

# Mitochondrial signaling proteins are involved in bystander response induced following chemical and physical genotoxic stress

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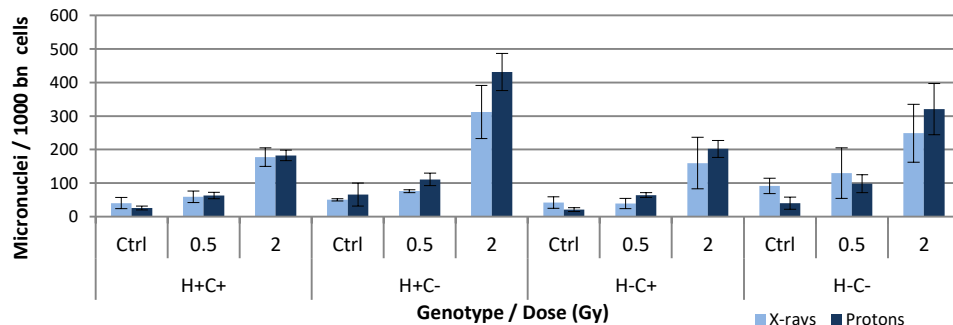
Few very recent studies are focused on connection of mitochondrial pathways with DNA damage response (DDR). HtrA2 is a mitochondrial serine-protease that induces expression of transcription factor CHOP, leading to upregulation of components of the integrated stress response.

Damaged cells send intercellular molecular signals to their neighbor cells that respond through a signaling process that lead to bystander effects.

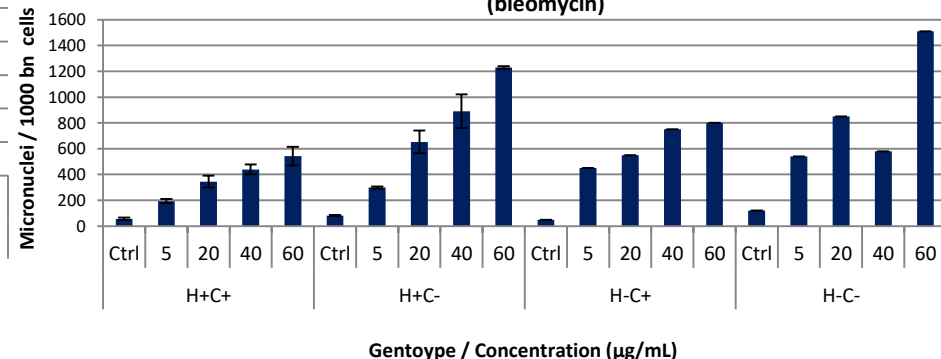
**Materials and methods:** Cell culture – Mouse Embryonic Fibroblasts (MEF) obtained from mice with normal expression of HtrA2 and CHOP (H+C+), from KO for HtrA1 (H-C+), CHOP (H+C-) or from double KO mice (H-C-). Genotoxic stress: ionizing radiation – X-ray; proton beam; chemotherapeutic agent bleomycin. Bystander induction: media transfer method. DNA damage induction analysis– Cytokinesis Block Micronuclei Assay.

**Aim: Evaluation of mitochondria-nucleus implication in bystander response following various types of genotoxic stress.**

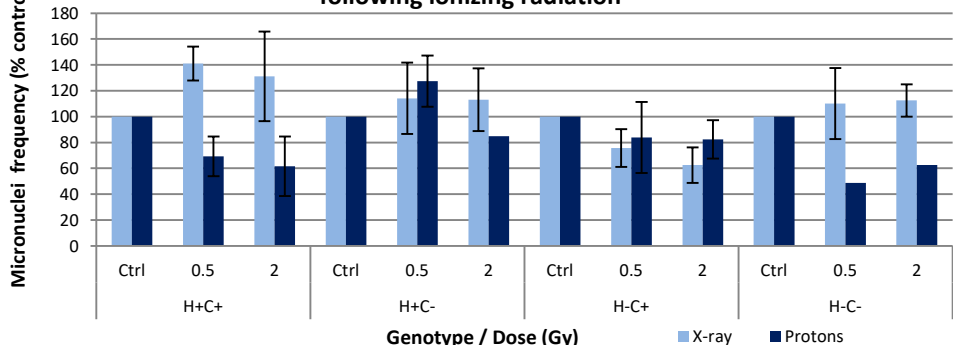
**Mitochondrial signaling proteins influence sensitivity to ionizing radiation**



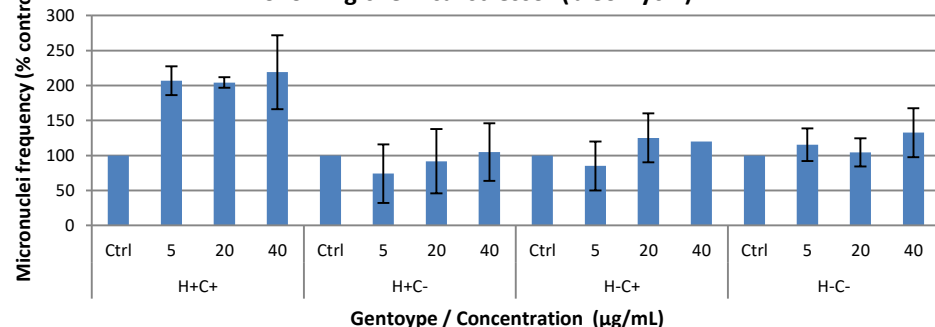
**Mitochondrial signaling proteins influence sensitivity to chemical stressors (bleomycin)**



**Mitochondrial signaling proteins influence bystander response following ionizing radiation**



**Mitochondrial signaling proteins influence bystander response following chemical stressor (bleomycin)**



**Conclusion: Mitochondrial signaling pathways of HtrA2/CHOP are involved in DDR and response to bystander signaling following exposure to physical and chemical genotoxic stress.**