



# Matsumoto Laboratory

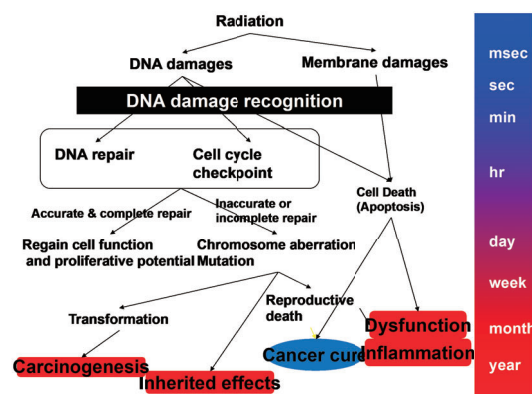
## Radiation Biology and Medicine based on Molecular and Cellular Biology

Laboratory for Zero-Carbon Energy

<http://www.zc.iir.titech.ac.jp/~yoshim>

- Molecular mechanisms of DNA damage response and repair
- Application for the prediction and control of radiosensitivity
- Low dose and low dose rate radiation effects for radioprotection
- Effects of radiation on stem cells (incl. iPS cells)

Various radiation effects, such as cancer, infertility and malformation, are thought to be caused by DNA damage. We seek to elucidate the molecular mechanisms of recognition of and response to DNA damage, employing cutting edge technologies in molecular biology and biochemistry. We also seek to apply the outcomes of this research to the prediction and control of individual radiosensitivity and to contribute to personalized radioprotection and radiotherapy in the next generation.

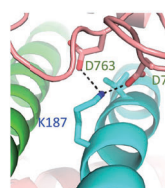
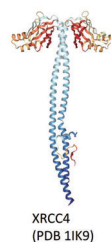


Scheme for radiation effects

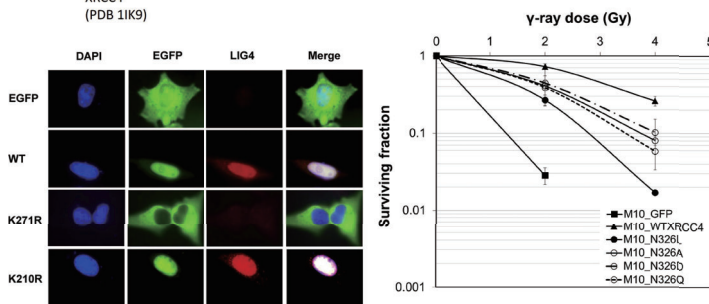


### Experimental set-up

Our laboratory is equipped with PCR, HPLC, centrifuge machine etc. for molecular biological experiments and with clean bench, CO<sub>2</sub> incubator and fluorescent microscope for cellular biological experiments.



	1	2	3	4	5	6	7	8
NU7441	-	-	+	-	-	+	+	+
KU55933	-	-	-	+	-	+	+	+
γ-ray	-	+	+	-	-	+	+	+



### Examples of experiments

- Structural analysis of protein interaction in DNA repair
- Analysis of posttranslational modification in DNA damage response
- Spatio-temporal dynamics of DNA damage related proteins
- Measurement of radiosensitivity of cells harboring mutations on a DNA repair gene