

Additional File 5. *Drosophila* genes exhibiting $K_p/K_u < 1$ at $p < 0.01$ (Fisher's exact test)

| gene | pref_subs | pref_sites | unpref_subs | unpref_sites | Kp | Ku | Kp/Ku | 1-tailed p value |
|------------|-----------|------------|-------------|--------------|------|------|-------|------------------|
| CG6690-PA | 4 | 121.03 | 29 | 155.86 | 0.03 | 0.21 | 0.16 | 4.03E-05 |
| CG6539-PA | 10 | 208.86 | 44 | 274.77 | 0.05 | 0.18 | 0.27 | 4.64E-05 |
| CG18095-PA | 7 | 121.36 | 35 | 166.52 | 0.06 | 0.25 | 0.24 | 1.60E-04 |
| CG33288-PB | 7 | 223.74 | 41 | 358.13 | 0.03 | 0.12 | 0.26 | 1.74E-04 |
| CG3491-PA | 13 | 316.83 | 54 | 486.19 | 0.04 | 0.12 | 0.35 | 2.11E-04 |
| CG6630-PA | 39 | 463.27 | 99 | 645.85 | 0.09 | 0.17 | 0.52 | 2.85E-04 |
| CG31622-PA | 0 | 79.66 | 13 | 103.14 | 0.00 | 0.14 | 0.00 | 4.30E-04 |
| CG9506-PA | 10 | 157.59 | 92 | 558.46 | 0.07 | 0.19 | 0.36 | 4.46E-04 |
| CG14376-PA | 12 | 167.72 | 45 | 241.94 | 0.08 | 0.21 | 0.35 | 5.07E-04 |
| CG17046-PA | 12 | 364.55 | 79 | 953.16 | 0.03 | 0.09 | 0.38 | 5.57E-04 |
| CG32121-PA | 6 | 92.07 | 62 | 299.76 | 0.07 | 0.24 | 0.28 | 6.73E-04 |
| CG1487-PA | 1 | 90.03 | 18 | 141.76 | 0.01 | 0.14 | 0.08 | 7.57E-04 |
| CG4903-PA | 23 | 453.63 | 66 | 633.19 | 0.05 | 0.11 | 0.47 | 8.87E-04 |
| CG16965-PA | 8 | 134.92 | 38 | 217.67 | 0.06 | 0.20 | 0.31 | 9.21E-04 |
| CG15326-PA | 6 | 94.00 | 45 | 221.88 | 0.07 | 0.24 | 0.28 | 9.34E-04 |
| CG32238-PA | 8 | 110.37 | 36 | 169.47 | 0.08 | 0.25 | 0.31 | 1.02E-03 |
| CG9626-PA | 17 | 320.24 | 76 | 666.44 | 0.06 | 0.12 | 0.45 | 1.07E-03 |
| CG5394-PA | 23 | 325.80 | 93 | 685.57 | 0.07 | 0.15 | 0.50 | 1.13E-03 |
| CG32026-PA | 9 | 165.44 | 33 | 210.26 | 0.06 | 0.18 | 0.32 | 1.15E-03 |
| CG7628-PA | 2 | 91.42 | 37 | 287.56 | 0.02 | 0.14 | 0.16 | 1.24E-03 |
| CG3327-PC | 3 | 151.31 | 41 | 450.78 | 0.02 | 0.10 | 0.21 | 1.26E-03 |
| CG8833-PA | 12 | 188.09 | 47 | 300.79 | 0.07 | 0.18 | 0.38 | 1.28E-03 |
| CG30084-PF | 8 | 234.70 | 58 | 609.59 | 0.03 | 0.10 | 0.34 | 1.28E-03 |
| CG7803-PA | 2 | 77.90 | 37 | 251.84 | 0.03 | 0.16 | 0.16 | 1.33E-03 |
| CG4063-PA | 5 | 131.07 | 37 | 280.79 | 0.04 | 0.14 | 0.27 | 1.67E-03 |
| CG7341-PB | 1 | 74.64 | 16 | 118.64 | 0.01 | 0.15 | 0.09 | 1.91E-03 |
| CG7526-PB | 29 | 344.00 | 71 | 466.84 | 0.09 | 0.17 | 0.53 | 2.04E-03 |
| CG5374-PB | 1 | 68.18 | 40 | 312.81 | 0.01 | 0.14 | 0.11 | 2.08E-03 |
| CG16742-PA | 21 | 367.50 | 41 | 342.94 | 0.06 | 0.13 | 0.46 | 2.11E-03 |
| CG5849-PA | 11 | 188.26 | 48 | 343.97 | 0.06 | 0.15 | 0.39 | 2.18E-03 |
| CG2189-PA | 2 | 95.74 | 27 | 232.31 | 0.02 | 0.13 | 0.17 | 2.54E-03 |
| CG10422-PA | 1 | 66.51 | 20 | 146.07 | 0.02 | 0.15 | 0.10 | 2.93E-03 |
| CG13840-PA | 1 | 70.63 | 23 | 184.15 | 0.01 | 0.14 | 0.10 | 3.19E-03 |
| CG11856-PA | 34 | 548.61 | 90 | 864.83 | 0.06 | 0.11 | 0.58 | 3.40E-03 |
| CG18368-PA | 0 | 254.96 | 7 | 211.92 | 0.00 | 0.03 | 0.00 | 3.69E-03 |
| CG31304-PA | 12 | 237.43 | 68 | 620.74 | 0.05 | 0.12 | 0.44 | 3.74E-03 |
| CG7223-PB | 13 | 119.77 | 67 | 302.96 | 0.12 | 0.26 | 0.45 | 3.75E-03 |
| CG6490-PA | 19 | 250.98 | 74 | 519.41 | 0.08 | 0.16 | 0.51 | 3.99E-03 |
| CG11259-PA | 4 | 261.90 | 16 | 253.49 | 0.02 | 0.07 | 0.23 | 4.03E-03 |
| CG14157-PA | 8 | 89.93 | 28 | 118.02 | 0.09 | 0.29 | 0.33 | 4.06E-03 |
| CG1677-PA | 12 | 155.90 | 63 | 385.66 | 0.08 | 0.18 | 0.44 | 4.24E-03 |
| CG4881-PB | 11 | 228.41 | 56 | 516.39 | 0.05 | 0.12 | 0.42 | 4.44E-03 |
| CG31805-PA | 5 | 110.18 | 16 | 98.15 | 0.05 | 0.18 | 0.25 | 4.48E-03 |
| CG7012-PB | 9 | 125.36 | 46 | 267.06 | 0.08 | 0.20 | 0.39 | 4.52E-03 |
| CG5747-PA | 27 | 352.25 | 84 | 634.33 | 0.08 | 0.15 | 0.55 | 4.58E-03 |
| CG8961-PA | 1 | 134.45 | 11 | 152.19 | 0.01 | 0.08 | 0.10 | 5.10E-03 |

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| CG8540-PA | 5 | 111.25 | 17 | 109.61 | 0.05 | 0.17 | 0.27 | 5.25E-03 |
| CG33128-PA | 0 | 35.95 | 33 | 226.96 | 0.00 | 0.16 | 0.00 | 5.35E-03 |
| CG8102-PA | 4 | 96.91 | 24 | 166.32 | 0.04 | 0.16 | 0.26 | 5.45E-03 |
| CG31510-PA | 13 | 290.99 | 27 | 260.04 | 0.05 | 0.11 | 0.41 | 5.65E-03 |
| CG13295-PA | 5 | 85.40 | 35 | 200.17 | 0.06 | 0.20 | 0.31 | 5.77E-03 |
| CG7003-PA | 15 | 225.59 | 59 | 449.95 | 0.07 | 0.14 | 0.48 | 5.90E-03 |
| CG5149-PA | 7 | 92.46 | 31 | 158.79 | 0.08 | 0.23 | 0.35 | 6.09E-03 |
| CG12785-PA | 16 | 257.28 | 50 | 409.82 | 0.06 | 0.13 | 0.49 | 6.55E-03 |
| CG3809-PA | 3 | 66.61 | 27 | 159.49 | 0.05 | 0.19 | 0.24 | 6.57E-03 |
| CG18609-PA | 3 | 48.85 | 23 | 98.04 | 0.06 | 0.28 | 0.23 | 7.19E-03 |
| CG11762-PA | 1 | 56.87 | 15 | 106.28 | 0.02 | 0.16 | 0.11 | 7.21E-03 |
| CG8147-PA | 2 | 83.07 | 26 | 226.56 | 0.02 | 0.12 | 0.20 | 7.49E-03 |
| CG3810-PB | 8 | 162.34 | 47 | 399.02 | 0.05 | 0.13 | 0.40 | 7.75E-03 |
| CG9117-PA | 0 | 36.85 | 13 | 86.06 | 0.00 | 0.17 | 0.00 | 7.92E-03 |
| CG5455-PC | 10 | 144.60 | 39 | 252.39 | 0.07 | 0.17 | 0.42 | 8.40E-03 |
| CG18405-PA | 3 | 140.08 | 32 | 406.95 | 0.02 | 0.08 | 0.26 | 8.63E-03 |
| CG4866-PA | 0 | 26.71 | 15 | 80.43 | 0.00 | 0.21 | 0.00 | 8.80E-03 |
| CG14882-PA | 6 | 81.95 | 32 | 167.12 | 0.08 | 0.22 | 0.35 | 8.87E-03 |
| CG11349-PA | 14 | 144.95 | 34 | 174.20 | 0.10 | 0.23 | 0.46 | 8.99E-03 |
| CG18112-PA | 2 | 54.40 | 36 | 223.60 | 0.04 | 0.18 | 0.21 | 9.30E-03 |
| CG1523-PA | 3 | 81.44 | 38 | 290.46 | 0.04 | 0.14 | 0.26 | 9.31E-03 |
| CG4694-PA | 3 | 79.60 | 24 | 170.10 | 0.04 | 0.16 | 0.25 | 9.38E-03 |
| CG3616-PA | 3 | 61.80 | 39 | 235.94 | 0.05 | 0.19 | 0.27 | 9.83E-03 |
| CNI03390 | 37 | 202.50 | 64 | 220.55 | 0.21 | 0.37 | 0.57 | 4.89E-03 |
| CNL05530 | 6 | 37.71 | 21 | 47.11 | 0.18 | 0.68 | 0.26 | 4.91E-03 |
| CNC01340 | 11 | 98.98 | 28 | 109.56 | 0.12 | 0.31 | 0.38 | 4.92E-03 |
| CNA06750 | 38 | 194.85 | 73 | 240.28 | 0.23 | 0.39 | 0.58 | 4.95E-03 |
| CNE01370 | 15 | 68.97 | 33 | 78.50 | 0.26 | 0.62 | 0.42 | 4.96E-03 |
| CNN00530 | 30 | 174.11 | 51 | 173.01 | 0.20 | 0.37 | 0.52 | 4.99E-03 |
| CNC02650 | 28 | 158.44 | 48 | 159.60 | 0.20 | 0.38 | 0.52 | 5.04E-03 |
| CND06150 | 27 | 129.15 | 81 | 238.83 | 0.25 | 0.45 | 0.54 | 5.47E-03 |
| CND04680 | 26 | 179.41 | 46 | 178.57 | 0.16 | 0.32 | 0.51 | 5.50E-03 |
| CNH01860 | 42 | 201.21 | 83 | 265.87 | 0.24 | 0.40 | 0.61 | 5.59E-03 |
| CNF04310 | 1 | 36.85 | 10 | 41.34 | 0.03 | 0.29 | 0.09 | 5.59E-03 |
| CNG01170 | 12 | 71.59 | 26 | 72.55 | 0.19 | 0.49 | 0.39 | 5.61E-03 |
| CNI02520 | 4 | 31.64 | 11 | 24.49 | 0.14 | 0.69 | 0.20 | 5.66E-03 |
| CNK00890 | 17 | 107.64 | 35 | 112.35 | 0.18 | 0.40 | 0.44 | 5.73E-03 |
| CNB01970 | 30 | 197.23 | 69 | 274.25 | 0.17 | 0.31 | 0.55 | 5.73E-03 |
| CNG03400 | 12 | 64.36 | 27 | 67.16 | 0.21 | 0.58 | 0.37 | 5.80E-03 |
| CNM01840 | 11 | 78.93 | 26 | 84.00 | 0.15 | 0.40 | 0.39 | 5.82E-03 |
| CNN00640 | 14 | 87.16 | 29 | 86.51 | 0.18 | 0.44 | 0.41 | 5.85E-03 |
| CNN00960 | 5 | 43.78 | 16 | 45.91 | 0.12 | 0.47 | 0.26 | 6.00E-03 |
| CNK00730 | 18 | 98.06 | 40 | 116.86 | 0.21 | 0.46 | 0.46 | 6.04E-03 |
| CNF02730 | 9 | 67.39 | 23 | 72.77 | 0.15 | 0.41 | 0.36 | 6.08E-03 |
| CNI03350 | 16 | 104.28 | 32 | 106.80 | 0.17 | 0.38 | 0.45 | 6.27E-03 |
| CNA07550 | 51 | 225.60 | 97 | 299.83 | 0.27 | 0.42 | 0.64 | 6.30E-03 |
| CNB00070 | 1 | 18.12 | 11 | 27.95 | 0.06 | 0.56 | 0.10 | 6.48E-03 |
| CNM02300 | 3 | 34.99 | 14 | 41.44 | 0.09 | 0.45 | 0.20 | 6.54E-03 |
| CNA04500 | 11 | 61.60 | 23 | 59.97 | 0.20 | 0.54 | 0.38 | 6.65E-03 |
| CNJ00810 | 36 | 202.71 | 58 | 206.50 | 0.20 | 0.35 | 0.58 | 6.89E-03 |

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| CND05270 | 1 | 23.34 | 17 | 56.97 | 0.04 | 0.38 | 0.12 | 6.94E-03 |
| CNC05030 | 1 | 24.54 | 11 | 33.37 | 0.04 | 0.43 | 0.10 | 7.07E-03 |
| CNC04910 | 5 | 69.59 | 18 | 80.98 | 0.08 | 0.26 | 0.29 | 7.10E-03 |
| CNA05850 | 4 | 48.02 | 23 | 85.82 | 0.09 | 0.33 | 0.27 | 7.18E-03 |
| CNF02900 | 9 | 73.69 | 22 | 75.93 | 0.13 | 0.37 | 0.36 | 7.22E-03 |
| CNM01790 | 22 | 122.29 | 51 | 166.91 | 0.21 | 0.39 | 0.52 | 7.36E-03 |
| CNL03980 | 14 | 68.69 | 28 | 70.39 | 0.24 | 0.57 | 0.42 | 7.39E-03 |
| CNL06360 | 6 | 39.90 | 12 | 27.55 | 0.17 | 0.65 | 0.26 | 7.48E-03 |
| CNA03050 | 23 | 127.54 | 46 | 149.82 | 0.21 | 0.39 | 0.52 | 7.71E-03 |
| CNH01870 | 1 | 30.16 | 12 | 47.94 | 0.03 | 0.30 | 0.11 | 7.75E-03 |
| CNF04020 | 23 | 144.62 | 46 | 164.27 | 0.18 | 0.35 | 0.51 | 7.84E-03 |
| CNM01890 | 11 | 67.84 | 29 | 85.97 | 0.18 | 0.45 | 0.41 | 7.87E-03 |
| CNB00770 | 17 | 97.11 | 32 | 95.01 | 0.20 | 0.45 | 0.45 | 7.93E-03 |
| CNC02500 | 26 | 154.22 | 39 | 132.66 | 0.19 | 0.37 | 0.51 | 8.08E-03 |
| CNH02020 | 9 | 52.26 | 27 | 73.00 | 0.20 | 0.51 | 0.38 | 8.13E-03 |
| CNE01100 | 18 | 99.93 | 40 | 123.39 | 0.21 | 0.42 | 0.49 | 8.30E-03 |
| CNL04710 | 15 | 105.96 | 40 | 148.15 | 0.16 | 0.33 | 0.47 | 8.45E-03 |
| CNI02370 | 10 | 60.50 | 38 | 109.25 | 0.19 | 0.47 | 0.40 | 8.64E-03 |
| CNJ00760 | 5 | 46.53 | 16 | 50.93 | 0.12 | 0.41 | 0.28 | 8.68E-03 |
| CNB02270 | 21 | 152.25 | 31 | 119.53 | 0.15 | 0.32 | 0.48 | 8.74E-03 |
| CNC04500 | 9 | 56.59 | 26 | 74.94 | 0.18 | 0.47 | 0.38 | 8.77E-03 |
| CNJ01760 | 23 | 119.57 | 36 | 108.95 | 0.22 | 0.44 | 0.51 | 8.97E-03 |
| CNK00560 | 34 | 185.76 | 68 | 241.52 | 0.21 | 0.35 | 0.59 | 9.08E-03 |
| CNB01740 | 12 | 83.15 | 56 | 199.23 | 0.16 | 0.35 | 0.46 | 9.20E-03 |
| CNA06970 | 23 | 114.18 | 58 | 173.68 | 0.23 | 0.44 | 0.53 | 9.39E-03 |
| CNB04470 | 1 | 20.45 | 21 | 67.81 | 0.05 | 0.40 | 0.13 | 9.45E-03 |
| CNB00030 | 5 | 52.58 | 25 | 95.97 | 0.10 | 0.32 | 0.32 | 9.47E-03 |
| CNA01290 | 20 | 119.36 | 64 | 223.62 | 0.19 | 0.36 | 0.53 | 9.63E-03 |
| CNB03820 | 2 | 23.43 | 11 | 28.73 | 0.09 | 0.54 | 0.17 | 9.72E-03 |