Proceedings of the SIGA Young Web Meeting
7 July, 2020
ISBN **978-88-944843-0-4**

Abstract – SY41

THE *WRKY* GENE FAMILY IN WILD POTATOES

VILLANO C.*, ESPOSITO S.*,**, D'AMELIA V.*,***, GARRAMONE R.*, ALIOTO D.*, ZOINA A.****, AVERSANO R.*, CARPUTO D.*

*) Department of Agriculture Sciences, University of Naples "Federico II", Via Università 100, 80055 Portici (Italy)
**) CREA, Via Cavalleggeri 25, 84098 Pontecagnano-Faiano (Italy)
***) National Research Council of Italy, Institute of Biosciences and Bioresources (CNR-IBBR), Via Università 133, Portici (Italy)
****) CNR-IPSP, Via Università 133, 80055 Portici (Italy)

WRKY protein family is one of the largest transcription factor (TF) family in plants and is involved in growth and development, signal transduction and stress response. In spite of their important role in plant adaptation and survival, to date no studies have addressed into exploring WRKY gene family components and their different characteristics in wild potato species, known to be a powerful and informative reservoir of several useful genes and alleles . In this study, 79 and 84 genes encoding putative WRKY TFs have been identified in two potato wild species, Solanum commersonii and S. chacoense. Phylogenetic analysis of WRKY proteins divided ScWRKYs and SchWRKYs into three groups and seven subgroups. Their classification and characterization with respect to protein structure and comparative phylogenetic analyses suggested an interspecific variability in the WRKY family. Furthermore, we analyzed their expression profiles in different tissues and under various stresses and we were able to select ScWRKY045 as a good candidate in wounding-response, ScWRKY055 as a bacterial infection triggered WRKY and ScWRKY023 as a multiple stress-responsive WRKY gene. Those WRKYs were further studied through interactome analysis allowing the identification of potential co-expression relationships between ScWRKYs/SchWRKYs and genes of various pathways. Our study allowed a genome-wide survey and characterization of the WRKY gene family in wild potatoes and the selection of WRKY genes that could be considered as potential candidates for both breeding efforts and functional studies.