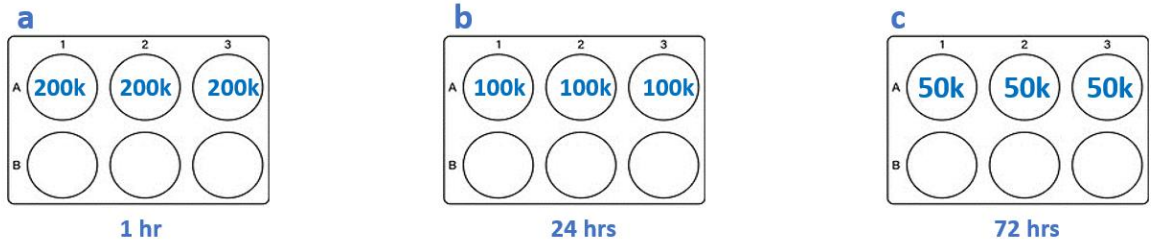
WP2 - Main aims

- *In vitro* evaluation of 111AgCl in-take on breast cancer cells through γ-counter and Lanthanum Bromo Chloride detector;
- Effect of 111AgCl administration on breast cancer cells proliferation and growth;
- Effect of 11AgCl administration on breast cancer cells DNA damage.

In-take evaluation Catania

on MDA-MB-231 cells

Test in-take→ y-counter + LBC
50KBq - 200-100-50k of cells/well - 3 Timepoint (1-24-72hrs)
- 3 replicates/condition

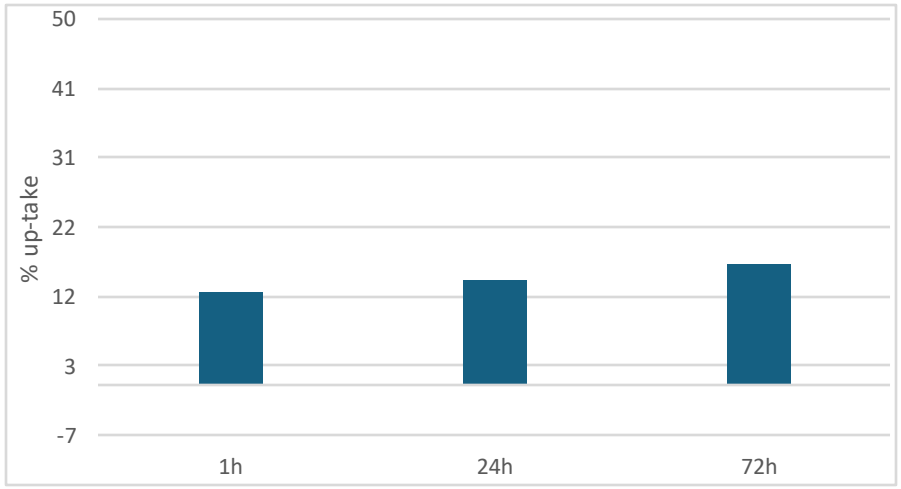


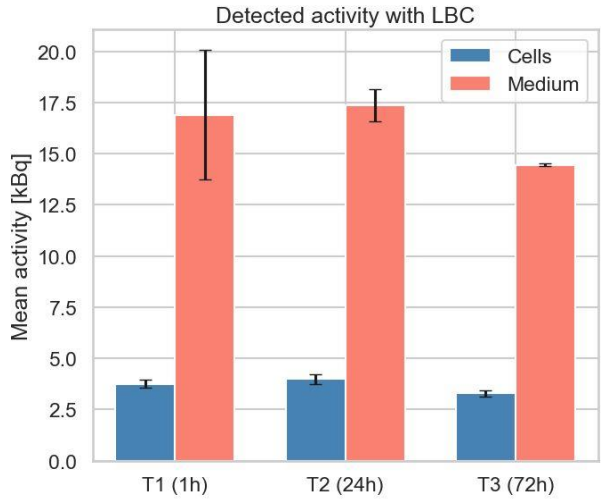
γ-COUNTER MEASUREMENT

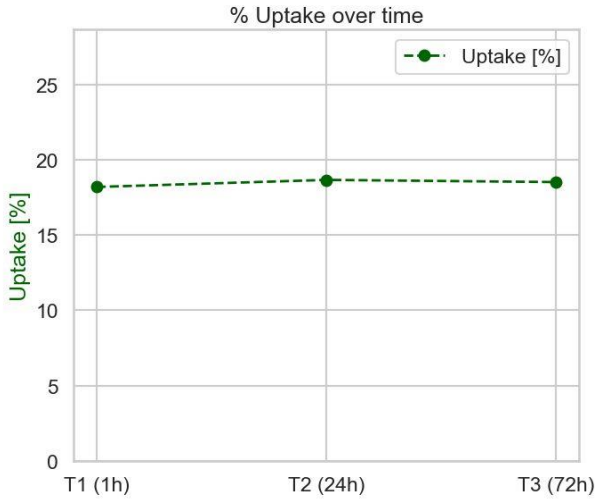
Plate	N° cells	Cell suspension Act. (Bq)	Supernatant Act. (Bq)	Total Act. (Bq)	% in-take
1 h	200k	5.469,00	37.597,67	43.066,67	**12,70**
24 h	100k	5.742,67	40.172,33	40.172,33	**14,30**
72 h	50 k	5.239,33	33.356,00	33.356,00	**16,31**

LBC MEASUREMENT

Plate	N° cells	Cell suspension Act. (kBq)	Supernatant Act. (kBq)	Total Act. (kBq)	% in-take
1 h	200k	3.76	16.89	20.65	**18,20**
24 h	100k	3.99	17.37	21.36	**18,70**
72 h	50 k	3.29	14.46	17.75	**18,50**







Clonogenic Assay - Catania

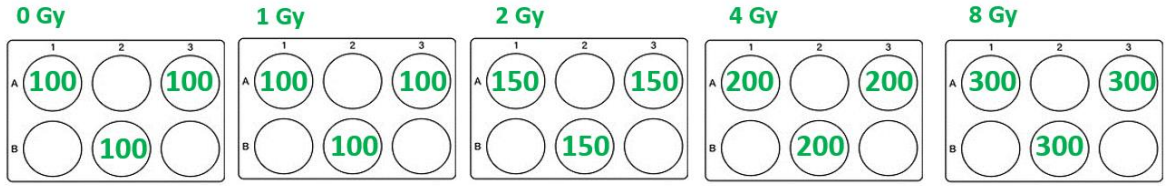
on MDA-MB-231 cells

DOSE/ACTIVITY	
D [Gy]	Ac (T1) [kBq/mL]
1	59,75
2	119,49
4	238,99
8	477,98

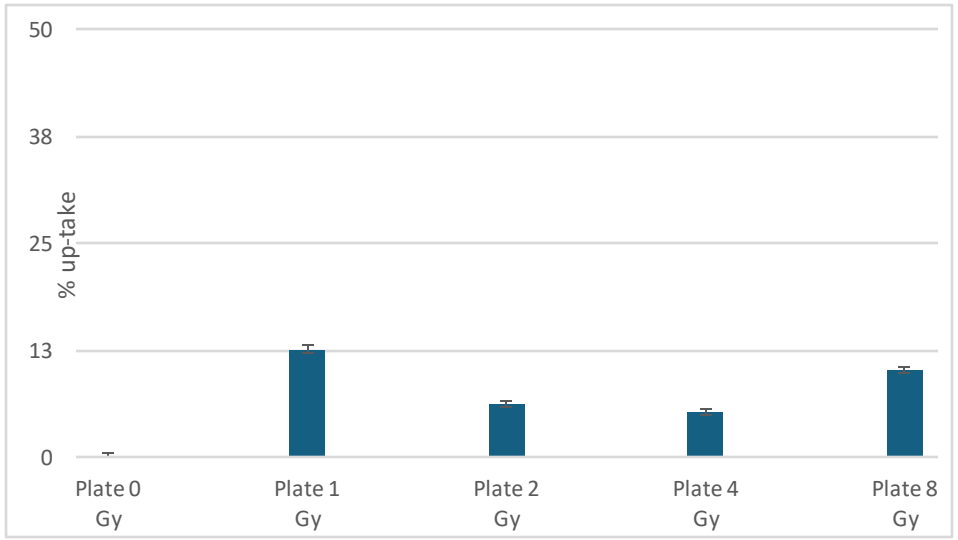
Clonogenic assay

0/1/2/4/8 Gy - 100-300 cells/well - 1 Timepoint (4 days)

- 3 replicates/condition



4 DAYS of 111Ag TREATMENT

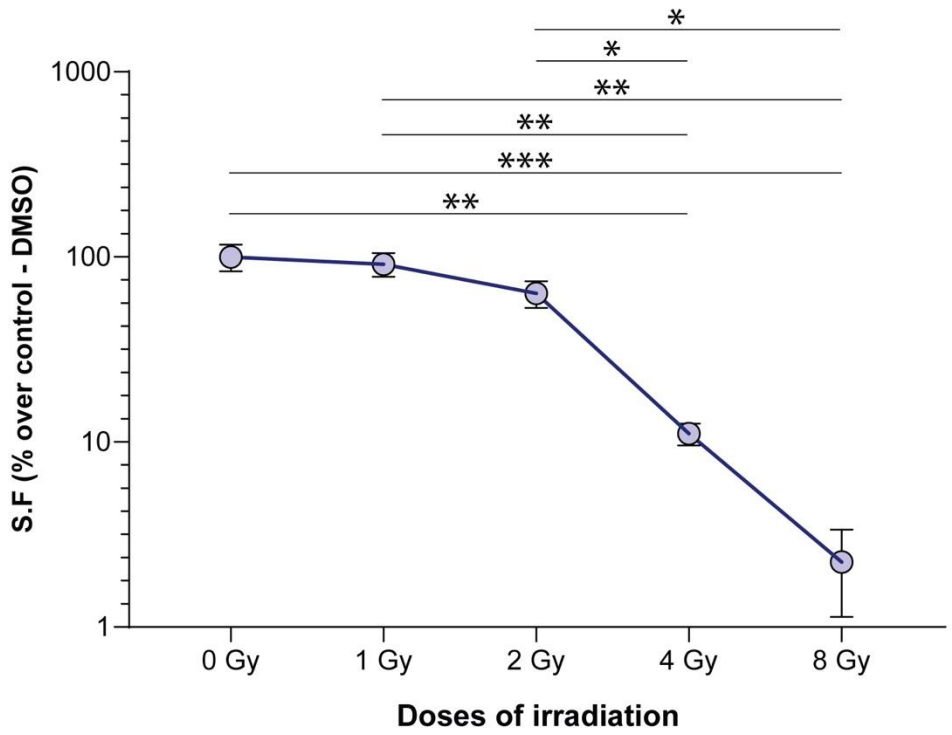


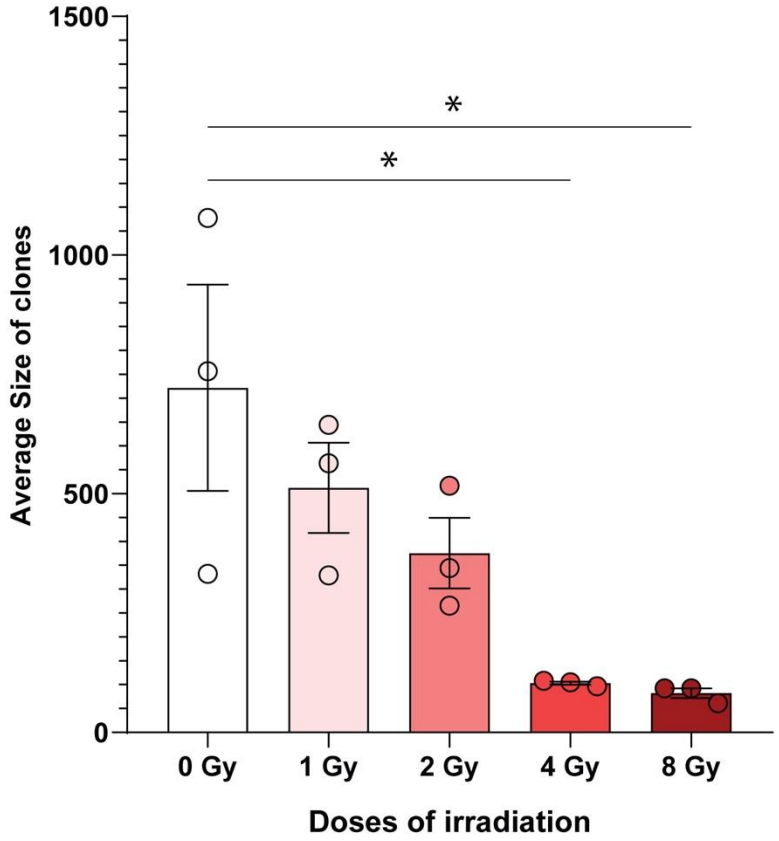
MISURAZIONI GAMMA-COUNTER

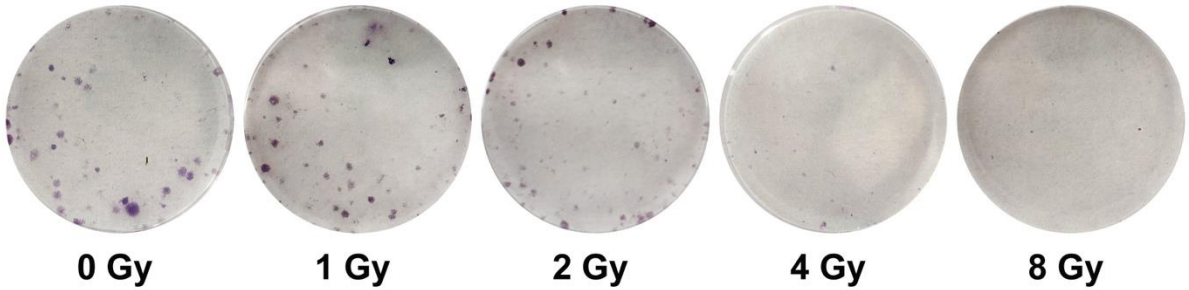
Plate	N° cells	Cell Suspension Act. (Bq) – CALCULATED	Supernatant Act. (Bq) - REAL	Total Act. (Bq) - CALCULATED	% in-take – day 4
0 Gy	100	/	/	/	/
1 Gy	100	7.694	53.296	60.990	**12,61**
2 Gy	150	7.656	115.364	123.020	**6,22**
4Gy	200	13.149	233.930	247.080	**5,32**
8 Gy	300	50.771	443.388	494.160	**10,27**

Survival fraction (%) + Average size of clones evaluation

4 DAYS of 111Ag TREATMENT on MDA-MB-231 cells







Next experiments - June 2025

Week 23.06.25

MDA-MB-231 e MCF10 cell lines

- **Clonogenic assay** → 0-1-2-4-8 Gy - 4 days 111Ag treatment
- **Cell In-take** → 1hr/24hrs/72hrs - 50kBq 111Ag activity
- **Foci H2aX**→ 1hrs/2 hrs/24hrs - 50kBq 111Ag activity
- **Single cell evaluation** → 1hr/24hrs - 0/200/400/600/800 KBq 111Ag activity

Main points - Criticism

Internal 111Ag radiation treatment vs External X-ray radiation treatment

- **Duration of treatment:** 111Ag administration takes 4 and 6 days to deliver a specific dose of internal radiation, instead X-rays beam is delivered in a single hit, spending not more than 5 minutes to reach 5 Gy as external dose delivered.

- **Different mechanism to obtain a cell effect:** In vivo, 111Ag needs to by up-taken in the cells or on the surrounding tissues. X-rays, acting as an external therapy, skip that step which is essential for 111Ag-based internal therapy.

Survival curves could be affected from these different radiation dynamics, resulting in different efficacy of the overall treatment.