

Helicase

Helicases are a class of enzymes vital to all living organisms. Their main function is to unpack an organism's [genes](#). They are motor proteins that move directionally along a [nucleic acid](#) phosphodiester backbone, separating two annealed nucleic acid strands (i.e., DNA, RNA, or RNA-DNA hybrid) using energy derived from [ATP](#) hydrolysis. There are many helicases resulting from the great variety of processes in which strand separation must be catalyzed. Approximately 1% of eukaryotic genes code for helicases.

The human genome codes for 95 non-redundant helicases: 64 RNA helicases and 31 DNA helicases.

Many cellular processes, such as DNA replication, transcription, translation, recombination, DNA repair, and ribosome biogenesis involve the separation of nucleic acid strands that necessitates the use of helicases

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