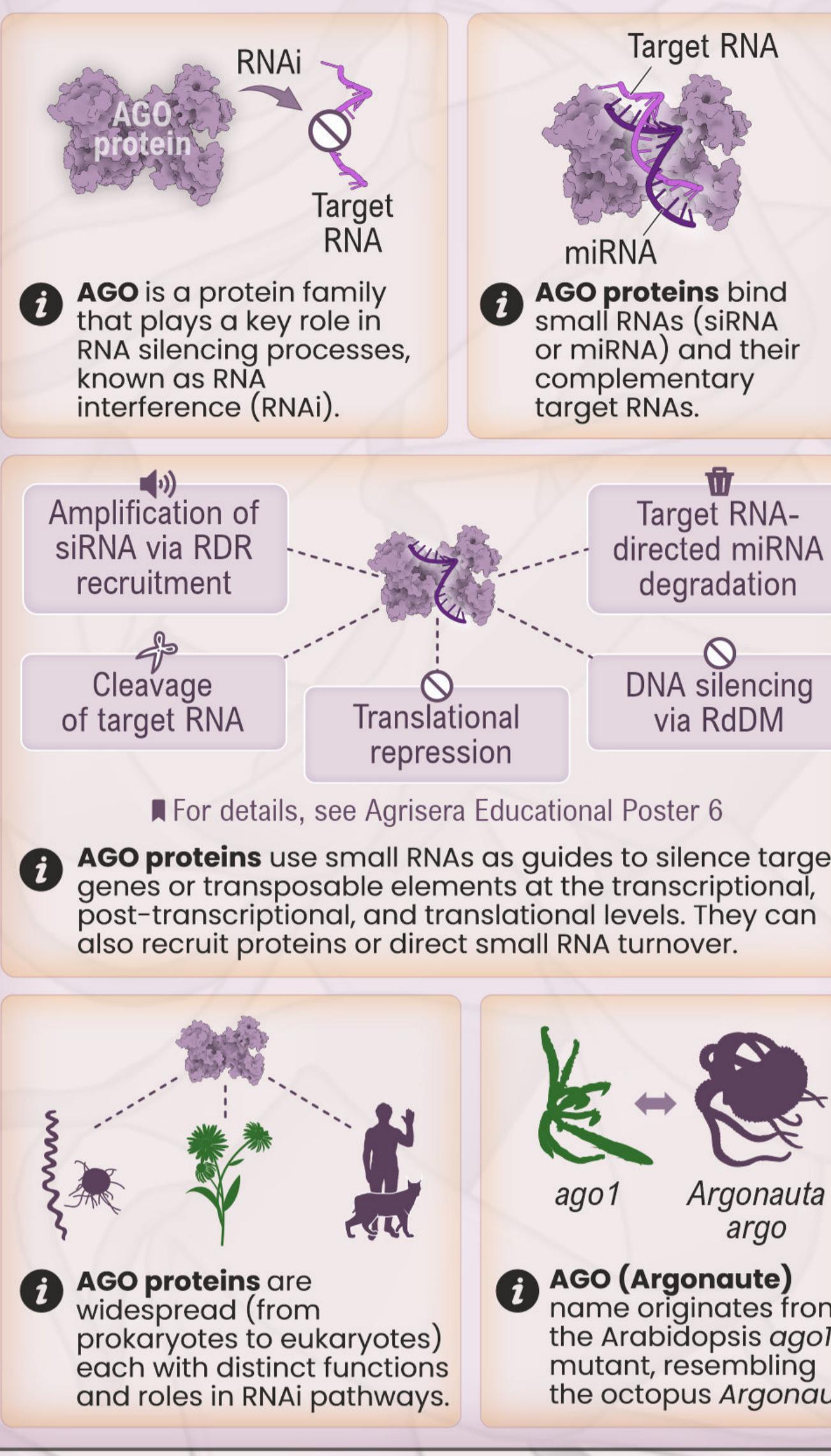
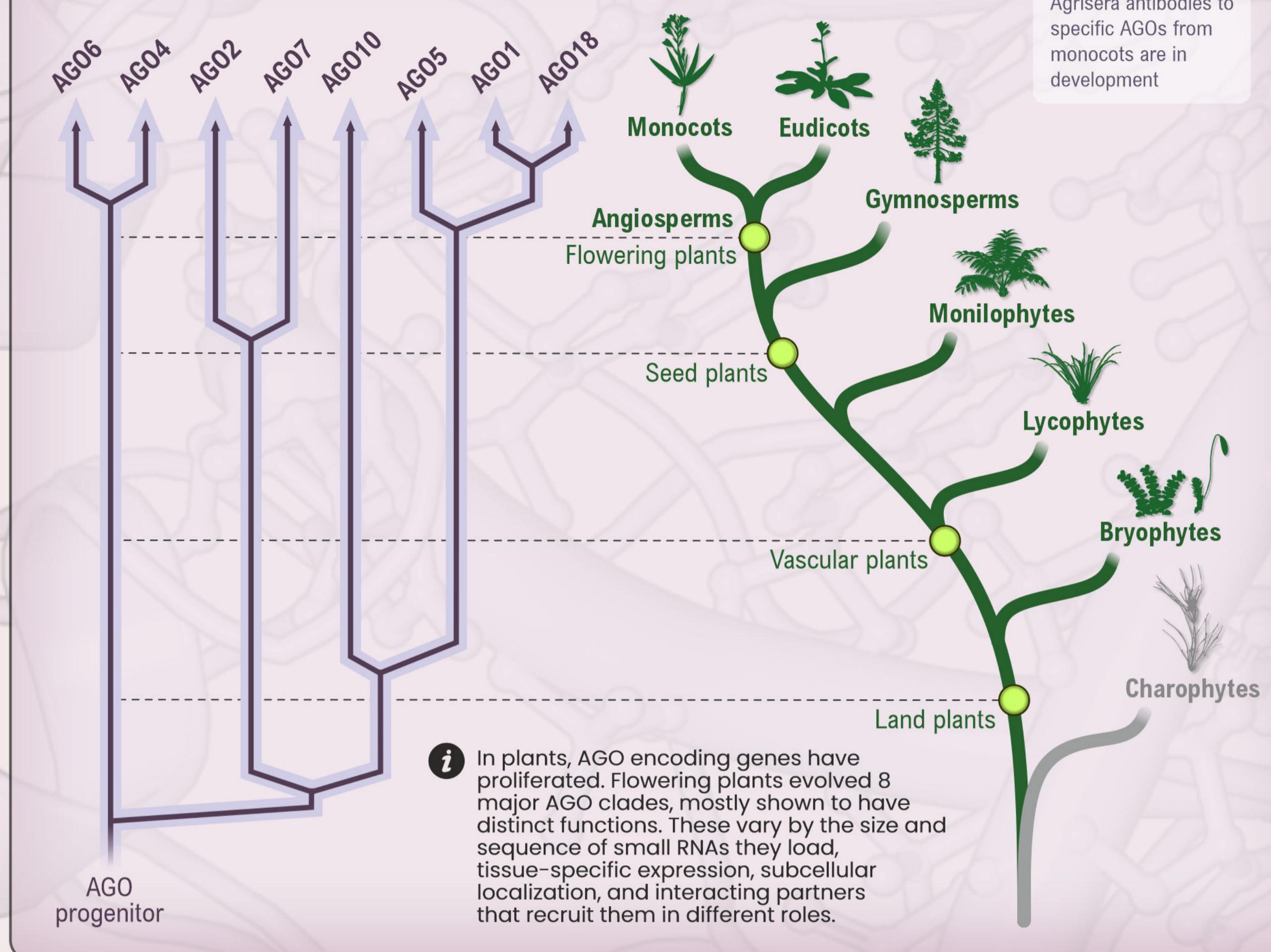


Plant Argonautes: Protein Effectors of Small RNAs

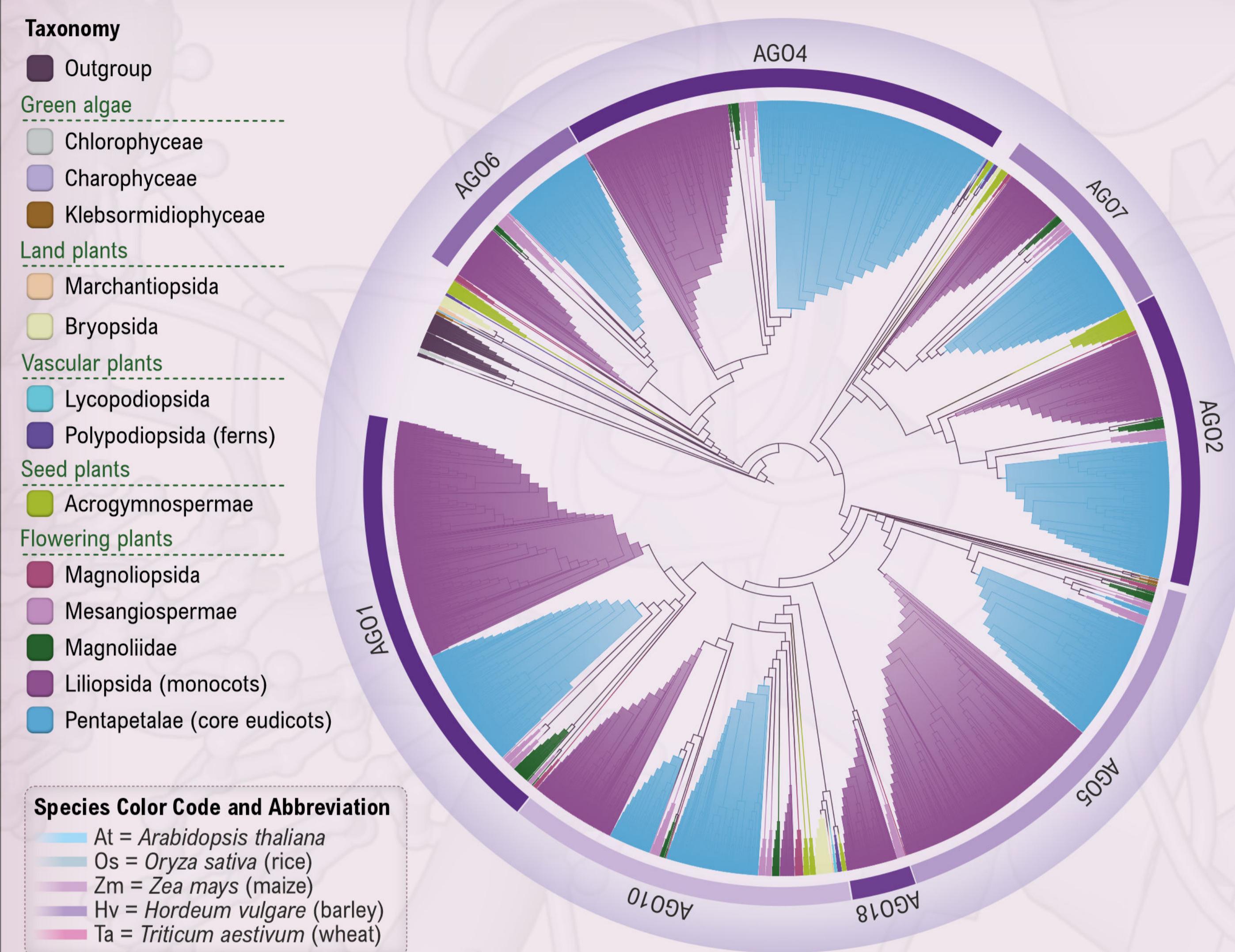
AGO proteins: Basic Information



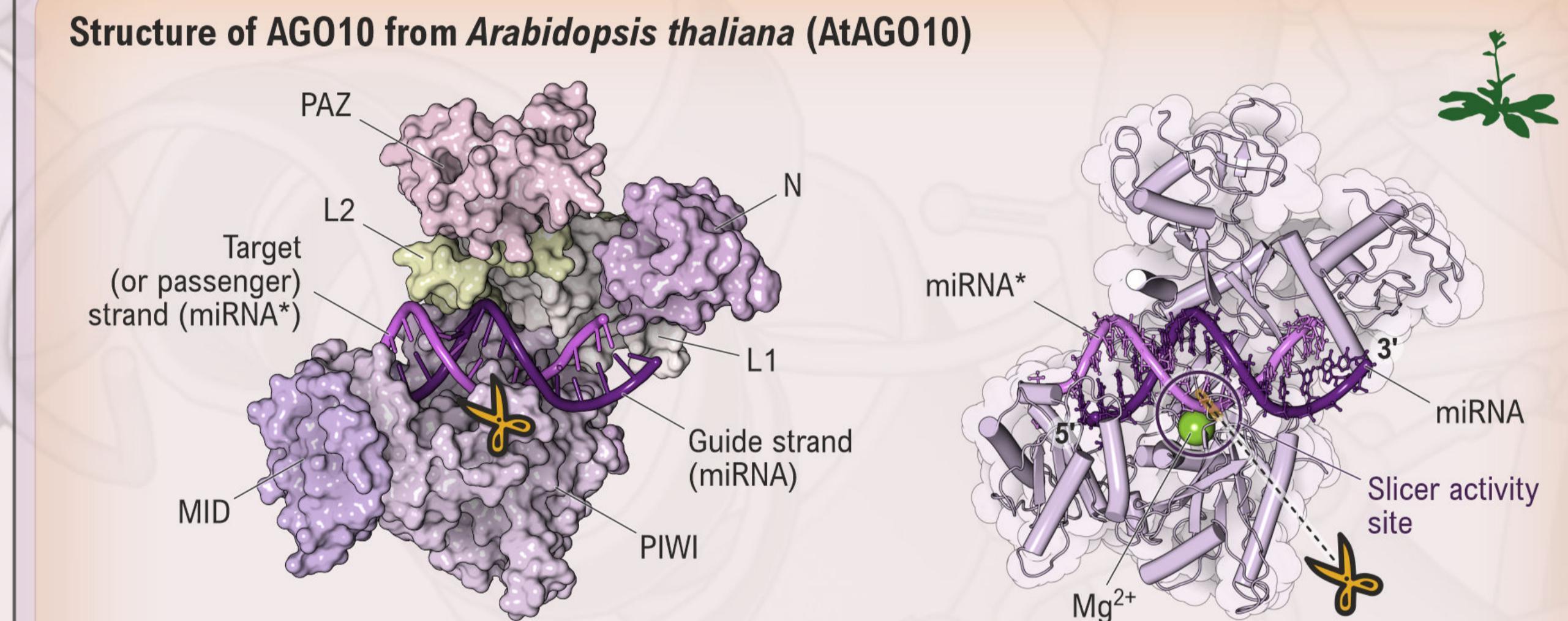
Evolutionary History of AGO Proteins in Plants



Maximum-Likelihood Phylogeny of Plant AGO Family Proteins



Structure of AGO Proteins: Domains and Their Functions



Plant Argonautes Poster: Protein effectors of small RNAs. For further information, see [1-11] and references therein. Send questions and comments to Prof. Blake Meyers (BMeyers@danforthcenter.org) and/or to Dr. Dmitry Shevela (info@scigrafik.se).

Abbreviations: AGO, Argonate; hc-siRNA, heterochromatic siRNA; HD-ZIP III, class III homeodomain-leucine zipper transcription factor; L1, linker domain 1; L2, linker domain 2; MID, middle domain; miRNA, microRNA; N, N domain; PAZ, PIWI-Argonaute-Zwille; phasiRNA, phased, secondary siRNA; PIWI, P-element induced wimpy testis; Pol, RNA polymerase; RdDM, RNA-directed DNA methylation; RDR, RNA-dependent RNA polymerase; RNAi, RNA interference; siRNA, small interfering RNA; SAM, shoot apical meristem; tasirNA, trans-acting RNA; vsiRNA, virus-derived siRNA.

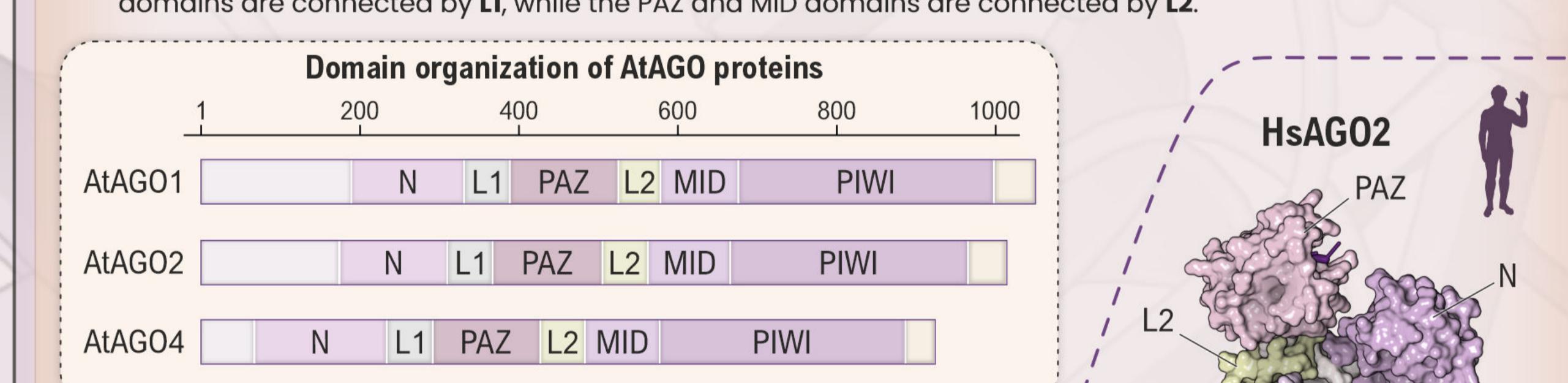
Notes: Complexes and cofactors were generated using *Protein Imager* software using coordinates of the following PDB codes: 4w5r and 7swf.

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Four key functional domains common to all AGO proteins. N-domain (N) is needed for unwinding duplex small RNAs and for loading guide strand (miRNA*). PAZ domain anchors the 3' end of miRNA. MID domain binds the 5' end of miRNA. PIWI domain cleaves the target (or passenger) strand by its catalytic triad/tetrad. N and PAZ domains are connected by L1, while the PAZ and MID domains are connected by L2.



In addition to the four domains (N, PAZ, MID, and PIWI), all AGO proteins display an unstructured and less conserved amino-terminal extension located before the N-domain.

HsAGO2

PAZ, L2, N, L1, MID, PIWI, DED, H, H807, D669, E637, D597, Catalytic tetrad at the active site

PIWI domain of human AGOs (HsAGOs) contains evolutionarily conserved amino acids that form a Mg²⁺-binding catalytic triad/tetrad. The catalytic triad/tetrad sites are also conserved in plant AGOs.

AGO proteins: Biological Roles in Plants

