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Use of Gene Splicing Technology in Many Areas

(*Lakki Sharma)
Dept. of Genetics and Plant Breeding, Mansarovar Global University, Sehore, Bhopal
*Corresponding Author's email: lakki17394@gmail.com

Today (in the time of climate change), gene splicing has the potential to solve many challenges in many different fields, especially in agriculture, medicine and business research. Rapid solutions to improve food security improve human health through good nutrition and promote sustainable development. However, ongoing care is needed to consider the ethical, social and environmental impacts of splicing technologies. Through responsible research, regulation and public consultation, we can maximize the benefits of genetics while minimizing the risks. Listed below are some of the successful applications of gene splicing in various fields:

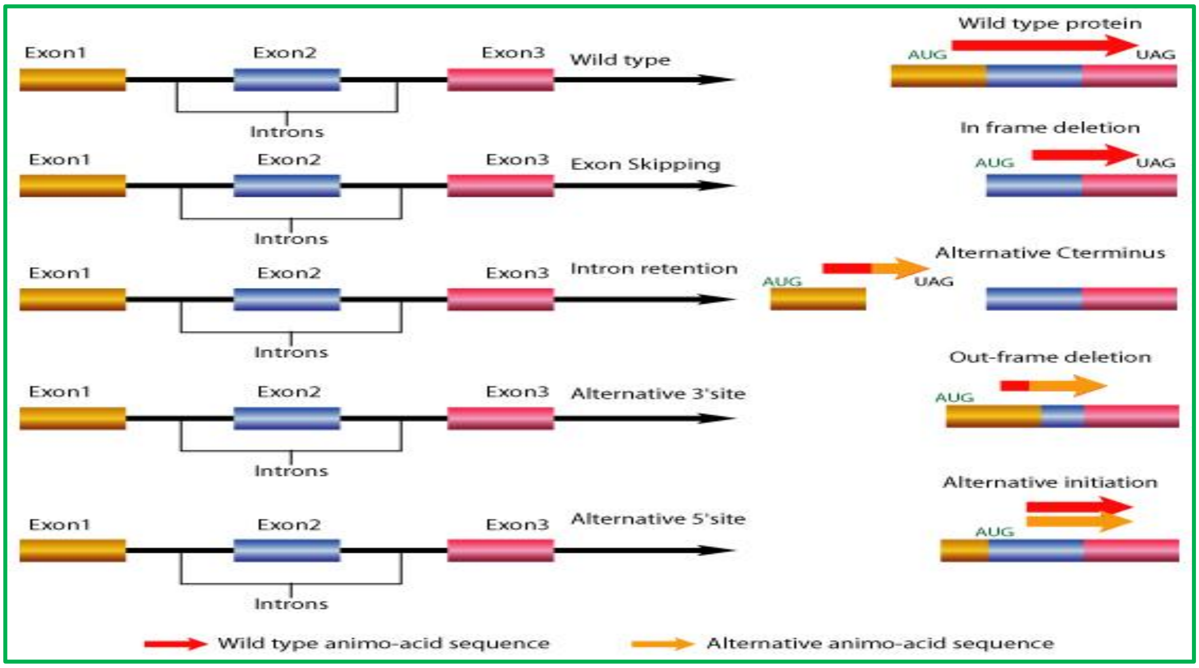
Agricultural Applications of Gene Splicing

Gene splicing has the potential to transform agriculture through improved genetics (GMOs) with good results. These traits include resistance to diseases, pests and abiotic stresses (environmental stress) such as drought and salinity. Improvement of agriculture and farmers' health. Also, gene splicing plays an important role in addressing nutritional deficiencies, as shown by the development of golden rice, which contains more vitamin A compared to plain rice (Oryza sativa L.). As the world population increases, the whole world is facing serious challenges in this regard, while genome editing technology plays an important role in ensuring food security and the security of the whole world. In the last three decades, plant breeding and genetics have been supported by new knowledge on growth and management (such as functional genomics) and new technologies (such as biotechnology and phenomics). Especially the group of regularly interspaced short palindromic repeats (CRISPR)/CRISPR-associated proteins (CAS) and their variants have become powerful tools in plant research and perhaps will become a change to be cultivated in this era. Traits are conferred by coding and non-coding genes. From this point, we proposed a treatment strategy for these two types of genes. The activity and amount of the encoded enzyme are regulated at transcriptional and post-transcriptional, as well as translational and post-translational levels. Different strategies have been proposed to intervene in genes to create changes that lead to phenotypic changes. For non-coding genes, gene modifiers can be used to control the mutation itself or to target genes to carry out mutation. Protoplast repair techniques are also included to make seeds suitable for planting (Tan et al., 2020).

Clinical applications of gene splicing

In medicine, gene splicing has opened up new avenues for treating genetic disorders and diseases. Gene therapy involves inserting functional genes into a patient's brain to correct genetic abnormalities. This approach holds promise for treating genetic diseases such as cystic fibrosis, sickle cell disease, and muscular dystrophy. Additionally, gene splicing technologies are being investigated for use in cancer treatment, as seen in CAR-T cell therapy, which can be used to alter the immune system to target and destroy cancer cells.

Since up to one-third of disease-causing mutations are thought to affect pre-mRNA splicing, it is important to classify these mutations in patient literature. Some collaborative organizations and healthcare services have conducted large-scale studies on patients that have discovered new alterations faster than they can be isolated. The use of this method for collaborative research and drug analysis, as well as the impact of junctions in MPRA and oligonucleotide linkage issues synthesis, is also discussed (Rhine et al., 2019).



Availability and Biotechnology Applications

In the field of industry and biotechnology, gene splicing plays an important role in the production of recombinant proteins for various applications. This includes the production of insulin for diabetes treatment and growth hormone for treatment. Additionally, gene splicing technology is also being used in bioremediation efforts where these bacteria are engineered to neutralize contaminants and clean the bacteria. Gene splicing also helps produce biofuels from renewable sources, reducing dependence on fossil fuels and environmental impact. Advances in the understanding of starch biosynthesis and the isolation of many genes involved in this process have led to genetic modification of crops to produce new rice with better starch performance. For example, potato starch contains an unprecedented amount of amylose and phosphate. Amylose-free short-chain amylopectins have also been produced; Pre-mRNA splicing is also important for the pathology of many diseases, especially cancer. Genetic engineering methods are used to splice genes. Gene splicing is often used to diagnose many human diseases, etc. Genetic engineering appears to play an important role in many areas such as agriculture, biotechnology and industrial applications.

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