

CRISPR TECHNOLOGY AND GENOME EDITING FOR NEW PLANT BREEDING TECHNOLOGY

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The history of crop breeding in the past ten thousand years is closely in line with the history of human civilization. Breeding methods such as selection breeding, mutation breeding, and crossing breeding were carried out in the absence or little knowledge of genetic information ‘DNA or genome’. Whether natural or artificial breeding methods, the mutation was random and the farmer was able to select the seeds of the crops that showed good agricultural traits. Unlike the past, the breeding of the 21st century has made it possible to produce seeds with good agricultural traits as they design. The technologies that made this possible are transgenic technology (GM technology) and gene scissors (genome editing technology). In particular, the third-generation gene scissors, CRISPR-Cas9 technology, which has revolutionized current biotechnology and life sciences, has the advantages of being easy, fast, and economical compared to previous technologies and has been experiencing rapid artificial evolution by the worldwide laboratories. This lecture looks over past and current status of gene scissors technology and predicts future development trends.