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Editorial

# Importance of Plasmids in Microbiology

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## Editorial

The dynamics of the bacterial genome are caused by a long series of evolutionary events. These evolutionary events are responsible for the unique biological functions of a large number of bacteria. Bacteria have two independent genetic systems, such as chromosomal DNA and extrachromosomal DNA. Both of these genetic systems can carry out gene transfer through various means, thereby accelerating the evolution of bacterial communities. The genetic diversity caused by evolution is the main reason for the acceptability of bacteria under a wide range of conditions. Bacteria are everywhere, even under extreme conditions, such as high salinity, extremely high and low temperatures, no higher animals will survive. They have different phenotypic characteristics and different metabolic activities. Bacterial genome diversity involves many processes, such as mutation, recombination, and horizontal gene transfer. Mutations are natural changes in the process of DNA replication, or they occur due to mutagens. Recombination is most common between closely related bacterial strains, and its frequency decreases as the sequence similarity between the donor and recipient decreases. Although mutations have brought changes in the existing genome, recombination services have changed a species. However, compared with horizontal gene transfer, the two contribute little to the evolution of microorganisms, and horizontal gene transfer changes the species boundary [1-3]. The horizontal gene transfer mechanism has three processes: conjugation, transformation and transduction. The frequency of gene transfer in aquatic ecosystems is unclear. Each has a different probability to occur under different conditions, such as the availability of external DNA and the existence of favorable environmental conditions (nutrient composition, cell density, temperature and salinity), but they have a common means of gene transfer, namely through Plasmid.

This is why plasmids are considered to be accessory genetic elements of bacterial chromosomes. The genetic diversity of bacteria is due to the active transfer of genes, which are combined with auxiliary elements such as plasmids. These plasmids survive in the host through vertical delivery and adapt to TENW conditions through horizontal gene transfer. Plasmid horizontal gene transfer has received widespread attention due to the occurrence of drug resistance of certain pathogenic bacteria. Plasmid desiccation resistance genes are thought to transfer these genes to other bacteria and help spread resistance. The transformation of this plasmid in the aquatic ecosystem has a potential impact on human health. Bacterial transformation has applications for carrying and disseminating plasmids with xenobiotic degradation genes.

Every animal has an adaptive mechanism through which they can live in one place for a long time. For bacteria such as prokaryotes, plasmids are the key to adaptation through genetic diversity. Plasmids have the characteristics of xenobiotic degradation and heavy metal tolerance, making them eco-friendly in the bioremediation of toxic chemicals. The characteristics such as antibiotic resistance are the result of farmers' abuse of drugs in the cultivation system. The practice of microbial genetic engineering and the development of superior varieties are useful compared with chemical methods of toxicity restoration. Supercatalysts are composed of catabolic fragments of different organisms in a recipient strain, which are often found in plasmids. Today, we use many plasmid vectors in gene cloning experiments, but adding antibiotic-mediated selection methods is harmful to the ecosystem. It is important to study more plasmids and their characteristics, and we will learn more about bacteria and their means of survival.

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