



CONFERINȚA ȘTIINȚIFICĂ ANUALĂ

CERCETAREA ÎN BIOMEDICINĂ ȘI SĂNĂTATE: CALITATE, EXCELENȚĂ ȘI PERFORMANȚĂ

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THE ROLE OF UBIQUITINE PROTEINS IN HUMAN PATHOLOGY

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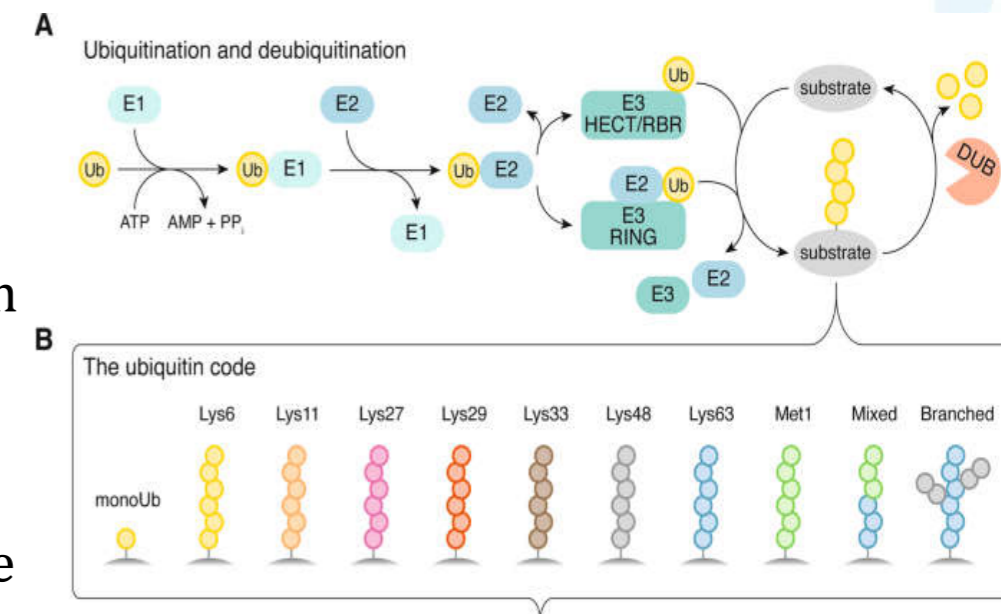
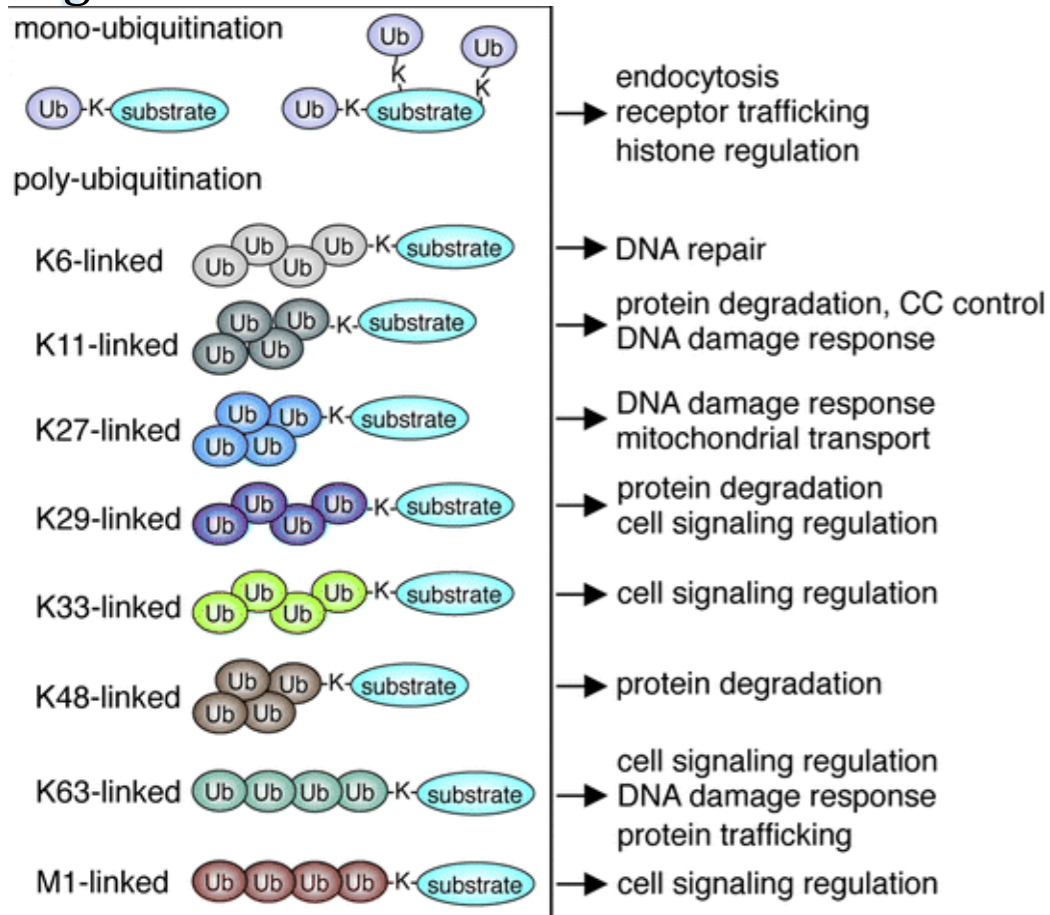
Introduction: The ubiquitin protein family (Ub) plays an important role in regulating cellular protein turnover in a variety of processes, such as DNA damage and repair, cell cycle progression, apoptosis, receptor-mediated endocytosis, and human cell signal transduction.

Material and methods: Journal of literature, articles published in electronic sources recognized by the international medical society: Science Direct, PNAS, Cell press Reviews, PubMed, Gene Cards.

Results: There are 4 genes in human cells that encode ubiquitin proteins: UBB (17p11.2), UBC (12q24.3), UBA52 (19p13.1), RPS27A (2p16.1). Ubiquitination is mediated by three enzymes: ubiquitin activator (E1), ubiquitin transfer enzyme (E2), and ubiquitin ligase (E3). 9000 target proteins and 60,000 ubiquitination sites are currently described.

The main sites for Ub - M1, K6, K11, K27, are needed to signal the cell for an adequate response: proteolysis, autophagy, DNA repair, cell cycle control. Defects or deficiency of Ub cause the accumulation of unwanted proteins in cells, which can lead to the appearance and/or progression of neurodegenerative diseases, cancer, muscle atrophy, immune deficiencies, etc.

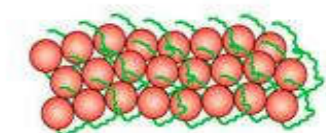
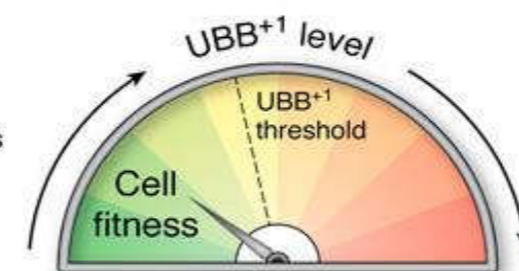
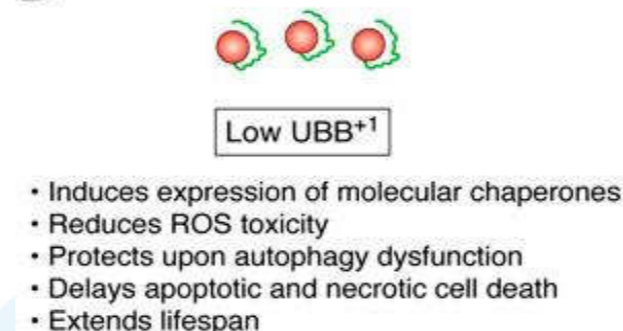
Conclusions: The quality of the structure, functions and properties of human cells are determined by signaling systems, including the Ub system. Scientific studies demonstrate the therapeutic efficacy of recombinant Ub proteins in hematological malignancies, cancer, Alzheimer's disease, hypothalamic neurodegeneration.



Keywords: ubiquitin, UBB gene, members of the ubiquitin system, ubiquitination.

Purpose: Understanding the role of Ub in labeling unwanted cellular proteins and their role in human pathology.

B



High UBB⁺1

- Impairs proteasome capacity
- Affects ubiquitin signaling
- Induces protein aggregation
- Impairs mitochondria function
- Increases ROS toxicity/cell death