**Table S1:** Gene sequences of GPx (and their accession numbers) used for phylogenetic reconstruction.

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| **SPECIES** | **ISOFORM** | **ACCESSION NUMBER** |
| *Arabidopsis thaliana* | GPx6 | NM\_117229.4 |
| *Chlamydomonas reinhardtii* | GPx1 | AY051144.1 |
| *Chlamydomonas reinhardtii* | GPx5 | XM\_001698523.1 |
| *Euplotes crassus* | GPx1 | MMETSP1380-20130617|3253\_1 |
| *Euplotes crassus* | GPx2 | FJ440154.1 |
| *Euplotes crassus* | GPx3 | JN872737.1 |
| *Euplotes crassus* | GPx4 | FJ440155.1 |
| *Euplotes harpa* | GPx1 | MMETSP0213-20121227|20483\_1 |
| *Euplotes harpa* | GPx2 | MMETSP0213-20121227|20569\_1 |
| *Euplotes harpa* | GPx3 | MMETSP0213-20121227|20483\_1 |
| *Euplotes harpa* | GPx4 | MMETSP0213-20121227|20569\_1 |
| *Euplotes harpa* | GPx5 | MMETSP0213-20121227|13322\_1 |
| *Homo sapiens* | GPx4 | BC011836.2 |
| *Homo sapiens* | GPx5 | AJ005277.1 |
| *Paramecium tetraurelia* | GPx2 | XM\_001443233.1 |
| *Paramecium tetraurelia* | GPx3 | XM\_001423564.1 |
| *Paramecium tetraurelia* | GPx4 | XM\_001449625.1 |
| *Paramecium tetraurelia* | GPx5 | XM\_001442917.1 |
| *Plasmodium falciparum* | GPx1 | XM\_001350492.1 |
| *Tetrahymena thermophila* | GPx1 | XM\_001022734.1 |
| *Tetrahymena thermophila* | GPx2 | XM\_001031216.4 |
| *Tetrahymena thermophila* | GPx3 | XM\_001030317.2 |
| *Tetrahymena thermophila* | GPx4 | XM\_001031214.1 |
| *Tetrahymena thermophila* | GPx5 | XM\_001031215.1 |
| *Tetrahymena thermophila* | GPx6 | XM\_001031213.1 |
| *Tetrahymena thermophila* | GPx7 | XM\_001014606.1 |
| *Tetrahymena thermophila* | GPx8 | XM\_001014604.1 |
| *Tetrahymena thermophila* | GPx9 | XM\_001011054.3 |
| *Tetrahymena thermophila* | GPx10 | XM\_012796335.1 |
| *Tetrahymena thermophila* | GPx11 | XM\_001020136.1 |
| *Tetrahymena thermophila* | GPx12 | XM\_012798148.1 |