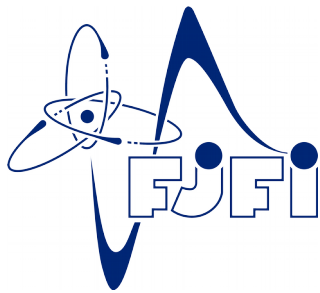
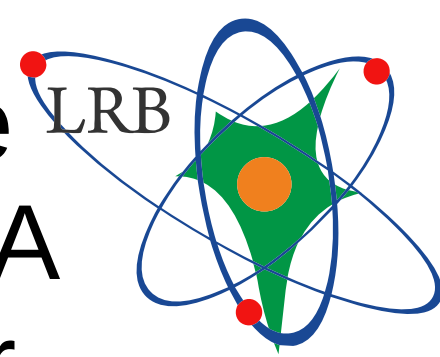




Detection and study of the formation and repair of DNA double-strand breaks after irradiation



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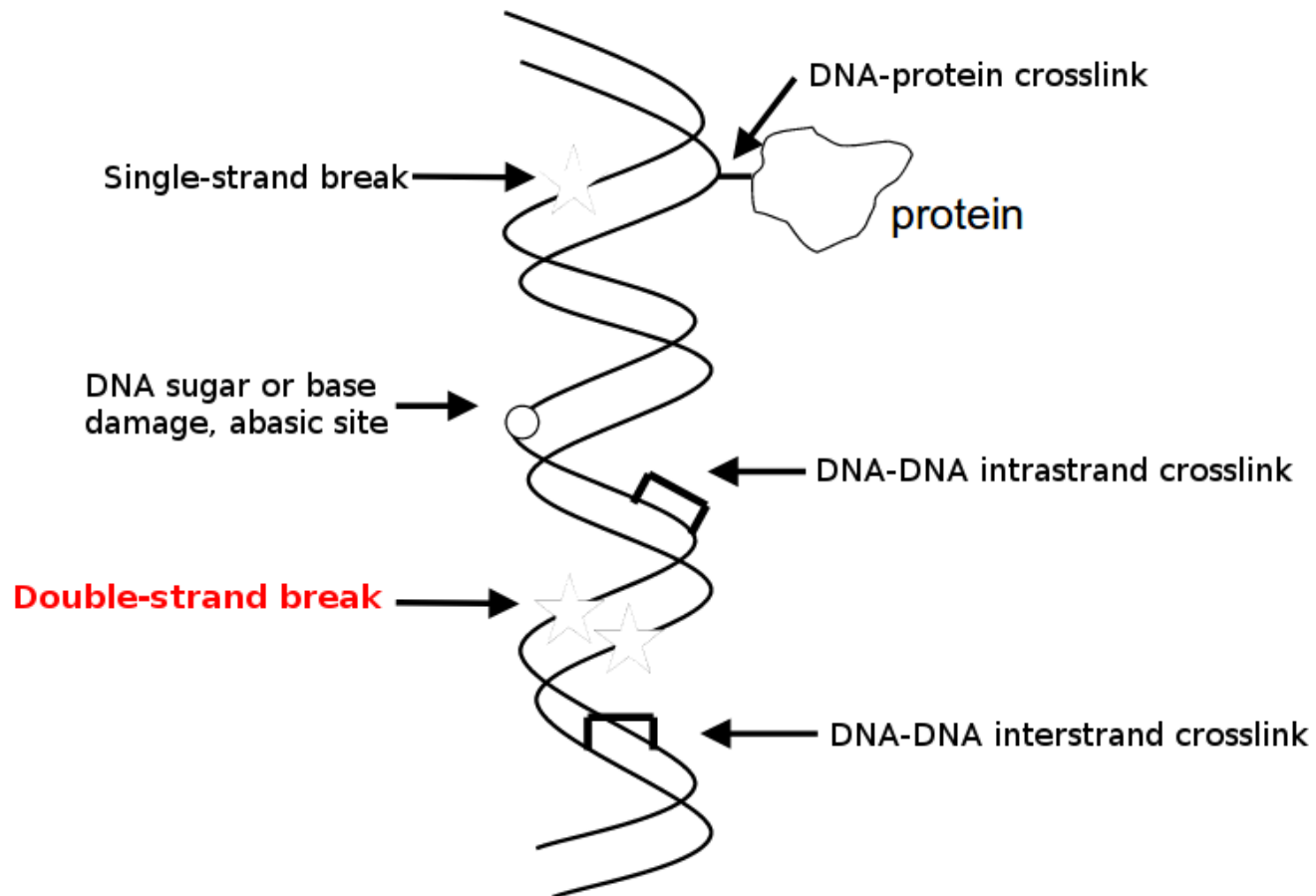
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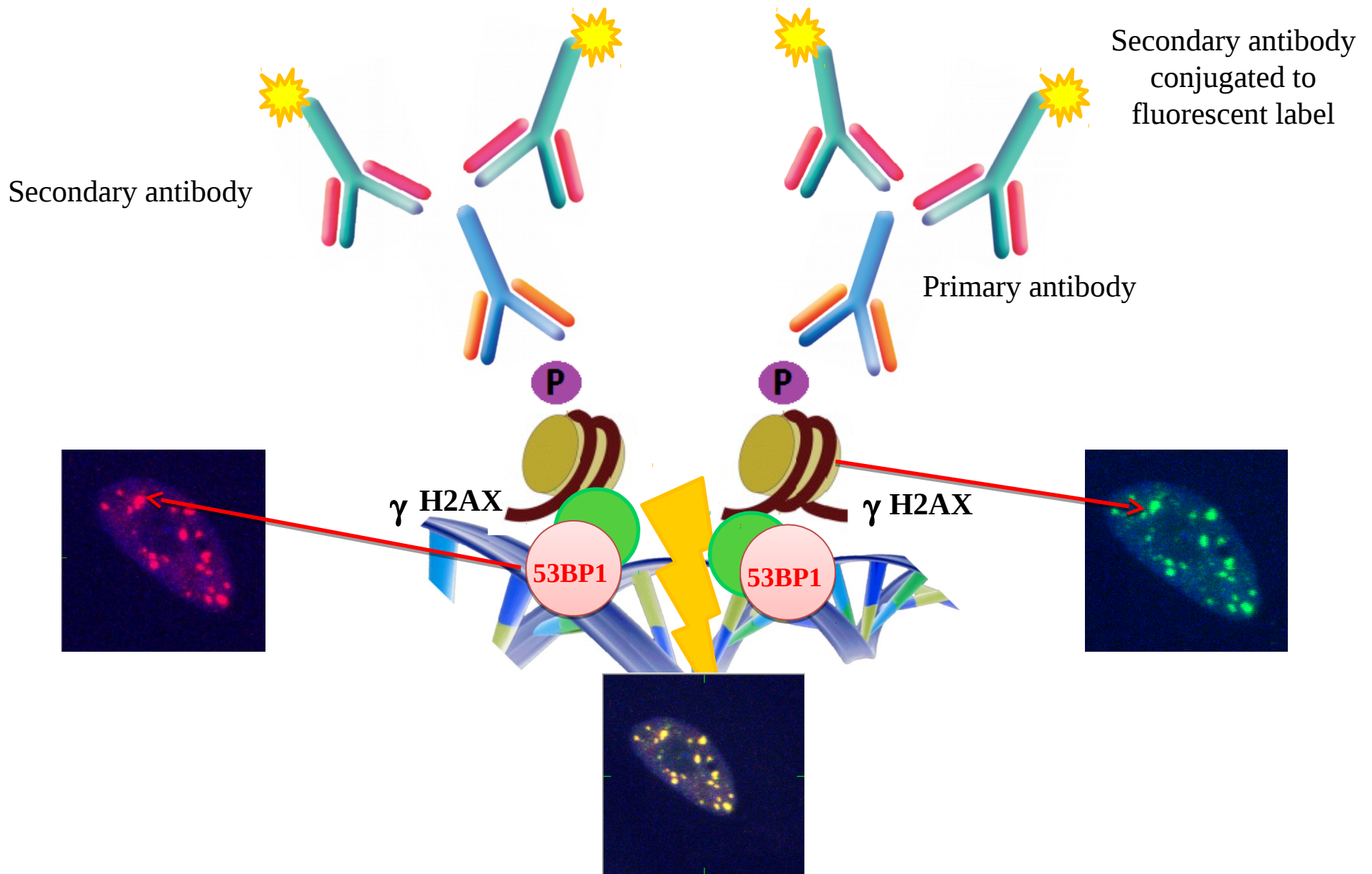


Introduction



Double-strand break is the most deleterious DNA damage and the most difficult to repair.

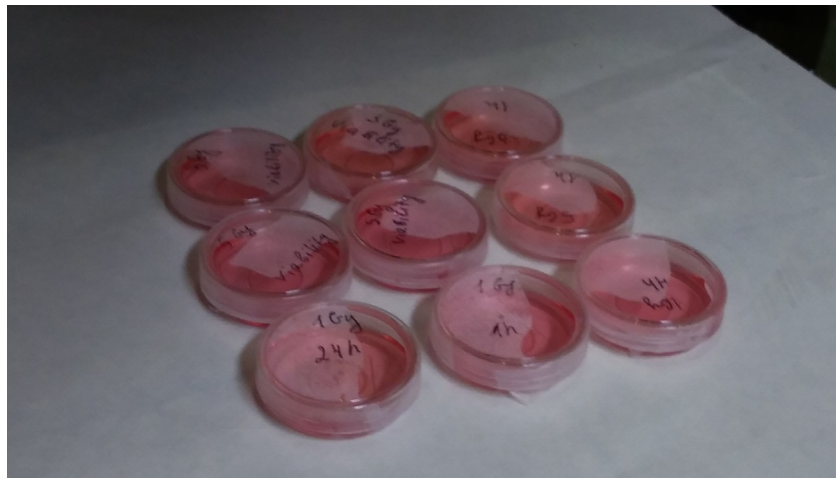
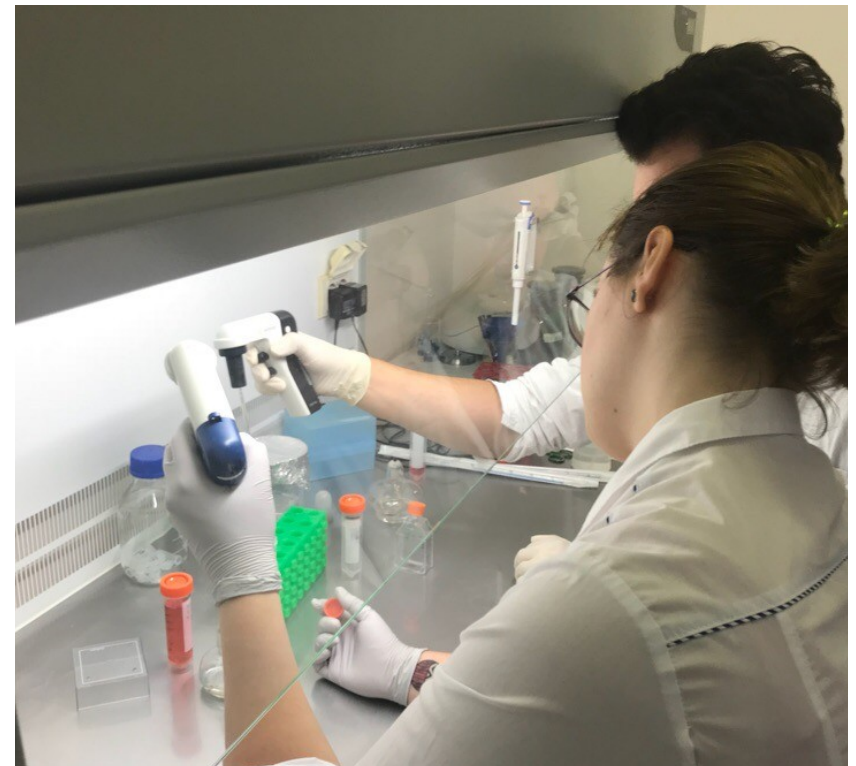
Detection of DNA double-strand breaks (DSB)





Methodology

- Subculturing
 - Prolongation of life and expansion of the number of cells in the culture
- Irradiation
 - ^{60}Co γ -rays teletherapy unit Rocus-M
 - Dose rate=0,6 Gy/min, LET=0,3 keV/ μm , E=1,25 MeV



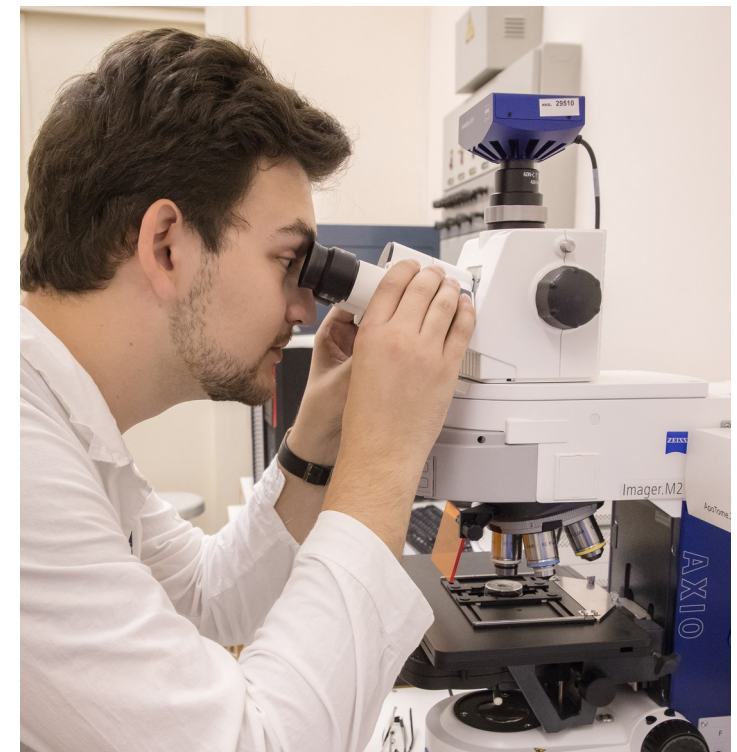
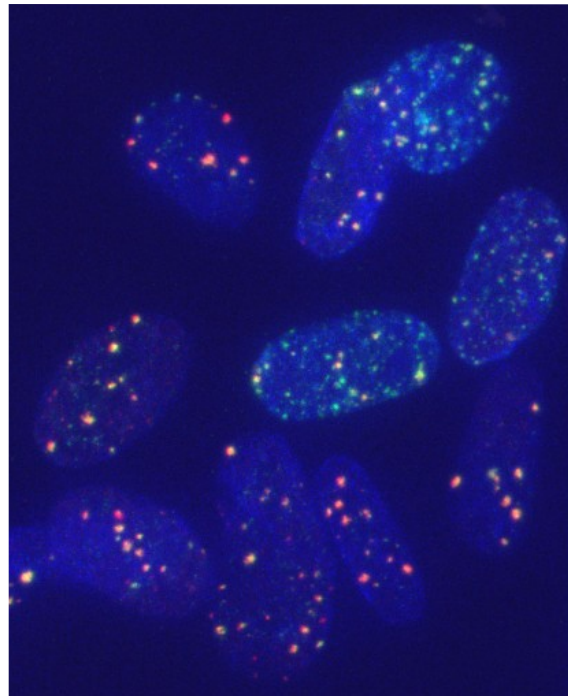
Methodology

- Fixation of the cells

Irradiation dose	Time post-irradiation		
	1 h	4 h	24 h
1 Gy	☺	☺	☺
3 Gy	☺		
5 Gy	☺		

- Microscopy

- Fluorescent imaging of cell nuclei with AxioImager M2

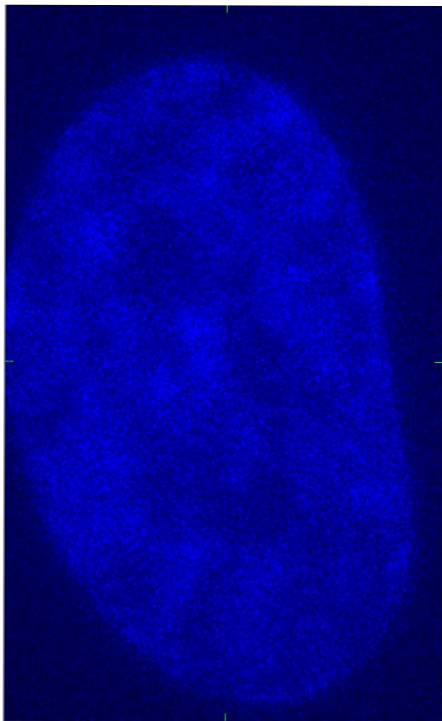




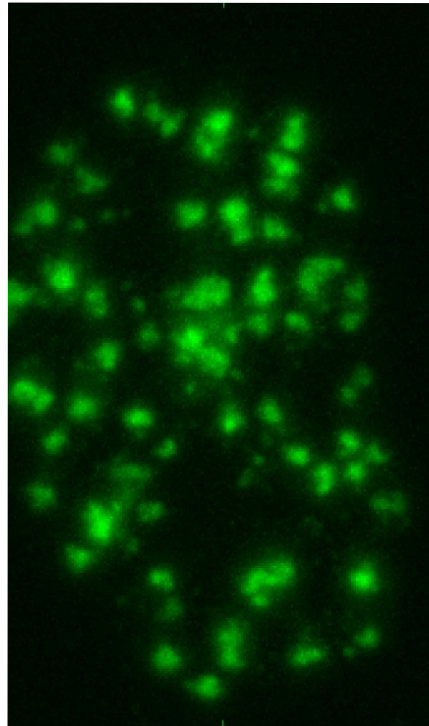
Methodology

- Counting of foci
 - Counting of colocalized γ H2AX/53BP1 foci

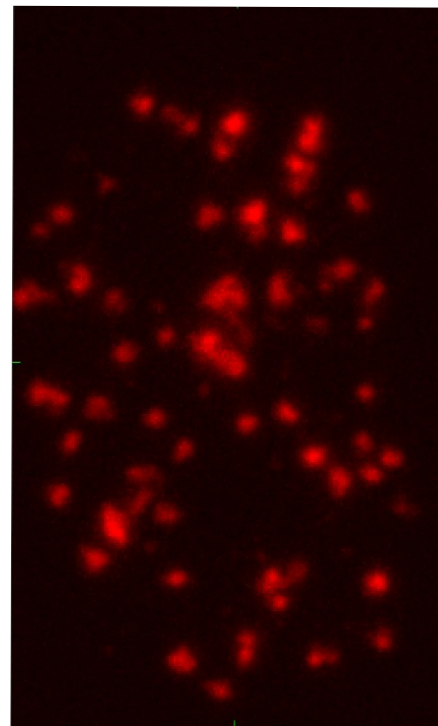
DAPI



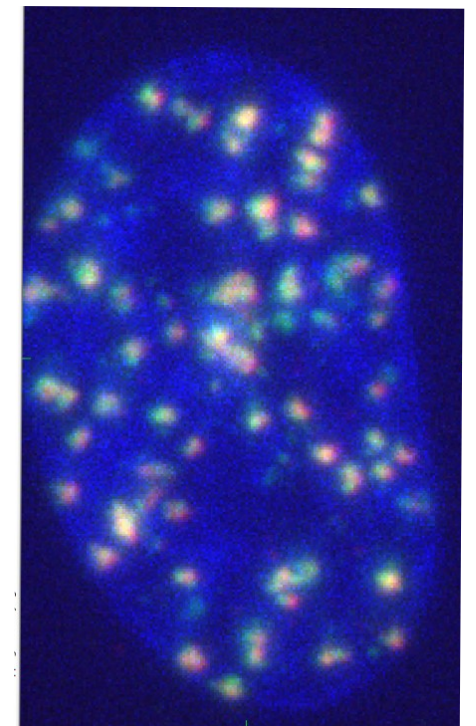
γ H2AX



53BP1

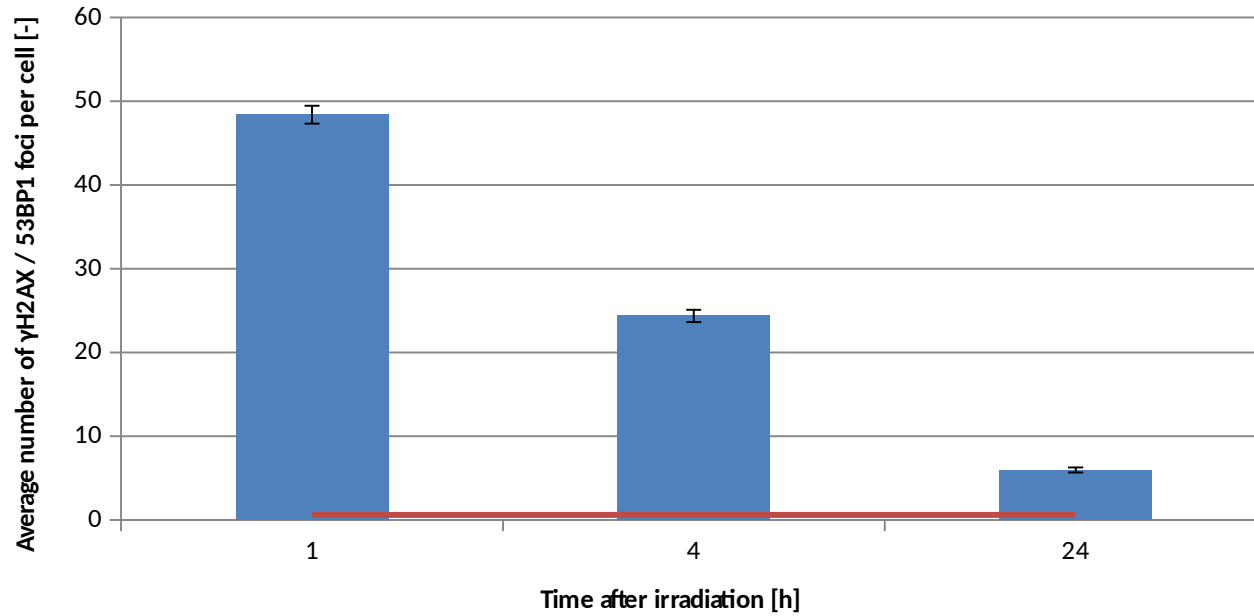


Merge



Results

Repair kinetics

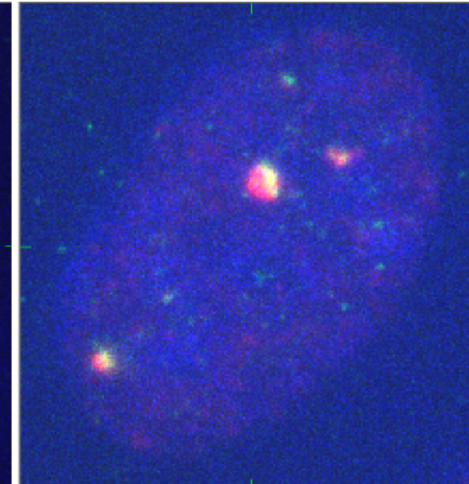
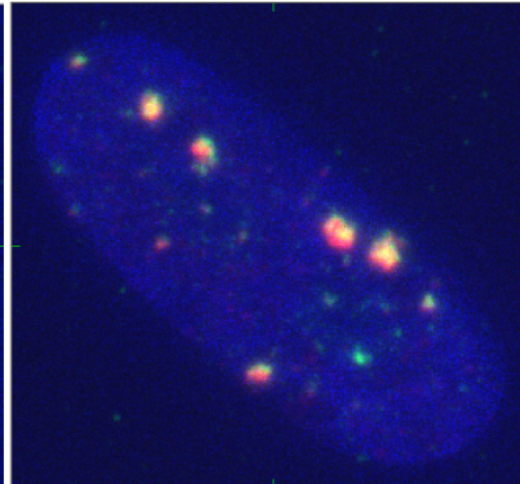
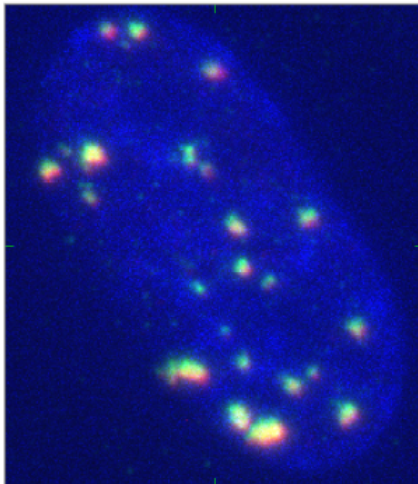


1 Gy

1 h

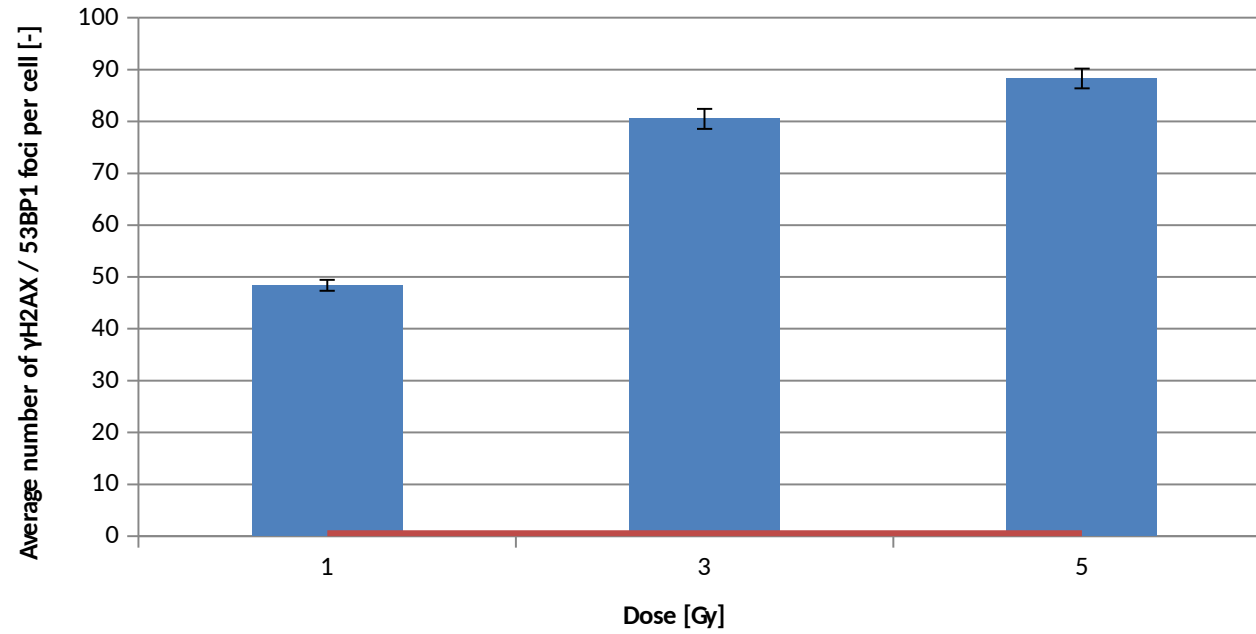
4 h

24 h



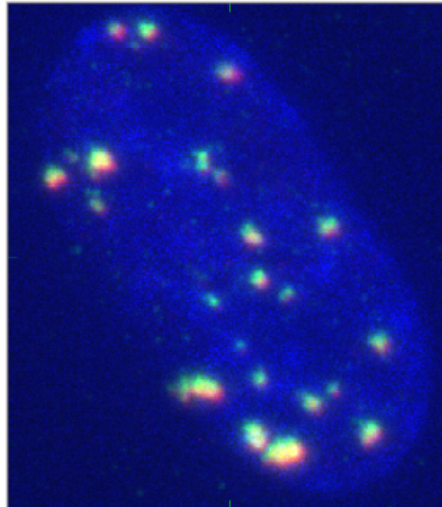
Results

Dose response

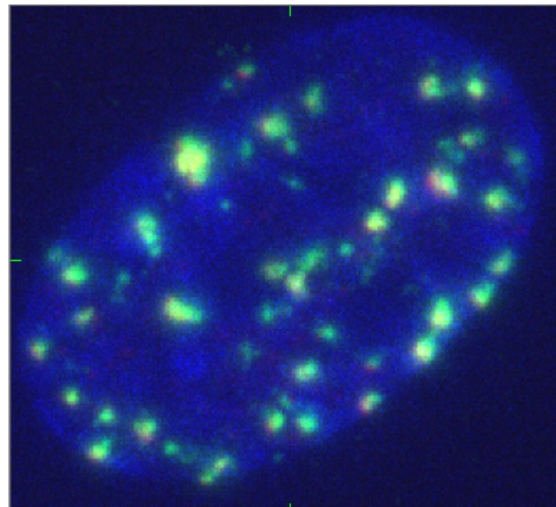


1 hour

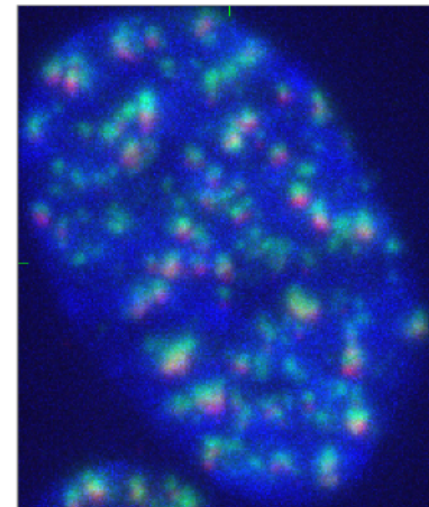
1 Gy



3 Gy



5 Gy





Conclusions

- Repair kinetics
 - The maximum number of γ H2AX / 53BP1 foci was observed 1 h after γ -irradiation with 1 Gy
 - The number of foci decreases with the time after irradiation
 - The results demonstrate efficient repair of DNA DSBs in human fibroblasts after irradiation with 1 Gy of ^{60}Co γ -rays
- Dose dependence
 - The number of γ H2AX / 53BP1 foci increases with irradiation dose



Thank you for your attention! 😊

