



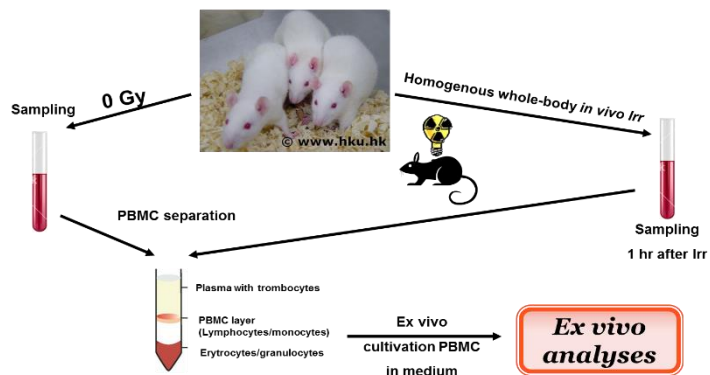
# Ex vivo experimental model in biodosimetry

Lenka ANDREJSOVÁ (lenka.andrejsova@unob.cz), Jana ČÍŽKOVÁ, Alžběta FILIPOVÁ and Zuzana ŠINKOROVÁ  
 Department of Radiobiology, Faculty of Military Health Sciences, University of Defence, Hradec Králové, CR



**BIODOSIMETRY is a subdiscipline of radiobiology.**  
**Its aim is a quantification of the absorbed dose of ionizing radiation according to detection of postradiation changes in the irradiated organism.**

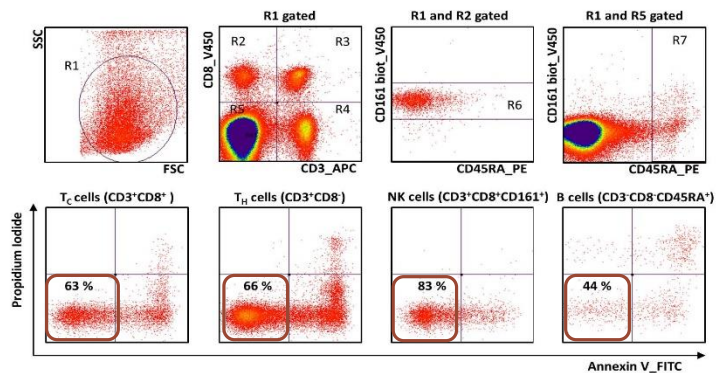
## Wistar Rat *Rattus sp.* strain Wistar



Antibody against	Clone	Fluoro-chrome	Specificity to
CD45RA	1F4	PE	B-lymphocytes
CD8	OX-8	V450	MHC-I restricted T-cells (suppressor/cytotoxic T-cells), NK cells, activated CD4 <sup>+</sup> T helpers
CD3	1F4	APC	T-lymphocytes
CD161	NKR-P1A	V500	NK cells, small T-lymphocyte subset
Annexin V		FITC	Apoptotic and dead cells
Propidium iodide			Dead cells

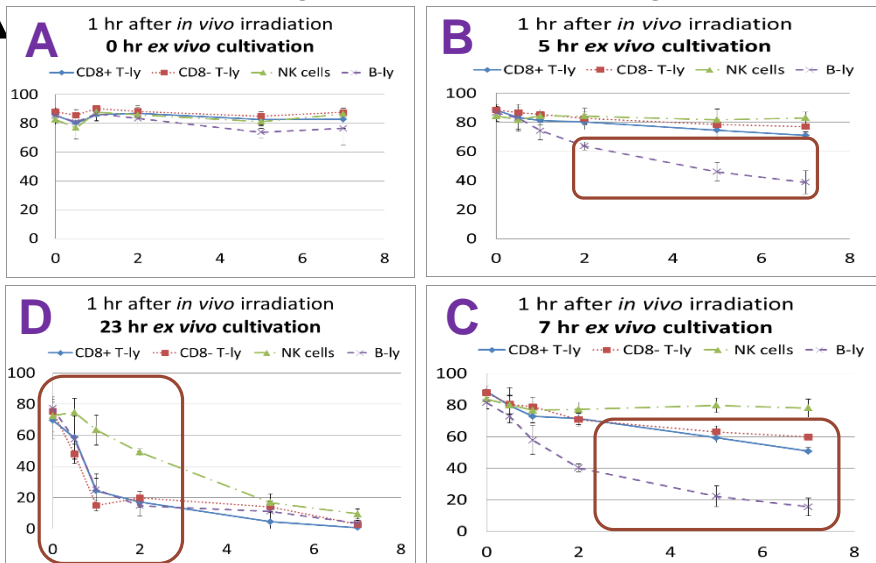
Six Wistar rats per group were *in vivo* whole-body exposed to homogeneous ionizing irradiation (IRR) of 0 - 7 Gy (dose rate 0.48 Gy/min) from a distance of 1 m. Peripheral blood (5 - 7 ml) of each animal was collected 1 hour or 4 hours after exposition. Non-irradiated animals were served as controls. Peripheral blood mononuclear cells (PBMC) were isolated by centrifugation through a Ficoll Histopaque 1077 cushion according to the manufacturer instructions and washed in Iscove's Modified Dulbecco's Medium.

Finally, the suspension density of  $1 \times 10^6$  PBMC in 1ml of IMDM was prepared and cultivated in cultivation plates 1hr, 3 hrs, 5 hrs, 7 hrs, and 23 hrs, respectively, under specific *ex vivo* conditions (37°C, 5% CO<sub>2</sub>). The representations of viable (non-apoptotic) lymphocytes were detected by immunophenotyping and analyzed at Cyan ADP (DakoCytomation) analyzer.



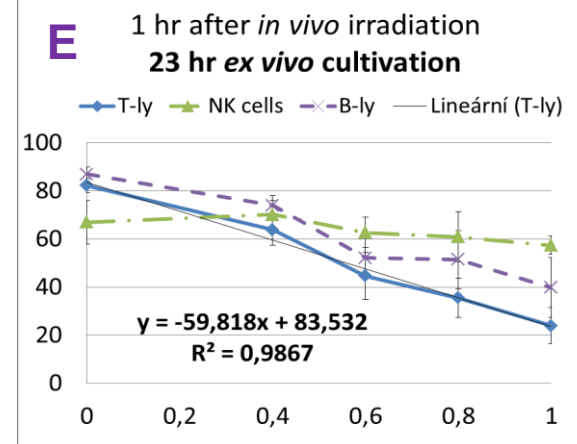
## RESULTS I

### Acute irradiation by 0.5 - 1 - 2 - 5 and 7 Gy



## RESULTS II

### Low dose irradiation by 0.4 - 0.6 - 0.8 and 1 Gy



% of non-apoptotic (Ann V-PI-) cells

*In vivo* absorbed dose (Gy)