**Table S5 The *P* values between TNP and other five expression profile-based methods for Fmax and AUPRon 8 species**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Species** | **Measure** | **GO aspect** | **(TNP, MR)** | **(TNP, PCC)** | **(TNP, MLC)** | **(TNP, SRC)** | **(TNP, ED)** |
| Human | Fmax | MF | 1.29×10-04 | 3.08×10-08 | 2.09×10-12 | 1.80×10-05 | 7.39×10-08 |
| BP | 7.83×10-09 | 2.32×10-11 | 7.00×10-18 | 2.00×10-10 | 3.23×10-11 |
| CC | 5.07×10-07 | 1.95×10-10 | 8.01×10-09 | 2.53×10-09 | 4.75×10-10 |
| AUPR | MF | 2.42×10-07 | 3.72×10-11 | 1.87×10-16 | 7.15×10-09 | 2.95×10-11 |
| BP | 1.42×10-07 | 1.51×10-11 | 1.11×10-16 | 6.09×10-10 | 3.94×10-11 |
| CC | 4.64×10-12 | 4.30×10-13 | 5.30×10-17 | 4.64×10-12 | 1.52×10-12 |
| Mouse | Fmax | MF | 2.58×10-04 | 4.38×10-07 | 1.89×10-10 | 4.09×10-03 | 4.00×10-09 |
| BP | 1.24×10-03 | 3.46×10-09 | 1.16×10-13 | 1.48×10-04 | 4.55×10-09 |
| CC | 2.96×10-05 | 5.33×10-07 | 1.22×10-12 | 4.56×10-06 | 3.73×10-07 |
| AUPR | MF | 2.01×10-06 | 1.51×10-10 | 2.07×10-14 | 4.76×10-06 | 4.98×10-11 |
| BP | 7.61×10-04 | 5.81×10-09 | 1.48×10-14 | 4.25×10-06 | 5.81×10-09 |
| CC | 1.65×10-04 | 2.14×10-08 | 5.98×10-15 | 1.65×10-04 | 2.91×10-09 |
| Arabidopsis | Fmax | MF | 1.74×10-08 | 5.57×10-10 | 3.27×10-16 | 1.76×10-09 | 1.17×10-09 |
| BP | 2.91×10-07 | 2.17×10-09 | 7.00×10-12 | 1.27×10-07 | 6.07×10-10 |
| CC | 7.50×10-09 | 2.30×10-10 | 1.07×10-09 | 2.27×10-06 | 5.81×10-10 |
| AUPR | MF | 2.89×10-07 | 3.47×10-11 | 2.84×10-14 | 1.73×10-07 | 7.94×10-11 |
| BP | 1.76×10-06 | 6.41×10-10 | 4.53×10-13 | 1.37×10-07 | 1.22×10-09 |
| CC | 1.82×10-11 | 1.39×10-12 | 3.84×10-15 | 6.67×10-10 | 5.29×10-12 |
| Rat | Fmax | MF | 3.04×10-01 | 6.57×10-04 | 9.63×10-07 | 1.87×10-01 | 1.43×10-04 |
| BP | 1.49×10-03 | 4.76×10-05 | 1.31×10-08 | 1.02×10-02 | 1.09×10-05 |
| CC | 2.04×10-01 | 2.30×10-04 | 9.75×10-07 | 9.68×10-03 | 2.01×10-04 |
| AUPR | MF | 9.02×10-04 | 3.74×10-05 | 1.43×10-05 | 8.78×10-06 | 1.63×10-05 |
| BP | 1.40×10-02 | 3.60×10-06 | 4.04×10-10 | 1.46×10-01 | 1.30×10-05 |
| CC | 9.00×10-07 | 1.44×10-10 | 1.17×10-08 | 1.38×10-07 | 6.65×10-11 |
| Fly | Fmax | MF | 6.69×10-03 | 5.35×10-06 | 9.31×10-11 | 1.02×10-07 | 3.97×10-07 |
| BP | 7.87×10-06 | 6.97×10-09 | 5.39×10-12 | 4.91×10-10 | 1.97×10-09 |
| CC | 3.01×10-06 | 8.38×10-07 | 2.77×10-14 | 1.35×10-10 | 5.11×10-07 |
| AUPR | MF | 3.31×10-01 | 1.55×10-05 | 9.90×10-14 | 6.06×10-10 | 6.78×10-06 |
| BP | 4.03×10-06 | 6.66×10-10 | 4.77×10-13 | 1.34×10-11 | 3.24×10-10 |
| CC | 2.04×10-08 | 2.56×10-11 | 7.29×10-15 | 3.58×10-13 | 3.63×10-12 |
| Budding  Yeast | Fmax | MF | 4.17×10-06 | 1.05×10-08 | 5.22×10-13 | 1.05×10-08 | 1.22×10-08 |
| BP | 4.32×10-06 | 7.34×10-08 | 1.20×10-13 | 2.07×10-08 | 1.41×10-08 |
| CC | 3.80×10-05 | 4.07×10-08 | 1.41×10-11 | 1.65×10-06 | 2.72×10-08 |
| AUPR | MF | 9.24×10-06 | 2.72×10-09 | 2.75×10-15 | 1.03×10-10 | 2.13×10-09 |
| BP | 2.98×10-08 | 6.08×10-11 | 2.64×10-15 | 4.84×10-12 | 7.64×10-11 |
| CC | 8.16×10-05 | 4.98×10-08 | 8.94×10-12 | 1.13×10-08 | 2.91×10-07 |
| Fission Yeast | Fmax | MF | 1.47×10-05 | 2.70×10-02 | 4.26×10-07 | 8.92×10-04 | 2.70×10-02 |
| BP | 1.05×10-06 | 4.87×10-06 | 6.31×10-13 | 4.48×10-08 | 4.87×10-06 |
| CC | 9.97×10-01 | 3.26×10-01 | 8.52×10-04 | 3.50×10-04 | 3.26×10-01 |
| AUPR | MF | 6.16×10-03 | 8.69×10-01 | 3.91×10-08 | 8.36×10-04 | 8.69×10-01 |
| BP | 1.99×10-06 | 6.24×10-06 | 4.60×10-12 | 6.24×10-06 | 6.24×10-06 |
| CC | 2.41×10-03 | 2.63×10-05 | 4.24×10-07 | 3.51×10-06 | 2.63×10-05 |
| Nematoda | Fmax | MF | 5.71×10-04 | 5.20×10-03 | 3.19×10-08 | 2.68×10-06 | 9.79×10-04 |
| BP | 2.12×10-06 | 9.91×10-07 | 1.09×10-10 | 4.80×10-09 | 1.58×10-07 |
| CC | 1.45×10-02 | 1.22×10-02 | 3.95×10-10 | 6.02×10-07 | 2.68×10-03 |
| AUPR | MF | 5.09×10-04 | 8.31×10-05 | 1.83×10-11 | 2.19×10-08 | 1.10×10-05 |
| BP | 2.09×10-06 | 6.80×10-09 | 2.96×10-13 | 5.79×10-12 | 3.42×10-09 |
| CC | 3.90×10-05 | 2.28×10-07 | 6.39×10-12 | 3.74×10-08 | 2.28×10-07 |