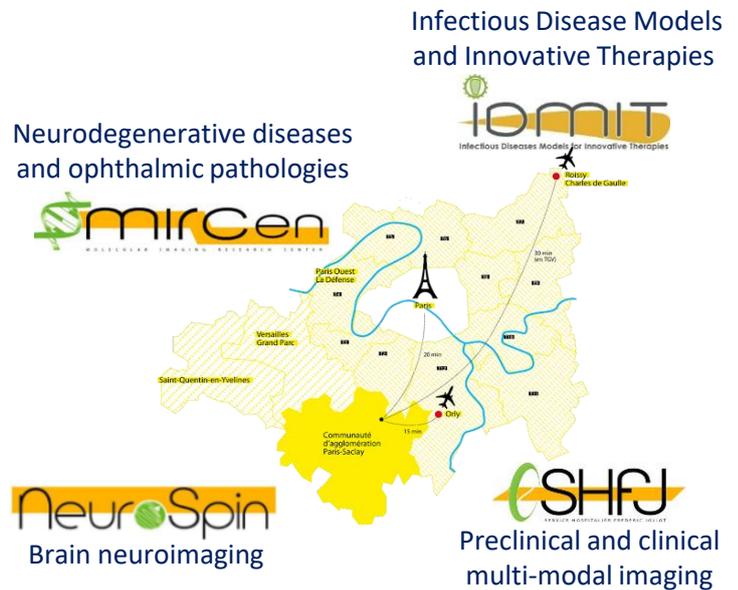


State-of-the-art *in vivo* imaging

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 (rodents and non-human primates) to clinical stages

PET IMAGING

OUR ACTIVITY

- ✓ Translational PET imaging from rodents and non-human primates to patients
- ✓ On-site isotope production (^{11}C , ^{15}O , ^{18}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

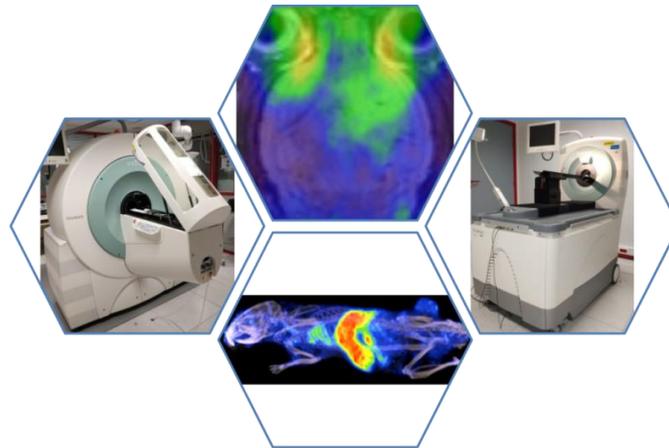
OUR STRENGTH

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

PRECLINICAL PET IMAGING

RODENTS

Brain and whole body multimodal imaging



APPLICATIONS

❖ Therapeutic fields

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

❖ Expertise

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

EQUIPMENT

PET	Inveon	Siemens
PET (2 units)	FOCUS 220	Siemens
PET/CT (5 units)	Inveon	Siemens
	Biograph	Siemens
	IRIS	Inviscan

PRECLINICAL PET IMAGING

NON-HUMAN PRIMATES

Brain and whole body multimodal imaging



APPLICATIONS

❖ Therapeutic fields

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

❖ Expertise

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

EQUIPMENT

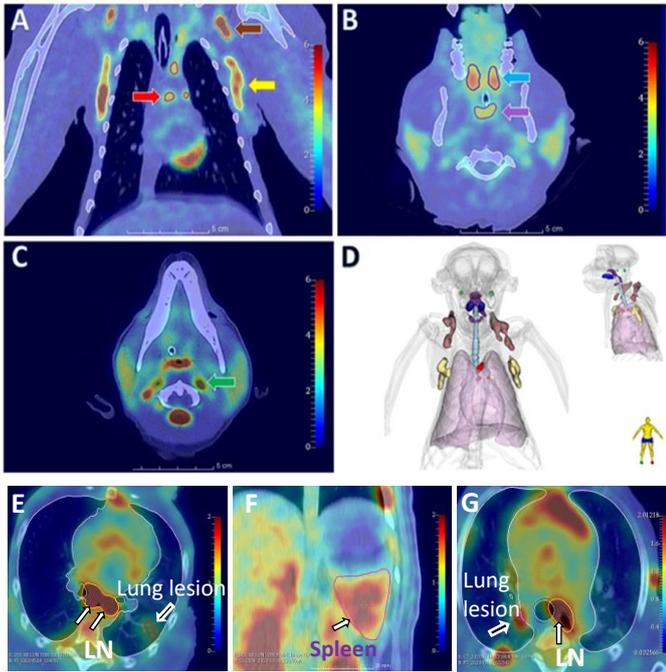
PET
PET/MRI 3T
PET/CT

HR+
SIGNA
Biograph
Vereos

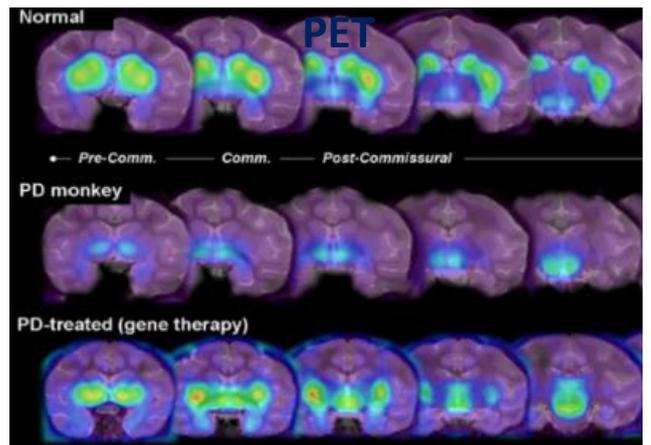
Siemens
GE
Siemens
Philips

PRECLINICAL CASE STUDIES

PET-CT



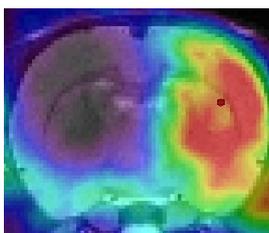
Infection effect of Sars-Cov-2 in NHP -
 $[^{18}\text{F}]$ FDG uptake
 Lemaitre et al., Mol. Immunology 2021



Gene therapy efficacy on a NHP model of Parkinson's disease - $[^{18}\text{F}]$ 6-FMT
 Aron Badin et al., Mol Ther Methods Clin Dev. 2019

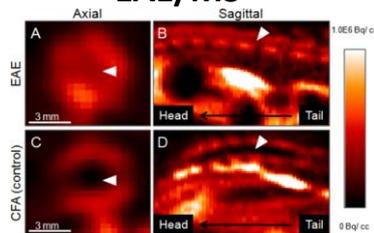
PRECLINICAL VALIDATION OF $[^{18}\text{F}]$ DPA-714

Stroke



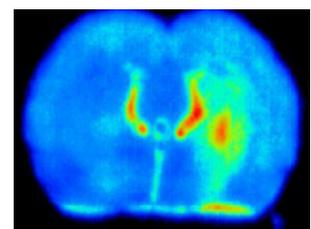
Martin et al., 2010

EAE/MS



Abourbeh et al., 2012

Kainate inj.

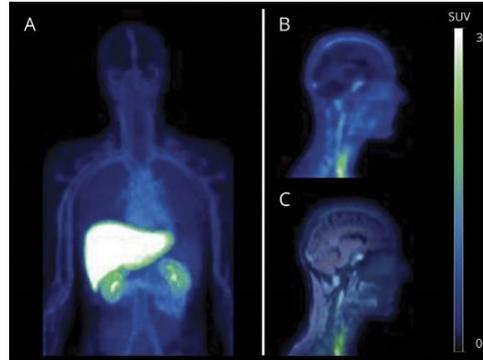


Chaveau et al., 2009

Animal models of neuroinflammation using $[^{18}\text{F}]$ 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

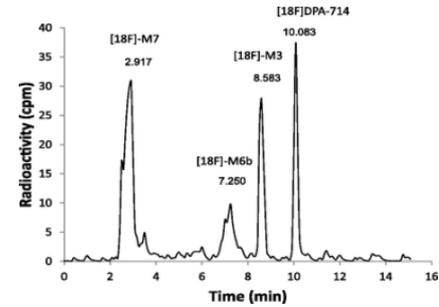
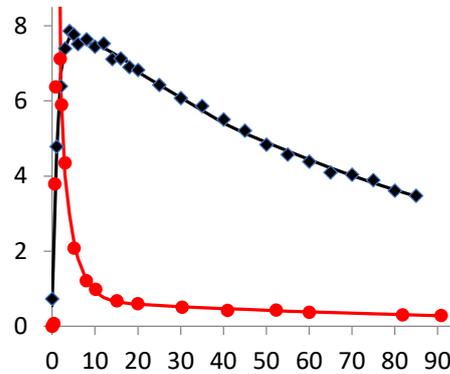
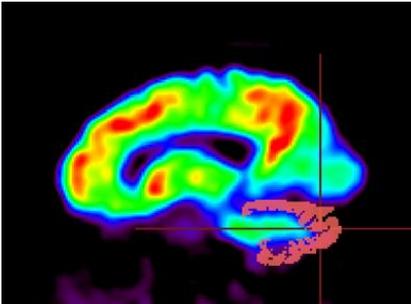
PET/MRI 3T
PET/CT

SIGNA
Biograph

GE
Siemens

CLINICAL CASE STUDIES

QUANTIFICATION STUDY OF [¹⁸F]DPA-714 IN HEALTHY SUBJECT



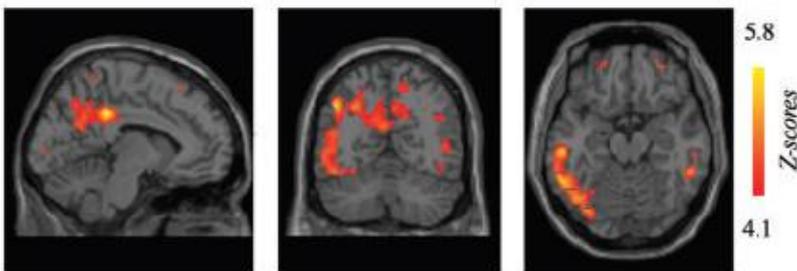
Lavisse et al., 2015 ; Garcia-Lorenzo et al., 2018; Wimberley et al., 2018; Peyronneau et al., 2013

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

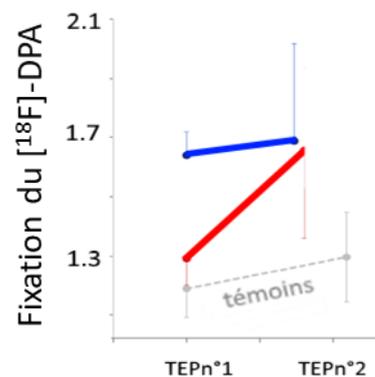
Kinetic profiling of metabolites in brain (blue) and plasma (red)

LONGITUDINAL STUDY OF THE MICROGLIAL ACTIVATION IN AD

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



Hamelin et al., Brain 2016 ; 2018



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

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



PASREL

imagerie



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