

Genetic technologies-based development and assessement of novel lines of crop plants

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The aim of the study is CRISPR/Cas-based modification of cereal, legume, vegetable, fruit and berry plants in order to improve grain/ fruit quality or plant architecture, to control yield or ripeness period. In dicots, target genes (*BvDODA1* (beet), *SBEI* и *SBEII* (peas), *TFL1* (cowpea), *E4* (soybean), *MybA1* (actinidia and grapes), *IdnDH* (grapes), *CIFS1* (watermelon)) were selected and re-sequenced in cultivars chosen. Constructs for their editing were developed. In monocots, (1) the constructs for maize waxy endosperm (*wx*) и amylase extender (*ae*) genes editing were developed and tested by protoplast transfection; (2) barley mutants with edited genes *Myc2*, *Cle3* and *Ant2* were obtained; (3) the complex phenotyping of the earlier obtained barley mutants with the *Nud* and *Win1* genes knockouts was performed. Therefore, the work on modification/ preparation for modification of the number cultivated species varieties was carried out in order to obtain genotypes with desired traits, as well as pleiotropic effects of some mutations were tested using the precise isogenic lines obtained by genome editing.

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