Paper ID: 16613
student

SPACE LIFE SCIENCES SYMPOSIUM (A1)
Poster Session (P)

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# TRANSCRIPTION FACTOR ACTIVATION IN HUMAN CELLS EXPOSED TO SPACE RELATED IONIZING RADIATION

**Abstract**

Radiation is a potentially limiting factor for long term orbital and interplanetary missions. The exposure of astronauts to space radiation differs in quality and quantity compared to other occupationally exposed radiation workers. For better risk estimation and development of appropriate countermeasures, the study of the cellular radiation response is necessary. Exposure of human cells to ionizing radiation 91-272 keV/$\mu$m provoked active cellular responses such as cell cycle arrest, DNA repair and apoptosis. These responses rely on gene expression changes. Experiments in this study have shown up-regulation of several target genes of the important NF-$\kappa$B and p53 stress response pathways. In this work, activation of transcription factors NF-$\kappa$B after exposure of human cells to ionizing radiation (X-rays, heavy ions; space conditions) are studied comprehensively.