**Table S8 The *P* values between EGPN and other eight GO prediction methods for Fmax and AUPR on 8 species**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Species** | **Measure** | **GO aspect** | **(EGPN, EPGP)** | **(EGPN, GSAGP)** | **(EGPN, PSAGP)** | **(EGPN, NGP)** | **(EGPN, GPN)** | **(EGPN, EPN)** | **(EGPN, EGN)** | **(EGPN, EGP)** |
| Human | Fmax | MF | 4.29×10-16 | 4.45×10-14 | 4.23×10-08 | 1.37×10-17 | 1.58×10-03 | 1.26×10-08 | 1.18×10-21 | 2.65×10-03 |
| BP | 2.04×10-15 | 1.31×10-17 | 5.53×10-15 | 1.75×10-18 | 7.79×10-20 | 2.20×10-11 | 2.76×10-19 | 5.95×10-11 |
| CC | 9.71×10-12 | 1.57×10-16 | 1.58×10-15 | 8.73×10-17 | 3.91×10-12 | 7.89×10-09 | 9.87×10-14 | 6.36×10-11 |
| AUPR | MF | 1.18×10-21 | 2.03×10-21 | 1.84×10-19 | 4.08×10-23 | 9.18×10-18 | 7.82×10-23 | 1.05×10-31 | 3.66×10-07 |
| BP | 2.48×10-18 | 8.91×10-22 | 2.70×10-20 | 1.52×10-21 | 1.18×10-26 | 1.42×10-17 | 8.86×10-25 | 1.68×10-15 |
| CC | 5.75×10-04 | 3.72×10-12 | 1.71×10-11 | 3.28×10-11 | 5.69×10-08 | 4.07×10-03 | 6.30×10-03 | 5.40×10-01 |
| Mouse | Fmax | MF | 5.63×10-21 | 3.45×10-15 | 8.18×10-12 | 3.72×10-22 | 1.36×10-04 | 2.08×10-17 | 3.99×10-23 | 1.42×10-02 |
| BP | 3.56×10-16 | 2.99×10-16 | 1.96×10-16 | 6.38×10-19 | 1.74×10-12 | 1.26×10-12 | 3.48×10-16 | 6.33×10-06 |
| CC | 1.06×10-12 | 1.69×10-16 | 8.19×10-17 | 1.79×10-17 | 2.70×10-18 | 1.56×10-12 | 1.98×10-10 | 6.37×10-01 |
| AUPR | MF | 3.98×10-22 | 2.04×10-20 | 1.73×10-19 | 4.01×10-23 | 2.16×10-09 | 1.19×10-25 | 5.99×10-28 | 3.62×10-01 |
| BP | 2.60×10-19 | 9.96×10-22 | 1.70×10-21 | 2.96×10-22 | 3.74×10-22 | 1.12×10-22 | 2.83×10-23 | 3.21×10-11 |
| CC | 7.71×10-06 | 9.57×10-14 | 2.25×10-13 | 3.96×10-13 | 1.28×10-11 | 1.43×10-03 | 2.78×10-03 | 2.79×10-01 |
| Arabidopsis | Fmax | MF | 1.52×10-17 | 5.58×10-14 | 1.06×10-12 | 4.93×10-19 | 1.39×10-11 | 7.77×10-15 | 7.09×10-17 | 2.28×10-03 |
| BP | 3.80×10-11 | 1.67×10-10 | 5.28×10-11 | 1.01×10-14 | 7.19×10-09 | 1.04×10-07 | 1.39×10-07 | 8.80×10-02 |
| CC | 1.58×10-07 | 5.08×10-14 | 1.80×10-14 | 1.02×10-12 | 3.19×10-13 | 5.82×10-08 | 2.30×10-03 | 4.44×10-02 |
| AUPR | MF | 1.07×10-20 | 1.21×10-21 | 2.38×10-20 | 1.78×10-22 | 1.15×10-14 | 1.19×10-22 | 1.41×10-26 | 3.21×10-06 |
| BP | 3.96×10-18 | 3.10×10-21 | 3.17×10-20 | 1.39×10-21 | 1.62×10-24 | 2.99×10-22 | 5.88×10-22 | 1.49×10-13 |
| CC | 7.76×10-05 | 3.35×10-14 | 2.98×10-13 | 1.41×10-11 | 1.52×10-11 | 3.53×10-01 | 2.32×10-03 | 1.20×10-01 |
| Rat | Fmax | MF | 8.51×10-18 | 3.25×10-11 | 1.73×10-11 | 4.62×10-19 | 8.20×10-01 | 6.32×10-15 | 7.91×10-16 | 4.98×10-01 |
| BP | 5.04×10-10 | 2.14×10-11 | 4.67×10-11 | 4.26×10-14 | 6.72×10-08 | 2.01×10-06 | 3.11×10-07 | 2.46×10-01 |
| CC | 2.12×10-08 | 3.22×10-11 | 6.12×10-12 | 2.22×10-12 | 1.50×10-08 | 1.23×10-03 | 1.24×10-02 | 8.58×10-04 |
| AUPR | MF | 1.22×10-22 | 6.41×10-21 | 6.20×10-20 | 1.43×10-23 | 4.55×10-09 | 2.09×10-28 | 9.71×10-27 | 2.84×10-09 |
| BP | 1.03×10-16 | 5.61×10-20 | 3.12×10-19 | 3.76×10-20 | 1.05×10-21 | 5.15×10-14 | 5.67×10-20 | 1.52×10-03 |
| CC | 5.31×10-09 | 2.13×10-15 | 2.28×10-15 | 6.98×10-15 | 1.08×10-14 | 5.16×10-07 | 1.91×10-02 | 5.95×10-02 |
| Fly | Fmax | MF | 1.60×10-18 | 1.42×10-15 | 1.19×10-12 | 1.83×10-20 | 6.27×10-12 | 5.87×10-12 | 5.21×10-19 | 7.79×10-06 |
| BP | 2.13×10-12 | 5.73×10-15 | 9.23×10-13 | 2.09×10-16 | 1.57×10-14 | 6.39×10-09 | 4.25×10-16 | 4.74×10-05 |
| CC | 1.00×10-09 | 5.94×10-15 | 4.35×10-12 | 1.00×10-14 | 3.24×10-16 | 8.24×10-03 | 8.18×10-15 | 1.64×10-05 |
| AUPR | MF | 3.30×10-22 | 2.71×10-22 | 3.56×10-21 | 4.08×10-24 | 6.16×10-26 | 5.94×10-25 | 5.07×10-25 | 9.30×10-11 |
| BP | 2.32×10-15 | 1.09×10-19 | 5.40×10-18 | 1.61×10-19 | 1.61×10-25 | 2.45×10-10 | 1.16×10-19 | 3.01×10-12 |
| CC | 2.59×10-10 | 3.70×10-19 | 1.35×10-17 | 6.36×10-18 | 9.80×10-21 | 4.82×10-02 | 1.16×10-15 | 1.02×10-04 |
| Budding  Yeast | Fmax | MF | 3.34×10-16 | 4.96×10-16 | 1.04×10-11 | 4.28×10-18 | 5.01×10-15 | 5.42×10-09 | 3.43×10-20 | 8.27×10-04 |
| BP | 8.17×10-10 | 1.10×10-14 | 1.31×10-11 | 3.14×10-14 | 1.76×10-14 | 7.76×10-01 | 1.91×10-11 | 4.07×10-02 |
| CC | 8.42×10-02 | 2.97×10-12 | 1.29×10-07 | 1.34×10-09 | 1.41×10-08 | 9.25×10-01 | 1.59×10-02 | 8.00×10-03 |
| AUPR | MF | 1.15×10-17 | 3.63×10-20 | 1.53×10-18 | 4.30×10-20 | 1.61×10-22 | 1.23×10-15 | 1.43×10-25 | 5.33×10-01 |
| BP | 6.37×10-15 | 4.23×10-21 | 4.02×10-19 | 8.61×10-20 | 2.08×10-26 | 9.02×10-11 | 1.77×10-21 | 1.23×10-09 |
| CC | 5.34×10-17 | 3.81×10-25 | 1.98×10-23 | 2.54×10-23 | 8.53×10-22 | 1.22×10-05 | 2.16×10-23 | 4.61×10-14 |
| Fission Yeast | Fmax | MF | 5.83×10-20 | 1.68×10-16 | 8.72×10-01 | 1.95×10-20 | 6.87×10-03 | 8.26×10-13 | 1.14×10-25 | 6.42×10-01 |
| BP | 3.00×10-12 | 2.56×10-14 | 2.44×10-10 | 3.25×10-14 | 1.66×10-07 | 2.30×10-04 | 3.11×10-18 | 1.88×10-02 |
| CC | 5.15×10-13 | 1.71×10-16 | 3.83×10-13 | 3.41×10-15 | 3.03×10-12 | 4.83×10-05 | 7.40×10-16 | 3.99×10-11 |
| AUPR | MF | 6.64×10-20 | 4.96×10-20 | 4.11×10-18 | 1.21×10-20 | 4.03×10-09 | 1.86×10-16 | 2.11×10-28 | 1.63×10-07 |
| BP | 1.93×10-18 | 3.65×10-22 | 2.38×10-19 | 5.18×10-21 | 7.43×10-17 | 1.56×10-11 | 3.91×10-27 | 1.41×10-08 |
| CC | 5.39×10-14 | 1.01×10-19 | 9.20×10-18 | 2.48×10-18 | 9.57×10-22 | 3.94×10-01 | 1.37×10-18 | 5.73×10-07 |
| Nematoda | Fmax | MF | 3.62×10-14 | 6.79×10-11 | 8.72×10-01 | 8.85×10-16 | 8.91×10-01 | 7.73×10-08 | 6.60×10-18 | 7.18×10-03 |
| BP | 2.31×10-08 | 9.59×10-12 | 9.80×10-10 | 1.39×10-12 | 4.25×10-12 | 5.61×10-03 | 1.40×10-09 | 7.70×10-01 |
| CC | 8.47×10-08 | 6.57×10-15 | 4.39×10-12 | 9.90×10-13 | 3.53×10-07 | 1.69×10-02 | 1.04×10-10 | 1.90×10-03 |
| AUPR | MF | 2.34×10-17 | 1.28×10-17 | 2.23×10-13 | 1.34×10-18 | 1.00×10-01 | 2.24×10-01 | 3.21×10-23 | 5.07×10-02 |
| BP | 6.74×10-14 | 5.92×10-19 | 4.85×10-17 | 3.38×10-18 | 3.54×10-22 | 6.00×10-08 | 1.48×10-17 | 5.85×10-02 |
| CC | 1.33×10-09 | 1.28×10-18 | 3.85×10-16 | 3.71×10-16 | 2.44×10-15 | 5.88×10-01 | 1.81×10-10 | 9.70×10-02 |