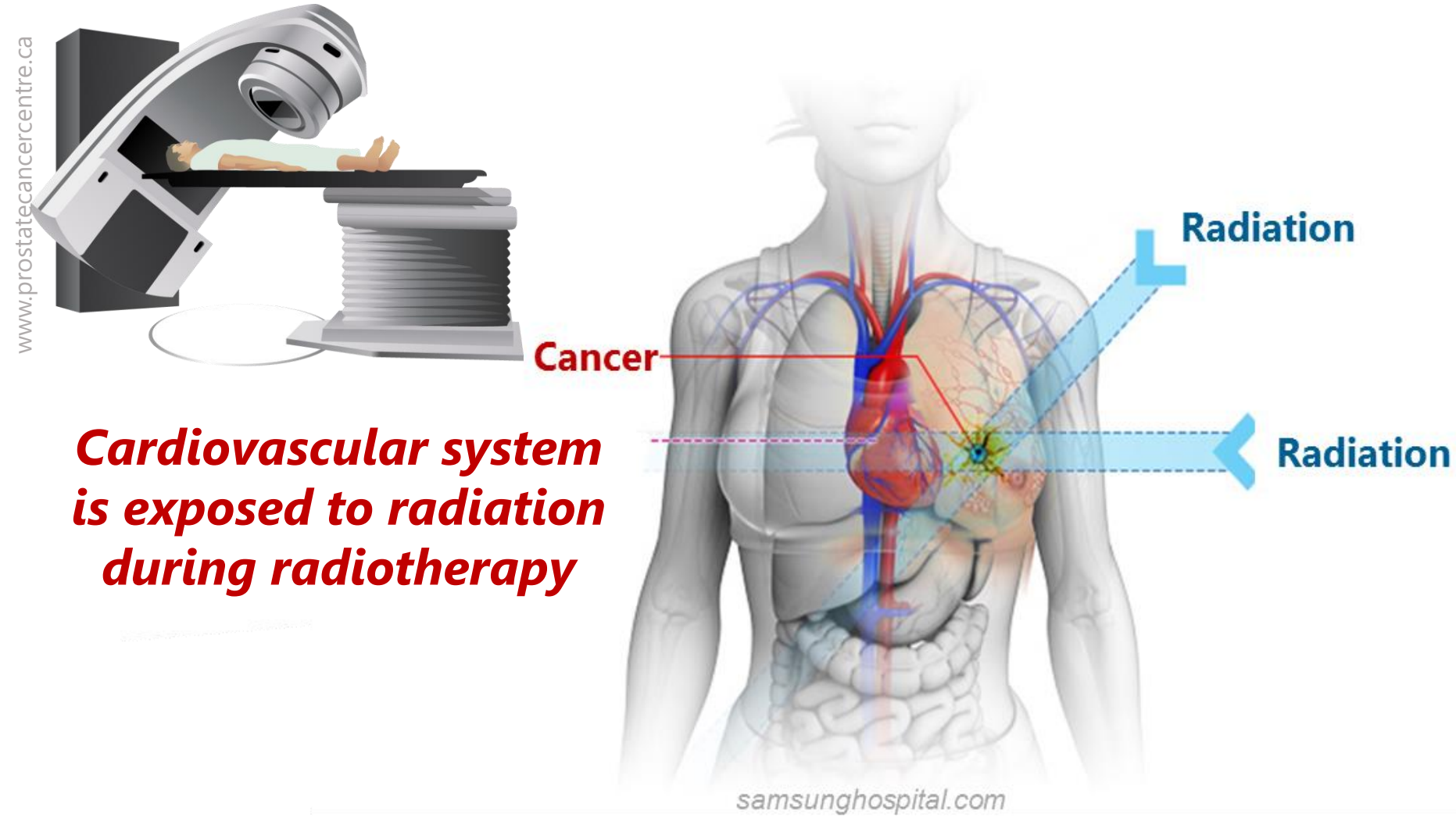
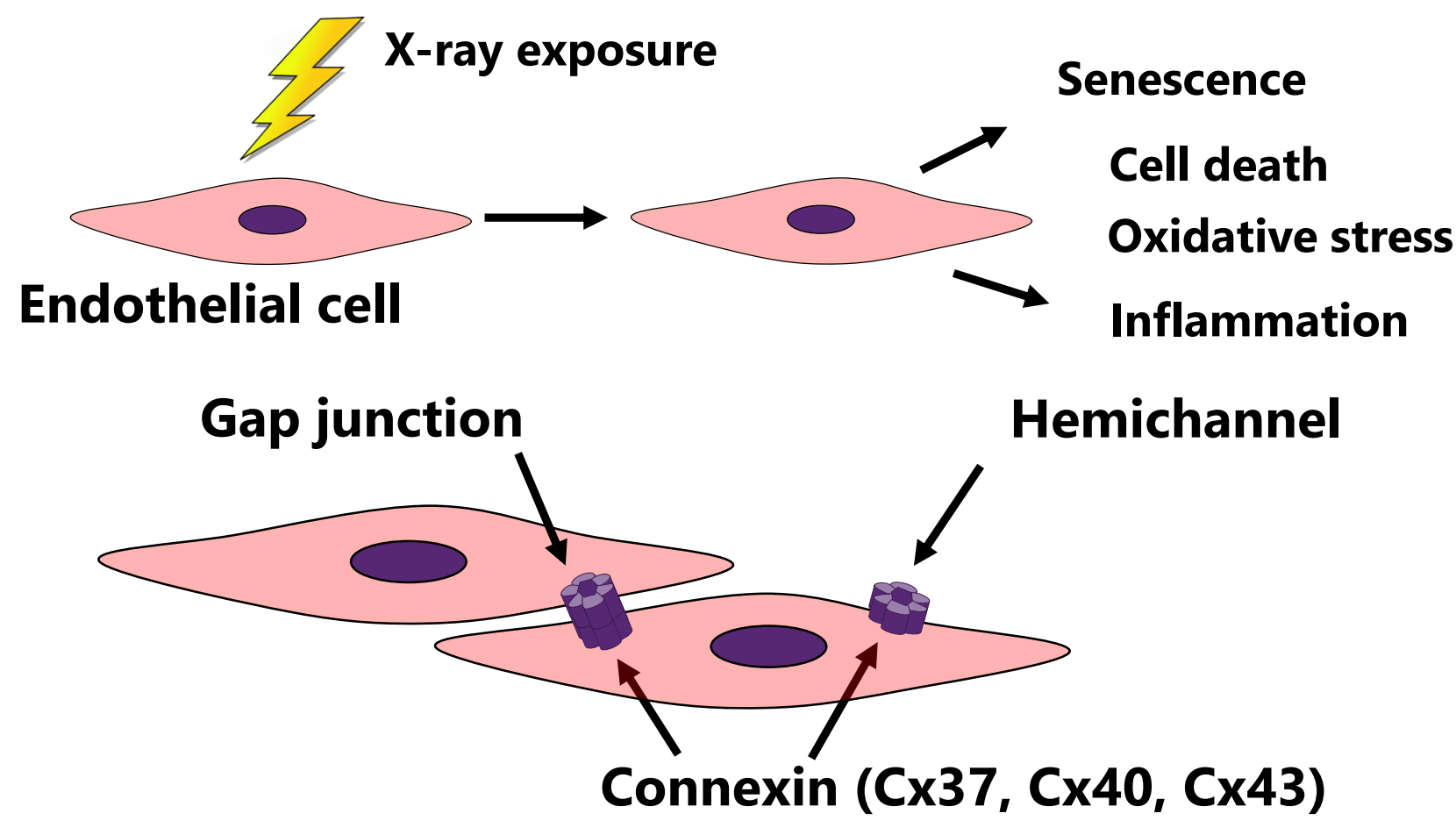


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## Introduction



**Radiotherapy** for breast cancer has increased the risk for secondary heart diseases, such as **atherosclerosis**, as it contributes to a **dysfunctional endothelium**



**Intercellular communication** mediated by **gap junctions** and **hemichannels**, composed of **connexin** proteins, can play a role in radiation-induced **endothelial dysfunction**, and therefore the **atherosclerotic process**

## Objectives

Investigate the potential protective effects of blocking connexin43 on radiation-induced damage in endothelial cells.

Process of radioprotective development



Understanding molecular mechanisms

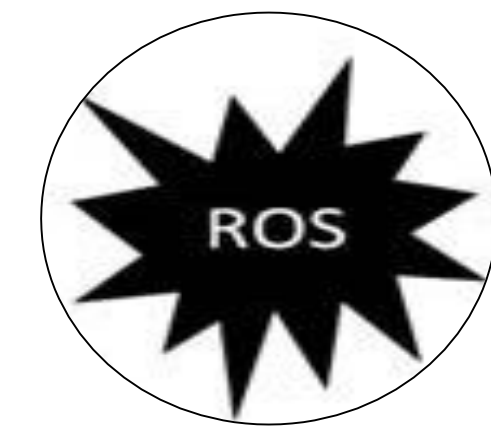
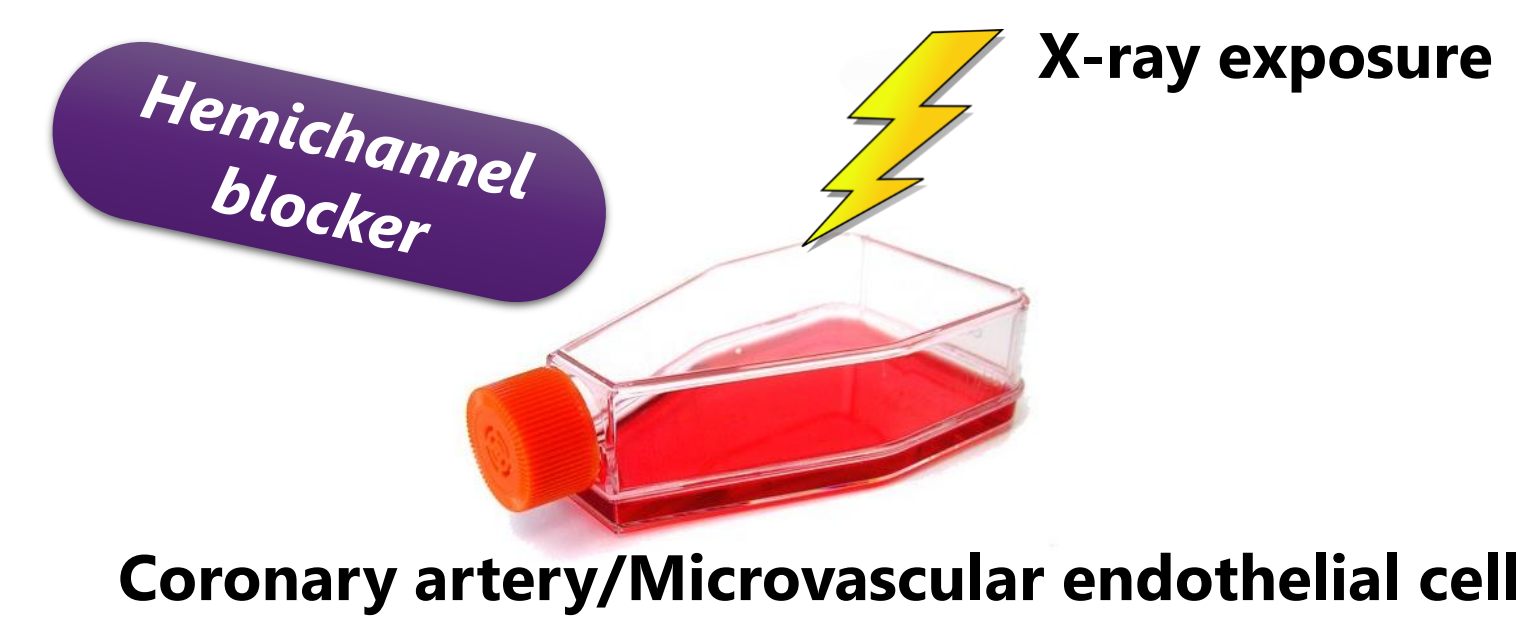


Identifying potential therapeutic targets

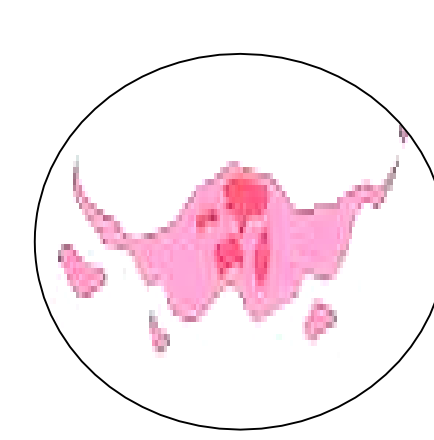


Developing drugs (Radioprotectants)

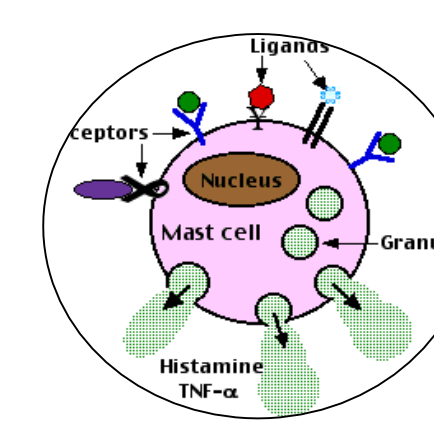
## Methods



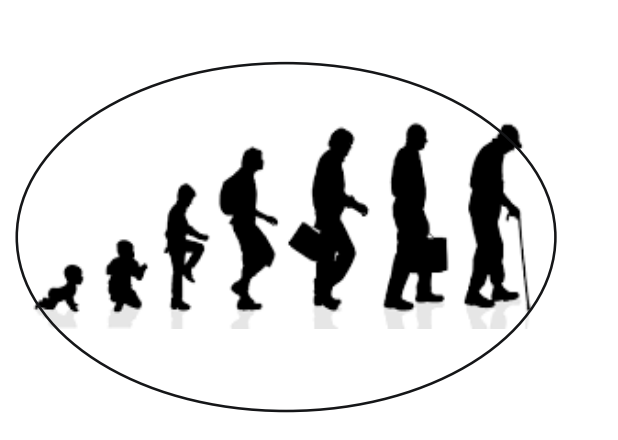
Oxidative stress



Cell death



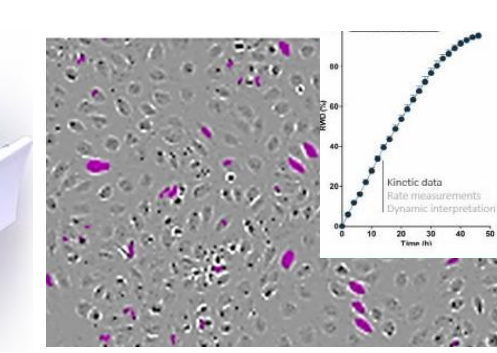
Inflammation



Senescence



Live cell imaging

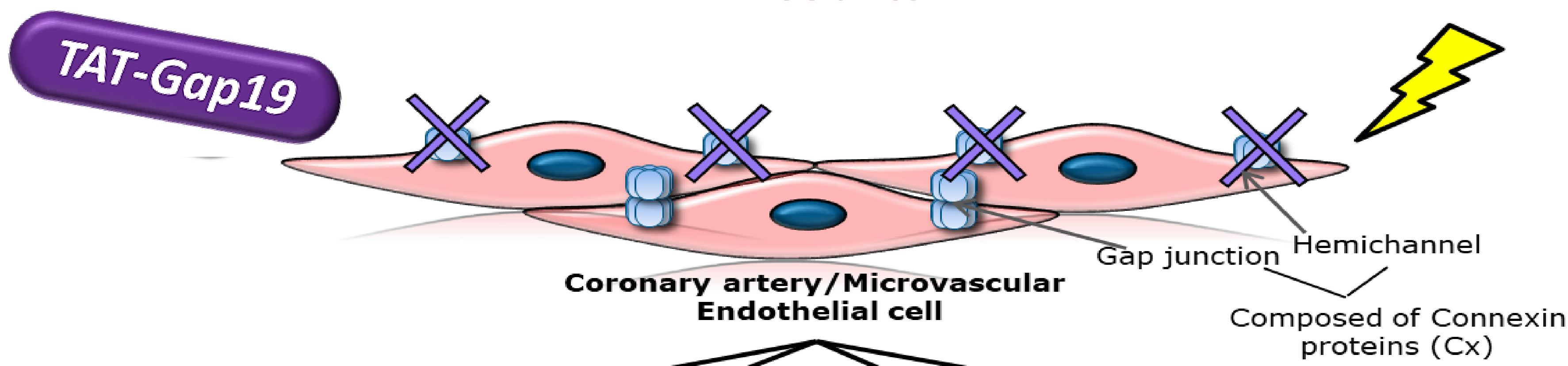


Multiplex assay (15 markers)

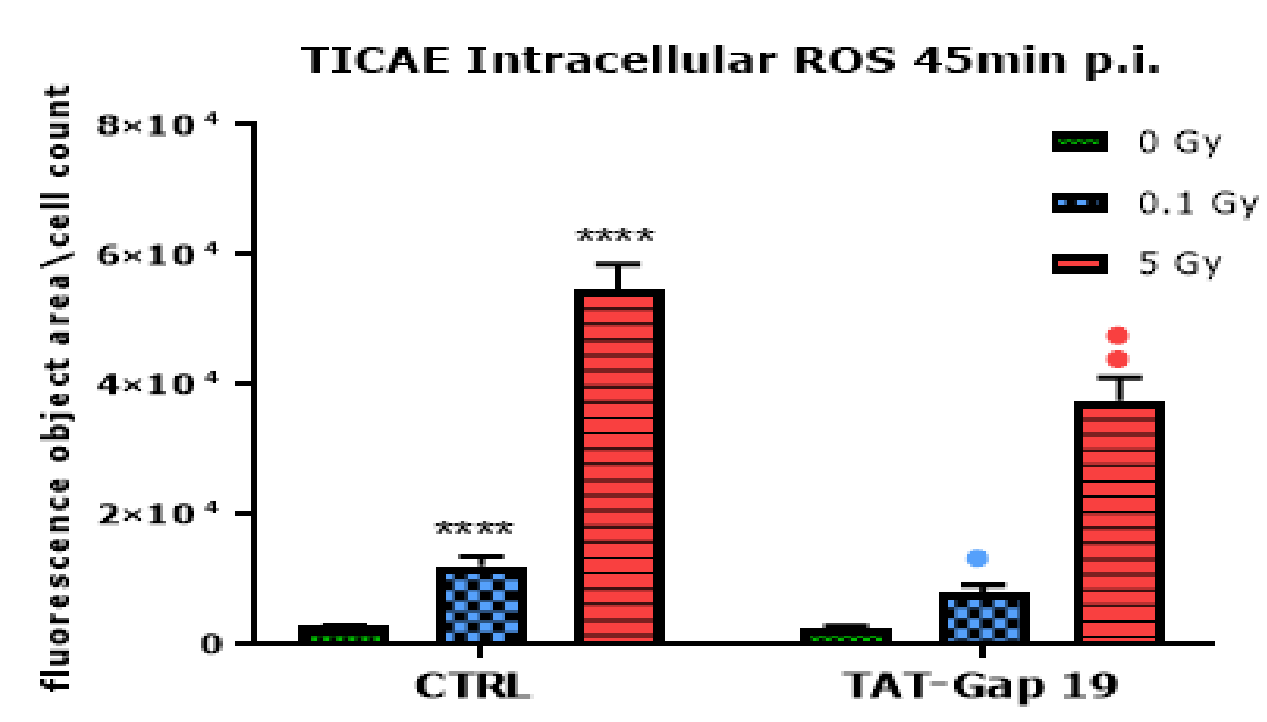


CPRG assay

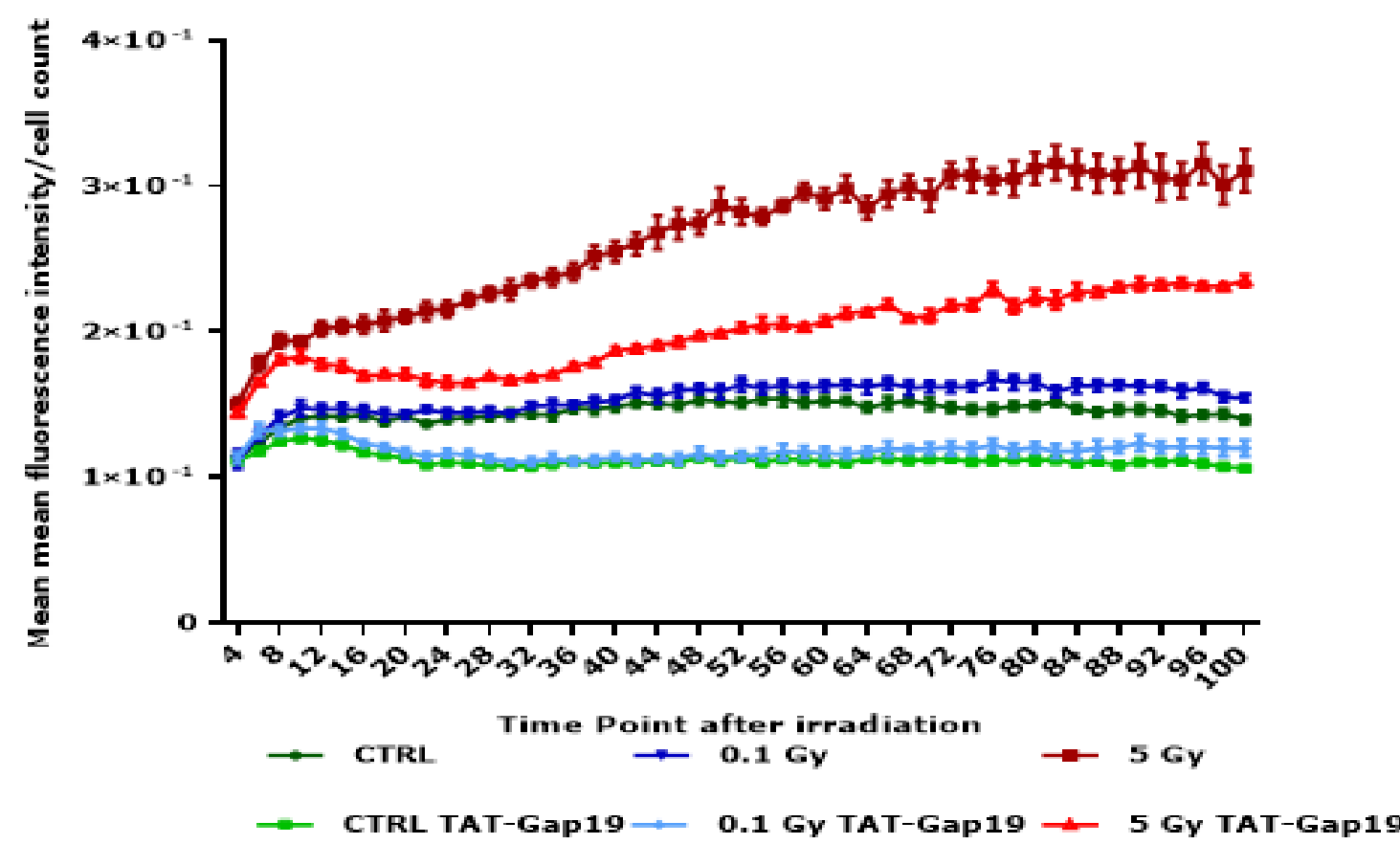
## Results



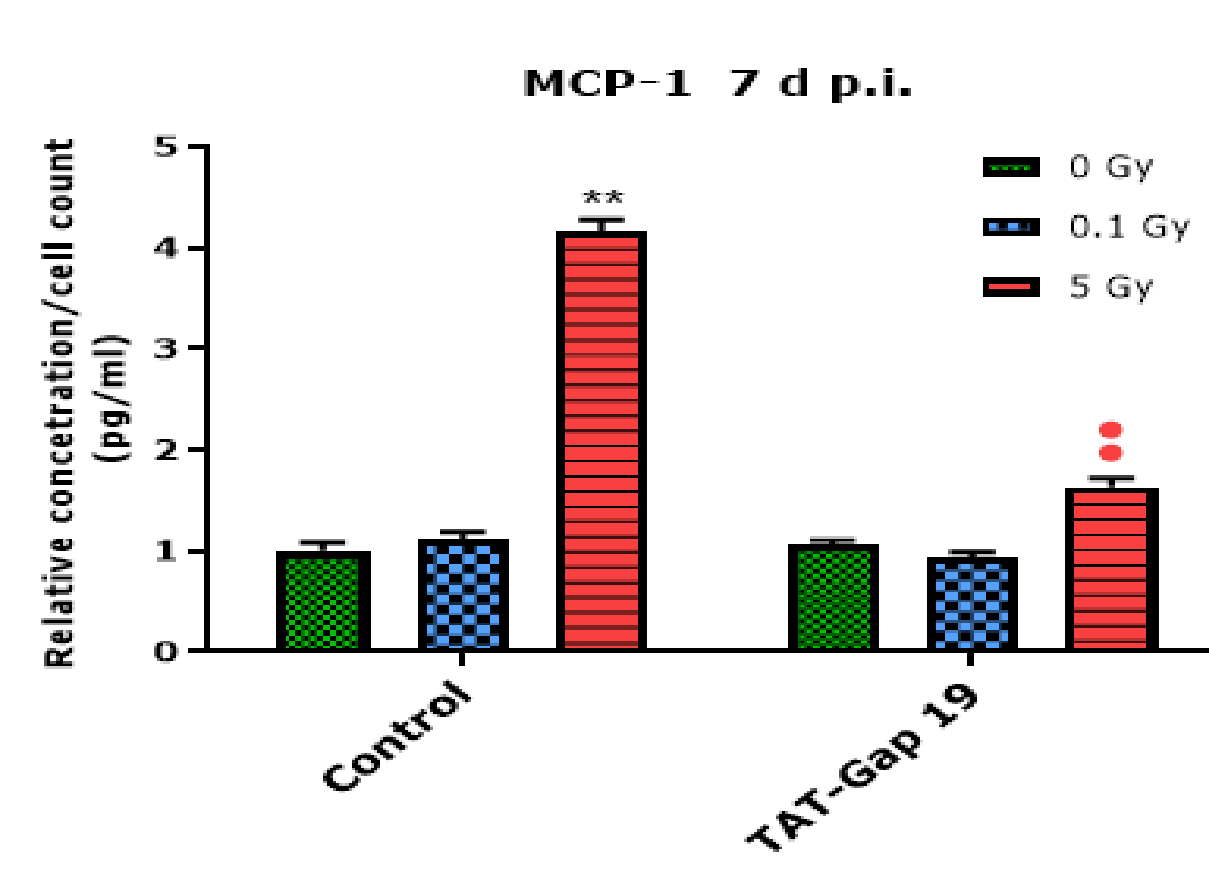
### Oxidative stress



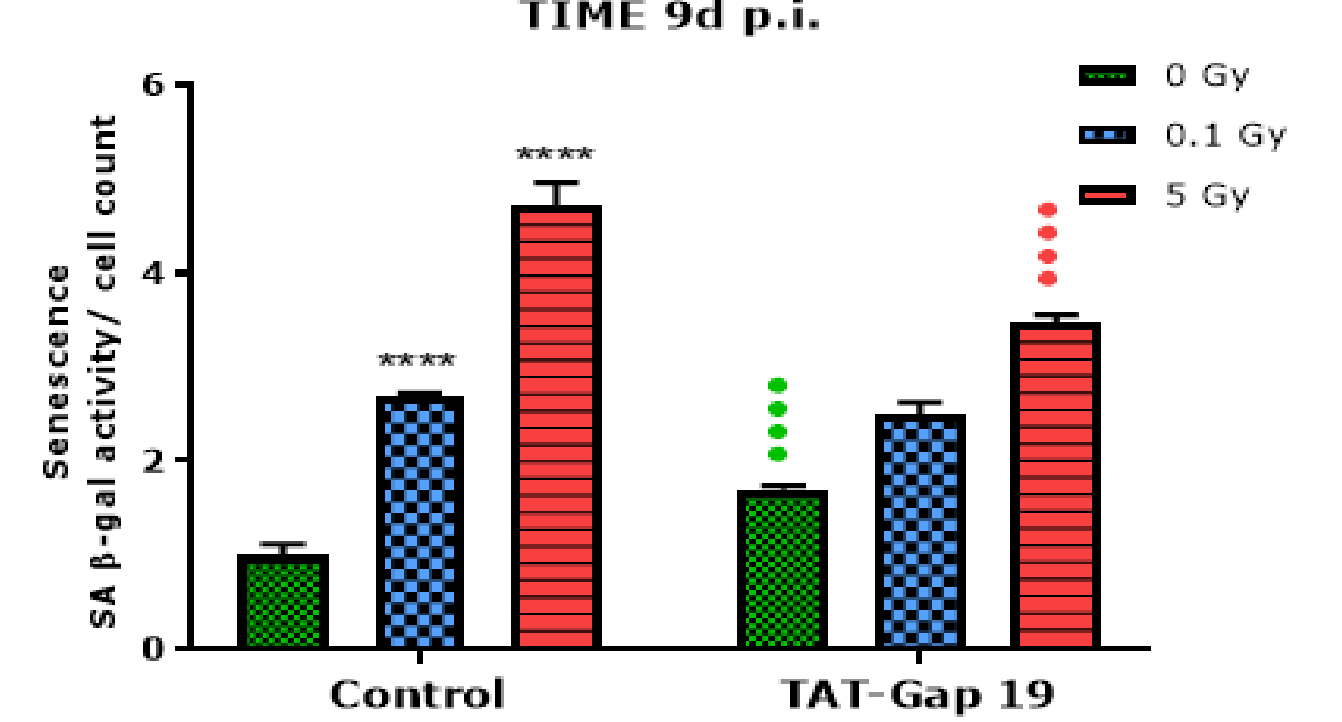
### Cell death



### Inflammation



### Senescence



↓ Risk of endothelial cell damage → ↓ Risk of Radiation-induced atherosclerosis

## Conclusion

- ❖ This is the first study to show that blocking Cx43 hemichannel could protect endothelial cells from damage after exposure to low and high doses of X-rays.
- ❖ Therefore, targeting Cx43 hemichannels holds potential to therapeutically protect against radiation-induced atherosclerosis in radiotherapy treated patients.

## Valorization

- ❖ A patent has been filed for Cx43 hemichannel as a novel radioprotective therapeutic target for healthy tissue.
- ❖ This may help to develop a radioprotective drug in the future to protect radiotherapy treated patients against atherosclerosis.