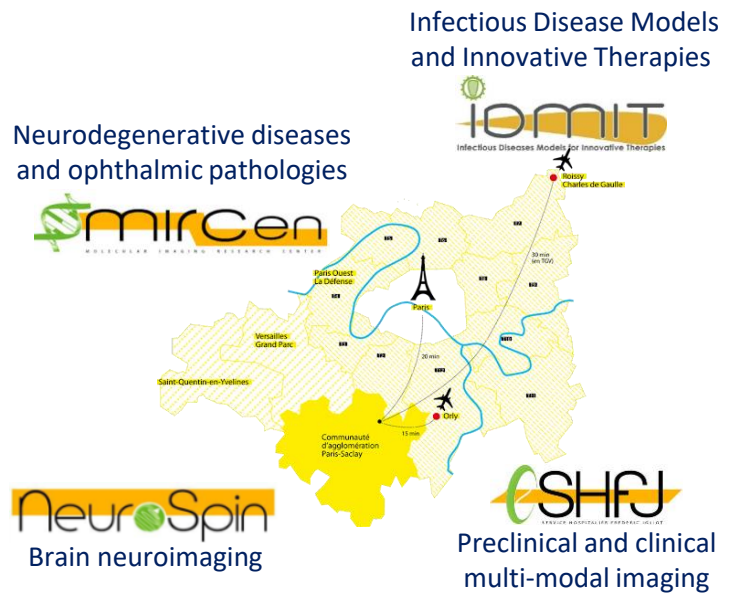


**State-of-the-art *in vivo* imaging**

**PET IMAGING ASSETS**

# A SYNERGY OF IN VIVO IMAGING EXPERTISE & TECHNOLOGIES TO SUPPORT INNOVATIVE PROJECTS

**Four complementary and multidisciplinary centers (IDMIT, MIRCen, SHFJ and NeuroSpin) contributing to major advances in various research fields**



From preclinical POC to drug development in patients



PET, MRI, ultrasound, multimodal imaging and radiopharmaceutical production

**Expertise and state-of-the-art translational in vivo imaging platforms:**

- \* 4 medical research imaging centers
- \* 34 technological platforms for preclinical and clinical research
- \* 10 research laboratories

**An access to a full range of scientific and technological solutions through one-stop shop and a dedicated project manager to support partner innovative developments from preclinical to clinical stages**

# PET IMAGING

## OUR ACTIVITY

- ✓ Translational PET imaging from preclinical models to patients
- ✓ On-site isotope production ( $^{11}\text{C}$ ,  $^{15}\text{O}$ ,  $^{18}\text{F}$ )
- ✓ Routine synthesis of radiopharmaceuticals (list on request)
- ✓ On demand labeling of small & large molecules
- ✓ Multimodal imaging: PET/CT – PET/MRI – PET/US
- ✓ BSL 1 to 3 environment
- ✓ Complementary assets: animal housing, radiometabolite analysis and quantification, autoradiography, histology, immunohistochemistry, behavior, etc.

## THERAPEUTICAL FIELDS

- ✓ Infectious diseases
- ✓ Neurodegenerative diseases
- ✓ Oncology
- ✓ Addiction
- ✓ Inflammation
- ✓ Ophthalmology

## EXPERTISE

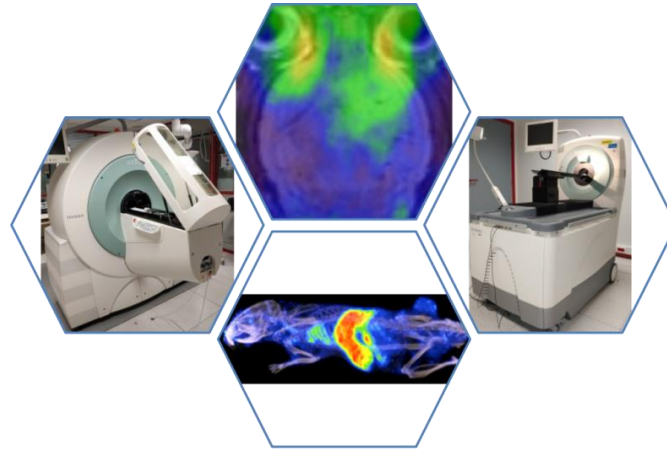
- ✓ Radiomedicine validation
- ✓ Animal model validation
- ✓ Evaluation of new therapies
- ✓ Study of drug-target interactions
- ✓ Pharmacokinetics study
- ✓ Co-registration of reconstructed 3D-histological volumes of multimodal data acquired in vivo and/or ex vivo imaging

## OUR STRENGTH

- ✓ Long-standing experience in multimodal imaging processing on preclinical models
- ✓ Complementary experts: biologists, physicists, pharmacologists, radiochemists, radiopharmacists, nuclear doctors, physicians
- ✓ Well-established partnerships with public and industrial players

# PRECLINICAL PET IMAGING

Brain and whole body multimodal imaging



## APPLICATIONS

### ❖ Therapeutic fields

- ✓ Neurodegenerative diseases
- ✓ Oncology
- ✓ Infectious diseases
- ✓ Neuroinflammation
- ✓ Addiction

### ❖ Expertise

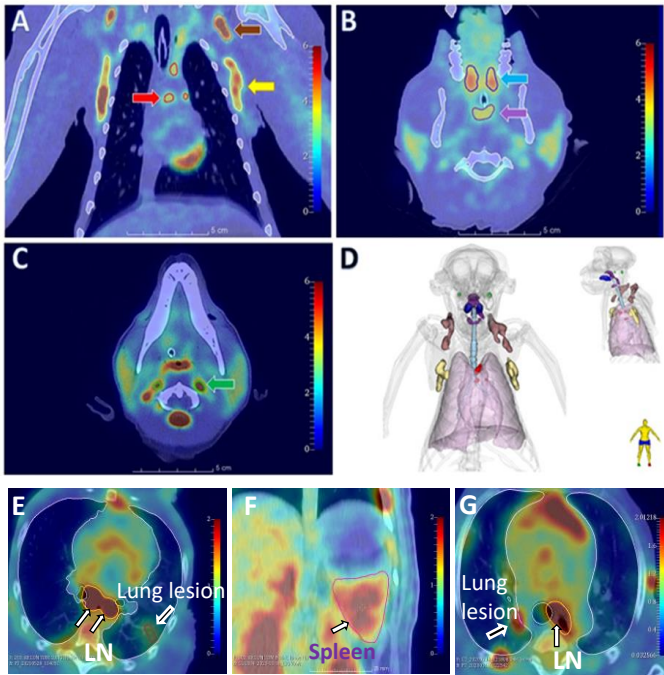
- ✓ Radiomedicine validation
- ✓ Animal model validation
- ✓ Evaluation of new therapies
- ✓ Study of drug-target interactions
- ✓ Pharmacokinetics study

## EQUIPMENT

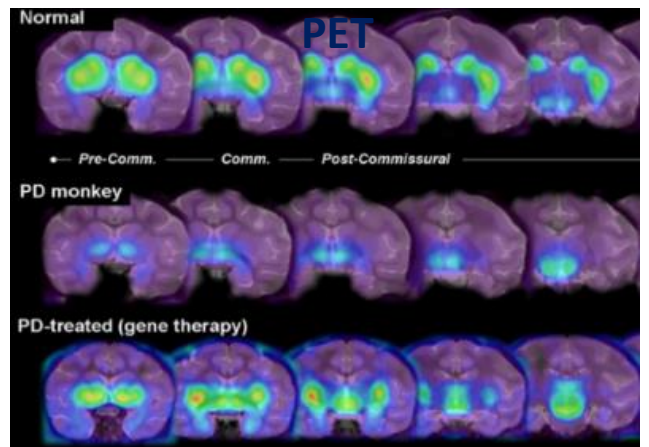
PET	Inveon	Siemens
	HR+	Siemens
High-resolution PET	HRRT	Siemens
PET (2 units)	FOCUS 220	Siemens
PET/CT	Inveon	Siemens
	Biograph	Siemens
	Vereos	Philips
PET/MRI 3T	SIGNA	GE

# PRECLINICAL CASE STUDIES

## PET-CT



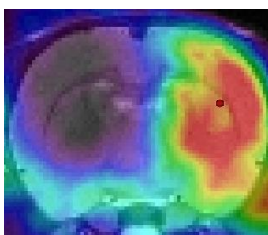
Infection effect of Sars-Cov-2 –  
[<sup>18</sup>F]FDG uptake  
Lemaitre et al., Mol. Immunology 2021



Gene therapy efficacy on an animal model of  
Parkinson's disease - [<sup>18</sup>F] 6-FMT  
Aron Badin et al., Mol Ther Methods Clin Dev. 2019

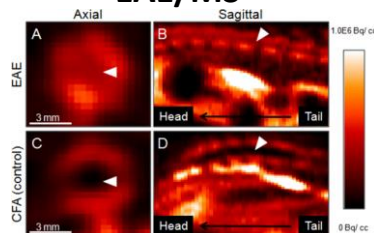
## PRECLINICAL VALIDATION OF [<sup>18</sup>F]DPA-714

### Stroke



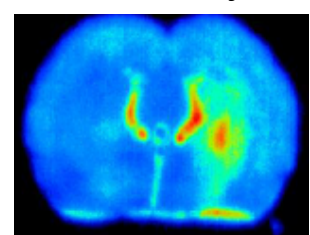
Martin et al., 2010

### EAE/MS



Abourbeh et al., 2012

### Kainate inj.



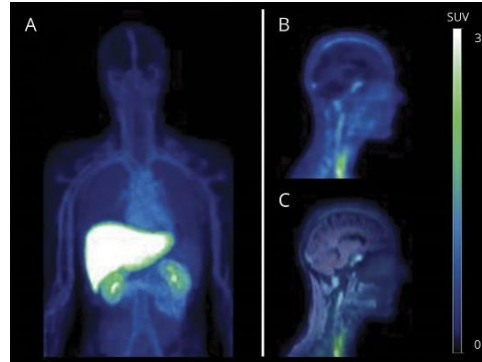
Chaveau et al., 2009

Animal models of neuroinflammation using [<sup>18</sup>F]DPA-714 binding TSPO, a biomarker of microglia activation



# CLINICAL PET IMAGING

## MULTIMODAL IMAGING



## APPLICATIONS

### ❖ Therapeutic fields

- ✓ Infectious diseases
- ✓ Neurodegenerative diseases
- ✓ Oncology
- ✓ Chronic mental illnesses in adult
- ✓ Normal aging
- ✓ Early brain pathology

### ❖ Expertise

- ✓ Radiomedicine validation
- ✓ Evaluation of new therapies
- ✓ Study of drug-target interactions
- ✓ Drug biodistribution

## EQUIPMENT

PET/MRI 3T

PET/CT

PET

SIGNA

Biograph

HRRT

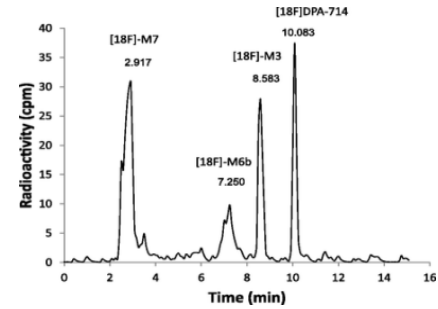
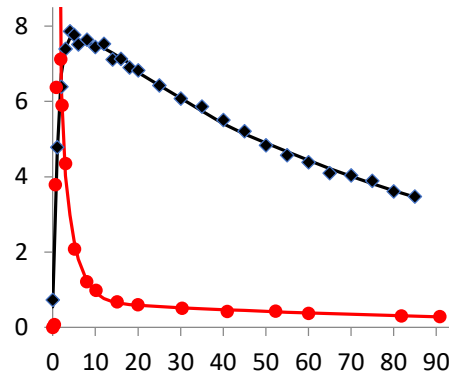
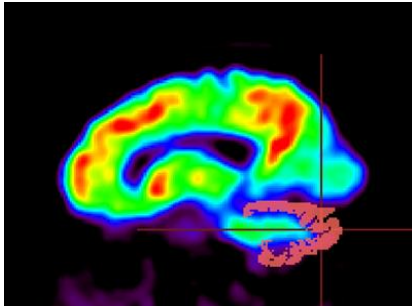
GE

Siemens

Siemens

# CLINICAL CASE STUDIES

## QUANTIFICATION STUDY OF [<sup>18</sup>F]DPA-714 IN HEALTHY SUBJECT



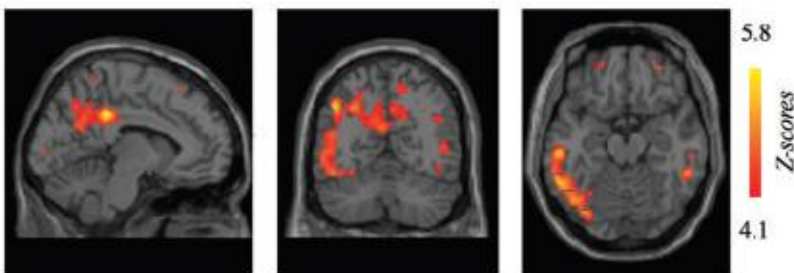
*Lavisse et al., 2015 ; Garcia-Lorenzo et al., 2018; Wimberley et al., 2018; Peyronneau et al., 2013*

Cerebellum TSPO (a marker of microglia) imaging using [<sup>18</sup>F]DPA-714

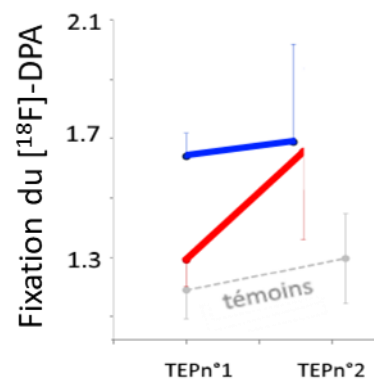
Kinetic profiling of metabolites in brain (blue) and plasma (red)

## LONGITUDINAL STUDY OF THE MICROGLIAL ACTIVATION IN AD

TSPO IMAGING <sup>18</sup>F-DPA-714 :  
Alzheimer patients > Controls



*Hamelin et al., Brain 2016 ; 2018*



Temporo-parietal cortex imaging: [<sup>18</sup>F]DPA-714 binding was higher in patients with AD than in controls in all volumes of interest

Individual analysis showed heterogeneous [<sup>18</sup>F]DPA-714 binding progression profiles among patients with AD (blue compared to red)



# PASREL

## **imagerie**



[www.pasrel-imagerie.com](http://www.pasrel-imagerie.com)



[pasrel-project](#)



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