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Development and Maintenance of Epigenetic Therapy

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INTRODUCTION

The majority of breast cancers express the estrogen receptor (ERα), and drugs that target this pathway are the main treatment. Endocrine therapy is an established resection therapy in the treatment of hormone-dependent breast cancer since its introduction in the early 1940s. Unfortunately, treatment resistance develops, leading to recurrence and recurrence of the disease. Recent studies have provided a better understanding of how changes in chromatin status and deregulation of epigenetic factors regulate resistance phenotypes. Here we explain how the epigenome is an essential determinant of the hormonal therapy response and why epigenetic factors are promising targets for overcoming clinical resistance.

DESCRIPTION

Recent advances in assisted reproductive technology (ART) have made it possible for couples experiencing severe infertility to become pregnant, but this method is not effective in all cases. Stem cells are known to be able to form a variety of cell types, tissues and organs as undifferentiated cells found at various stages of embryos, fetuses and adults. Due to their unlimited resources and incredible differentiation, they are considered potential new therapeutic biological tools for treating infertility. In assisted reproductive technology, stem cells are stimulated in vitro to develop a variety of specialized functional cells, including male and female gametes. Epigenetic patterns can change within the genome under certain drug exposures or lifestyle changes.

Mutations in the epigenetic modifier group are the largest group of mutant genes in myelodysplastic syndrome (MDS) and are very common in acute myeloid leukemia (AML). Our progress in understanding the epigenetics of these diseases has helped us develop breakthrough therapies that will transform the treatment environment for MDS and AML and significantly improve outcomes. Gallbladder cancer (GBC) is known to be highly malignant and resistant to multiple drugs. Previously, we discovered that reduced integrity and stability of the elongated complex led to GBC chemotherapy resistance, but it is unclear whether that recovery could be an efficient treatment strategy for GBC.

Arginine plays various roles in cell physiology. As a semi-essential amino acid, arginine deficiency has been used to combat arginine synthesis-deficient cancer. Cancer cells deprived of arginine exhibit mitochondrial dysfunction, transcriptional reprogramming, and eventual cell death. This study showed that arginine acts as an epigenetic regulator of histone acetylation, leading to overall upregulation of the nuclear-encoded oxidative phosphorylation gene in prostate cancer cells. Recent findings indicate the fundamental role of the epigenome in immunity. Vaccination against seasonal influenza induced a sustained reduction in H3K27ac of monocytes and bone marrow dendritic cells (mDCs) associated with impaired cytokine response to like receptor stimulation. Single-cell ATACseq analysis revealed epigenomeally distinct subclusters of monocytes with reduced accessibility of chromatin at AP1 target sites after vaccination.

CONCLUSION

Neuropathic pain (NP) is a common symptom of many disorders of the somatosensory nervous system and has a profound effect on the patient's quality of life. Epigenetics are genetic changes in gene expression that do not cause permanent changes in DNA sequences. Epigenetic modifications affect gene expression and function and can mediate exchanges between genes and the environment. Increased evidence indicates that epigenetic modifications, including DNA methylation, histone modifications, non-coding RNAs, and RNA modifications, are involved in the development and maintenance of NPs.

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