Special Issue

DNA Damage, DNA Repair and Immune Responses

Message from the Guest Editor

DNA damage can arise from a variety of external and internal factors, including exposure to radiation, chemicals, and reactive oxygen species. This damage can result in mutations and genetic instability, increasing the risk of cancer and other diseases. Fortunately, cells possess several mechanisms to repair damaged DNA, such as base excision repair, nucleotide excision repair, and double-strand break repair. These mechanisms are essential for removing or replacing damaged DNA, restoring the correct sequence, and preventing further harm. When DNA is damaged, the immune system can be activated, recognizing the damaged DNA as foreign and mounting a response to eliminate it. This immune response involves the activation of various immune cells, including T cells and B cells, as well as the release of cytokines and other signaling molecules. The interplay between DNA damage, DNA repair, and immune responses is vital for maintaining genomic integrity and preventing the development of diseases such as cancer.

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