# The description of the AmiRNA Designer input files

Datasets necessary for thermodynamic profiles generation are loaded as parsed text files from selected databases. We have used miRNA precursor sequences [dataset 1] downloaded from miRBase rel18. (Griffiths-Jones et al., 2008) (truncated to an organism of interest – A.thaliana – in this example).

The dataset 1 is divided into the following columns: miRbase accession number, ID (miR name), Precursor sequence, Mature1 Accession number, Mature1 ID, Mature1 Sequence, (where "Mature" means mature miRNA derived from precursor), and optionally if other miRNA from the same precursor are generated: Mature2 Accession number, Mature2 ID and Mature2 Sequence.

Sequences of miRNA and their targets [dataset 2] were taken from ASRP database (Gustafson et al., 2005). We have considered both computationally and experimentally validated targets. Since the ASRP database is no longer kept, the aforementioned data are now available for download at the Arabidopsis small RNA database maintained by Blake Meyers and Pamela Green (http://mpss.udel.edu/at/target.php). Dataset 2 contains columns organised as follows: Target Gene ID, Target Gene Name (optional), miR names (e.g.: miR156a,b,c,d,e,f,g) and target sequence site (from 5' to 3' end).

Third input text file [dataset 3] contains mature miRNA names and sequences listed along with miRNA exact location and orientation within their precursors. In the dataset 3 the columns are presented in this way: miRbase accession number, Mature miRNA sequence, Precursor start (first miRNA nucleotide number in the precursor), Precursor end (last miRNA nucleotide number within the precursor), Polarity (3' or 5' precursor arm), Length of miRNA (nt).

This file should be prepared by the user basing on the genomic coordinates.

Datasets 1 to 3 are needed to create thermodynamic profiles.

The following genes have been chosen as targets for amiRNA:amiRNA* design: AGB1 (ID: AT4G34460, alias names: ATAGB1, ELK4, ERECTA-LIKE 4, GTP BINDING PROTEIN BETA 1), and Immutans (ID: AT4G22260, alias names: IM, IM1, IMMUTANS, PLASTID TERMINAL OXIDASE, PTOX). The above-mentioned sequences were downloaded from TAIR database (http://www.arabidopsis.org/).