Table S2. Correlations between amino acids at specific positions within PPR motifs and aligned nucleotides. Contingency tables (amino acids versus nucleotides) were constructed from the alignments in Figure 2 and Figure S1. Each $20 \times 4$ table was tested for independent assortment of amino acids and nucleotides using a chi-squared test (after first removing any empty rows from the table). P-values from the tests are shown in the table, with those values that are significant for both P and S motifs highlighted (a 1\% significance threshold was used, corrected for multiple tests using the Šidák correction). Rows: amino acid positions within the motifs. Columns: 0 indicates the motif aligned with the nucleotide, -1 the preceding motif, +1 the following motif.

|  | P |  |  | S |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | -1 | 0 | +1 | -1 | 0 | +1 |
| 1 | $1.68 \mathrm{E}-02$ | $5.25 \mathrm{E}-01$ | 5.02E-08 | $1.74 \mathrm{E}-02$ | $1.43 \mathrm{E}-01$ | $1.43 \mathrm{E}-10$ |
| 2 | 1.22E-01 | 6.93E-02 | 3.68E-02 | 3.49E-04 | $4.67 \mathrm{E}-01$ | 9.23E-02 |
| 3 | $2.63 \mathrm{E}-01$ | $9.30 \mathrm{E}-03$ | 8.42E-04 | $4.08 \mathrm{E}-04$ | $1.01 \mathrm{E}-05$ | $5.24 \mathrm{E}-02$ |
| 4 | 1.92E-01 | $1.25 \mathrm{E}-01$ | 4.03E-07 | $2.51 \mathrm{E}-04$ | $1.11 \mathrm{E}-01$ | 2.15E-07 |
| 5 | 7.14E-05 | $5.68 \mathrm{E}-01$ | 1.19E-01 | 2.29E-02 | 2.09E-03 | 6.16E-02 |
| 6 | 3.93E-01 | 6.93E-28 | 5.59E-01 | 1.34E-02 | $5.75 \mathrm{E}-12$ | 1.70E-01 |
| 7 | $2.69 \mathrm{E}-04$ | $9.65 \mathrm{E}-02$ | $1.89 \mathrm{E}-02$ | $1.67 \mathrm{E}-01$ | $5.27 \mathrm{E}-01$ | $2.03 \mathrm{E}-02$ |
| 8 | 1.80E-02 | $1.00 \mathrm{E}-01$ | 2.22E-01 | 2.03E-03 | $6.77 \mathrm{E}-03$ | 1.99E-02 |
| 9 | 2.50E-01 | 3.85E-03 | 8.12E-02 | 1.82E-04 | 3.06E-03 | 5.39E-02 |
| 10 | 9.14E-04 | $4.55 \mathrm{E}-02$ | 1.01E-02 | 3.55E-01 | 1.93E-03 | 1.58E-01 |
| 11 | $2.24 \mathrm{E}-01$ | $6.35 \mathrm{E}-02$ | $4.60 \mathrm{E}-01$ | $3.49 \mathrm{E}-02$ | $7.75 \mathrm{E}-02$ | $4.42 \mathrm{E}-02$ |
| 12 | 3.47E-03 | $8.28 \mathrm{E}-03$ | 6.21E-01 | 3.14E-04 | 3.33E-01 |  |
| 13 | 2.32E-01 | $3.45 \mathrm{E}-02$ | 2.80E-01 | 5.34E-02 | 3.32E-01 | 3.20E-04 |
| 14 | 5.42E-02 | $4.59 \mathrm{E}-03$ | 7.16E-02 | 1.98E-03 | 8.92E-02 | 1.40E-03 |
| 15 | $3.41 \mathrm{E}-02$ | $2.59 \mathrm{E}-03$ | $1.98 \mathrm{E}-01$ | $8.24 \mathrm{E}-01$ | $6.76 \mathrm{E}-01$ | 7.67E-03 |
| 16 | 4.27E-02 | $6.01 \mathrm{E}-01$ | $2.06 \mathrm{E}-01$ | $4.77 \mathrm{E}-01$ | $2.91 \mathrm{E}-01$ | 3.84E-01 |
| 17 | 1.94E-02 | $1.72 \mathrm{E}-01$ | 9.16E-01 | 5.52E-02 | 1.03E-01 | $4.35 \mathrm{E}-02$ |
| 18 | 8.29E-03 | $1.17 \mathrm{E}-01$ | 9.39E-02 | 5.12E-01 | $2.46 \mathrm{E}-01$ | $2.16 \mathrm{E}-01$ |
| 19 | 1.61E-01 | $5.41 \mathrm{E}-01$ | $4.40 \mathrm{E}-03$ | 3.95E-02 | $1.72 \mathrm{E}-01$ | $1.43 \mathrm{E}-03$ |
| 20 | 1.57E-01 | 1.78E-01 | 1.51E-01 | $2.18 \mathrm{E}-04$ | $3.74 \mathrm{E}-03$ | $1.07 \mathrm{E}-01$ |
| 21 | 2.26E-02 | $1.22 \mathrm{E}-01$ | 8.41E-04 | 2.55E-02 | $6.81 \mathrm{E}-02$ | 4.50E-02 |
| 22 | 7.73E-02 | 1.73E-01 | $1.24 \mathrm{E}-01$ | 7.52E-02 | 7.30E-01 | $1.85 \mathrm{E}-01$ |
| 23 | 6.00E-03 | 2.83E-03 | 3.29E-01 | 3.60E-01 | 1.60E-01 | 2.05E-03 |
| 24 | 4.57E-01 | $2.07 \mathrm{E}-04$ | 3.53E-01 | 5.97E-04 | $1.71 \mathrm{E}-01$ | 2.80E-01 |
| 25 | 5.61E-01 | 1.20E-02 | $1.27 \mathrm{E}-01$ | $1.42 \mathrm{E}-01$ | 1.56E-01 | 2.85E-02 |
| 26 | 1.27E-02 | 1.60E-05 | 8.81E-02 | 4.57E-03 | 5.87E-02 | 3.60E-02 |
| 27 | 2.26E-02 | 7.69E-02 | 3.82E-02 | 6.66E-03 | 8.42E-03 | 7.56E-02 |
| 28 | 6.61E-02 | $4.08 \mathrm{E}-02$ | 4.06E-03 | 3.62E-01 | $2.46 \mathrm{E}-01$ | 1.60E-01 |
| 29 | 3.88E-02 | 1.62E-02 | 6.03E-02 | 1.59E-02 | 8.14E-01 | $3.77 \mathrm{E}-02$ |
| 30 | 2.07E-01 | 7.95E-03 | 4.96E-01 | 1.51E-02 | $6.21 \mathrm{E}-02$ | 9.96E-02 |
| 31 | 1.00E-01 | $4.61 \mathrm{E}-02$ | 1.10E-02 | $1.04 \mathrm{E}-01$ | $2.74 \mathrm{E}-01$ | $1.48 \mathrm{E}-01$ |
| 32 | 2.83E-01 | $2.14 \mathrm{E}-01$ | 3.58E-03 |  |  |  |
| 33 | $5.85 \mathrm{E}-01$ | $1.88 \mathrm{E}-02$ | $1.07 \mathrm{E}-01$ | 1\% significance threshold: |  | $1.08 \mathrm{E}-04$ |


|  | $\mathbf{P}$ |  |  | S |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | -1 | 0 | +1 | -1 | 0 | +1 |
| 34 | 7.49E-03 | $3.72 \mathrm{E}-01$ | 3.56E-02 |  |  |  |
| 35 | 8.29E-02 | 5.43E-01 | $1.61 \mathrm{E}-03$ |  |  |  |
|  |  |  |  |  |  |  |
|  | $1 \%$ significance threshold: |  | $9.57 \mathrm{E}-05$ |  |  |  |

