



## NCOModels

*Platform for your in vivo investigations in oncology*

Dr Benoit Haelewyn  
Dr Samuel Valable



## Cyceron

*Biomedical Imaging Platform*

Dr Benoit Haelewyn

Anti-Cancer  
Center  
**Baclesse**

Caen University  
Hospital

EPOPEA Science and Innovation Park

University  
of Caen

ENSICAEN

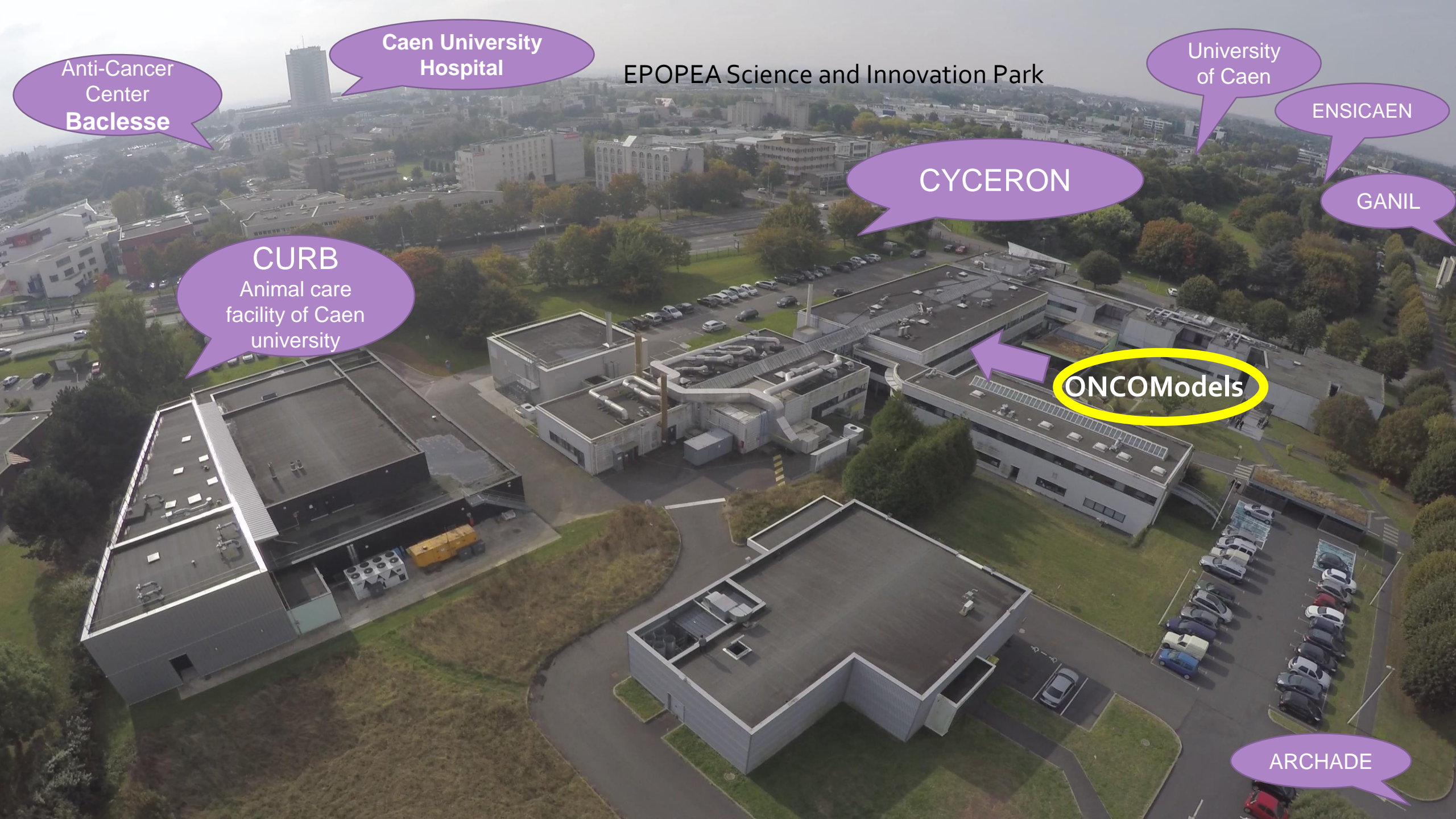
GANIL

CYCERON

**CURB**  
Animal care  
facility of Caen  
university

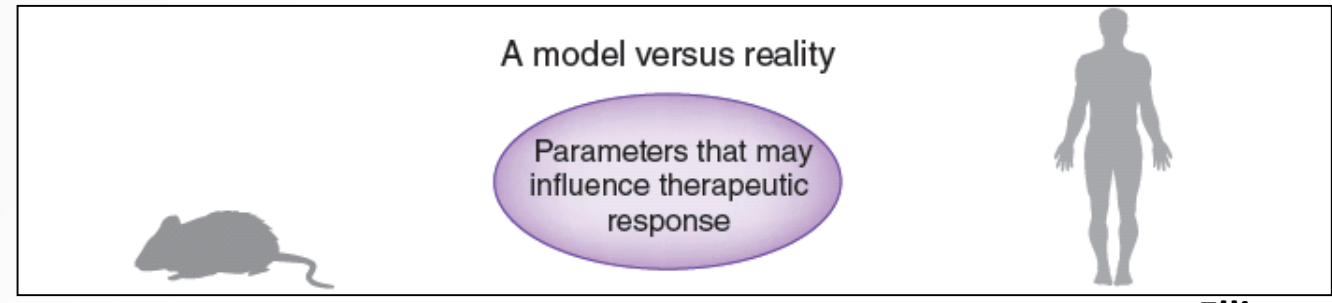
**ONCOModels**

ARCHADE

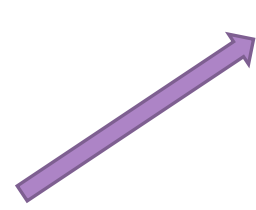
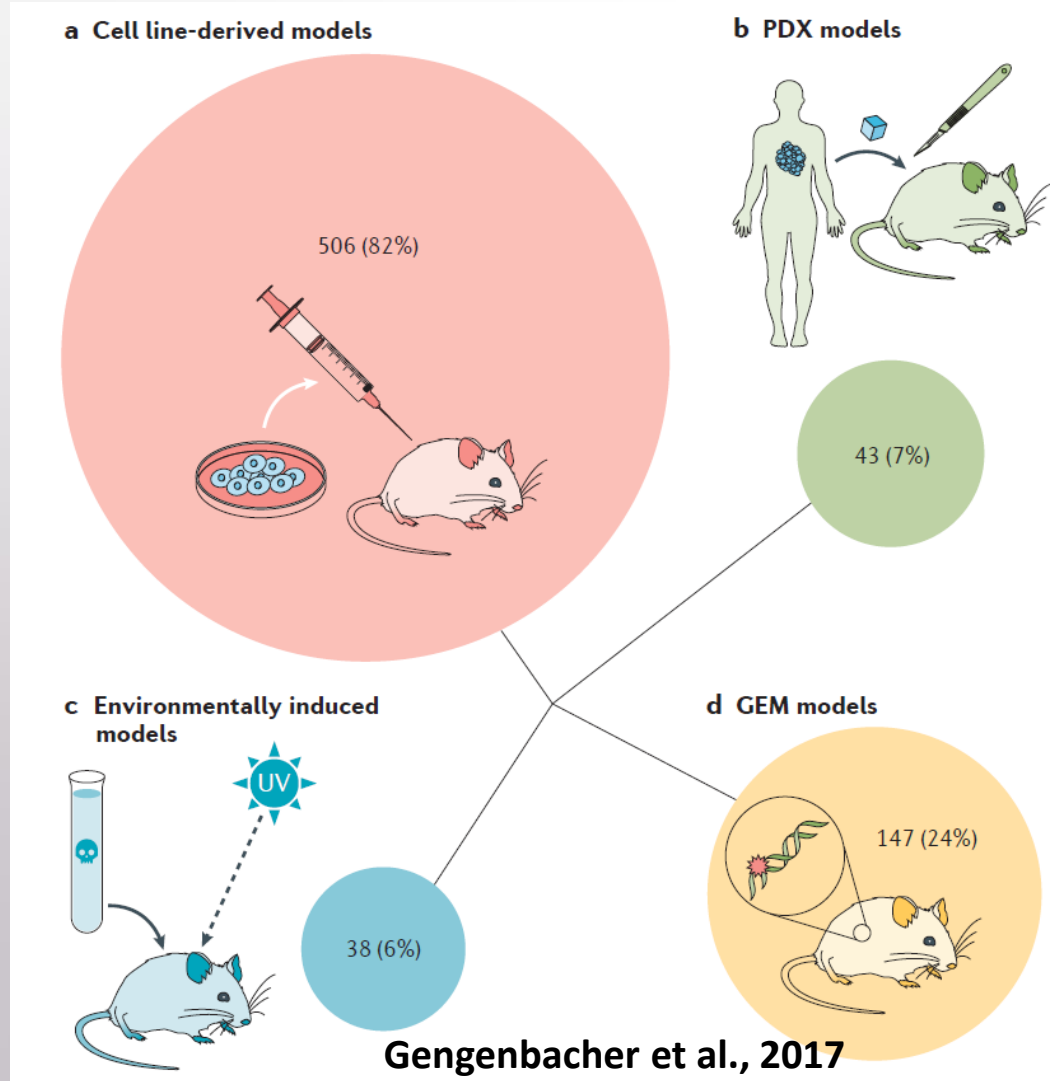




# Research in oncology

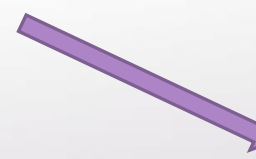


Ellis et al., 2010



**Immunocompetent animals**

Conventional area



**Immunocompromised animals**

Specific-pathogen-free area

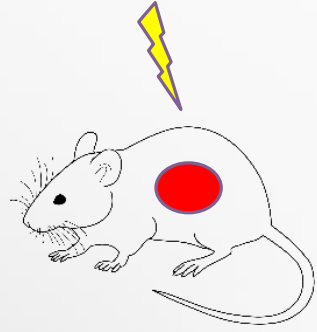


**Table 1 | Subgroup analysis of preclinical mouse tumour model studies published in 2016**

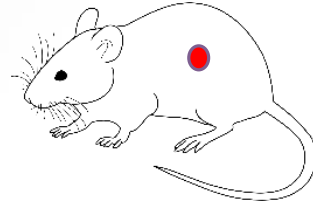
<b>Type of study</b>	<b>All</b>	<b>Breast</b>	<b>Lung</b>	<b>Colorectal</b>	<b>Melanoma</b>	<b>Pancreas</b>	<b>Brain</b>	<b>Prostate</b>	<b>Liver</b>
<i>In vivo</i> mouse tumour studies	618	139	88	69	62	47	47	36	32
• Cell line-derived	506	129	75	57	59	28	43	29	22
• PDX	43	9	8	4	3	6	3	0	1
• GEM model	147	24	23	12	5	28	7	10	8
• Environmentally induced	38	1	6	12	3	1	0	2	9
Immunocompetent	265	58	38	33	38	31	13	13	18
Immunocompromised	426	105	61	46	35	23	40	27	17

**Gengenbacher et al., 2017**

**Treatments**



**Longitudinal  
follow-up**



**Major role of imaging**

- Bioluminescence
- Fluorescence
- PET
- MRI.....

**Specific-pathogen-free area**



Bioluminescence  
Fluorescence  
PET  
MRI.....



*Platform for your in vivo investigations in oncology*

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- Developing and validating original and up-to date animal models
- Enabling longitudinal follow-up with biomedical imaging

*Platform for your in vivo investigations in oncology*

## Overall presentation

ONCOModels is a small animal dedicated platform for oncology research from model development to *in vivo* imaging at Caen.

- ❖ **Various cell type originating from rodents to patients**
- ❖ **Dedicated standard or pathogen free animal care facilities**
- ❖ **Various physiological/behavioral tests**
- ❖ **Full access to *in vivo* imaging**

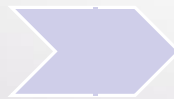
## Services

Study design, selection of appropriate models

Tumor cell preparation, maintenance

Surgery

Characterization of tumor growth and evaluation of treatment efficacy



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Contact: [oncomodels@unicaen.fr](mailto:oncomodels@unicaen.fr)  
Phone: +33 (0)2 31 56 68 81  
[www.oncomodels.fr](http://www.oncomodels.fr)

## Local partners

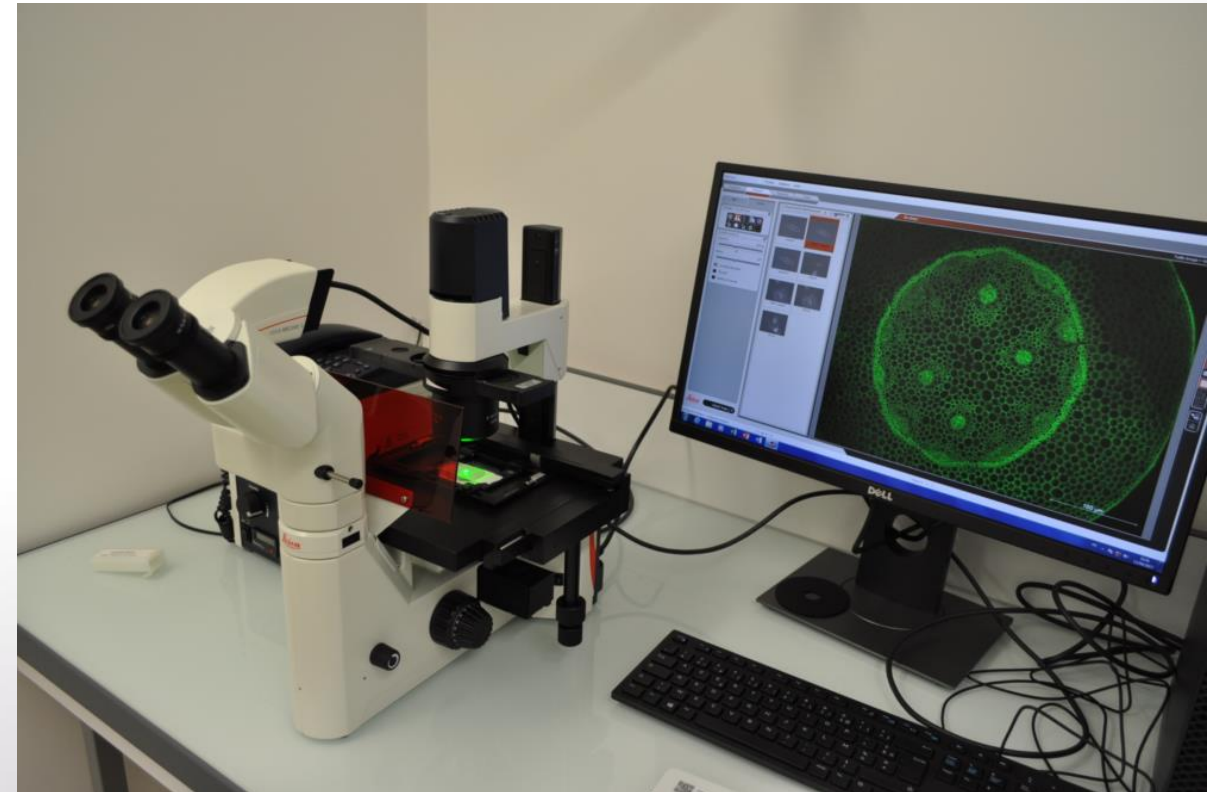
- ❖ **CYCERON imaging platform**
- ❖ **UNICAEN platforms: CURB, CMABio<sup>3</sup>, BRP**

## *In vitro* area

### Cell preparation



### Microscopy (Phase Contrast / fluorescence)





*In vivo area*

**Surgery room**



**Surgery bench**



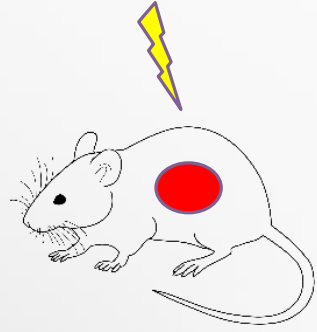
**Individually ventilated Caging System for mice**



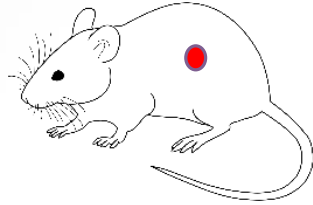
**Individually ventilated Caging System for rats**



Treatments



Longitudinal  
follow-up



Major role of imaging

Bioluminescence  
Fluorescence  
PET  
MRI.....



NCOModels

*Platform for your in vivo investigations in oncology*

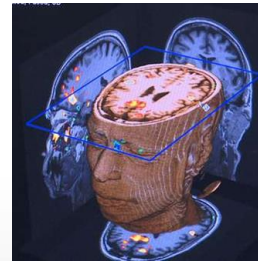
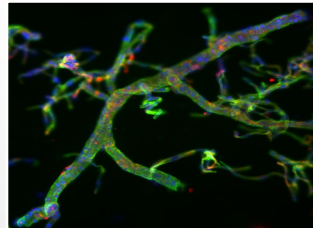


Cyceron

*Biomedical Imaging Platform*

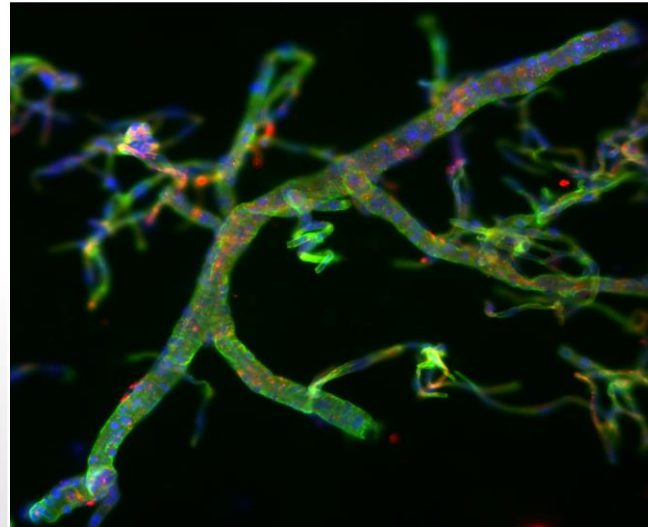
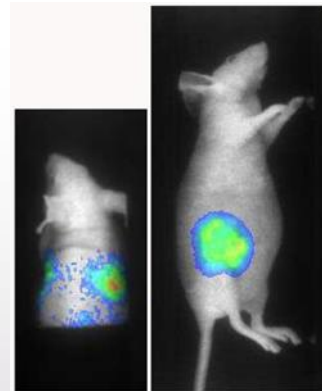
## Biomedical Imaging Platform

Outstanding facilities to realize studies at each scale of living on a single site: molecule, cell, organ, organism, from preclinical experimentation to human research





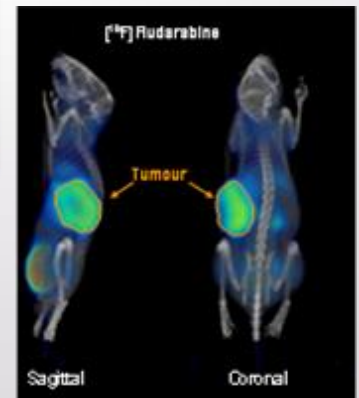
Bioluminescence and multi-photon imaging





On site Cyclotron  
Allows the production of radionuclides used in PET

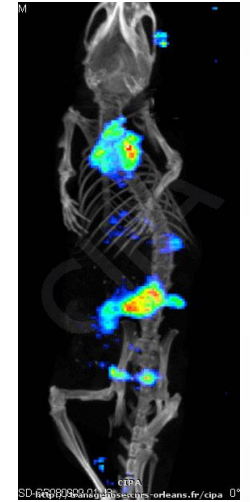
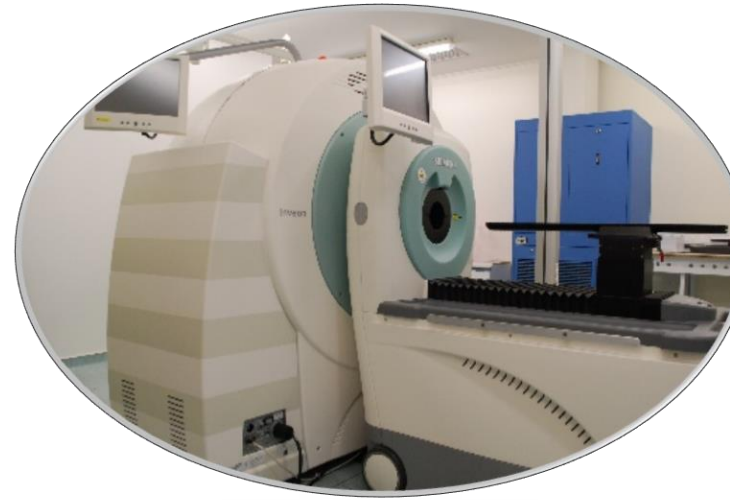
Radiochemistry laboratories  
White Room  
Radiotracer production and  
radiopharmaceutical qualification



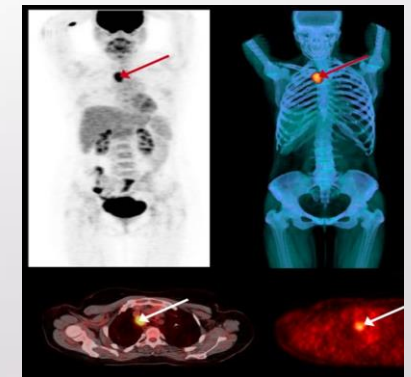
# High technological continuum

## Preclinical PET-CT scan)

Preclinical imager for measuring in three dimensions a metabolic or molecular activity

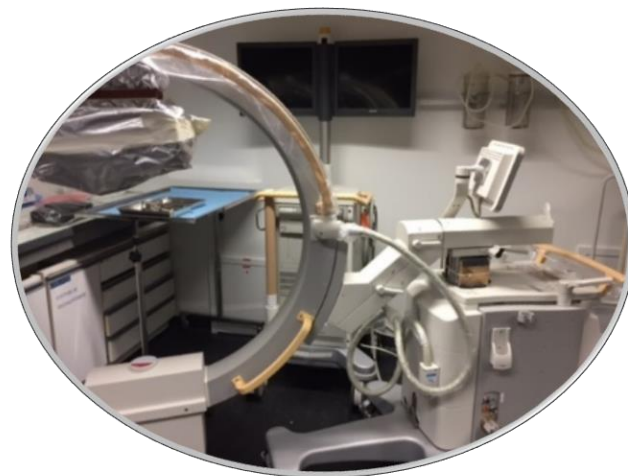


## Clinical PET-Scan

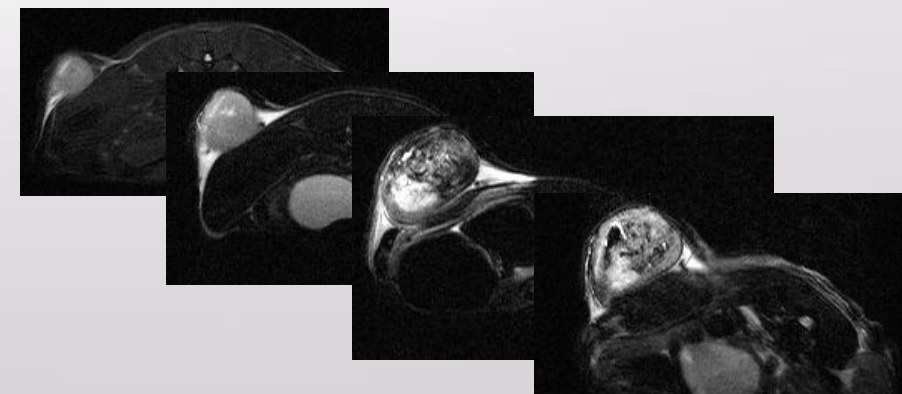
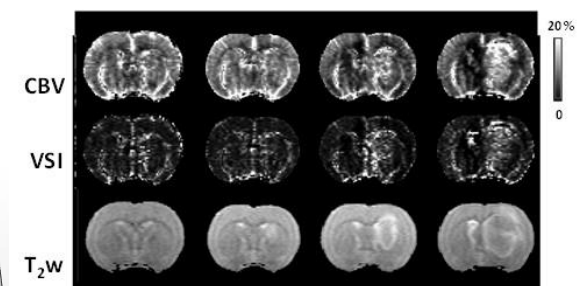


# High technological continuum

Surgery room  
Angiography

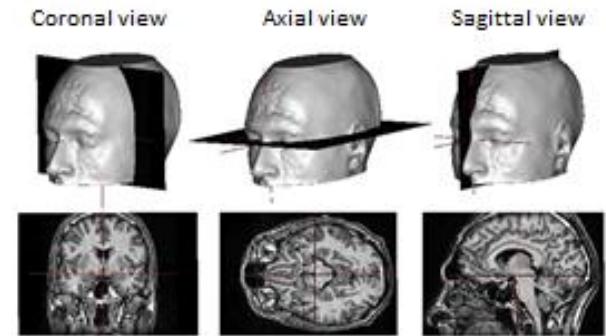


Preclinical 7 Tesla MRI  
Anatomical and functional  
acquisitions

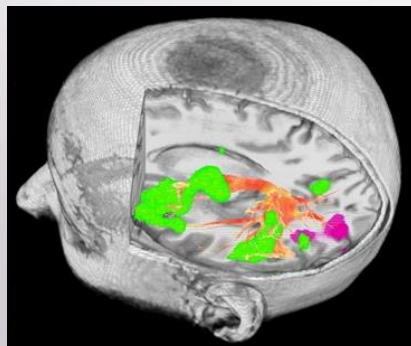
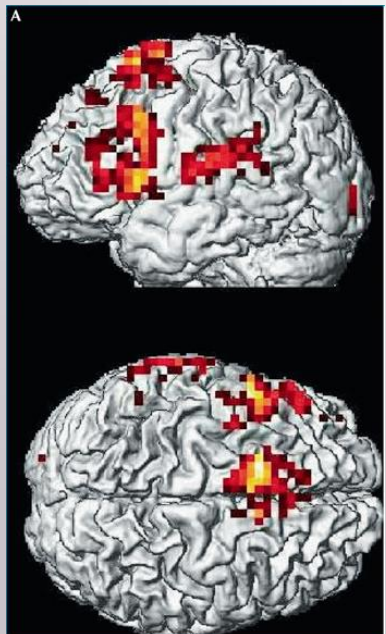
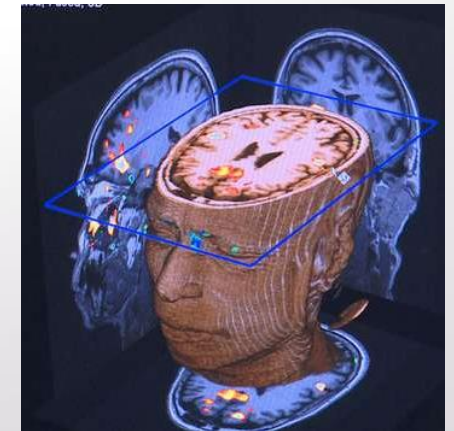




3 Tesla MRI  
Anatomical and functional  
acquisitions

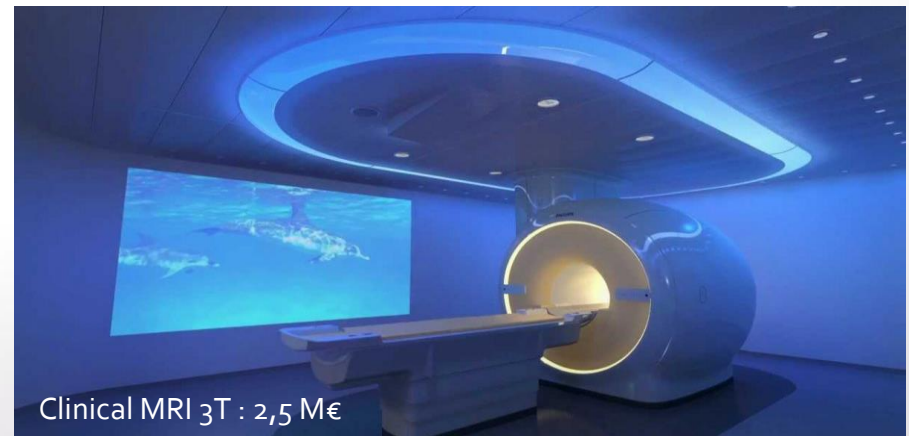


Data center and computing grids 400 TB  
Secure storage of data & calculations required  
for image processing





White room for radiopharmaceutical production 1 M€



# ONCOModels / Cyceron and Hadrontherapy in the context of Archade

## Cyclhad building

- ➔ X-Ray irradiation (Xrad 225 Cx + TPS)
- ➔ Proton irradiation



Animal preparation

treatments

Animal follow-up



+/-



Cyclhad building  
=> temporary housing



+/-





**NCOModels**

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Dr Samuel Valable



**Cyceron**

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Dr Benoit Haelewyn

*THANK you for your attention*