**Table S2. Novel Domain Architectures shared across the Pseudofungi.**

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| --- | --- | --- | --- |
| **Gene Name** | **Domain Architecture** | **Oomycete exemplar (Accession number)** | ***Hyphochytrium* homologue (Accession number)** |
| 1-phosphatidylinositol 3-phosphate 5-kinase FAB1 | FYVE\_like\_SF-GAF | *Phytophthora nicotianae* (KUF83522) | Hypho2016\_00014879 |
| Long-chain-fatty-acid--AMP ligase FadD29 | FAAL-PKS\_PP-BioF | *Phytophthora nicotianae* (KUF80336) | Hypho2016\_00002377 |
| rhodanese domain-containing dual specificity protein phosphatase | DSPc-FYVE\_like\_SF- RHOD | *Phytophthora nicotianae* (KUF77573) | Hypho2016\_00006029 |
| putative aminotransferase | AAT\_like-dihydrodipicolinate reductase | *Phytophthora sojae* (XP\_009530580) | Hypho2016\_00002138 |
| putative callose synthase | Glucan\_synthase-Sugar\_tr | *Phytophthora infestans* (XP\_002998554) | Hypho2016\_00001204 |
| conserved hypothetical | RING-finger-tub | *Phytophthora infestans* (XP\_002898661) | Hypho2016\_00011754 |
| AGC/RSK/RSKP90 protein kinase | PH-PH-PH-STKc\_AGC | *Phytophthora infestans* (XP\_008915041) | Hypho2016\_00001388 |
| phosphatidylinositol 3 and 4-kinase-like protein | PH-FYVE\_scVPS27p-PI3Kc\_II | *Phytophthora sojae* (XP\_009538551) | Hypho2016\_00003770 |
| PAX-interacting protein 1 | TPR\_11-Prefoldin\_2 | *Phytophthora nicotianae* (KUF96058) | Hypho2016\_00008250 |
| histidine kinase A two component receptor | PAS-PAS-PAS-PAS-PAS-PAS-PAS-PAS-PAS-PAS-PAS-PAS-PAS-PAS-PAS-PAS-PAS-Histidine kinase-like ATPases | *Phytophthora sojae* (XP\_009526816.1) | Hypho2016\_00014859 |
| TKL protein kinase | S\_TKc-DEP | *Phytophthora parasitica* (ETM36095) | Hypho2016\_00016538 |
| L-aminoadipate-semialdehyde dehydrogenase large subunit | Abhydrolase\_6-A\_NRPS-SDR\_e1 | *Phytophthora infestans* (XP\_002905400) | Hypho2016\_00000654 |