCGCTTCTGGCTG-3´ |
| hPAX2\_NGS\_rev | 5´-*GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAG*  CAGGAGCCGGTCTCGAATC-3´ |
| Primers off-target efficiency | |
| EMX f | 5´-CTGCCATCCCCTTCTGTGAATGT-3´ |
| EMX r | 5´-GGAATCTACCACCCCAGGCTCT-3´ |
| EMX OT f | 5´-GTTGAGGTGGGATACCATGA-3´ |
| EMX OT r | 5´-TCTTCACTAATACGGTTCTGTA-3´ |
| VEGFA f | 5´-GCATACGTGGGCTCCAACAGGT-3´ |
| VEGFA r | 5´-CCGCAATGAAGGGGAAGCTCGA-3´ |
| VEGFA OT f | 5´-TCTGTCACCACACAGTTACCACC-3´ |
| VEGFA OT r | 5´-GTTGCCTGGGGATGGGGTAT-3´ |