

**Supplementary File S4 - MIPs from the *Chytridiomycota* and *Opisthosporidia* phyla (MycoCosm portal of JGI), along with XIP sequences from one representative fungal strain per phylum where XIP sequences are present.** The assignment of the AQP and AQGP subgroups is putatively predicted based on an alignment that includes the characterized orthodox AQP, AQGP, Yf1054-like, Fps-like, “Other” AQGP, and XIP sequences of *Trichoderma atroviride* (highlighted by an asterisk) [25].

>Croqu845\*

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>Croqu6585\*

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>Mycal1170102\*

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>Dacru2420693\*

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>Felpe277600\*

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>Artol52763\*

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>Aspac63958\*

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>Aspac64679\*

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>Aspac44287\*

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>Perma654005\*

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>Usnfl941042\*

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>Cadma175\*

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>Xylhe044\*

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>Xylhe054\*

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>Lipor342385\*

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>Geopy171\*

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>Geopy098\*

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>Basmе033\*

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>Basmе565\*

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>jgilFimjon11531984

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>jgilClarep1\_11798110

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