Base excision repair (BER) is a cellular mechanism, in DNA repair throughout the cell cycle. It is responsible primarily for removing small, non-helix-distorting base lesions from the genome. The related nucleotide excision repair pathway repairs bulky helix-distorting lesions. BER is important for removing damaged bases that could otherwise cause mutations by mispairing or lead to breaks during DNA replication. BER is initiated by DNA glycosylases, which recognize and remove specific damaged or inappropriate bases, forming AP sites. These are then cleaved by an AP endonuclease. The resulting single-strand break can then be processed by either short-patch (where a single nucleotide is replaced) or long-patch BER (where 2–10 new nucleotides are synthesized).