

**Supplementary Table 1:** List of fatty acid desaturases having highest sequence homologies with the protein from *Ostreococcus tauri*.

The amino acid sequence of the putative desaturase from *Ostreococcus tauri* was used for a protein-protein BLAST search at the National Centre for Biotechnology Information (<http://www.ncbi.nlm.nih.gov/BLAST/>). Only functionally characterised proteins having the highest sequence homologies are shown.

Organism	Regiospecificity	Identity (%)	Homology (%)	Nucleotide Accession Number
<i>Thaustochytrium sp.</i> (marine protist)	$\Delta 5$	36	53	AF489588
<i>Mortierella alpina</i> (fungus)	$\Delta 6$	19	35	AB070557
<i>Rhizopus oryzae</i> (fungus)	$\Delta 6$	19	36	AY583316
<i>Caenorhabditis elegans</i> (worm)	$\Delta 6$	18	32	AF031477
<i>Amylomyces rouxii</i> (fungus)	$\Delta 6$	19	35	AY392409
<i>Danio rerio</i> (zebrafish)	$\Delta 6/\Delta 5$	20	38	AF309556
<i>Homo sapiens</i>	$\Delta 6$	21	36	AF134404
<i>Sparus aurata</i> (fish)	$\Delta 6$	20	38	AY055749