Supplementary Information

TET1 Deficiency Impairs Morphogen-free Differentiation of Human Embryonic Stem Cells to Neuroectoderm

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| Experiment     | Gene   | Forward                   | Reverse                        |
|---------------|--------|---------------------------|--------------------------------|
| Mutation       | TET1   | CACCCCTGCTTCCCTTGTAA      | CTGCCCTCCAGCAAACAC              |
| qRT-PCR        | SOX1   | TACAGCCCCATCTCCCAACTC     | GCCTCGACTTACCCAGAGAG           |
|                | PAX6   | TAAGGATGTGAACGGGGAAG     | TGTTATTTCTCTCCCTCCTTCTCT       |
|                | Nestin | GCGTTGGAAACAGAGGTTGGA    | TGGGAGCAAGATCCAAGAC             |
|                | FOXG1  | AGGAGGCAAGGAAGAGAAGAAGCAC| TCACGAAGCACTTTGAGG              |
|                | N-cadherin | TCCTGATATATGGCCAAAGACE  | TGACCCAGTCTCTCTTCTGCT           |
| MeDIP/hMeDIP   | PAX6   | GTACCCCTCGGCTGCTTTCAT    | AATGCCGCAGATTAGGACA             |
|                | MIR218 | GTTCCGTTTCCATGTTCCA      | ACCCTGACTTGCAGACAGTCG           |
|                | FOXG1  | CCCCCCTTATCCAAAGCTCGG    | ACTTTTCGGAGTGCGGCTTG            |
| Teratomas      | TUBB3  | CGGTGTTGGAACCCCTACAAC    | AGGTGGTGGACTCCGCTCAT            |
|                | SMA    | CACGGTGTTGCGTACTTCCTTCTT| GCAGTGCCATCTCATTTCCTCA          |
|                | AFP    | GCAAGGAGATGTGCTGGATTG    | CGTGTCAGTGGTGCGCATCCTG          |
|                | TWIST2 | TCTGAAACCTGAACACCTCAAG   | CTGCTGTCCTCTCTCCGAC             |
|                | Brachyury | ACAGCCAGCAACCTGGGTGA    | CATGCGAGGTGATGTCAGAAA           |
|                | SOX17  | GAGCCCAAGGGCGAGTCCCCGTA | CCTCCGACAGATTGCGCCAGCAT        |
|                | EOMES  | CGGGCTCTCTGGCCCCAGCTC    | CATGCCGGCTGCCCTGTCTG            |
|                | MIXL1  | TACCCCGTCTCTCTCAACCTT    | GCATGCAGAGTCATTTGAGC           |
### Table S2

**Antibodies Used in the Study.**

| Antibody           | Catalog #  | Vender                        | Dilution |
|--------------------|------------|-------------------------------|----------|
| OCT4               | MAB4401    | Millipore                     | 1:1000   |
| NANOG              | MABD24     | Millipore                     | 1:1000   |
| SOX2               | MAB4343    | Millipore                     | 1:400    |
| SSEA-3             | MAB4303    | Millipore                     | 1:1000   |
| SSEA-4             | MAB4304    | Millipore                     | 1:1000   |
| TRA-1-60           | MAB4360    | Millipore                     | 1:1000   |
| TRA-1-81           | MAB4381    | Millipore                     | 1:1000   |
| TET1               | MAB5-16312 | Thermo Fisher                 | 1:500    |
| SmC                | 39649      | Active motif                  | 1:1000   |
| ShmC               | 39769      | Active motif                  | 1:1000   |
| AFP                | A008       | Dako                          | 1:1000   |
| SMA                | A5228      | Sigma                         | 1:1000   |
| TUJ1               | AB78078    | Abcam                         | 1:1000   |
| MAP2               | sc-74421   | Santa Cruz                    | 1:500    |
| PAX6               | PAX6       | Developmental Studies Hybridoma Bank | 1:1000   |
| SOX1               | AF3369     | R&D systems                   | 1:1000   |
| OTX2               | AF1979     | R&D systems                   | 1:1000   |
| HRP-conjugated anti mouse IgG | NA931 | GE healthcare                | 1:2000   |
| HRP-conjugated anti rabbit IgG | NA934 | GE healthcare                | 1:2000   |
| Donkey anti-Rabbit IgG (H+L), Alexa Fluor 488 | A21206 | Thermo Fisher                | 1:2000   |
| Donkey anti-Mouse IgG (H+L), Alexa Fluor 546 | A10036 | Thermo Fisher                | 1:2000   |
| Donkey anti-Goat IgG (H+L), Alexa Fluor 647 | A21447 | Thermo Fisher                | 1:2000   |