



CRISPR technology and its impact on microbial biotechnology

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Abstract:

CRISPR or clustered regularly interspaced short palindromic repeats has been best-known as adaptive immunity system of bacteria and archaea. It helps them to protect themselves from the invasion of bacteriophage. Looking precisely at the mechanism of the protection, a creatively-genome editing system is available. CRISPR currently is a world-spreading technology which has found his place in genetics and biotechnology. The most important impact of CRISPR technology has been emerged in medical industry including cell and gene therapy. CRISPR resolves challenges related to using viral vector in cell and gene therapy in terms of increasing safety and lowering costs. Besides the above-mentioned applications, CRISPR has been developed to use as a reliable diagnostic tool for identifying genes involved in infectious and non-infectious diseases because of its highly site-specific nature. In addition, the great role of CRISPR in medicine, it has shown itself as an applicable tool in microbial biotechnology specially in metabolic engineering where it helps bio-technologists to modify metabolic pathways in different microorganisms to generate engineered strains with the maximum potential of producing bio-products of interest. Therefore, it has many potentials to be developed into great tool for biotechnology applications.

Biography:

Sajjad Yazdanpanah has been graduated from University of Tehran in master of microbial biotechnology. He holds a Bsc in cellular and molecular biology, and currently pursuing his PhD in microbial biotechnology at the School of Biological Science and Technology, University of Isfahan. As Sajjad has a fantastic interest to genetic engineering, he started to study about gene cloning and expression of recombinant proteins in his master degree and had a successful experience in his thesis. He has been involved



in outbreak investigations of CRISPR technology in University of Isfahan. He also has an ongoing workshop on CRISPR technology in the Isfahan University of Medical Sciences at the International Congress of Isfahan Biomedical Sciences (ICIBS 2020) in Iran.

Publication of speakers:

1. Hsu PD, Lander ES, Zhang F. Development and applications of CRISPR-Cas9 for genome engineering. *Cell*. 2014;157(6):1262-1278. doi:10.1016/j.cell.2014.05.010
2. Horvath, Philippe, and Rodolphe Barrangou. "CRISPR/Cas, the immune system of bacteria and archaea." *Science* 327.5962 (2010): 167-170
3. Manghwar H, Lindsey K, Zhang X, Jin S. CRISPR/Cas System: Recent Advances and Future Prospects for Genome Editing. *Trends Plant Sci*. 2019 Dec;24(12):1102-1125. doi: 10.1016/j.tplants.2019.09.006. Epub 2019 Nov 11. PMID: 31727474.

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