



























**Supplementary Table S4. Over-represented 5mers in flanking introns of Matrin3 repressed exons.**











The splicing event region, pentamer, total sites found, number of sequences with sites, log<sub>2</sub>(fold-ratio), p-value, FDR and logo are shown. Enriched pentamers were selected after multiple test correction (FDR < 0.05). See further details in main text Materials and Methods. Abbreviations, number of sequences comprised and over-represented RBP motifs for each splicing event region analyzed are shown at the foot of the table.










5mer enrichment analysis: Matrin3 NEG (-PTB)(Skipping)











| region |   | 5mer         | sites | seq w/<br>sites | log <sub>2</sub> (ratio) | p-value | FDR     | Logo  |
|--------|---|--------------|-------|-----------------|--------------------------|---------|---------|---|
| 5IA    | 1 | <b>TCTTG</b> | 112   | 85 (44.7%)      | 1.22                     | 3.65e-8 | 3.73e-5 |    |
| 5IA    | 2 | <b>TTTGT</b> | 166   | 106 (55.8%)     | 1.06                     | 7.29e-7 | 3.29e-4 |   |
| 5IA    | 3 | <b>TTCAT</b> | 101   | 82 (43.2%)      | 1.07                     | 1.24e-6 | 3.29e-4 |  |
| 5IA    | 4 | <b>TTTAT</b> | 150   | 102 (53.7%)     | 1.03                     | 1.28e-6 | 3.29e-4 |  |
| 5IA    | 5 | <b>TCATT</b> | 103   | 80 (42.1%)      | 0.97                     | 1.08e-5 | 2.20e-3 |  |
| 5IA    | 6 | <b>TTCTT</b> | 158   | 101 (53.2%)     | 0.93                     | 1.37e-5 | 2.34e-3 |  |











|     |    |              |     |             |      |         |         |   |
|-----|----|--------------|-----|-------------|------|---------|---------|---|
| 5IA | 7  | <b>CTTTG</b> | 105 | 83 (43.7%)  | 0.92 | 2.43e-5 | 3.55e-3 |    |
| 5IA | 8  | <b>TTTCT</b> | 182 | 112 (58.9%) | 0.89 | 3.17e-5 | 4.05e-3 |    |
| 5IA | 9  | <b>CTCTA</b> | 60  | 52 (27.4%)  | 1.03 | 4.64e-5 | 5.28e-3 |    |
| 5IA | 10 | <b>CTCTT</b> | 95  | 78 (41.1%)  | 0.89 | 5.21e-5 | 5.34e-3 |    |
| 5IA | 11 | <b>TGTGA</b> | 88  | 74 (38.9%)  | 0.88 | 1.08e-4 | 8.49e-3 |   |
| 5IA | 12 | <b>TCTCT</b> | 107 | 80 (42.1%)  | 0.84 | 1.37e-4 | 1.00e-2 |  |
| 5IA | 13 | <b>GTTCT</b> | 78  | 63 (33.2%)  | 0.9  | 1.47e-4 | 1.00e-2 |  |
| 5IA | 14 | <b>CATTG</b> | 68  | 58 (30.5%)  | 0.91 | 1.68e-4 | 1.00e-2 |  |
| 5IA | 15 | <b>TTCTG</b> | 122 | 88 (46.3%)  | 0.81 | 1.76e-4 | 1.00e-2 |  |
| 5IA | 16 | <b>TGTCT</b> | 103 | 79 (41.6%)  | 0.83 | 1.76e-4 | 1.00e-2 |  |










|     |    |              |     |            |      |         |         |   |
|-----|----|--------------|-----|------------|------|---------|---------|---|
| 5IA | 17 | <b>TTGTC</b> | 73  | 59 (31.1%) | 0.89 | 2.10e-4 | 1.13e-2 |    |
| 5IA | 18 | <b>CTGTA</b> | 65  | 61 (32.1%) | 0.84 | 3.06e-4 | 1.49e-2 |    |
| 5IA | 19 | <b>TGACT</b> | 64  | 57 (30%)   | 0.83 | 5.82e-4 | 2.31e-2 |    |
| 5IA | 20 | <b>ATAGT</b> | 53  | 48 (25.3%) | 0.87 | 5.88e-4 | 2.31e-2 |    |
| 5IA | 21 | <b>TTATT</b> | 127 | 89 (46.8%) | 0.74 | 6.63e-4 | 2.52e-2 |   |
| 5IA | 22 | <b>ATACT</b> | 51  | 47 (24.7%) | 0.88 | 7.19e-4 | 2.60e-2 |  |
| 5IA | 23 | <b>CTTCT</b> | 99  | 74 (38.9%) | 0.75 | 7.36e-4 | 2.60e-2 |  |
| 5IA | 24 | <b>TCTTT</b> | 160 | 95 (50%)   | 0.71 | 8.76e-4 | 2.79e-2 |  |
| 5IA | 25 | <b>TATCT</b> | 66  | 54 (28.4%) | 0.82 | 8.82e-4 | 2.79e-2 |  |
| 5IA | 26 | <b>ATTCT</b> | 89  | 72 (37.9%) | 0.74 | 8.96e-4 | 2.79e-2 |  |

|     |    |              |     |            |      |         |         |   |
|-----|----|--------------|-----|------------|------|---------|---------|---|
| 5IA | 27 | <b>TATTT</b> | 153 | 99 (52.1%) | 0.71 | 9.46e-4 | 2.79e-2 |    |
| 5IA | 28 | <b>TTATC</b> | 55  | 48 (25.3%) | 0.84 | 9.50e-4 | 2.79e-2 |    |
| 5IA | 29 | <b>GTTTA</b> | 69  | 58 (30.5%) | 0.8  | 9.73e-4 | 2.79e-2 |    |
| 5IA | 30 | <b>TTGTA</b> | 78  | 66 (34.7%) | 0.75 | 1.08e-3 | 2.96e-2 |    |
| 5IA | 31 | <b>CGTAC</b> | 9   | 9 (4.7%)   | 1.93 | 1.10e-3 | 2.96e-2 |   |
| 5IA | 32 | <b>CTGAT</b> | 59  | 53 (27.9%) | 0.81 | 1.16e-3 | 3.04e-2 |  |
| 5IA | 33 | <b>TTATA</b> | 90  | 67 (35.3%) | 0.73 | 1.22e-3 | 3.09e-2 |  |
| 5IA | 34 | <b>ATGTG</b> | 81  | 64 (33.7%) | 0.75 | 1.27e-3 | 3.09e-2 |  |
| 5IA | 35 | <b>ACTTC</b> | 53  | 48 (25.3%) | 0.83 | 1.31e-3 | 3.13e-2 |  |
| 5IA | 36 | <b>GTATT</b> | 72  | 58 (30.5%) | 0.76 | 1.47e-3 | 3.42e-2 |  |











|     |    |              |     |             |      |         |         |   |
|-----|----|--------------|-----|-------------|------|---------|---------|---|
| 5IA | 37 | <b>GATGA</b> | 51  | 49 (25.8%)  | 0.81 | 1.56e-3 | 3.54e-2 |    |
| 5IA | 38 | <b>TACTG</b> | 49  | 47 (24.7%)  | 0.79 | 1.98e-3 | 4.31e-2 |    |
| 5IA | 39 | <b>GTCTT</b> | 82  | 61 (32.1%)  | 0.72 | 2.07e-3 | 4.43e-2 |    |
| 5IA | 40 | <b>TCCTT</b> | 95  | 72 (37.9%)  | 0.68 | 2.35e-3 | 4.91e-2 |    |
| 3ID | 1  | <b>TTCTT</b> | 171 | 114 (59.1%) | 1.09 | 2.48e-7 | 2.54e-4 |  |
| 3ID | 2  | <b>TCCTT</b> | 125 | 90 (46.6%)  | 1.06 | 9.22e-7 | 4.72e-4 |  |
| 3ID | 3  | <b>CCTTA</b> | 70  | 58 (30.1%)  | 1.17 | 1.52e-6 | 5.19e-4 |  |
| 3ID | 4  | <b>TCTTT</b> | 168 | 110 (57%)   | 1    | 2.47e-6 | 6.31e-4 |  |
| 3ID | 5  | <b>TTTTC</b> | 201 | 115 (59.6%) | 0.99 | 3.11e-6 | 6.31e-4 |  |

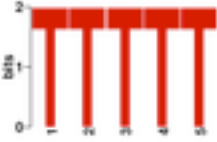









|     |    |              |     |             |      |         |         |   |
|-----|----|--------------|-----|-------------|------|---------|---------|---|
| 3ID | 6  | <b>TTTCT</b> | 230 | 124 (64.2%) | 1    | 3.70e-6 | 6.31e-4 |    |
| 3ID | 7  | <b>CTTAC</b> | 56  | 51 (26.4%)  | 1.14 | 8.87e-6 | 1.30e-3 |    |
| 3ID | 8  | <b>CATCT</b> | 97  | 76 (39.4%)  | 0.97 | 1.61e-5 | 2.06e-3 |    |
| 3ID | 9  | <b>TCTCT</b> | 132 | 90 (46.6%)  | 0.87 | 4.99e-5 | 5.29e-3 |    |
| 3ID | 10 | <b>CTTTT</b> | 183 | 113 (58.5%) | 0.86 | 5.17e-5 | 5.29e-3 |   |
| 3ID | 11 | <b>TCTGT</b> | 119 | 95 (49.2%)  | 0.85 | 6.85e-5 | 5.85e-3 |  |
| 3ID | 12 | <b>TGTCT</b> | 102 | 82 (42.5%)  | 0.85 | 1.12e-4 | 8.85e-3 |  |
| 3ID | 13 | <b>TTCAT</b> | 115 | 81 (42%)    | 0.82 | 1.58e-4 | 1.15e-2 |  |
| 3ID | 14 | <b>TTCTC</b> | 123 | 88 (45.6%)  | 0.8  | 1.85e-4 | 1.26e-2 |  |
| 3ID | 15 | <b>ATCTT</b> | 99  | 72 (37.3%)  | 0.83 | 2.08e-4 | 1.33e-2 |  |

|     |    |              |     |            |      |         |         |   |
|-----|----|--------------|-----|------------|------|---------|---------|---|
| 3ID | 16 | <b>TCTTC</b> | 108 | 74 (38.3%) | 0.8  | 2.74e-4 | 1.57e-2 |    |
| 3ID | 17 | <b>TATCT</b> | 71  | 61 (31.6%) | 0.87 | 2.75e-4 | 1.57e-2 |    |
| 3ID | 18 | <b>ATCCT</b> | 67  | 59 (30.6%) | 0.87 | 3.18e-4 | 1.72e-2 |    |
| 3ID | 19 | <b>ATCTG</b> | 78  | 66 (34.2%) | 0.81 | 3.84e-4 | 1.96e-2 |    |
| 3ID | 20 | <b>CTCTT</b> | 100 | 80 (41.5%) | 0.77 | 4.29e-4 | 2.09e-2 |   |
| 3ID | 21 | <b>TTTCC</b> | 113 | 87 (45.1%) | 0.74 | 4.85e-4 | 2.26e-2 |  |
| 3ID | 22 | <b>CATTC</b> | 68  | 60 (31.1%) | 0.81 | 5.81e-4 | 2.31e-2 |  |
| 3ID | 23 | <b>TTCTG</b> | 126 | 92 (47.7%) | 0.73 | 5.96e-4 | 2.31e-2 |  |
| 3ID | 24 | <b>TACTT</b> | 84  | 67 (34.7%) | 0.78 | 6.09e-4 | 2.31e-2 |  |
| 3ID | 25 | <b>TTACT</b> | 73  | 67 (34.7%) | 0.78 | 6.09e-4 | 2.31e-2 |  |

|     |    |              |     |            |      |         |         |   |
|-----|----|--------------|-----|------------|------|---------|---------|---|
| 3ID | 26 | <b>GTTTT</b> | 146 | 97 (50.3%) | 0.71 | 7.32e-4 | 2.68e-2 |    |
| 3ID | 27 | <b>CTATC</b> | 36  | 34 (17.6%) | 0.99 | 8.46e-4 | 2.99e-2 |    |
| 3ID | 28 | <b>GTACA</b> | 42  | 41 (21.2%) | 0.91 | 9.52e-4 | 3.25e-2 |    |
| 3ID | 29 | <b>TTGGT</b> | 85  | 64 (33.2%) | 0.74 | 1.35e-3 | 4.45e-2 |    |
| 3ID | 30 | <b>TTTAC</b> | 73  | 61 (31.6%) | 0.75 | 1.43e-3 | 4.58e-2 |   |
| 3IA | 1  | <b>TCTTA</b> | 86  | 71 (36.8%) | 1.02 | 7.20e-6 | 3.69e-3 |  |
| 3IA | 2  | <b>TTATT</b> | 128 | 94 (48.7%) | 0.88 | 4.30e-5 | 9.18e-3 |  |
| 3IA | 3  | <b>GATAG</b> | 47  | 41 (21.2%) | 1.12 | 4.63e-5 | 9.18e-3 |  |
| 3IA | 4  | <b>GTTTT</b> | 127 | 95 (49.2%) | 0.86 | 4.77e-5 | 9.18e-3 |  |



|     |    |              |     |             |      |         |         |   |
|-----|----|--------------|-----|-------------|------|---------|---------|---|
| 3IA | 5  | <b>ATTCA</b> | 86  | 65 (33.7%)  | 0.94 | 5.38e-5 | 9.18e-3 |    |
| 3IA | 6  | <b>ATTAA</b> | 108 | 74 (38.3%)  | 0.89 | 7.38e-5 | 1.08e-2 |    |
| 3IA | 7  | <b>AATTC</b> | 63  | 58 (30.1%)  | 0.92 | 1.17e-4 | 1.50e-2 |    |
| 3IA | 8  | <b>ATATT</b> | 122 | 85 (44%)    | 0.81 | 1.55e-4 | 1.60e-2 |    |
| 3IA | 9  | <b>TATTT</b> | 163 | 106 (54.9%) | 0.8  | 1.57e-4 | 1.60e-2 |   |
| 3IA | 10 | <b>ATGAC</b> | 51  | 46 (23.8%)  | 0.98 | 1.98e-4 | 1.60e-2 |  |
| 3IA | 11 | <b>TTCTT</b> | 137 | 96 (49.7%)  | 0.79 | 2.03e-4 | 1.60e-2 |  |
| 3IA | 12 | <b>TCAAT</b> | 48  | 44 (22.8%)  | 0.96 | 3.59e-4 | 2.35e-2 |  |
| 3IA | 13 | <b>TATGT</b> | 84  | 67 (34.7%)  | 0.82 | 3.86e-4 | 2.35e-2 |  |
| 3IA | 14 | <b>CATTC</b> | 64  | 54 (28%)    | 0.87 | 3.88e-4 | 2.35e-2 |  |

|     |    |              |     |             |      |         |         |   |
|-----|----|--------------|-----|-------------|------|---------|---------|---|
| 3IA | 15 | <b>TTTTT</b> | 186 | 106 (54.9%) | 0.75 | 3.90e-4 | 2.35e-2 |    |
| 3IA | 16 | <b>TAAAT</b> | 112 | 83 (43%)    | 0.76 | 5.04e-4 | 2.87e-2 |    |
| 3IA | 17 | <b>CGTTG</b> | 17  | 16 (8.3%)   | 1.44 | 6.85e-4 | 3.44e-2 |    |
| 3IA | 18 | <b>GATAA</b> | 58  | 48 (24.9%)  | 0.85 | 8.84e-4 | 4.00e-2 |    |
| 3IA | 19 | <b>AAGTT</b> | 78  | 64 (33.2%)  | 0.77 | 8.98e-4 | 4.00e-2 |   |
| 3IA | 20 | <b>AAATG</b> | 121 | 89 (46.1%)  | 0.7  | 9.77e-4 | 4.17e-2 |  |
| 3IA | 21 | <b>TTTAA</b> | 152 | 97 (50.3%)  | 0.69 | 1.27e-3 | 4.99e-2 |  |
| 3IA | 22 | <b>CGGTA</b> | 10  | 10 (5.2%)   | 1.78 | 1.28e-3 | 4.99e-2 |  |
| 3IA | 23 | <b>TATCT</b> | 61  | 54 (28%)    | 0.78 | 1.39e-3 | 4.99e-2 |  |
| 3IA | 24 | <b>ACTTT</b> | 90  | 74 (38.3%)  | 0.71 | 1.46e-3 | 4.99e-2 |  |

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|     |    |              |     |            |      |         |         |
|-----|----|--------------|-----|------------|------|---------|---------|
| 3IA | 25 | <b>TAAAA</b> | 138 | 93 (48.2%) | 0.68 | 1.48e-3 | 4.99e-2 |
|-----|----|--------------|-----|------------|------|---------|---------|

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5' Exon (5E), # sequences = 198, # 5mers = 0  
5' Intron Donor (5ID), # sequences = 190, # 5mers = 0  
5' Intron Acceptor (5IA), # sequences = 190, # 5mers = 40  
Cassette Exon (CE), # sequences = 189, # 5mers = 0  
3' Intron Donor (3ID), # sequences = 193, # 5mers = 30  
3' Intron Acceptor (3IA), # sequences = 193, # 5mers = 25  
3' Exon (3E), # sequences = 198, # 5mers = 0