

# How to Guide



# Switching on the instrument

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1. SWITCH THE MAIN SWITCH INTO ON POSITION.
2. LOG IN WITH : USERNAME **USER** PASSWORD **IVIF**
3. DO NOT PLACE ITEMS ON GENERATOR LID.
4. DO NOT TOUCH THE LASERS IN THE IRRADIATION CHAMBER.
5. TURN THE KEY INTO ON POSITION.

# If you are the first user of the day

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1. RUN A SHORT WARM-UP.
2. RUN A MAXIMUM EXPOSURE TEST (300kV, 10mA, 3minutes). **Only if you need high dose stability.**
3. FILL IN THE SPREADSHEET YOU CAN FIND CLOSE TO THE FILTERS WITH RELEVANT INFORMATIONS.

# Changing the filters

## 1. ALL THE AVAILABLE FILTERS CAN BE FOUND ON THE SHELVES NEXT TO THE MACHINE

- Copper 0.5mm : high dose rate for ExVivo irradiations
- Copper 1mm : low dose rate for InVivo irradiations
- Thoraeus filter (Sn1mm+Cu 0.25mm+Al1.5mm) : low dose, high penetration for InVivo irradiation

## 2. WHEN REPLACING THE FILTERS, HANDLE THEM FROM THE EXTERNAL HOLDER AND DO NOT TOUCH THE MATERIALS.

The filter changes the dose rate : be careful to use the correct calibration table.

# Choosing the right parameters

1. **THE SMALLER IS THE FOCAL TO SURFACE DISTANCE (FSD) THE FASTER YOU CAN ACHIEVE YOUR EXPOSURE. KEEP IN MIND THAT THE DOSE RATE TENDS TO BE INHOMOGENEOUS AT THE BORDERS OF THE IRRADIATION REGION.**
2. **PLEASE REFER TO THE CALIBRATION VALUES TO SET UP, FOR A SPECIFIC FILTER, YOUR **kV, mA, time** COMBINATION IN ORDER TO ACHIEVE THE DESIRED EXPOSURE.**
  - **DOSE RATE is proportional to mA**
  - **DOSE RATE is inversely proportional to  $FSD^2$**

**FOR CELL IRRADIATION : place your plate on the Perspex slab as close to the center as possible**

**FOR MICE IRRADIATION : use the pie-cage (and corresponding calibrations!!)**

# Choosing the right parameters

**DOSE RATE in [Gy min<sup>-1</sup>]**  
(calibration July 2023)

For IN VIVO irradiation  
Dose Rate in pie cage

Filter :	0.5mm Cu	1mm Cu	Thoraeus
Beam :	300kV, 10mA	300kV, 10mA	300kV, 10mA
FSD 30	3.841	2.912	1.636
FSD 40	2.117	1.656	0.929
FSD 50	1.415	1.065	0.634
FSD 60	--	0.745	--

For IN VIVO irradiation  
Dose Rate in pie cage

	1mm Cu 300kV, 10mA [Gy min <sup>-1</sup> ]	Thoraeus 300kV, 10mA [Gy min <sup>-1</sup> ]
FSD 50	1.245	0.710

**Dose Rates are recalibrated twice per year - always use the latest version which can be found next to the irradiator.**

# Enter Parameters and Run the Irradiation

1. TURN THE PANEL KEY INTO standby POSITION.
2. ENTER THE DESIRED PARAMETERS.
3. FILL IN THE SPREADSHEET ATTACHED TO THIS USER GUIDE.

**i** The panel key needs to be in **standby** position to be able to enter irradiation parameters **!**

# If you are the last user of the day/Switching off the instrument

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- 1. TURN THE PANEL KEY INTO standby POSITION.**
- 2. TURN THE MAIN SWITCH TO OFF POSITION : THE SYSTEM WILL WAIT 3 MINUTES BEFORE COMPLETE SHUT DOWN TO GUARANTEE SATISFACTORY COOLING.**
- 3. FILL IN THE SPREADSHEET YOU CAN FIND CLOSE TO THE FILTERS WITH RELEVANT INFORMATIONS.**



# Before leaving

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- 1. DO NOT SPRAY ANYTHING INSIDE THE IRRADIATION CHAMBER.**
- 2. CLEAN THE CAGES YOU HAVE USED WITH DECONEX.**
- 3. CLEAN THE MAIN SCATTER PLATE WITH DECONEX.**

# Choosing the right parameters

REFERENCE VALUES (calibration August 2022)

Filter 1 mm Cu  
@300kV, 10mA

