



INSTITUT UNIVERSITAIRE  
DU CANCER DE TOULOUSE  
Oncopole

# COLLECTIVE EXPERTISE TO FIGHT CANCER



ACTIVITY REPORT 2023

IUCT-ONCOPOLE



INSTITUT UNIVERSITAIRE  
DU CANCER DE TOULOUSE  
Oncopole

1, avenue Irène Joliot-Curie - 31 059 Toulouse cedex 9

+33 (0) 5 31 15 50 50

[www.iuct-oncopole.fr](http://www.iuct-oncopole.fr)



# Fore- word

The “Oncopole”, as patients and the general public know it, brings together on a single site more than 2,000 professionals committed to the fight against Cancer, divided between the Toulouse-Oncopole University Cancer Institute (IUCT-Oncopole) and the Toulouse Cancer Research Center (CRCT).

The Oncopole Claudius Regaud (Comprehensive Cancer Center) and the Toulouse University Hospital join forces as the IUCT-Oncopole, sharing their expertise and excellence in missions of care, research, and teaching.

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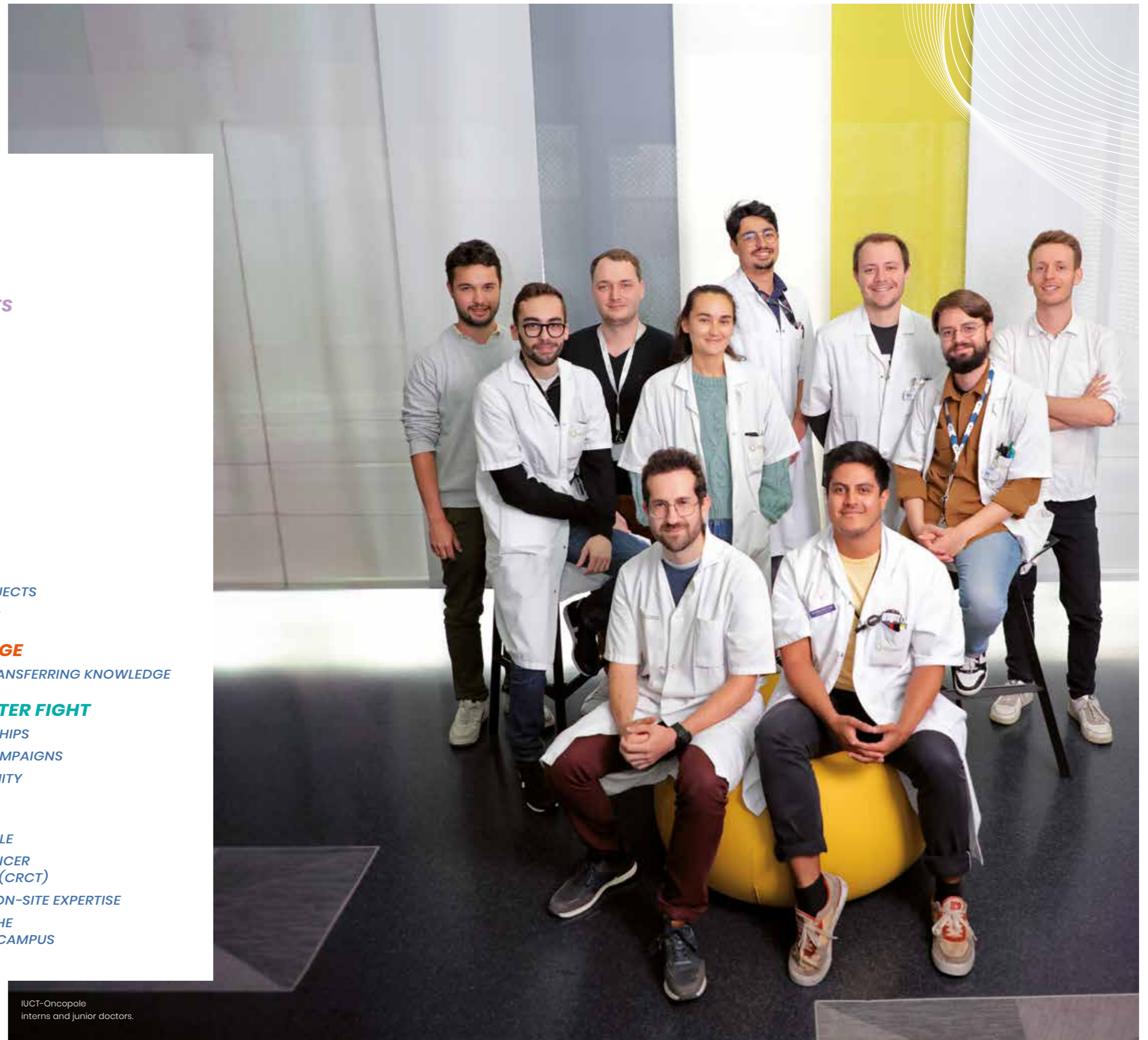
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IUCT-Oncopole  
interns and junior doctors.

# Editorial

2023 was a period of significant progress and success for the Oncopole. With unwavering dedication, our teams continued to push back the boundaries of research and innovation in the fight against cancer. This activity report highlights major advances in various fields of oncology, reflecting our commitment to improving patient care, finding new therapies and raising public awareness.

Our collective and interdisciplinary efforts have borne fruit, as evidenced by the many successful research projects, promising clinical trials and awareness-raising campaigns that marked this year. Thanks to the close collaboration between researchers, clinicians and partners, we have been able to explore new therapeutic approaches, improve diagnostic techniques and offer patients a better quality of life.

This report presents not only the results of our research, but also the stories of the Oncopole's persevering teams. It highlights the innovative projects that have emerged, the fruitful partnerships and the scientific advances that make our center a leading player in the field of oncology.

Together, for 10 years on this innovative site, unique in France, we have continued to work for a future where cancer will be diagnosed as early as possible, treated more effectively, and one day, be conquered.

We warmly thank all those who have contributed to these achievements – patients, professional caregivers, medical teams, researchers and all our partners, patrons and donors – for their unwavering support and confidence.

We approach the challenges lying ahead with enthusiasm and determination, strengthened by our successes and motivated by our shared mission.

Enjoy your reading.

**Prof. Jean-Pierre Delord**  
General Manager of the Oncopole Claudius Regaud  
and Administrator of the GCS IUCT-Oncopole

**Jean-François Lefebvre**  
General Manager of the Toulouse University Hospital  
and President of the General Assembly of the GCS IUCT-Oncopole

**Dr. Pierre Cordelier**  
General Manager of the CRCT

## Impact & achievements Key figures 2023

LESS THAN

6

MONTHS

for a discovery by the CRCT to be translated into a clinical trial at the IUCT-Oncopole

68

INTERNATIONAL PUBLICATIONS  
with an impact factor > 20

20

RESEARCH TEAMS



RESEARCH

147

RESEARCHERS

26

NATIONALITIES  
among the different researchers

8

TECHNICAL RESEARCH  
PLATFORMS

126

ENGINEERS AND RESEARCH  
TECHNICIANS

1

LABORATORY OF EXCELLENCE: TOUCAN



1

ERC GRANT: ATTACK



European Research Council  
Established by the European Commission



CLINICAL  
TRIALS

369

CLINICAL TRIALS

opened for inclusions in 2023

43%

EARLY PHASE  
TRIALS

1,563

NEW PATIENTS  
included in 2023

2X

as many clinical trials – a figure that has doubled since the creation of the IUCT-Oncopole 10 YEARS AGO

13,6% of the active file of patients included in a clinical trial in 2023

INCLUSIONS

41%

SPONSORED BY THE IUCT-ONCOPOLE

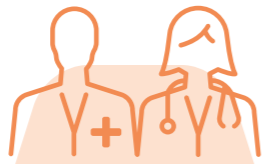
39%

SPONSORED BY ACADEMIA

20%

SPONSORED BY INDUSTRY

2,175 on-site staff



## PATIENT CARE

The  
**1**<sup>st</sup>

### HOSPITAL PHARMACY IN FRANCE

in terms of chemotherapy  
preparations

**308**

**BEDS**  
of which **103** day-hospital beds

**752**

CARE PROVIDERS

INCLUDING

**191**

PHYSICIANS

**11,448**

PATIENTS

(active hospitalization file)

**39,202**

PATIENTS TREATED

**114,733**

HOSPITAL STAYS



## TEACHING

**219**

INTERNS

**77**

DOCTORAL STUDENTS

**836**

EMPLOYEES PARTICIPATING

in continuing professional education  
offered by the IUCT-Oncopole



## CANCER CARE ACTIVITIES

**55,962**

RADIOTHERAPY  
SESSIONS

**3,733**

patients treated with  
ORAL THERAPIES

**73**

patients treated with  
CAR-T CELLS,  
2.2 times more than in 2022

**1,341**

patients treated by  
VECTORIZED INTERNAL  
RADIOTHERAPY

**125,000**

CHEMOTHERAPY  
PREPARATIONS  
(injectable and oral)

**182**

TRANSPLANTS PERFORMED  
including **107** autologous  
and **75** allogenic grafts

**121**

patients treated by  
BRACHYTHERAPY

**85%**

OUTPATIENTS  
in hospital services

**7,863**

OPERATIONS

including **2,645** to place an implantable  
venous access port (Port-a-cath)  
or a central venous catheter (CVC)

**2,839** LBP (Labile blood products)  
transfusion sessions

**4,641** anesthesia procedures  
(excluding local)

**17** total body irradiation sessions

**6.7 days** average length  
of stay in full hospitalization

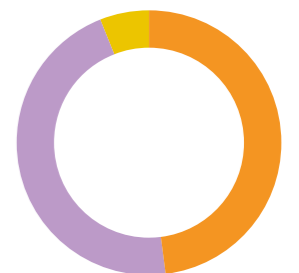
### NEW PATIENTS



39% Men  
61% Women



AGE GROUPS:  
0-14 years: **0.3%**  
15-25 years: **2.7%**  
26-74 years: **76%**  
75 years and older: **21%**



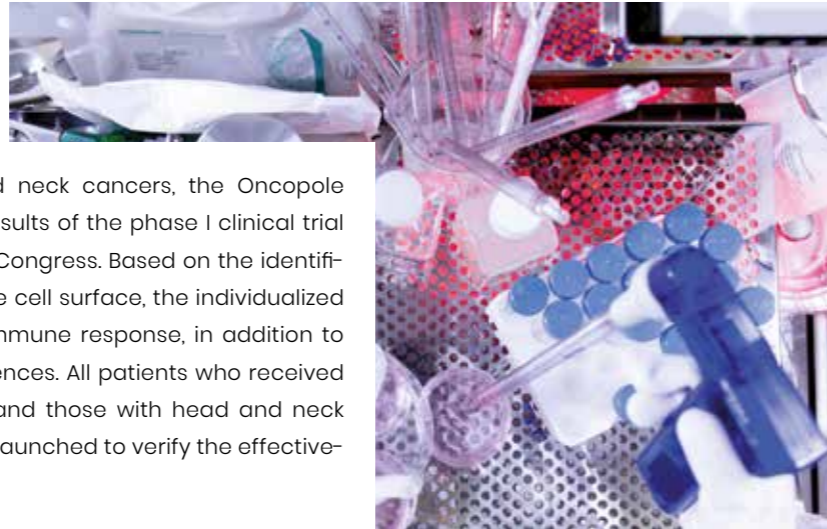
GEOGRAPHIC ORIGIN:  
Haute-Garonne: **48%**  
Occitanie-Pyrénées  
(excluding Haute-Garonne): **40%**  
France and international: **12%**

# Highlights 2023

## HEAD AND NECK CANCERS: A SUCCESSFUL YEAR

### First positive results

Engaged in research against head and neck cancers, the Oncopole teams presented the first encouraging results of the phase I clinical trial of the TG4050 vaccine at the ASCO 2023 Congress. Based on the identification of the neo-antigens located on the cell surface, the individualized vaccine aims both to induce a lasting immune response, in addition to active treatments, and to prevent recurrences. All patients who received the vaccine had an immune response, and those with head and neck cancer had no relapse. Phase II has been launched to verify the effectiveness of this therapeutic strategy.



### First University-Hospital Research Project (UHR) in Occitanie

As part of France 2030 (a national research investment plan) the Toulouse BIOFACE project, led by Prof. Agnès Dupret-Bories and the Toulouse University Hospital, won the call for proposals in University-Hospital Research in Health. BIOFACE proposes a radical transformation of surgical procedures for facial reconstructions in oncology, thanks to an innovative medical device. The project aims to improve the quality of life of patients with head and neck cancer who need bone reconstruction.

### “Before your very eyes”: a shock communication campaign to raise awareness of the symptoms of head and neck cancers

Because the symptoms of these cancers sometimes appear harmless – right before our very eyes – but do not draw enough attention, the Oncopole head and neck cancer teams wanted to launch a dedicated national communication campaign. The challenge was to mobilize and alert the general public without stigmatizing through a simple, clear message: if a symptom lasts more than three weeks, see your doctor. The slightly humorous, but unsettling, video concludes that these symptoms are no laughing matter. Inspired by the Communication department in partnership with the Corasso association and several learned societies, the video, together with an original social networking feature, went viral, reaching more than two million views in one week.

**For more information:**  
[cancerorliuct-oncopole.fr/campagne-2023](http://cancerorliuct-oncopole.fr/campagne-2023)



**Prof. Sébastien Vergez,**  
Head of the department of surgery and co-leader of the head and neck cancer committee



2 Gold awards, 1 Silver award

**Dr. Anouchka Modesto,**  
Radiotherapist and co-leader of the head and neck cancer committee



2 Silver awards

## UNPRECEDENTED DISCOVERY: THE SUPERPOWER OF THE INTESTINES AGAINST METASTASES

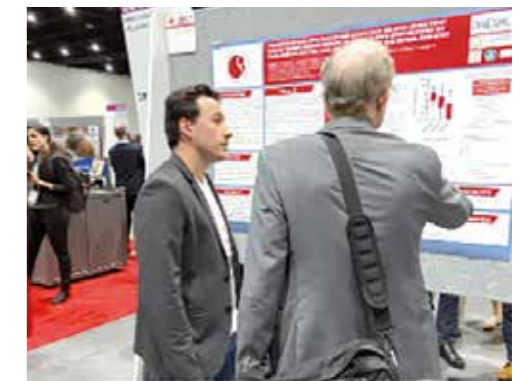
Five years after joining the “Anti-tumor Immunity and Immunotherapy” team led by Profs. Ayyoub and Delord at the Oncopole’s Toulouse Cancer Research Center, Dr. Christel Devaud signed her first publication, with Virginie Féliu, in the prestigious international journal *Science Immunology*, reported in *Science*. Their discovery? A family of killer T cells, CD8 T lymphocytes, that derive specifically from the colon and are particularly effective against metastases. “This publication demonstrates the scope of the Toulouse Oncopole model that has already enabled us to initiate the validation of our fundamental discoveries in patients”, says Dr. Christel Devaud.

Prof. Maha Ayyoub,  
Dr. Christel Devaud  
and Virginie Féliu,  
T2i Team



## HEMATOLOGY: THE TEAM FROM THE PINK CITY MOBILIZED

At the 65<sup>th</sup> Congress of the *American Society of Hematology* (ASH), the hematology team was present in San Diego to share its work with world experts – a record year with 85 papers co-signed by authors from the Oncopole (20% more than to 2022). Young clinicians – Julie Higué, Camille Gondran and Yann Zadro – were able to present their work supervised by the team’s experienced hematologists.



The hematology team at the ASH 2023.

## GYNECOLOGICAL CANCERS: 2023, THE YEAR OF THE FIRST TIMES!

### Live:

For the first time during the ESGO (European Learned Society of Gynecological Oncology) Congress, surgery was broadcast live to the 5,000 participants gathered for the occasion in Istanbul. An expert in this specialty, Dr. Gwénaél Ferron, surgeon and member of the gynecology committee at IUCT-Oncopole, performed the procedure from an operating room at the Oncopole.

### Turquoise September:

#### Breaking down preconceived ideas

On the occasion of "Turquoise September", the awareness-raising month for gynecological cancers, the IUCT-Oncopole organized its first campaign "Breaking down preconceived ideas". The objective was both to remind women of the need for regular follow-up at any age and to provide an update on ongoing research at the Oncopole (see page 44).



## BREAST CANCER: PERMANENTLY COMMITTED TO THE FIGHT AGAINST BREAST CANCER

### A clinical trial

#### "made in Oncopole"

Presented at the San Antonio Breast Cancer Symposium (USA) last December, **ADC Low** is the name of the largest national retrospective multicenter study evaluating the efficacy of one conjugate antibody following another in patients with metastatic breast cancer. Led by a young oncologist, Dr. François Poumeaud, under the direction of Prof. Florence Dalenc, the study included 179 patients. The results were presented and praised at the *San Antonio Breast Cancer Symposium* last December



The breast cancer team at the SABCS in 2023.



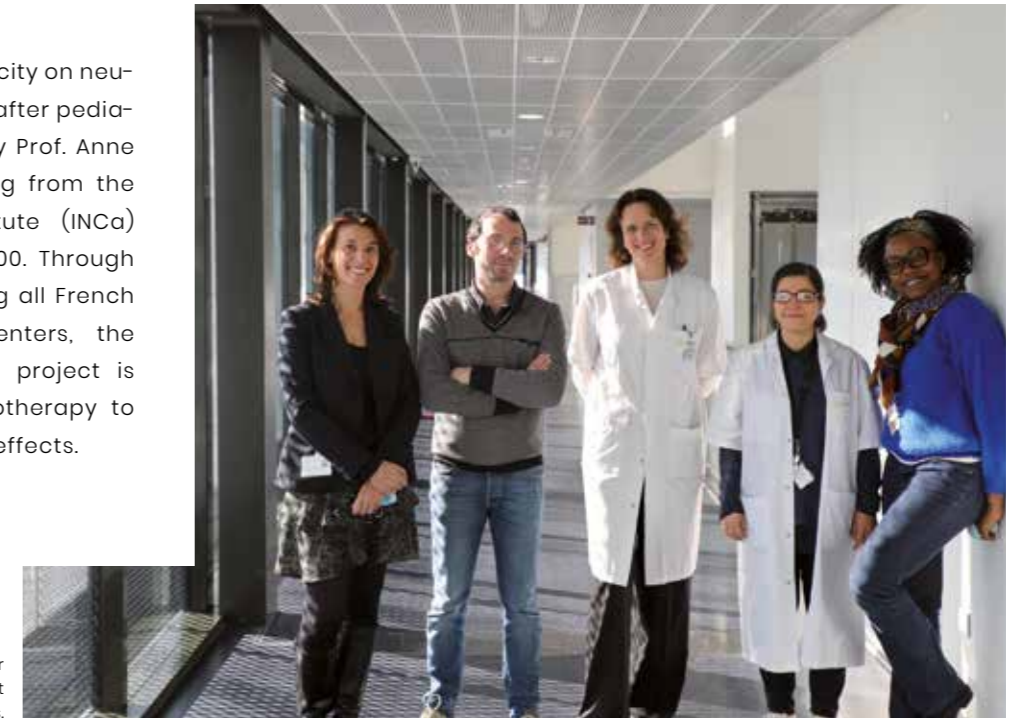
### Pink October

In 2023, not one, but two "Pink" days were organized as part of the Pink October campaign. The second day was dedicated to patients with metastatic breast cancer to provide an update on treatment and research projects and to offer relaxation, wellness and recreational workshops. In total, these two days brought together more than 400 patients, family caregivers and health-care professionals.

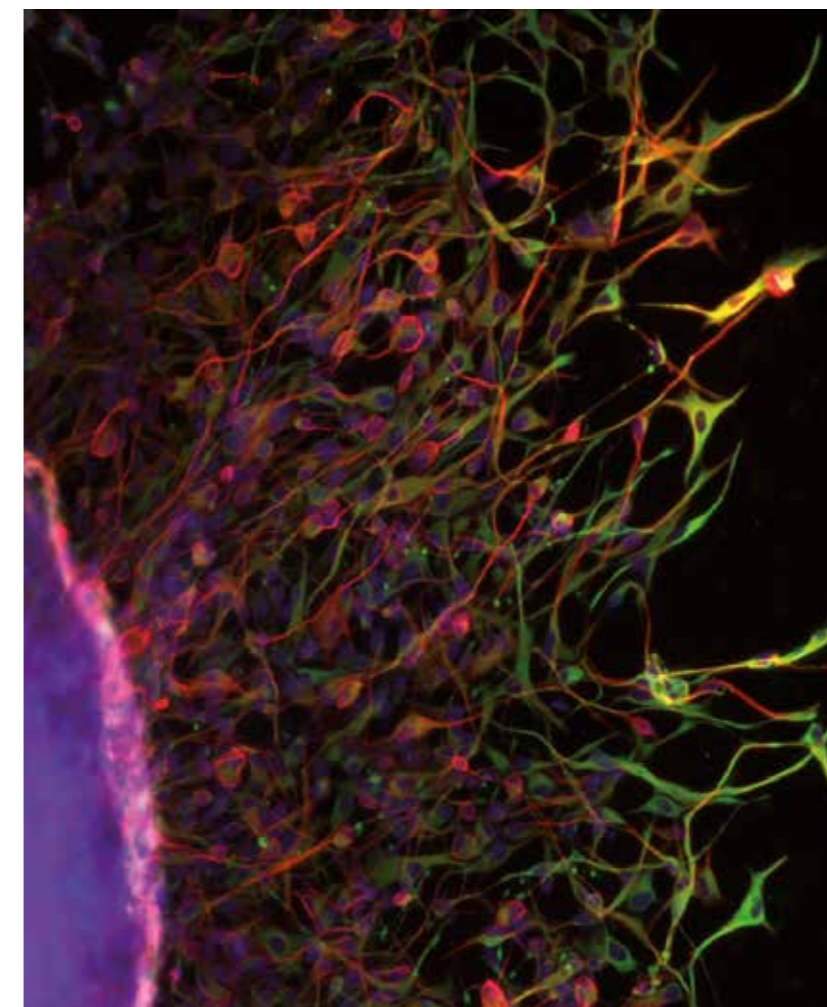
## RADIOTHERAPY: TECHNOLOGICAL INNOVATION FOR THE BENEFIT OF PATIENTS

### Pediatrics:

The **THINK project** – "Toxicity on neuro-cognition and health after pediatric irradiation" – led by Prof. Anne Laprie, obtained funding from the National Cancer Institute (INCa) to the tune of €1,220,000. Through clinical studies involving all French pediatric oncology centers, the objective of the THINK project is to optimize brain radiotherapy to reduce cognitive after-effects.



Prof. Anne Laprie in the center with some of the THINK project team members.



### Glioblastoma

A 100% Toulouse team composed of radiotherapists from the Oncopole, neurosurgeons from the Toulouse University Hospital, and the National Institute of Health and Medical Research (INSERM) researchers has just demonstrated the relevance of a new MRI technique to locate foci of aggressive tumor cells to improve the treatment of glioblastomas. This research has been published in the prestigious international journal *Science Advances*.

**ScienceAdvances**  
AAAAA

# Distinctions

Prizes and recognition were awarded to several members of our teams.  
**A big bravo to each of them!**

**National Academy of Surgery**



**Dr. Gwénaél Ferron**  
 Surgical oncologist  
**Ambroise Paré medal  
 Skali Villet award**

**Monegasque Cancerology Biennale**



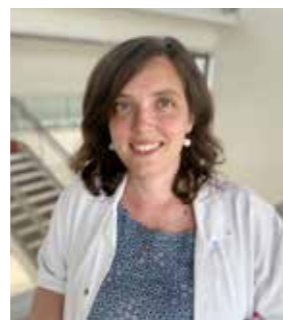
**Ana Cavaillon**  
 Biostatistician  
**Best publication  
 of the year award**

**American Oil Chemist's Society**



**Dr. Marc Poirot**  
 Director of research,  
 INOV team  
**Schroepfer award**

**French Society of Medical Physics**



**Dr. Laure Parent**  
 Medical physicist  
**Appointed President  
 for 3 years**

**Visiomel Data Challenge**



**Lucas Robinet and Ziad Kheil**  
 Doctoral students  
**2<sup>nd</sup> prize**

**French Association for Oncological Supportive Care**



**Dr. Audrey Eche-Gass**  
 General practitioner  
**Appointed Vice-president**

**French Society for Nuclear Medicine**



**Prof. Frédéric Courbon**  
 Nuclear physician  
**Appointed President  
 for 3 years**

**European Society for Pediatric Oncology**



**Prof. Anne Laprie**  
 Radiation oncologist  
**Member of the Scientific  
 committee**



**International Society for pediatric radiation oncology**

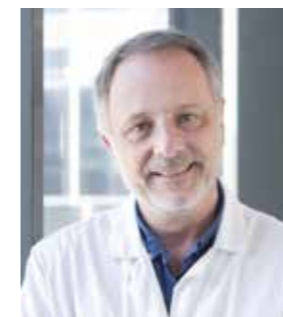
**Appointed Treasurer  
 for 3 years**

## # FOCUS

### INTERNATIONAL RECOGNITION



Clarivate, the global specialist in connecting people and organizations, has unveiled its "Highly Cited Researchers 2023" ranking. This classification reveals the world's most cited researchers who have demonstrated significant and widespread influence in their fields. 139 French researchers were listed in this internationally renowned ranking, including Prof. Jean-Pierre Delord, General Manager of the Oncopole Claudius Regaud, Administrator of the GCS IUCT-Oncopole, medical oncologist and co-director of the T2i research team at the Toulouse Cancer Research Center, and Prof. Julien Mazières, head of the pneumology department and coordinator of the Toulouse University Hospital Cancer Federation. Also included was Prof. Jean-Philippe Girard, Director of Research at the National Institute of Health and Medical Research (INSERM) and a renowned scientist in the fight against cancer – notably breast cancer – who in April 2024 was awarded the Grand Prix Oberling-Haguenau by the *Fondation ARC*.

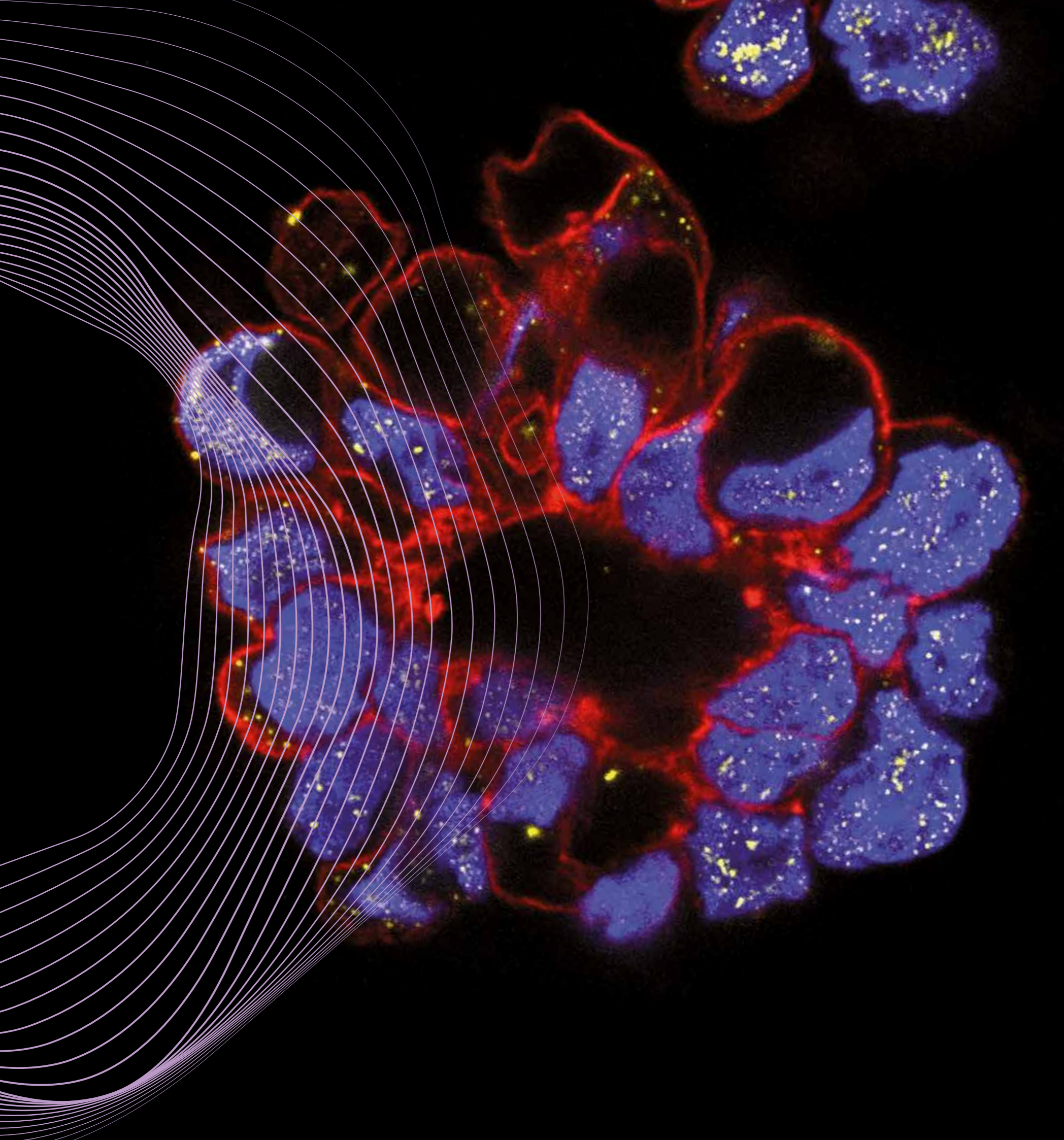


**Prof. Jean-Pierre Delord**  
 General Manager  
 of the Oncopole Claudius Regaud  
 Administrator  
 of the GCS IUCT-Oncopole



**Prof. Julien Mazieres**  
 Head of the pneumology  
 department  
 Coordinator of the Toulouse  
 University Hospital Cancer  
 Federation





PART I

# Finding tomorrow's treatments

**'Fatal beauty'**: this photo by Romina D'Angelo (SigDyn team) won the 2023 CNRS **'Proof through pictures'** (**'La preuve par l'image'**) competition.

# Immunotherapy

## Improving treatment efficacy

The presence of the CD137 molecule on the surface of killer T lymphocytes infiltrating cancer cells could be one of the keys to increasing the number of immune cells in patients.

**Dr. Ludovic Martinet,**  
INSERM Director of research



"Killer" T cells are the most promising immune system players in the fight against cancer. However, in this disease these T cells are often subject to exhaustion, limiting their effectiveness. Research is focusing on how to address this issue through new treatments, notably immunotherapy, based on the use of monoclonal antibodies. The aim of this therapy is to "revitalize" patients' exhausted killer lymphocytes so that they eliminate cancer cells. Unfortunately, while immunotherapy can boost exhausted lymphocytes, it behaves differently from patient to patient.

**It is therefore necessary to better understand the mechanisms stimulating exhausted lymphocytes in cancer.**

The CRCT's GENIM team, led by Dr. Ludovic Martinet, is seeking to better understand these mechanisms of exhaustion. By studying the molecular characteristics of T lymphocytes in models of cancer and chronic infection, team members have succeeded in identifying the CD137 molecule on the surface of exhausted lymphocytes. Through approaches based on experimental models of mice with genetic CD137 receptor deficiency, the team discovered that this molecule regulates the quantity of exhausted lymphocytes in cancers. The absence of CD137 led to the disappearance of killer lymphocytes in tumors and an increase in cancer cells. Conversely, stimulating the CD137 receptor by agonist antibodies increased the number of exhausted lymphocytes within the tumor. While it did not revitalize depleted killer lymphocytes,

by substantially increasing the number of these cells, this molecule nonetheless promoted cancer cell destruction through immunotherapy.

**This discovery paves the way for new treatments to enhance the efficacy of current immunotherapies and thus cure a greater number of patients.**



DOI: 10.1016/j.immuni.2023.06.007

# Acute Myeloid Leukemia

## A clustering method to optimize assessment of minimal residual disease

Minimal residual disease (MRD) is a measure used in oncology to assess the presence of residual cancer cells after treatment. In particular, it is becoming increasingly important in adjusting treatment for acute myeloid leukemia. MRD can be assessed using a technological approach known as flow cytometry, recently validated by the European LeukemiaNet.



**With this study, the IUCT-Oncopole hematology laboratory became a reference for MRD in acute myeloid leukemia for national and European treatment protocols in 2023.**

**Dr. François Vergez,**  
Biologist-researcher

The clinical hematology and hematology laboratory teams at the IUCT-Oncopole, coordinated by biologist-researcher Dr. François Vergez, have set up an unsupervised clustering method, in collaboration with the Bordeaux University Hospital, to quantify residual blasts and rare leukemic stem cells (LSCs).

In a cohort of 155 patients treated at the Oncopole, the teams identified a group of MRD negative patients, but with detectable leukemic stem cells having an intermediate prognosis. This research demonstrates the value of analyzing MRD and chemoresistant cell populations for patient follow-up.



### Major publications

- Canali and al., Clinical Cancer Research, Jan. 23, PMID 36318706
- Oral communication SFH Congress 2024

\* From the Toulouse-Bordeaux DATAML clinico-biological database for acute myeloid leukemia which included the 6,000<sup>th</sup> patient in 2023.

Finding tomorrow's treatments

# Onco-gynecology

Innovative clinical research on an international scale



The gynecology committee team.

## 930

PATIENTS treated in 2023

## 16

CLINICAL TRIALS conducted at the Oncopole

## 110

PATIENTS included in a clinical trial

A reference center in onco-gynecology and promoter of research projects of international scope, the Oncopole is also recognized for its ability to include patients in innovative clinical trials. Focus on 3 flagship projects:



**Dr. Laurence Gladiëff,**  
Medical oncologist,  
head of the gynecology committee

### OVARIAN CANCER: A NEW STUDY TO UNDERSTAND RESISTANCE MECHANISMS

**PARP** inhibitors are revolutionizing the treatment of high-grade ovarian cancers, especially those with BRCA mutation, but resistance can develop in some patients. To identify and understand these resistance mechanisms, Dr. Laurence Gladiëff, in collaboration with Dr. Laura Keller and Prof. Anne Pradines, launched the **ATROVA study**. Funded as part of PHRCI 2023, this new study will be based on the circulating tumor DNA analysis method developed by the Oncopole's Cancer biology laboratory (LBMO).

Dr. Laurence Gladiëff is the principal investigator in France for the BEATcc trial, demonstrating for the second time the benefits of immunotherapy in treating recurrent cervical cancer. This treatment not only prolongs relapse-free survival, but above all patients' overall survival.



Oaknin and al., Jan. 24, PMID 38048793.

### CERVICAL CANCER: TWO INTERNATIONAL SURGICAL TRIALS

Open to inclusions, the **PAROLA trial**, coordinated by Prof. Alejandra Martinez, is studying the role of lumbo-aortic resection in advanced cervical cancer to adapt radiotherapy fields more precisely according to lymph node staging. This is the second international surgical study in onco-gynecology carried out in France.

The **international SHAPE study**, led in France by Dr. Gwénaél Ferron, has shown that less invasive surgery (simple hysterectomy) is as effective (reduced complications, better quality of life) as complete hysterectomy for women with early cervical cancer.

Presented at ASCO 2023, the results of the SHAPE study have also been published in the international journal *The New England Journal of Medicine*.

2023 ASCO ANNUAL MEETING

The NEW ENGLAND JOURNAL of MEDICINE

Plante and al, Febr. 24, PMID 38416430.



**Prof. Alejandra Martinez,**  
Surgical oncologist



**Dr. Gwénaél Ferron,**  
Surgical oncologist

Finding tomorrow's treatments

# Breast cancer

## Co-constructed research

**2,800**  
PATIENTS  
treated yearly

**32**  
CLINICAL TRIALS  
conducted in 2023

With 2,800 patients treated every year and recognized medical and scientific expertise, the Oncopole is a key player in the fight against breast cancer. In 2023, 32 clinical trials dedicated to these cancers were conducted at the instigation of the breast cancer committee led by Prof. Florence Dalenc, Prof. Charlotte Vaysse and Dr. Eva Jouve.

### METASTATIC BREAST CANCER

Based on 100% Toulouse-based research by the CRCT's Oncosarc team, the new **DP-Metabreast study** aims to identify new therapeutic targets. Using liquid biopsies, the team aims to prove the tumoral origin of so-called double-positive cells (expressing epithelial and immune markers) to understand their role in tumor dissemination and better characterize them. This study will be offered to 60 Oncopole patients treated for metastatic breast cancer.

### TRIPLE-NEGATIVE BREAST CANCER

New research illustrates the collaboration between Oncopole clinicians and researchers from the CRCT's DynACT team. T lymphocytes are "killer" cells that may not function in triple-negative breast cancers, being blocked by molecules produced by the tumor cells. The teams' aim is to study the spatial organization of lymphocytes and its role in these cancers to guide patients towards new immunotherapy strategies.

CALL FOR PROJECTS: INTEGRATED RESEARCH ACTION PROGRAM (PAIR) - OBESITY AND CANCER

### OBESITY

A new study seeks to understand the link between obesity and the aggressive nature of luminal breast cancers. Four research teams, including that of Prof. Catherine Muller at the Institute of Pharmacology and Structural Biology (IPBS)-Toulouse, are analyzing the impact of breast adipose tissue on the tumor microenvironment, using innovative technologies (single cells, multimodal imaging or co-culture models).

**Objectives:** understand cellular changes and metabolites and identify new therapeutic targets.



Finding tomorrow's treatments

# Glioblastoma

## Encouraging leads

The combined expertise of clinicians and researchers to discover encouraging new avenues in the fight against glioblastoma.

### MSRGB PROJECT

Coordinated by Prof. Elizabeth Moyal and accredited by the Fondation ARC, this project studies the involvement of metabolic change in glioblastoma stem cells in adaptation and resistance to radiotherapy. The program also involves Prof. Jean-Yves Tournier's team at the Toulouse Institute for Computer Research (IRIT), where new metabolites and their ability to predict relapse after treatment will be identified and studied using deep learning.



**Prof. Elizabeth Moyal,**  
Head of the radiotherapy department,  
RADOPT team leader

### TRIDENT TRIAL

In the fight against glioblastoma, it is essential to increase the efficacy of standard treatments such as radiotherapy and chemotherapy. To this end, the **TRIDENT trial** aims to compare the addition of electric fields (TFIELDS) at the start of radiotherapy and chemotherapy with the current treatment integrating electric field therapy in the adjuvant phase after radio-chemotherapy.

The world's **No. 1**

CENTER OF INCLUSION  
IN THIS CLINICAL TRIAL  
46 patients



### PARTNERSHIP

#### PIRAT STUDY

The fruit of a partnership between the Oncopole and the Saint Exupéry Technological Research Institute (IRT), several projects involving physicians, engineers and AI researchers were launched in 2023. The aim is to predict the response to radiotherapy and immunotherapy treatments of glioblastoma patients included in the **STEMRI trial**. Using AI and data analysis (blood and tumor samples, histological slides and MRI imaging), the teams have succeeded in developing AI algorithms for predicting therapeutic efficacy, paving the way for personalized medicine. This research is the subject of two doctoral theses, one in medicine and the other in applied mathematics, supervised respectively by Dr. Caroline Zerbib and Lucas Robinet.



Finding tomorrow's treatments

# Radiotherapy: ambitious projects



The Radiotherapy team includes radiotherapists, manipulators, nurses, physicists, dosimetrists and secretaries.

The radiotherapy department, renowned for its translational research and innovation, continually furthers its development (modernizing equipment, technological partnerships, etc.) and clinical activities. At the same time, it conducts numerous research projects to improve the organization and effectiveness of radiotherapy treatments and reduce adverse reactions.

## PARTNERSHIP

### SYNERGY BETWEEN AERONAUTICS AND MEDICINE

Improving the planning of radiotherapy sessions – crucial for speeding up patient care – is a major focus for many researchers. This optimization aims to allocate patients to different machines according to criteria of urgency, pathology and patient well-being, along with technical and dosimetric constraints. An initial feasibility study, conducted with **Airbus** and incorporating AI, transposes approved aerospace solutions to cancer care. Results are due to be published shortly.

### ASSESSING CLINICAL BENEFIT

In recent years, several immune checkpoint inhibitors have been approved to treat various solid tumors, including metastatic esophageal cancer. To assess the effectiveness and clinical benefit for these patients of adding an anti-PD-L1 antibody to chemoradiotherapy (CRT) and then continuing it as maintenance therapy, radiotherapist Dr. Anouchka Modesto is coordinating the phase II **ARION study** whose initial results have been published in *BMC Cancer*.

### CONSOLIDATIVE RADIOTHERAPY

For patients with a metastatic urothelial carcinoma not progressing after 1<sup>st</sup>-line chemotherapy, Dr. Jonathan Khalifa is coordinating the randomized phase II **BLAD-RAD 01** trial to evaluate the benefit of adjuvant radiotherapy on the bladder and residual oligometastases in addition to standard avelumab maintenance therapy. Conducted on a national level, the study to date includes 28 patients out of the 130 expected.



#### Major publications

- Pasquier and al., *Frontiers in oncology*, PMID: 37397359
- Desrousseaux and al., *Int J Radiat Oncol Biol Phys*, PMID: 37437811

Finding tomorrow's treatments

# Medical physics

## Optimized treatments by cutting-edge teams

Medical physicists play a central role in personalized medicine. They are responsible for patient safety, machine performance and radiation dose measurement. At the Oncopole, the Medical physics department leads research projects in radiotherapy and imaging and invests in cutting-edge equipment to optimize treatments.

### AT THE CUTTING EDGE

State-of-the-art equipment has an impact on the quality of care and success of treatments: faster, more precise radiotherapy sessions, patient comfort, simplified processes. Since 2023, Halcyon 6, a new-generation linear accelerator, has been providing the Oncopole with intensity-modulated treatments at an arm speed of 24°/sec. 800 patients have already been treated.

### PET SCANNER

The new Omni Legend PET scanner has been the focus of research at the Oncopole. Using synthetic data, a method has been developed to evaluate its performance in oncology, making it possible to optimize the system under realistic clinical conditions. This evaluation offers better understanding of this new imaging technology and its capabilities.

### PREDICTION PARTNERSHIP

When using complex radiotherapy equipment, component breakdowns can occur, complicating patient care. To prevent these interruptions of varying duration, the Oncopole has signed an unprecedented partnership with **Accuray** and **Airbus** to co-develop a failure prediction system based on machine learning and AI.



The Medical physics team includes physicists, dosimetrists, physics assistants, research engineers and PhD students.



#### Major publications

- Younes and al., *Physica Medica*, 2023, PMID: 37820506
- Darréon and al., *Cancer Radiother*, 2023, PMID: 37558608

Finding tomorrow's treatments

# Cancer biology laboratory



Cutting-edge research for bold scientific challenges

## LIQUID BIOPSY

Since February 2023, the Cancer biology laboratory (LBMO) has been routinely offering the "HRRLIQ" test to detect mutations in the BRCA1 and BRCA2 genes from tumor DNA present in the blood, or circulating tumor DNA (ctDNA) in prostate cancers. The presence of a pathological mutation is an essential indicator to prescribe PARP inhibitors (PARPi) whose benefits in terms of survival and quality of life have been clinically proven. Traditionally, BRCA1/2 mutations have been detected using DNA extracted from paraffin-embedded tumor tissue, but over 30% of samples are unusable. Circulating tumor DNA thus offers a useful alternative, minimally invasive for patients and easily repeatable, enabling dynamic mutation detection and regular monitoring of resistance to anti-PARP treatments.



This new investigative technique makes it possible to detect tumor-derived elements (cells or DNA-type molecules or proteins) to analyze individual cancers and adapt treatments on a case-by-case basis. The Oncopole LBMO team has already carried out over fifty "HRR-Liquid" tests.

The LBMO team who set up the HRR test.

## Research partners

The laboratory's teams contribute to the many research projects carried out at the Oncopole. The close proximity to the CRCT means that LBMO's managers share their research activities with several teams from the National Institute of Health and Medical Research (INSERM): Prof. Maha Ayyoub (T2i team), Prof. Gilles Favre (SIGNATHER team) and Prof. Étienne Chatelut (DIAD team).

## STATE-OF-THE-ART EQUIPMENT

The Oncopole continues to invest in acquiring modern technological equipment to improve the care of cancer patients. Over the past two years, the Cancer biology laboratory (LBMO) has embarked on a complete overhaul of its automated equipment. For patients' continuous benefit, these investments allow the team to reduce analysis times to thus deliver results more rapidly to prescribing physicians. They also make it possible to handle more work to meet the growing number of patients treated at the Oncopole.



## Major publications

- Boutonnet and al., Analytical chemistry, June 23, PMID 37279458
- Feliu and al., Science Immunology, June 23, PMID 37289857



PART II

# Innovating for better care



Innovating for better care

# Innovation in Supportive care

## Personalized interdisciplinary support at every stage of the care pathway

A pioneer in this field, the IUCT-Oncopole's 43-strong Supportive care department, headed by Dr. Nathalie Caunes-Hilary, focuses its activities on patients' global care pathway and beyond, striving to broaden its range of supportive services and treatments to ensure that patients and their families enjoy the best possible quality of life. Here's a closer look at the initiatives our teams launched in 2023.

### UNIQUE IN EUROPE: TELECONSULTATION SPEECH THERAPY SESSIONS

Appropriate speech therapy is essential for head and neck cancer patients. To support speech therapists in the community, the Oncopole proposes joint teleconsultations to guide them in the specific management of these patients. This system, the only one of its kind in France and Europe, is currently the subject of a clinical study conducted by Jean-Claude Farenc, speech therapist at the IUCT-Oncopole, to assess the benefits for patients (access to care, quality of life) and for community speech therapists.



**Jean-Claude Farenc,**  
Speech therapist



**Dr. Antoine Boden,**  
Pain management specialist

**Dr. Coralie Guillemot,**  
Pharmacist

### NEW: A REGIONAL PAIN MANAGEMENT NETWORK

Thanks to funding from the National Cancer Institute (INCa), Dr. Antoine Boden, pain management specialist, and Dr. Coralie Guillemot, pharmacist at the IUCT-Oncopole, launched the "Regional intrathecal analgesia network" in 2023 to provide referral management of complex cancer pain. The aim is to improve access to this technique for patients in Western Occitanie, and to facilitate their management in collaboration with local health care facilities.

### VULCANO, A NEW CITY/HOSPITAL NETWORK

The **Vulcano Project** (VULnérability in CANcer in Occitanie) is headed by Prof. Virginie Woisard, a head and neck specialist and phoniologist. Funded by the National Cancer Institute (INCa), it aims to limit after-effects of treatments and improve the quality of life of patients with cancer of the upper aerodigestive tract through a regional city/hospital network based on a pilot area (the Haute Garonne, Aude and Ariège departments). The project seeks to identify vulnerable patients at an early stage to adapt their care pathway by improving access to therapeutic education programs and addressing all of the socio-environmental health determinants. The Oncopole, the Toulouse University Hospital, the Onco-Occitanie network and the Carcassonne General Hospital are involved in the project.

### BACK TO WORK: SUPPORTING THE POST-CANCER PERIOD

Breaking down the taboos surrounding cancer and daring to tackle the post-cancer period have been the objectives of the "Emily's Path" web series since its launch in 2021. In 2023, the third and final season, entitled "Life after, how to get started", two new themes are tackled: "At the office", about returning to work, and "In the kitchen", about nutrition. These topics and the writing of the scripts were decided during discussions with patients at the "Pink Days" events. The web series already boasts 9 episodes, over 70,000 YouTube views and 8 film awards.



### CLINICAL STUDIES FOR ONCOSEXOLOGY

For many years now, the IUCT-Oncopole has fully integrated the "sexual health" of patients and their families into their care pathway. Josiane Ménard, a nurse sexologist, offers dedicated consultations to help them overcome the emotional repercussions of cancer. In 2023, she took part in three clinical studies\* to assess the acceptability of an onco-sexology pathway and the benefits for patients or to measure the quality of sex life after treatment.



**Josiane Ménard,**  
Nurse sexologist

\*ABSENS, Lambeau Stepa and Santicol III studies





Innovating for better care

# Sport & Cancer

For  
**7 years**

**+450**  
PATIENTS  
INVOLVED

**€80k**  
PER YEAR

The "Sport & Cancer" program has already been running for seven years at the IUCT-Oncopole. Adapted physical activity sessions (APA) are prescribed by physicians and provided by CAMI professionals specifically trained in cancerology. Organized on the premises of ASTEN or the Stade Toulousain Rugby Club, these sports therapy sessions are an opportunity for patients to take advantage of quality infrastructures in a stimulating, top-class environment.

In 2023, 180 patients benefited from this program, co-financed by the IUCT-Oncopole, Malakoff Humanis and the *Rugby Club Toulousain* endowment fund. Most of the patients enrolled are being treated for breast cancer or a blood disorder including 30 adolescents and young adults. This is an added advantage in the fight against disease, given the known benefits of physical activity before, during and after treatment. On both physical and psychological levels, patients enrolled in the program emphasize its benefits.

In 2023, the Oncopole and CAMI management teams renewed their partnership for the next three years, offering patients free access to two weekly sessions, renewable for three months. The cost of the project is €80,000 per year, so sponsors are welcome to support the "Sport and Cancer" theme, like the *Rugby Club Toulousain* endowment fund that has financed part of the project for several years.

**The objective for 2024:** offer this program to 155 additional patients, in particular head and neck cancer patients.



**PARTNERS**

The Adapted Physical Activity (APA) program was honored in November 2023 with a visit from Agnès Firmin Le Bodo, then Deputy Minister for Regional Organization and Health Professions. The Minister and her accompanying delegation attended a session and spoke with patients. This was an opportunity for Dr. Nathalie Caunes-Hilary to point out that **67%** of patients benefiting from the program feel less tired and tolerate treatment better, and for Dr. Stéphanie Motton to present the **PROGRESS study that aims**, which aims to evaluate whether the implementation of a personalized and collaborative APA program proves more effective than a standard physical activity prescription in patients with cancer diagnosed within the year.

Innovating for better care

# Inter-hospital cooperation projects

In 2023, the Oncopole pursued its strategy of inter-hospital cooperation with nearby healthcare facilities. The aim is to strengthen and improve cancer care pathways for the benefit of patients and healthcare professionals alike.



Signing the partnership with the Montauban General Hospital.



Signing the partnership with the Castres-Mazamet Intercommunity General Hospital.

The specific fields concerned include surgical specialties, as well as associated and cross-disciplinary cancer care activities such as medical oncology, radiotherapy, oncogenetics, access to clinical trials and dedicated pathways for patients with disabilities.

This approach is led by the Oncopole Claudius Regaud and the Toulouse University Hospital Cancer Federation, in conjunction with the regional hospital groups (GHT).

For each partnership, areas of cooperation have been identified, such as:

- **Organizing care pathways** between facilities to ensure access to local and referral services
- **Developing human resources** (training and knowledge transfer in scientific innovation)
- **Developing digital strategy** to facilitate transmitting medical information
- **Developing specific pathways** for people with disabilities.

\* Regional Hospital Group.

Prof. Julien Mazières and Prof. Charlotte Vaysse, coordinators of the Toulouse University Hospital Cancer Federation.



Innovating for better care

# Concrete initiatives for patients

The IUCT-Oncopole is renowned for its excellence in patient care, offering a high-quality welcome in a caring and secure environment. Our teams are mobilized to support patients and their caregivers throughout their care pathway. Highlighting several initiatives that marked the year 2023:

## 1<sup>ST</sup> HANDICAP & CANCER CONFERENCE

The fruit of unprecedented collaboration between the IUCT-Oncopole and the ASEI Association (for widespread accompaniment of people with disabilities) since 2021, the "Handicap and Cancer" program aims to improve care for people with disabilities suffering from cancer by bringing together the knowledge and expertise of the healthcare and medico-social sectors. With the participation of Pascal Jacob, initiator of the Romain Jacob Charter in France, the first Handicap & Cancer Conference was an opportunity for the 70 healthcare and medico-social professionals present to share knowledge and feedback and to further evolution of practices.



## A WEEK OF EVENTS TO RAISE AWARENESS OF UNDERNUTRITION

Nutritional management is an integral part of the patient care pathway: diagnosis, detection of undernutrition, nutritional strategy. In 2023, the dietetics unit (1 manager, 6 dietitians and 1 nutritionist) took part in the "Undernutrition Week", focusing on the theme of food supplements. The program, aimed at patients and care teams alike, included a tasting workshop of recipes based on food supplements, a recipe book and an information stand set up throughout the week in the main hall.



## ONCOREHABILITATION: DAY-HOSPITALIZATION FOR PERIPHERAL NEUROPATHIES

The IUCT-Oncopole oncorehabilitation team coordinates managing the after-effects of cancer treatments or of the disease itself. In 2023, it launched a day-hospital for chemotherapy-induced peripheral neuropathy, offering comprehensive assessment and rehabilitation, involving specialists of various fields (pain management, occupational therapy, physiotherapy, physical medicine and rehabilitation). At the same time, the team structured the care pathway for sarcoma patients, offering pre-rehabilitation before surgery and support for post-surgery after-effects.

## A NEW AREA DEDICATED TO ADOLESCENT AND YOUNG ADULT PATIENTS

Every year, a dedicated team at the Oncopole cares for over 150 Adolescent and Young Adult (AJA) patients, aged between 15 and 25. In 2023, it appealed to the generosity of our sponsors, the **Toulouse Sud Rotary Club** and the **For Rose association**, to refurbish the relaxation area reserved for AJAs, offering them an escape from loneliness. Following renovations and the purchase of equipment (video games, table soccer, books, etc.), AJA patients now have a space adapted to their needs, promoting their well-being during their care pathway.



FUNDED BY DONATIONS



## READING AND IMAGINATION TO REDUCE STRESS

A short story dispenser was installed in the waiting room of the oncology day-hospitalization ward, and a digital version in the radiotherapy reception area. Available free of charge to patients, relatives and health professionals, stories lasting 1, 3 or 5 minutes are randomly printed out by the dispenser to stimulate the reader's imagination. This initiative aims to involve patients in their care by encouraging reading to reduce the stress of waiting. In 2023, 1,000 stories were distributed.

# 4

PROJETS to improve patient reception and comfort

Initiated by care teams as part of an internal competition, four projects were selected by a jury made up of healthcare professionals, patient representatives and IUCT-Oncopole patients. The projects all had one thing in common: being initiated by healthcare teams to improve patients' welcome and comfort. These projects will be receiving €30,000 from the Financial incentive for quality improvement (IFAQ) scheme of the French national Authority for Health. Winning projects of the 2023 competition:

- Creating a child-friendly environment in the post-operative monitoring room
- Creating a relaxing, individualized space in the outpatient surgery unit
- Reorganizing the pharmacy reception area to ensure confidentiality and practicality
- Setting up a self-service snack area on the day-hospital ward



PART III

# Disseminating knowledge

Conference on immunotherapy by Dr. Ira Mellman, Vice-president of Cancer Immunology, Genentech Inc. San Francisco, USA.

Disseminating knowledge

# Acculturating, sharing, transferring knowledge

Launching "Oncopole Tuesdays" in 2023, a program of medico-scientific events organized and run by the oncology teams at the IUCT-Oncopole and Toulouse University Hospital.



Under the impetus of a scientific steering committee, the "Oncopole Tuesdays" program offers monthly cross-disciplinary thematic and post-symposium conferences to review the latest national and international medical and scientific news in oncology. In 2023, 14 events were organized, bringing together over 1,200 regional healthcare and research professionals. This program is also an opportunity to invite world-wide experts to share their knowledge, such as Prof. Fabrice André (Institute Gustave Roussy), Prof. Louise Emmett (St Vincent's Hospital, Sydney), Prof. Ira Mellman (Genentech, San Francisco).



## PREPARING FOR THE FUTURE! 1<sup>ST</sup> YS2C CONGRESS FOR YOUNG RESEARCHERS AND CLINICIANS

In October, the post-doctoral fellows' association of the Toulouse Cancer Research Center organized the 1<sup>st</sup> Congress of young researchers and clinicians in oncology. This was an opportunity to share recent work and create more interaction between research and clinical practice. This first edition was a resounding success, with over 180 participants gathering at the Oncopole for conferences, partner stands and convivial exchanges.



## ONCODERMATOLOGY: 1<sup>ST</sup> INTERNATIONAL SYMPOSIUM ON SKIN TOXICITIES

Under the aegis of the European Academy of Dermatology and Venerology, and for the first time in Europe, the Task Force headed by Prof. Vincent Sibaud, oncodermatologist at the IUCT-Oncopole, organized an international symposium presenting experts' European recommendations for managing adverse skin effects associated with immune checkpoint inhibitors.



## MEDICAL PHYSICS: 2<sup>ND</sup> DOSIMETRY SCHOOL

Unique in France and organized for the second time in Toulouse, the "Dosimetry school" is a worldwide educational initiative aimed at improving understanding and practice of clinical dosimetry used in radiotherapy treatments. In collaboration with the industrial partner in quality assurance PTW, members of the IUCT-Oncopole's Medical physics team provided a series of training courses to some twenty European medical physicists, combined with practical seminars using the Oncopole's state-of-the-art equipment.

150 PARTICIPANTS

## CHALLENGE "MY THESIS IN 180 SECONDS"

Inspired by the international competition "My thesis in 180 seconds" the 1<sup>st</sup> version "made in Oncopole" took place in February 2023. Open to all PhD students and interns at the IUCT-Oncopole and the CRCT, the aim of this competition is for students to present their doctoral work and try their hand at the difficult exercise of popularizing science! The jury members and members of the public voted Quentin Maronnier, a doctoral student in Medical physics, the winner.



## SCIENCE FESTIVAL "SALES PITCHES FROM THE ONCOPOLE"

As part of the national Science Festival ("Fête de la Science") program, a special evening was organized in a café-theater in downtown Toulouse. Using everyday objects, 8 Oncopole healthcare and research professionals presented their projects and innovations for the fight against cancer in 8 minutes each! In the course of the evening, Loelia Babin, Nicolas Bery, Frédéric Chibon, Christel Devaud, Agnès Dupret-Bories, Thomas Ginsbourger, Anne Laprie and Quentin Maronnier shared their experience and knowledge. It was a huge challenge and was met with flying colors before an audience of over 70 spectators!



## FORUM "100 YEARS OF VICTORIES AGAINST CANCER"

The year 2023 marked the centenary of the Oncopole Claudius Regaud. To mark the occasion a "100 years of victories against cancer" Forum was organized. Attended by over 250 patients and healthcare and research professionals, the day was punctuated by conferences highlighting major developments in cancer care, information stands on innovative projects led by Oncopole teams, and a retrospective in pictures of Oncopole milestones. Conviviality, sharing and knowledge transfer were the order of the day!





PART IV

# Mobilizing for a better fight

The "Pink October" solidarity walk organized by the Portet-sur-Garonne town council on October 15, 2023.

Mobilizing for a better fight

# Generosity & Partnerships

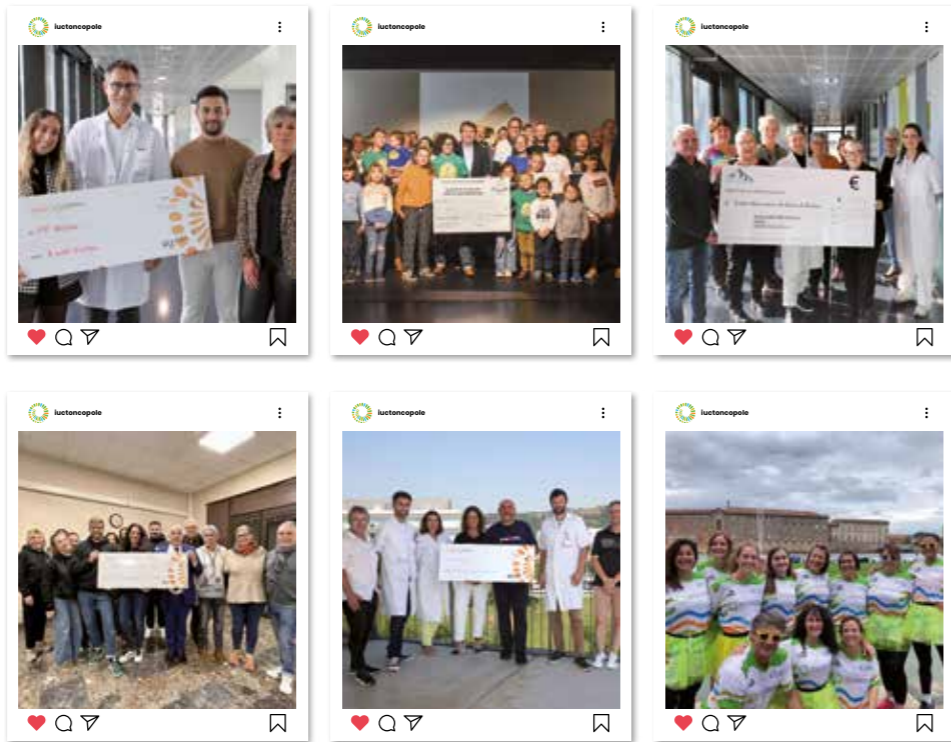
## €1,130,047

**RAISED**  
30% bequests - 70% donations

The Oncopole continues its partnership-based initiative with local players. The mobilization and commitment of individuals, associations, municipalities and companies are essential to accelerate the development of innovative programs for the benefit of research teams, healthcare professionals and patients. All of the Oncopole teams express their sincere gratitude to all the individual donors, sponsors and partners for their commitment to both staff and patients.

## Many thanks to:

ASSOCIATION PHIL' ANTHROPE - LA CAPULETTE GV DE PRAT CONTRE LE CANCER DU SEIN - ASSOCIATION EVEIL ET LOISIRS LAURANAIS - ASSOCIATION BENOIT UN SOURIRE POUR LA VIE - ASSOCIATION RANDO POUR UNE MAMAN - ASSOCIATION POUR CORENTIN - AGMOMP - ASSOCIATION SPORTIVE ATHLETISME ROUTE - ASSOCIATION VIVE LES VOISINS - ASSOCIATION ENTENTE CORDIALE GAILLACOISE - ASSOCIATION CEDIS - LA SEIN GO ROSE - LE MARATHON DE LAURIE - UNION SPORTIVE COLOMIERS OMNISPORTS - LE CLO DE L'ARIZE - TENNIS CLUB ALBIASSAIN - ASSOCIATION CARLUCET ANIMATION - ASSOCIATION COMITE D'ANIMATION DE SOS - AGV DE RIEUX VOLVESTRE - COMITE DES AMIS D'EMMAÛS - FOREST RUN - ARTC - LES AMIS DE L'ONCOPOLE - CORPO ARSENAL - MAIRIE DE PORTET SUR GARONNE - JOIE AU CŒUR - MAIRIE DE BALMA - TRIPLE'N'ROSES - ASSOCIATION DASSOS



Oncopole teams thank all of the associations and the municipalities for their loyal support.



### A NEW PATRON FOR THE ONCOPOLE

SPIE ICS became a patron in 2023 and has mobilized its employees throughout the year. Olivier Lainé, Director of Operational Performance, tells us about their mobilization: "SPIE ICS is strongly committed to Corporate Social Responsibility, and we believe that the well-being of our employees is closely linked to our performance. We are fortunate to have a center of medical excellence in Toulouse, and we want to support Oncopole teams, as well as patients and their families, in their recovery and return to the company."



### TISSÉO VOYAGEURS, 3 YEARS OF COMMITMENT

It has already been three years since Tisséo Voyageurs, the public transport authority for the Greater Toulouse area, became a partner of the Oncopole. As a major player in mobility and the region, the company relays the Oncopole's awareness-raising campaigns and appeals for donations to its customers. Congratulations to their employees, who are proud to wear the pink ribbon every year in support of the fight against cancer!



### THE TOULOUSE WHOLESALE FOOD MARKET (MIN)

For the third year, under the impetus of its Directress Maguelone Pontier, patron of the Oncopole, the Toulouse MIN has relayed the "Pink October" campaign to its teams and partners. A fundraising campaign for research was also held at the market.

**They accompany us, support our projects, our research teams, our healthcare services:**

Inserm - CNRS - Université Toulouse III Paul Sabatier - UNICANCER - Institut National Du Cancer - ANR - Université Fédérale Toulouse Midi-Pyrénées - La Région Occitanie - Les Investissements d'Avenir - Le Cancéropôle Grand Sud - Ouest - L'Etablissement Français du Sang - l'Union Européenne - Fondation pour la recherche médicale - Fondation ARC pour la recherche contre le cancer - Ligue nationale contre le cancer - Ligue contre le cancer 31 - Institut Carnot Opale - Chaire Pierre Fabre - Fondation de France - Fondation RITC - Fondation Bettencourt Schueller - Laurette Fugain - le GIRCI SOHO - Fondation Amgen - Fondation Riney

### UNFAILING SUPPORT

For several years now, the Oncopole's patrons have worked unflinchingly to support our projects and the healthcare professionals, encouraging their entourage to advance the fight against cancer. "IN TOULOUSE, TEAM SPIRIT ALSO FIGHTS CANCERS"



**Maguelone Pontier,**  
Directress of the Toulouse Wholesale Food Market (MIN)

**Maxime Médard,**  
former Stade Toulousain Rugby Club and XV de France player

### COMPANIES GET INVOLVED



# Awareness-raising campaigns

## TURQUOISE SEPTEMBER



To mark the gynecological cancer awareness month, the IUCT-Oncopole organized a comprehensive campaign aimed at the general public, as well as patients and their caregivers. The campaign focused on five key initiatives:

- The Turquoise Challenge: the second edition of the artistic and creative competition to collect works in the color turquoise for display in the reception hall throughout September.
- A first media campaign to raise public awareness of gynecological cancers by combating preconceived ideas – relayed on the Tisséo transit authority display network and social networks.
- A day for patients and caregivers, led by teams from the IUCT-Oncopole gynecology committee, to provide an update on research projects and improving care pathways.
- The creation of a web application providing information on gynecological cancers through interactive infographics.
- The second Turquoise edition of the "Hike for a Mom" to collect donations for the IUCT-Oncopole gynecology committee.

## BLOOD CANCER MONTH



September is also blood cancer awareness month. Once again, this year, the IUCT-Oncopole played an active role in this campaign. An overview of our activities:

- A "Blood cancers, our lives" exhibition featuring information totems on these pathologies, with testimonials from patients, professionals and associations (ELLYe, AF3M, Laurette Fugain, CCM) and access to podcasts – Exhibition produced with the institutional support of Abbvie.
- A photobooth made available to all the IUCT-Oncopole's hematology and internal medicine teams to create a mural in their wards – Project carried out with institutional support from AstraZeneca.
- A conference organized by the Ellye association on leukemia and lymphoma for patients and caregivers – with the participation of Profs. Loïc Ysebaert and Pierre Brousset and Drs. Lucie Obéric and Caroline Protin.
- An "All in red" day in collaboration with the association *Vivre avec une néoplasie myéloproliférative* (VNM). Hematology and internal medicine teams dressed in red to raise awareness of blood cancers and support patients.

# Engaging the community

## PEDAL FOR CANCER RESEARCH

Going to work or just for a ride, getting some exercise or visiting Toulouse and the surrounding region, what could be better than pedaling your way to support local cancer research? This was the idea behind the first "Cycling Challenge", open to the general public and companies in Toulouse. Thanks to a mobile application, the 176 participants were able to record the 17,000 km they cycled and turn them into donations. Thanks to our partners working alongside the Oncopole in 2023: MH Comm Crédit Mutuel - Nuwo.



## PINK OCTOBER, PINK CITY: THE SAME FIGHT

The month of October, dedicated to raising awareness of breast cancer, is a key high point of the year at the Oncopole: the moment to renew appeals for donations from the people of Toulouse to support research projects spearheaded by the breast cancer committee. Two strong slogans highlighting the Oncopole's role in cutting-edge research were displayed on the backs of Toulouse buses and across the transit authority's digital network: "To help research go farther, it's right next door", "Pink October, pink city, the same fight".

## WHATEVER THE REASON FOR YOUR DONATION TO ONCOPOLE, IT'S A GOOD ONE!

The end of the year is synonymous with charitable activity. To mark the occasion, the Oncopole unveiled its new campaign to encourage the general public to make donations supporting research projects and improvement of patient well-being. The campaign includes billposting across the city of Toulouse and on the Tisséo public transit network, as well as spreading the word on social media.





PART V

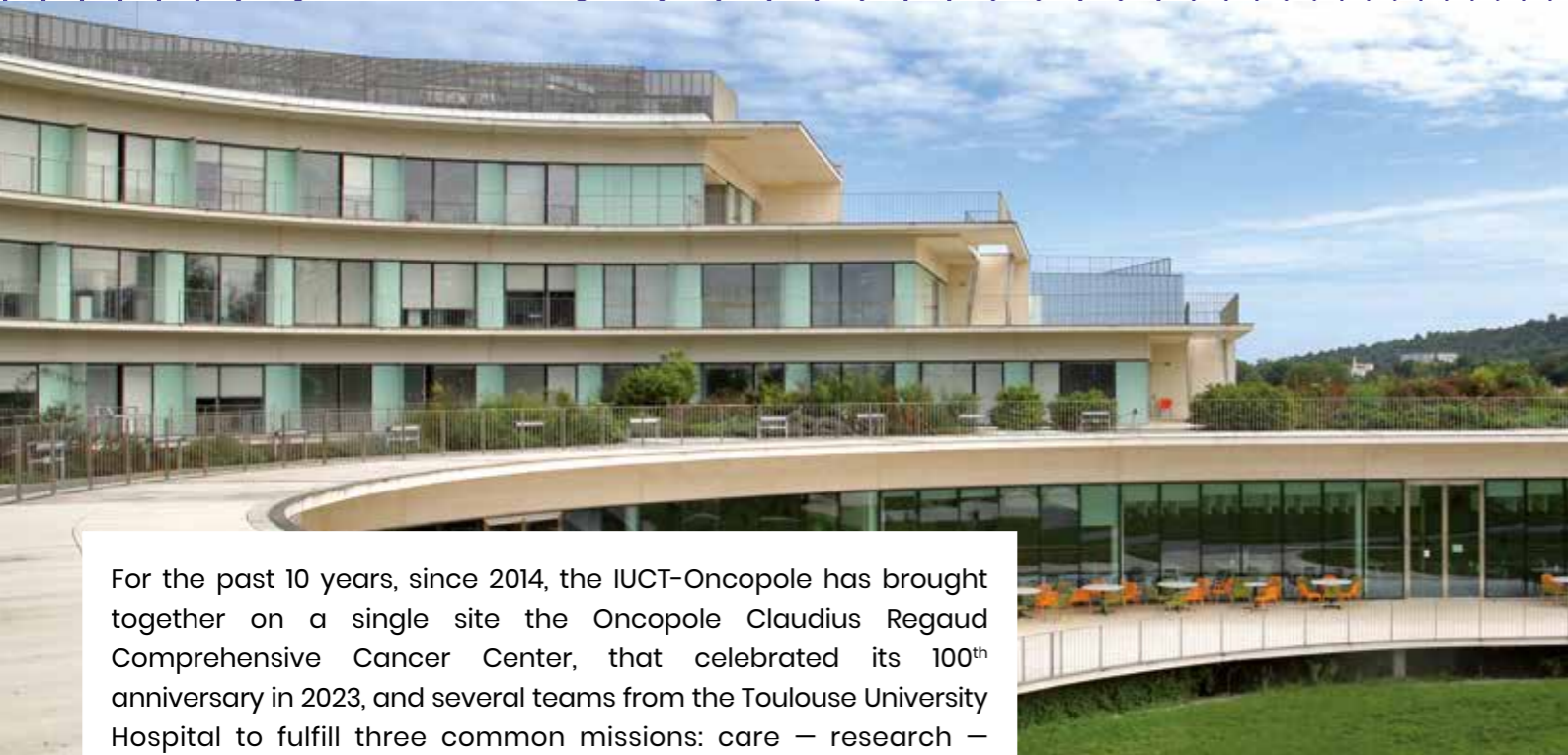
# A single site





A single site

# The IUCT-Oncopole



For the past 10 years, since 2014, the IUCT-Oncopole has brought together on a single site the Oncopole Claudius Regaud Comprehensive Cancer Center, that celebrated its 100<sup>th</sup> anniversary in 2023, and several teams from the Toulouse University Hospital to fulfill three common missions: care – research – teaching. Linked by a walkway, the Toulouse Cancer Research Center (CRCT) complements expertise and offers fundamental and translational research programs. In all, more than 2,000 professionals combine their skills to accelerate cancer research and provide patients and their families with the best possible support.

The site comprising the IUCT-Oncopole and the CRCT is certified as a Comprehensive Cancer Center by the Organisation of European Cancer Institutes (OEI). This label of excellence attests to the expertise in oncology and highlights the multi-disciplinary nature of patient care, along with a high level of integrated patient care and research.

The strength of this model – a pioneer in France – lies in the pooling of skills of care and research teams who work together on a daily basis to ensure that patients benefit from comprehensive care at the cutting edge of innovation.



**10** years after opening, the IUCT-Oncopole offers:

**2x** as many clinical trials to patients and produces

**2x** as many publications in international scientific journals

## ORGANIZATION

The IUCT-Oncopole brings together more than twenty care units and medico-technical platforms. It is organized around 18 medico-clinical departments and 12 Organ Coordination Committees (CCOs), in collaboration with 3 other CCOs at the Toulouse University Hospital's Rangueil and Purpan sites.



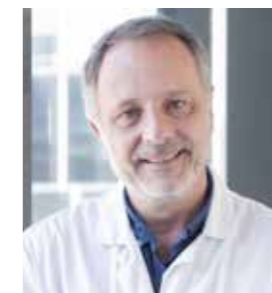
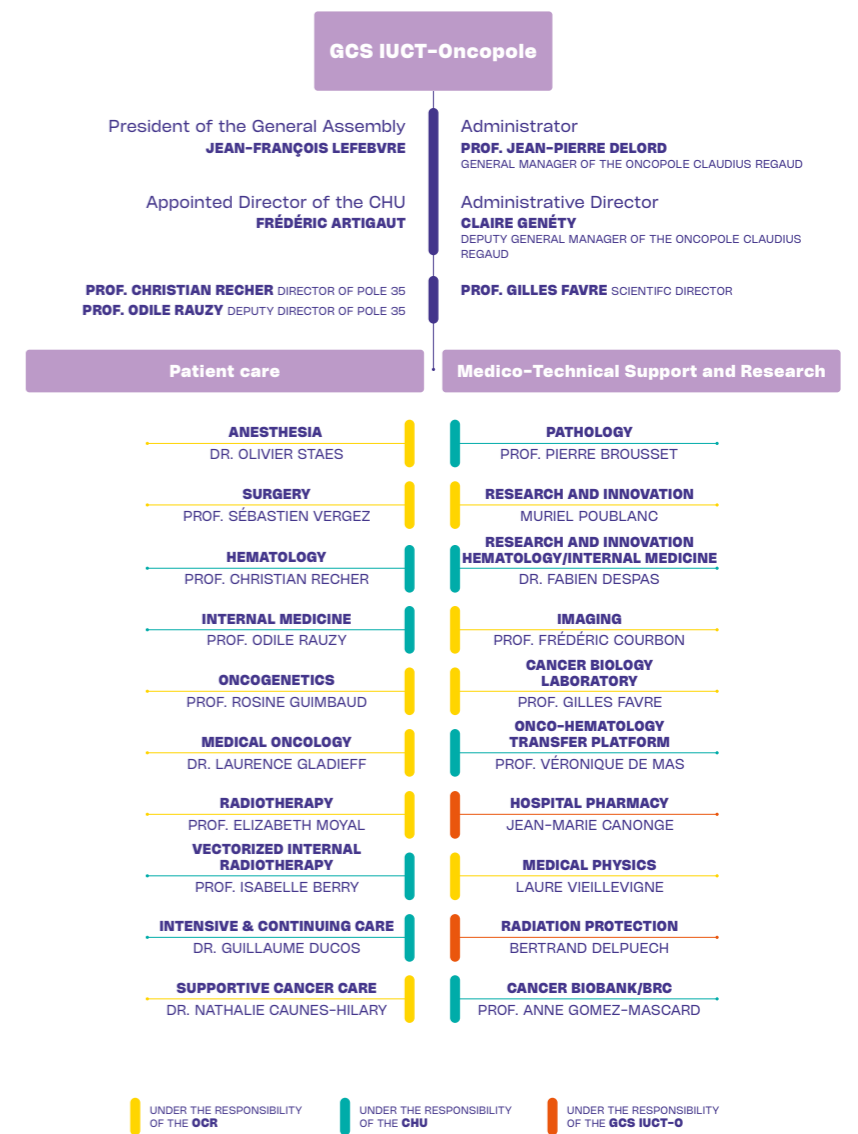
### The GCS IUCT-Oncopole

The IUCT-Oncopole is organized as a healthcare consortium (*Groupe de Coopération Sanitaire, GCS*) set up under private law as an equal partnership between the Oncopole Claudius Regaud (OCR) and the Toulouse University Hospital (CHU). The General Manager of the CHU presides over the General Assembly, and the General Manager of the OCR acts as GCS director. Internal rules of procedure specify the division of disciplines and competencies.

### This cooperation is unique in France. Its aim:

- Coordinating **public cancer care at the OCR and the CHU**. The three sites, IUCT-Oncopole (CHU-OCR site), IUCT-Purpan (CHU site) and IUCT Rangueil/Larrey (CHU site), allocate patient care pathways without duplication.
- Pooling skills and heavy medical equipment at the IUCT-Oncopole.
- Developing joint research programs with the National Institute of Health and Medical Research (INSERM) and the University to accelerate the availability of scientific advances.

Together, the two establishments have drawn up a new **Medico-Scientific Project (PMS) for 2023-2028** committing the IUCT-Oncopole to an expansion program.



**Prof. Jean-Pierre Delord**, General Manager of the Oncopole Claudius Regaud, Administrator of the GCS IUCT-Oncopole



**Jean-François Lefebvre**, General Manager of the Toulouse University Hospital (CHU), President of the General Assembly of the GCS IUCT-Oncopole



A single site

# The Toulouse Cancer Research Center (CRCT)

The only research center in Toulouse dedicated entirely to cancer research, the CRCT (INSERM Joint Research Unit 1037, University of Toulouse III-Paul Sabatier, CNRS Joint Research Unit 5071) brings together over 400 people in 18 research teams, 9 technology platforms and support services. Each team integrates on-site clinicians, and all translational research projects are led by researcher/clinician duos.

The multidisciplinary expertise of the CRCT teams is organized around four thematic axes, all of which aim to better characterize the mechanisms of oncogenesis and better understand and target the mechanisms of tumor cell resistance to different treatments.

- **Oncogenic signaling, DNA damage and genetic instability/ from modeling to targeted therapy.** The aim is to better understand and target oncogenic mechanisms within cells or their immediate environment.

- **RNA & cancer.** The mechanisms of RNA deregulation are explored to better identify their role in tumor initiation and progression to the metastatic stage.

- **Tumor microenvironment and metabolism.** The challenge here is twofold: on the one hand, to better understand the dialogue between tumor cells and stroma, and on the other, the role of metabolism in tumor growth and cellular resistance to treatment.

- **Onco-immunology.** The aim is to characterize the molecular and cellular determinants involved in the anti-tumor immune response to improve its effectiveness.



From left to right: Sébastien Guibert (General secretary), Dr. Pierre Cordelier (Manager), Prof. Elizabeth Moyal (Deputy manager), Dr. Frédéric Lopez (Technology Cluster Manager).



To further encourage collaboration between CRCT members and researchers from a wide range of disciplines, the CRCT has signed two partnerships with the Systems Analysis and Architecture Laboratory (LAAS-CNRS) and the Toulouse Institute for Computer Research (IRIT). These partnerships aim to broaden the scope of cancer research and offer innovative solutions to even better understand and fight the disease. With LAAS researchers, the CRCT is, in particular, exploring the importance of physical constraints in oncogenesis and therapeutic responses, as well as developing tomorrow's theranostic approaches. Together with IRIT researchers, some of whom work on site, CRCT researchers use artificial intelligence to model living organisms to better understand tumor biology and optimize treatments, as well as developing future digital assistants for clinical decision-making.

Last but not least, the CRCT is also committed to industrial development, hosting the NeoVirTech start-up on its premises.

## TECHNOLOGY CLUSTER NEWS

For the past 10 years, the CRCT Technology Cluster has provided technological support for the CRCT and IUCT-Oncopole research teams, and more broadly for the regional and national scientific community. Equipped with a substantial range of instruments, it benefits from the technological and administrative know-how and skills of a team of 15 people spread over 8 technical platforms.

The Technology Cluster benefits from a double quality certification (ISO 9001:2015 and NFX 50-900), as well as the GénoToul environment (the Toulouse-based network of life sciences research platforms) to carry out its three missions: expertise - training - R&D.

In 2023, it carried out an active recruitment program, won funding, installed new equipment, created a new platform and organized scientific events.



A single site

# Complementary on-site expertise

Located within the IUCT-Oncopole, Onco-Occitanie has a mission to support, structure and federate all cancer care professionals in the Occitanie region to improve and harmonize the quality of patients' cancer care pathways. In this role, Onco-Occitanie:

- Contributes to coordinating the regional organization of healthcare provision and its legibility
- Promotes and improves quality of care
- Participates in informing and training healthcare professionals and facilitates access to innovation and expertise
- Participates in patient information
- Evaluates organizations and practices in oncology

To carry out its missions, Onco-Occitanie works in close collaboration with all players in the ecosystem (care facilities, healthcare professionals, regional coordination centers, etc.).



On site, the **Etablissement français du sang – EFS (French National Blood Service)** houses an adult hematopoietic stem cell (HSC) collection unit to meet the needs of the IUCT-Oncopole, as well as a cell therapy unit to prepare and store marrow and stem cell samples to meet regional, national and international demand. The EFS also manages the nearby Institute for Adult Stem Cells and Regeneration (INCERE) on the "Santé du Futur" Campus.

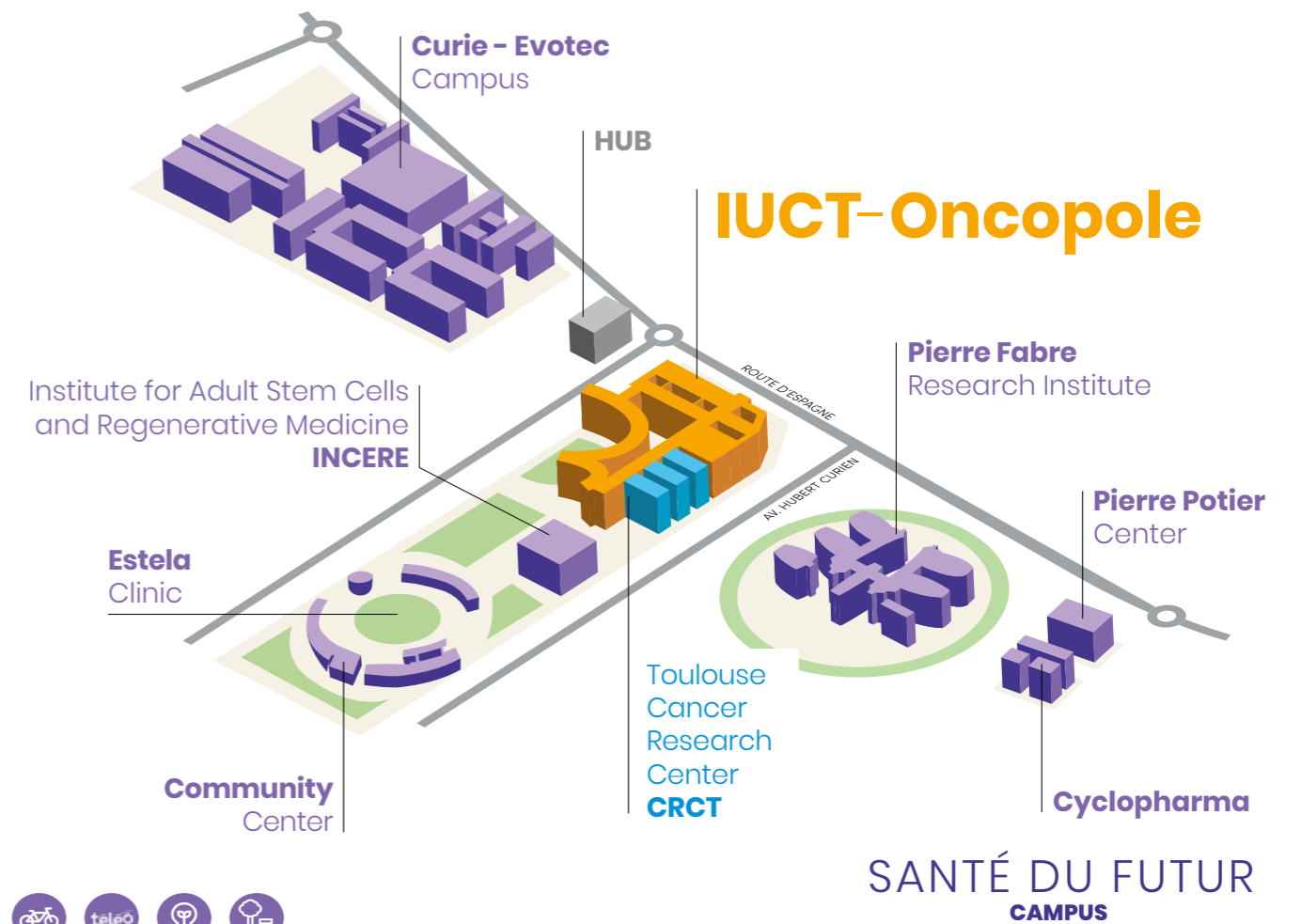


Several patients' associations are also involved on a daily basis with IUCT-Oncopole patients. Some are housed within the IUCT-Oncopole, while others are located on the campus.

A single site

# The "Santé du Futur" Campus

The IUCT-Oncopole and the CRCT are located on the "Santé du Futur" Campus, concentrating the competencies from the academic, scientific, medical, clinical, industrial, public and private sectors striving for the same objective – the fight against cancer. More than 6,000 professionals work together every day on this 220-hectare campus. Beyond the buildings, the IUCT-Oncopole offers patients and visitors 3,000 m<sup>2</sup> of landscaped green spaces.



## 2023 HIGHLIGHT

A new urban project called the "Hub" has been announced as part of the "Draw me Toulouse" ("Dessine-moi Toulouse") program. With a surface area of over 10,000m<sup>2</sup> and built on the former WHO premises at the gateway to the "Santé du Futur" Campus, the "Hub" will offer a place to live, work, play and socialize.

## 2023 HIGHLIGHT

**Evotec**, the pharmaceutical research group, continues construction of its new drug production plant. The first five self-contained cleanrooms from Ireland have already been installed, with commissioning scheduled for the second half of 2024.

The IUCT-Oncopole is accredited by:



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