

# Mechanisms, regulation and functions of the unfolded protein response

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## Abstract

The unfolded protein response (UPR) comprises a network of signalling pathways that reprogramme transcription, translation and protein modifications to relieve the load of unfolded or misfolded proteins in the endoplasmic reticulum lumen and restore proteostasis. Understanding the regulation of the UPR and the role it has in the pathophysiology of various cell types and organs might open new therapeutic avenues.

Cellular stress induced by the abnormal accumulation of unfolded or misfolded proteins at the endoplasmic reticulum (ER) is emerging as a possible driver of human diseases, including cancer, diabetes, obesity and neurodegeneration. ER proteostasis surveillance is mediated by the unfolded protein response (UPR), a signal transduction pathway that senses the fidelity of protein folding in the ER lumen. The UPR transmits information about protein folding status to the nucleus and cytosol to adjust the protein folding capacity of the cell or, in the event of chronic damage, induce apoptotic cell death. Recent advances in the understanding of the regulation of UPR signalling and its implications in the pathophysiology of disease might open new therapeutic avenues.

## Palabras clave

**KeyWords Plus:** [ENDOPLASMIC-RETICULUM STRESS](#); [THIOREDOXIN-INTERACTING PROTEIN](#); [TRANSCRIPTION FACTOR XBP-1](#); [MESSENGER-RNA TRANSLATION](#); [ELEMENT-BINDING PROTEIN](#); [PANCREATIC BETA-CELLS](#); [ER-STRESS](#); [TRANSMEMBRANE PROTEIN](#); [BAX INHIBITOR-1](#); [LUMINAL DOMAIN](#)

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