

13th of October 2026

**For the french-ukrainian workshop
at IJCLAB – Orsay**

Visit of Centre de Protonthérapie d'Orsay

**Samuel Meyroneinc
Manager of the Biomedical Engineering Service**

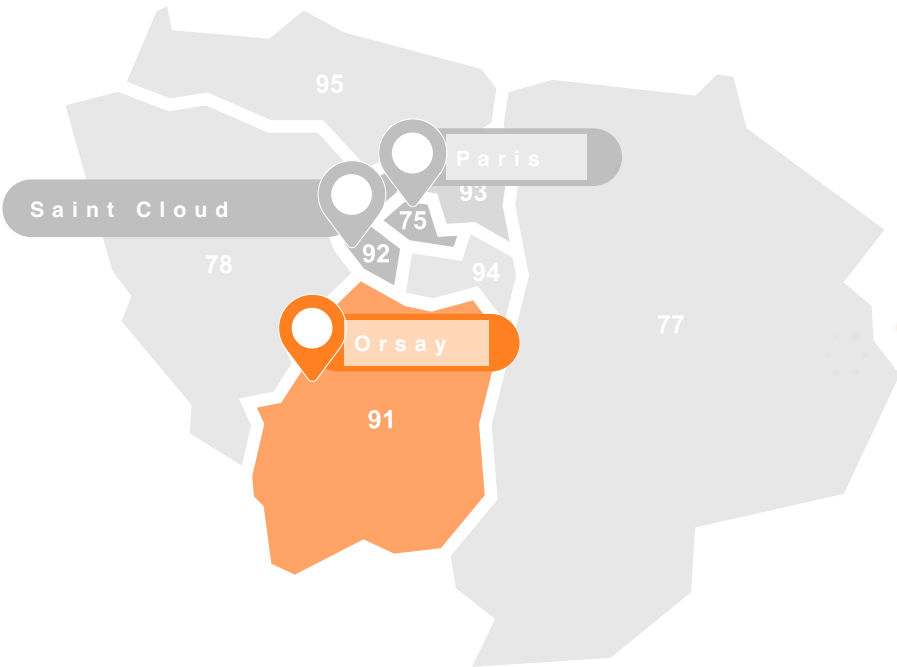
- About the facility
- Medical features for PT
- Visit of the Proton Therapy Center (45 min)



 institut
che
Curie

 institut
Curie

ORSAY SITE



SITE ORSAY

- Radiotherapy
- Early-stage trials
- Proton therapy :
→ A world leader in ophthalmology (no. 1) and in pediatrics (no. 3)



Medico-scientific Program



Technological platform



Teaching

RADIATION ONCOLOGY DEPARTMENT

Key figures

1st French radiation oncology department in terms of number of patients and size of the technical platform (on 3 sites)



IBA Cyclotron Proteus plus 230 MeV



CY
CL
OT
RO
N

230 MeV (2010) :
Pencil Beam scanning only
since 2020. General
anaesthesia
All tumors locations



GA
NT
RY

200 MeV (1998) :
intracranial and brain tumors
General anaesthesia



RO
OM
Y1

73 MeV (1991) :
ocular tumors

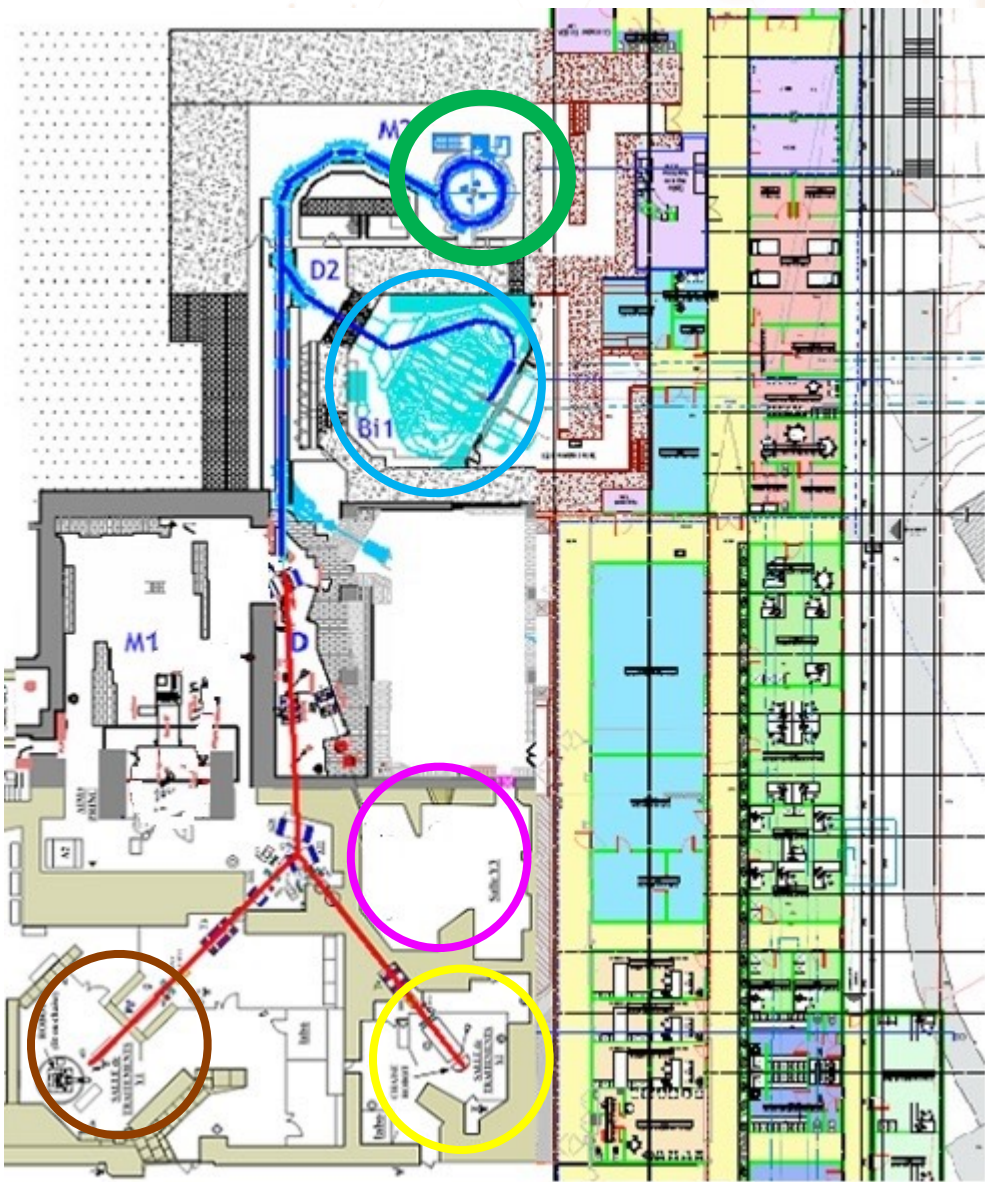


RO
OM
Y2

Varian TrueBeam (2018) :
Matched with 3 other TB in
Paris/Saint-Cloud

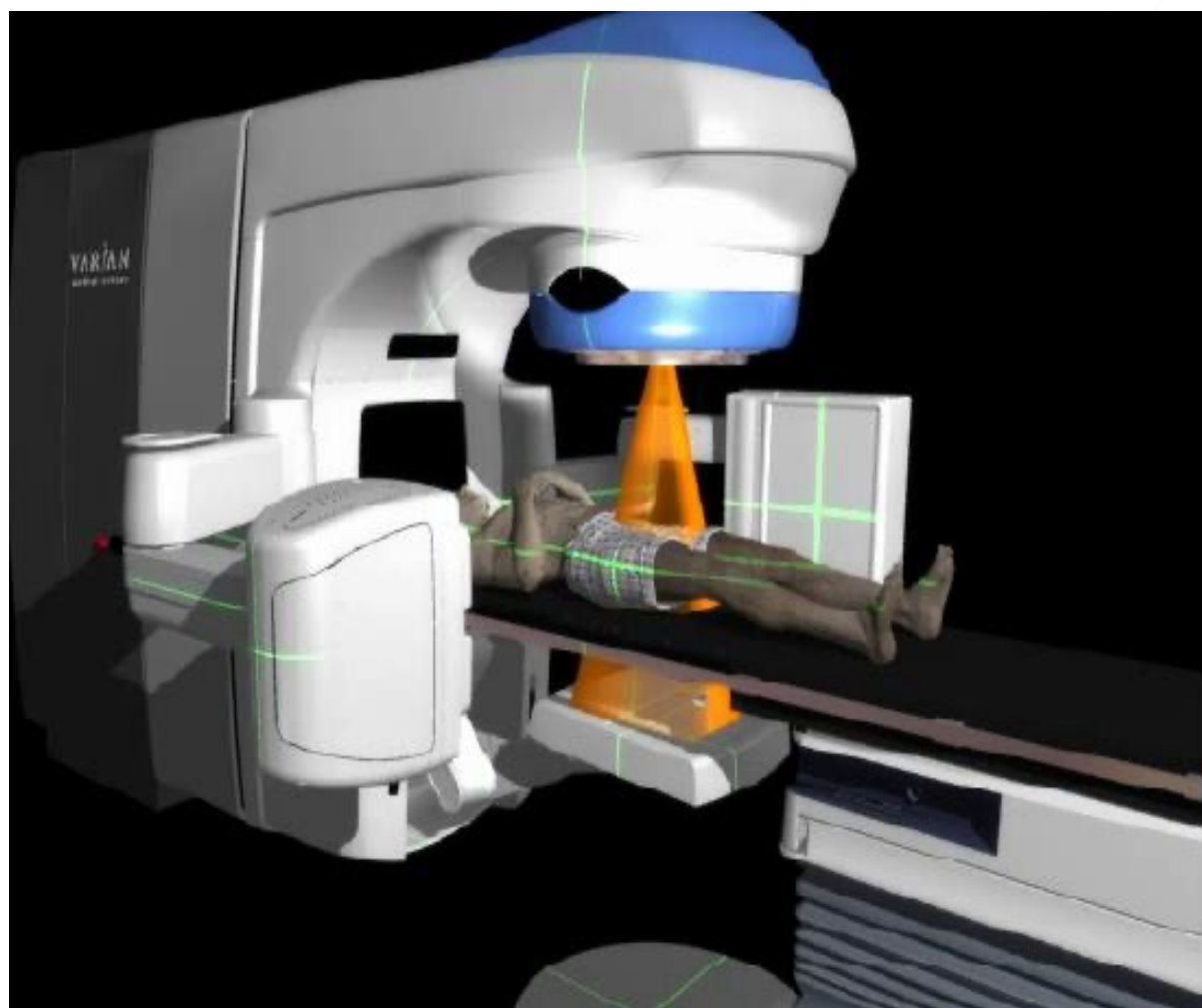


DE
NA
LI

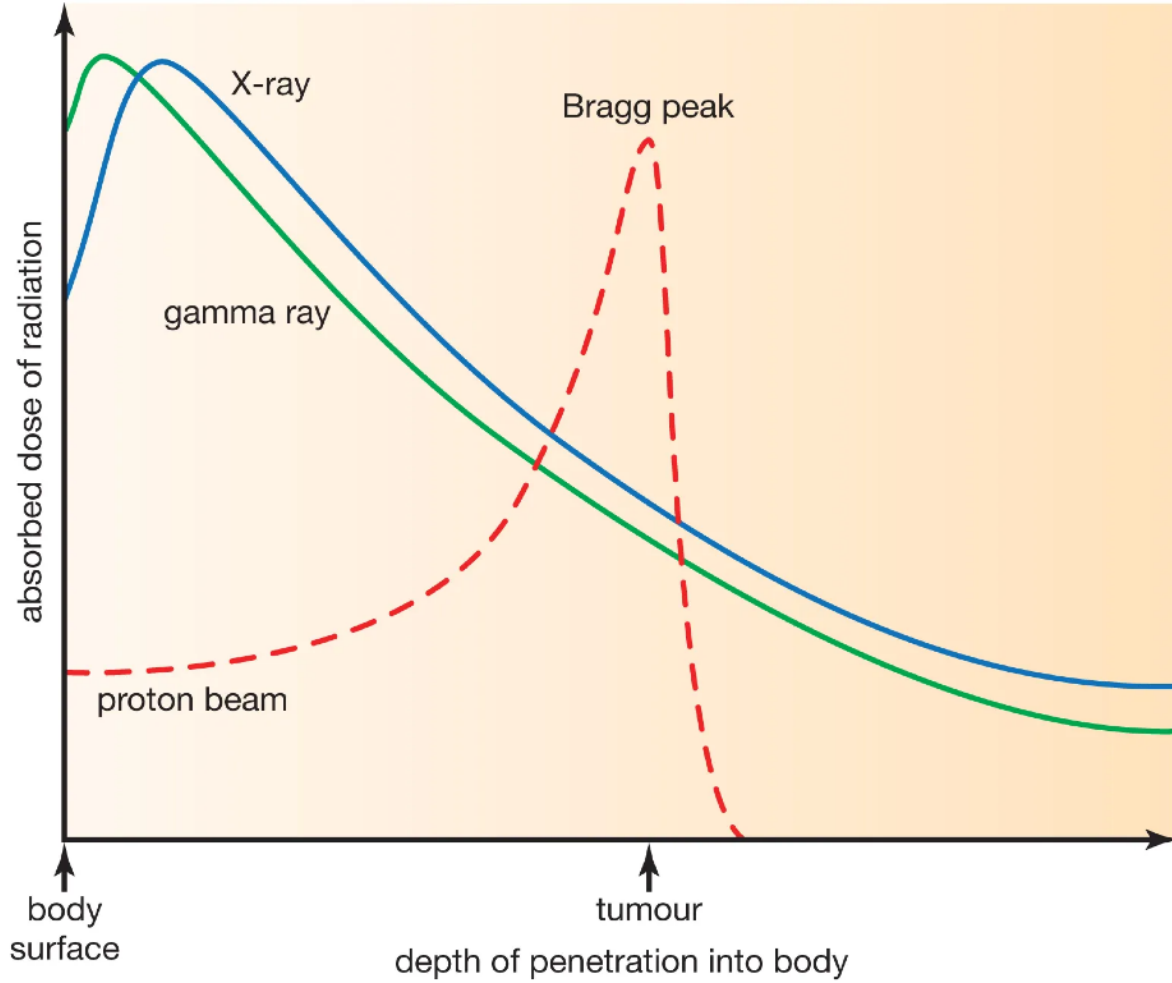


Conventional Radiation Therapy

Radiation Therapy (based en X or e⁻ 6-20 MeV)



Depth range of different forms of ionizing radiation



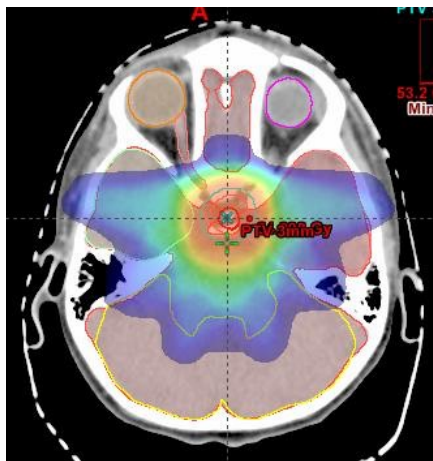
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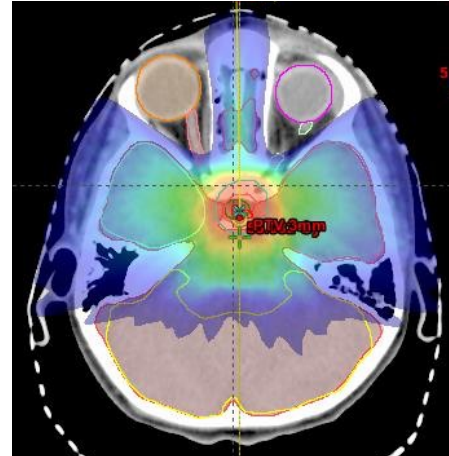
Dosimetric comparison Proton vs Photon

Craniopharyngioma

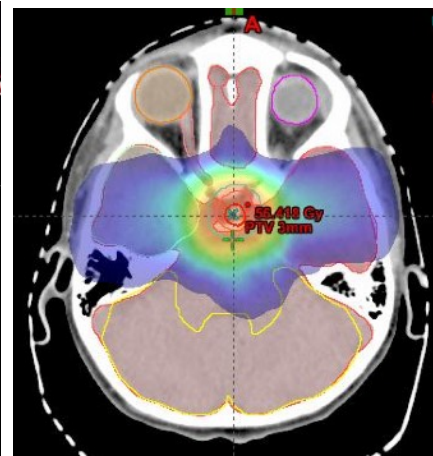
The volume covered by isodose of 10Gy



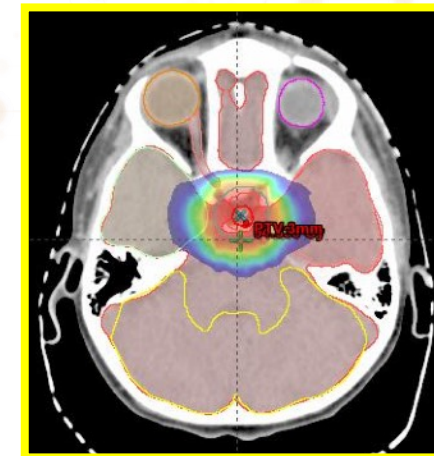
IMRT 583 cc
x 2.5



TomoTherapy 687 cc
x 2.9



VMAT 403 cc
x 1.7



DS Proton 234 cc
x 1

Protons deliver less low doses

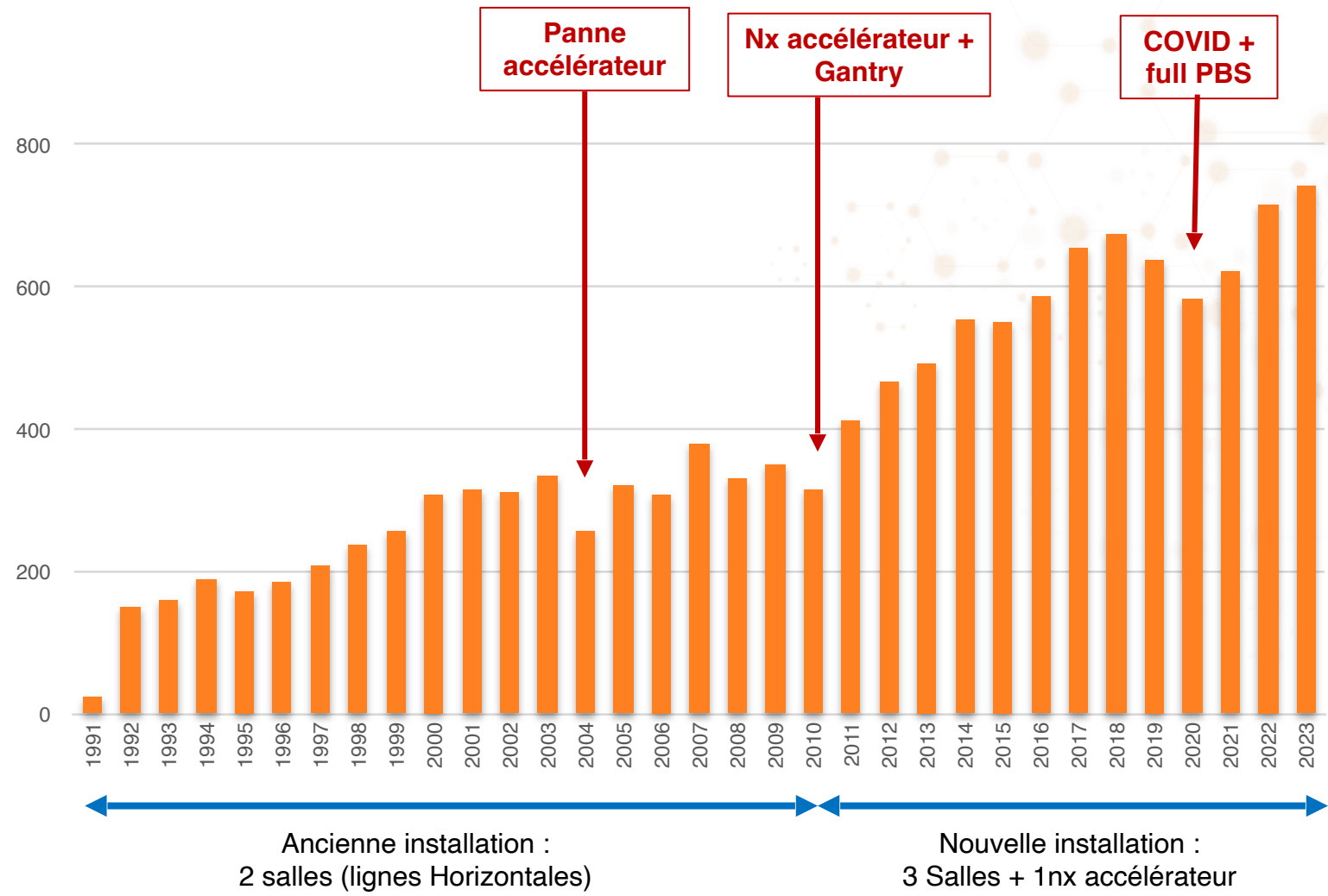
Advantages real and potential :

- Diminution of late toxicity
- Diminution of second cancer risk

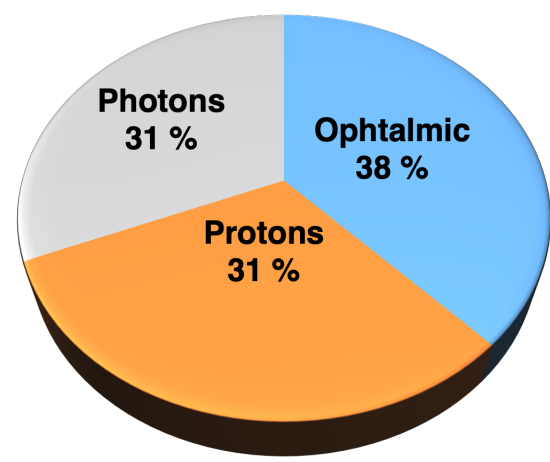
Courtesy to Dr Alapetite

EVOLUTION DE L'ACTIVITE EN PROTONTHERAPIE - ORSAY

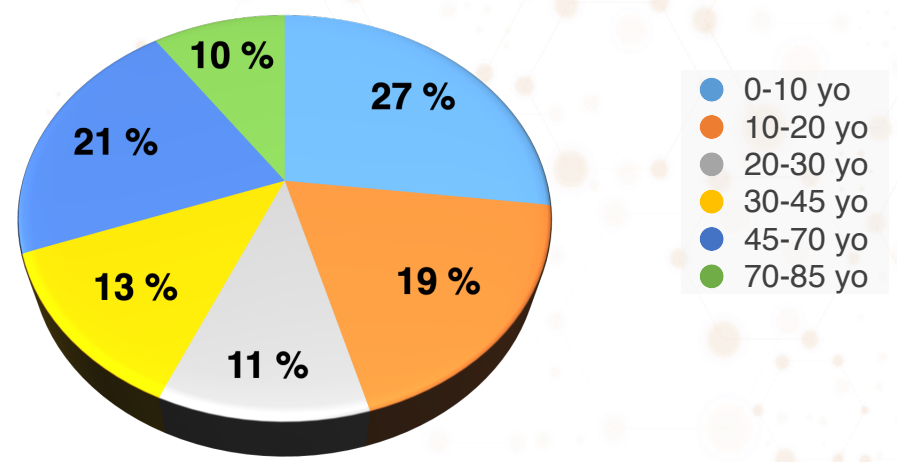
09/1991 à 12/2023 :
12 800 patients



Activity



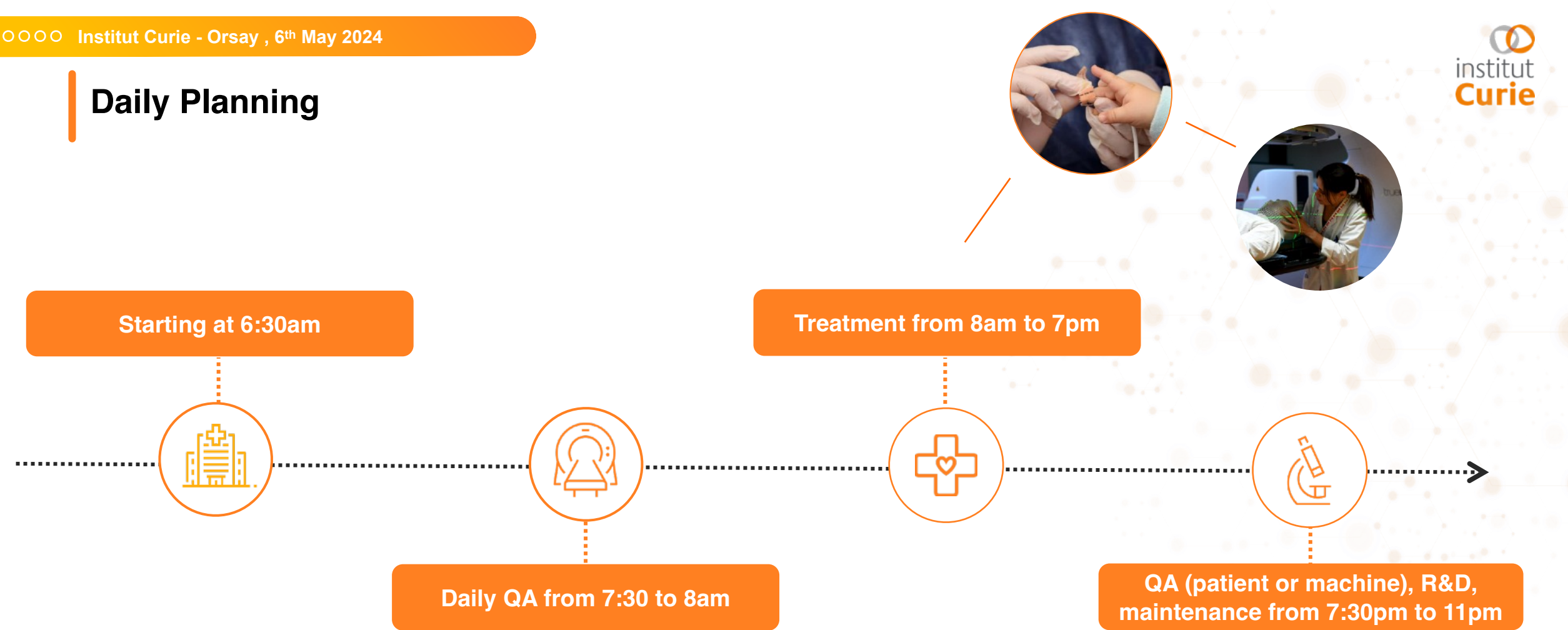
All patients



Distribution of patients by age
Proton (except ophtalmic)

- Almost **85-90 patients per day**
- For protons, **46% of patients are less than 20yo** (increasing number of pediatric cases)

Daily Planning



- Maintenance and QA are organised to increase treatment slots
- Maintenance also planned during week-end

Research and Teaching

Clinical research

- Pancreas trial: NEOPROPANC
- Meningioma trial: COG-PROTON-01 TRIAL
- Oesophagus trial: PROTECT

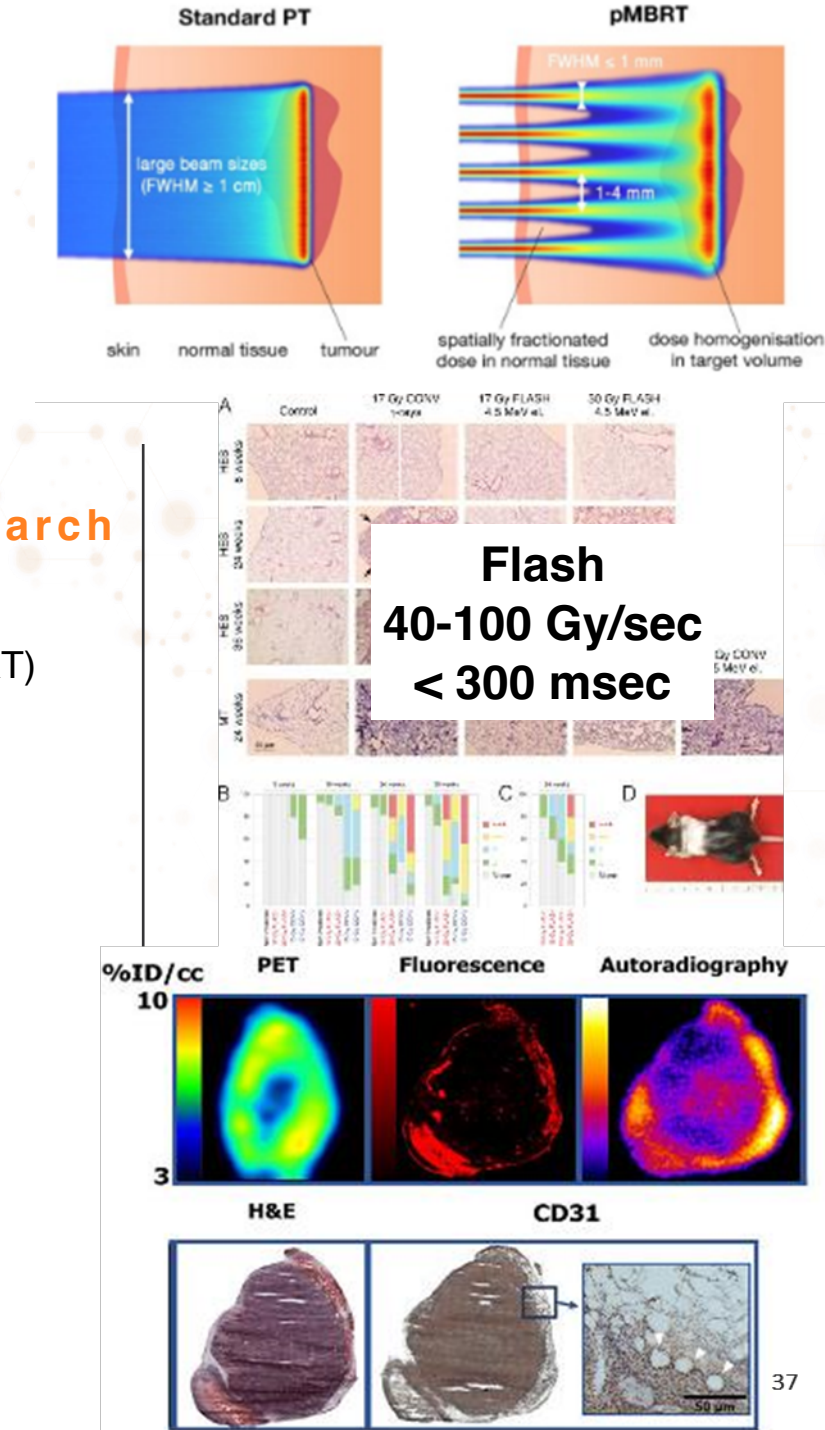


Teaching

- International / national course for proton therapy
- DU (University diploma)
- Medical physicist training and course
- Clinical resident

Pre Clinical research

- Mini beam trial (pmBRT)
- Flash research
- Nanoparticles



	Dose rate	Duration	Nb of fractions
Conventional Radiation Therapy	2Gy/min	~1 min	~25
Flash Radiation Therapy (perspectives)	> 100 Gy/sec	< 0,5 sec	1-3 ?

Le projet Frathéa

A **demonstrator** bases upon an accelerator VHEE (Very High Electrons Energy) of energy near 140 MeV for physical-radiobiological et pre-clinical studies.

FRATHEA
Flash RAdiation THerapy Electron Acceleration



W e l c o m e f o r t h e v i s i t