

**Table S3** The sequences used to construct phylogenetic tree.

>OsAAO1

MRLSSLLFLVCFVTAMSQAAAACKARHFRWEVSNMFWSPDCEEKVVIGINGQFPGPTIRAKAGDTIVVHLK  
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V\*

>OsAAO2

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>OsAAO3

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PVLAGQRRYAVNGVSFVVPDTPLKLVDNYNIANVIGWDSVPARDGAAPRSGTPVVRNLHEFIEVVFQNTEN  
ELQSWHLDGYDFWVVGNGQWTENQRTTYNLDAQARHTVQVYPNGWSAILVSLDNQGMWNLRSAN  
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>OsAAO4

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VAPGAAGDGEREPFRYDGEHTVLLNDWWHRSTYEQAAGLASVPMVWVGEPPQSLLINGRGRFVNCSSPATA  
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>OsAAO5

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VRHAAYRLALGSVVDVVLQNTAIPPNGRSETHPWHLGDFWVLGYGEGKFVPEVDGPLNAASARGGAV  
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>AtAAO1

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NATTSDGIYRLRFNSTVDVILQANANTMNANNSETHPWHLGDFWVLGYGEGKFNESEDPKRYNRVDPIKK  
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>AtAAO2

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DQCAPQTLRVEPNRVYRLRIASTTALASLNQAVQGHQLVVVEADGNYVAPFTVNIDVYSGETYSVLLTNALPS  
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>AtAAO3

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>NtAAO1

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>NtAAO2

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>GmAAO1

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>GmAAO2

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>GmAAO3

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NKNYWLISIGVRGRKPNTPQGLTILNYKPIASVFPTFPPPITPLWNDERSKAFTKKIIAKMGTPQPPKRSRDTIFL  
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>GmAAO4

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>GmAAO5

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>GmAAO6

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>GmAAO7

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IENGRY

>ZmAAO1

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>ZmAAO2

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>ZmAAO3

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>ZmAAO4

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>TaAAO1

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TGYDVYGVQANPNATTSDGLYRLAFGSVVDVLQ NANMLAPNNSETHPWHLHGHDFTLGFVGRFDPAV  
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>TaAAO2

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TVPDGFVEPFSYDEEHTVLLGDWWHKSVYEQATGLSSNPVFVTEPQSLLINGRGMFNCSLAPSGTCNASRPD  
CALPTLFTA PGKTYLLRIGSLTSLLSYFEIEGHSM MVVEADGHYVLPFAVRGLFIYSGETYSVLVKADQDPRRN  
WAASHVVG RNP SQT PGS KAV VS YAF NG NNP WMP PPT APP AGR AW NN TAIR VE Q SRA IF AH PR VV PMP AR  
ADRTLLLNTQNRIDGHIKWTINGVSLMFPATPYLVAMKRGMDAYEQRPPDMYDHMSHEISAPARTNGTV  
GSPVYRLALGSVVDVVLQNSNALNNKTETHPWHLHGHDFTLGHGEKG FNPAADAWRLLNVRDPIMKNTV  
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>TaAAO3

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>TaAAO4

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>TaAAO5

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>TaAAO6

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>TaAAO7

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>TaAAO8

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>TaAAO9

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>TaAAO10

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>TaAAO11

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>TaAAO12

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>StAAO1

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>StAAO2

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>StAAO3

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>StAAO4

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>StAAO5

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>StAAO6

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>StAAO7

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>StAAO8

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>StAAO9

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