Proceedings of the LXII SIGA Annual Congress
Verona, Italy – 25/28 September, 2018
ISBN **978-88-904570-8-1**

Oral Communication Abstract – 6.06

miRVIT: A GRAPEVINE NOVEL miRNA DATABASE AND ITS APPLICATION

CHITARRA W.*,**, PAGLIARANI C.*, ABBÀ S.*, BOCCACCI P.*, BIRELLO G.***, ROSSI M.*, PALMANO S.*, MARZACHÌ C.*, PERRONE I.*, GAMBINO G.*

*) Institute for Sustainable Plant Protection, National Research Council (IPSP-CNR), Strada delle Cacce 73, 10135 Torino (Italy)
**) Viticultural and Enology Research Centre, Council for Agricultural Research and Economics (CREA-VE), Via XVIII Aprile, 31015 Conegliano (Italy)
***) Research Institute on Sustainable Economic Growth, National Research Council (IRCRES-CNR), Strada delle Cacce 73, 10135 Torino (Italy)

Novel micro RNAs, univocal database, Vitis spp., phytoplasma

Micro(mi)RNAs play crucial roles in plant developmental processes, as well as in defence responses to biotic and abiotic stresses, through post-transcriptional control of several biological pathway intermediates. In the last years, many works on small RNAs (sRNAs) in grapevine (*Vitis* spp.) were published. Nevertheless, there is no uniformity in the classification of the miRNAs identified: hundreds of putative novel miRNAs were indicated in different ways, and often the same miRNA was named differently in different works. In order to reorganise the high quantity of available data, we produced 'miRVIT', the first database of all novel grapevine miRNA candidates characterised so far, and still not deposited in miRBase. To this aim, each miRNA accession published was renamed, repositioned in the last version of the grapevine genome and compared with all the novel and conserved miRNAs detected in grapevine. Overall, 901 sequences referred to as novel miRNAs, re-named using a 'vvi_miC' code, were found. Starting from the criteria published for plant miRNA annotation, we considered as novel miRNAs only the 20–22 nt long sRNAs. Of the 621 20–22 nt long novel miRNAs present in miRVIT, miRNA* sequences were identified for only 150 accessions, and 45 of these were found in at least two different works, e.g. in at least two different sRNA libraries originating from different genotypes or tissues. Hypothetically, only 5% of the novel miRNAs previously identified in grapevine satisfied the stringent requirements and could be really considered as novel miRNA candidates. miRVIT were then applied in *V. vinifera* plants infected by *Flavescence dorée* phytoplasma. The application of this database in a biological context confirmed the effectiveness of the followed approach for pinpointing complex interactions among miRNAs and related target genes. vvi_miC64 and vvi_miC137 appear to be *bona fide* miRNAs, spread among different genotypes, potentially regulated by diverse environmental conditions and likely playing important biological functions. miRVIT database is available at http://mirvit.ipsp.cnr.it.