Research evaluation

EVALUATION REPORT OF THE UNIT

N2C - Nutrition, croissance et cancer

UNDER THE SUPERVISION OF THE FOLLOWING ESTABLISHMENTS AND ORGANISMS:

Université de Tours, Institut national de la santé et de la recherche médicale - INSERM

EVALUATION CAMPAIGN 2022-2023

GROUP C

Rapport publié le 21/08/2023

High Council for evaluation of research and higher education

In the name of the expert committee[1] :

Philippe Valet, Chairman of the committee

For the Hcéres[2] :

Thierry Coulhon, President

Under the decree n° 2021-1536 of 29th November 2021:

[1] The evaluation reports "are signed by the chairperson of the expert committee". (Article 11, paragraph 2);

[2] The president of the Hcéres "countersigns the evaluation reports established by the expert committee and signed by their chairperson." (Article 8, paragraph 5).

This report is the result of the unit's evaluation by the expert committee, the composition of which is specified below. The appreciations it contains are the expression of the independent and collegial deliberation of this committee. The numbers in this report are the certified exact data extracted from the deposited files by the supervising body on behalf of the unit.

MEMBERS OF THE EXPERT COMMITTEE

Chairperson:	Mr Philippe Valet Université Toulouse 3 - Paul Sabatier - UPS
Experts :	Mr Xavier Collet, Institut des Maladies Métaboliques et Cardiovasculaires, Toulouse
	Ms Marie Demion, Université de Montpellier
	Ms Véronique Montcuquet, Université de Paris
	Ms Fédérique Penault-Llorca, Université Clermont-Auvergne
	Ms Jennifer Rieusset, Faculté de Médecine Lyon Sud

HCÉRES REPRESENTATIVE

Ms Francesca Palladino

CHARACTERISATION OF THE UNIT

- Name: Nutrition, croissance et cancer
- Acronym: N2C
- Label and number: UMR 1069
- Composition of the executive team: Mr Christophe Vandier

SCIENTIFIC PANELS OF THE UNIT

SVE Sciences du vivant et environnement

SVE6 Physiologie et physiopathologie humaine, vieillissement

THEMES OF THE UNIT

N2C is a single team unit carrying out multidisciplinary translational research (bench to bedside) with the overall objective of identifying nutritional lipids of interest for oncology. The unit studies the cellular mechanisms of action of lipids in cancer cachexia and tumour progression in order to identify both natural and synthetic patentable lipids able to improve the efficacy of anticancer therapy, restrain tumour progression, and prevent metastasis occurrence and/or cachexia. The three original axes of research are:

(i) Role of lipids in the deregulation of hepatic mitochondrial and skeletal muscle bioenergetics in cancer cachexia,

(ii) Role of fatty acids and sterols in modulating tumour progression and response to treatment

(iii) Role of ether lipids in calcium signalling.

HISTORIC AND GEOGRAPHICAL LOCATION OF THE UNIT

N2C was created in 1989 and became an Inserm research unit in 2002. It includes members from the Faculties of Sciences, Pharmacy, Medicine, University Institute of Technology and CHRU Tours. N2C is located in the Dutrochet building of the Faculty of Medicine, i.e. the Tonnelle site of the University of Tours. It occupies the 2nd (330 m2) and share the 4th floor (100 m2) floor, with the CNRS ERL/LNOx/EMR 7,001 team. N2C and LNOx teams plan to merge in the near future.

RESEARCH ENVIRONMENT OF THE UNIT

N2C is associated with Inserm, Tours University and the CHRU Tour. It is a member of several national networks, including 'Réseau National Cancer Alimentation Recherche' (leader of the axe 'Lipids in chronic pathologies'), the Cancéropôle Grand Ouest (leader of 3 axes, including Réseau des tumorothèques, MeetOchondrie, and the labex Mabimprove) , as well as regional networks (Biotechno Centre, MotivHealth and IEHCA). N2C is part of the 'Institut Européen d'Histoire et des Cultures de l'Alimentation' an international scientific outreach initiative, and belongs to the consortium 'Réseau Thématique de Recherche-Cultures et sciences de l'alimentation' financed by the Loire Valley Region. Technical facilities developed by N2C include: a facility for testing natural and synthetic chemical molecules able to modulate ion channels (part of a 'Groupement d'Intérêt Scientifique' named CalciScreen); a lipid chemistry facility for the analysis of lipids; and a facility for the synthesis of reconstituted high-density lipoproteins and ether lipids.

UNIT WORKFORCE: in physical persons at 31/12/2021

Permanent personnel in active employment	
Professors and associate professors	10
Lecturer and associate lecturer	5
Senior scientist (Directeur de recherche, DR) and associate	0
Scientist (Chargé de recherche, CR) and associate	1
Other scientists (Chercheurs des EPIC et autres organismes, fondations ou entreprises privées)	0
Research supporting personnel (PAR)	12
Subtotal permanent personnel in active employment	28
Non-permanent teacher researchers, researchers and associates	5
Non-permanent research supporting personnel (PAR)	15
Post-docs	2
PhD Students	6
Subtotal non-permanent personnel	28
Total	56

DISTRIBUTION OF THE UNIT'S PERMANENTS BY EMPLOYER: NON-TUTORSHIP EMPLOYERS ARE GROUPED UNDER THE HEADING 'OTHERS'.

Employer	**EC**	**C**	**PAR**
Université de Tours	15	1	8
CHRU Tours	0	1	2
Inserm	0	1	9
Total	15	3	19

UNIT BUDGET

Recurrent budget excluding wage bill allocated by parent institutions (total over 6 years)	687
Own resources obtained from regional calls for projects (total over 6 years of sums obtained from AAP idex, i-site, CPER, territorial authorities, etc.)	2,188
Own resources obtained from national calls for projects (total over 6 years of sums obtained on AAP ONR, PIA, ANR, FRM, INCa, etc.)	1,972
Own resources obtained from international call for projects (total over 6 years of sums obtained)	1,513
Own resources issued from the valorisation, transfer and industrial collaboration (total over 6 years of sums obtained through contracts, patents, service activities, services, etc.)	–
Total in K euros	6,360

GLOBAL ASSESSMENT

The N2C is a single team unit studying the action of lipids in cancer to develop innovative therapeutic approaches. Research is organised around three axes that study: (i) lipids in the deregulation of hepatic mitochondrial and skeletal muscle bioenergetics in cancer cachexia (ii) fatty acids and sterols in modulating tumour progression and response to treatment and (iii) ether lipids in calcium signalling. It is part of a pluri-disciplinary cancer research centre co-directed by the INSERM, the University of Tours and the CHRU Tours.
The scientific production of the unit is very good. During the last period 342 articles have been published, of which 52 original articles and 45 clinical articles signed in first or last position. The majority of these are published in specialised journals (Hepatology, J. Pathology, Clin Cancer Res.).
The attractiveness of the unit is excellent. Over the assessment period the unit disposed of a total budget of around 5.7 M€ euros, of which the large majority was obtained from external grants, including coordination of three European funding (2 IMI, 1 PHC Ulysse, 1513 k€), nine national grants (4 as leader, including 1 INCa and 1 ANR grants), three PIA (1 as leader, FHU PRECI CARE), 40 LCC grants as leaders and ten regional grants as coordinator. N2C is a founding member of the international GDR APPICOM, and the national networks NACRe and CRNH. The unit is also involved in the LabEx MabImprove. N2C has also demonstrated an excellent capacity to attract new high-level collaborators, including the recruitment of two INSERM researchers and one engineer. The unit hosted three international researchers. Four members were visiting scientists in international laboratories (University of Edmonton, Institute of Cardiology of Montreal, Penn State College of Medicine, USA). One member of N2C obtained an IUF junior position. Two members participated in the organisation of international meetings. Nevertheless, no member of the unit has been invited to international conferences, and the participation in the organisation of national/international meetings remains very limited. The involvement in research training and teaching is very good: sixteen members of N2C have an HDR (3 obtained in the last period) and fourteen PhD theses were defended, with five more ongoing (of note one PhD had an ATER position). Three contractual researchers were funded (from the US with a STUDIUM research fellowship, Madrid with a Marie-Curie PRESTIGE fellowships). Three postdoctoral fellows were hosted.

Interactions with the non-academic world are excellent. The unit created an IC-SCAN platform (part of the GIS CalciScreen), filed four patents and obtained one licence. The unit was involved in the creation of a start-up (Lifesome Therapeutics), set up four clinical trials and obtained six contracts with industry (Synthelis, ERBC, Orgapharm, Atlantic Bone Screen), including funding for two PhDs (CIFRE).

Overall N2C has a very good to excellent regional/national visibility in the field of lipids and cancer. Its recognition at the international level should be improved, especially via publications in more generalist journals and involvement in international meetings.

DETAILED EVALUATION OF THE UNIT

A – CONSIDERATION OF THE RECOMMENDATIONS IN THE PREVIOUS REPORT

The previous report made the following recommendations:

- To focus on the main topics and go deeper into the mechanistic part of the project and to work on a more structured organized chart focused on the identified leading projects without too many subtopics.

The three axes presented in the previous project were merged into two axes at the end of the current period with interconnected aims: Role of lipids in i) energy metabolism and ii) calcium signalling. The integration of the LNOX team is also ongoing.

- to use the established biobanks as a valuable tool for increasing clinical-translational research and as a way to collaborate with other international groups

N2C has published papers (original and reviews) using established biobanks, some of which in collaboration with international groups.

- to further increase the international visibility of the unit through different strategies such as applying to international grants and recruiting foreign researchers participating in international consortia

International collaborations have been set up (Mexico, Ireland, Canada, USA, Tunisia, Spain, UK, Italy) at different levels (shared PhD, patents, collaborations…).

- To apply for certification of procedures, especially for the established technical platform.'

Certification of procedures for a technical platform has been carried out (CalciScreen) and methodological papers published.

- To strengthen its manpower, the unit N2C has hired two INSERM CRCN researchers and one INSERM assistant engineer

B – EVALUATION AREAS

EVALUATION AREA 1: PROFILE, RESOURCES AND ORGANISATION OF THE UNIT

Assessment on the unit's resources

The unit's resources are considered as excellent with a total budget of around 5.7 M€ euros. The unit is well staffed with a total of 28 permanent staff (including 5 PU, 7 PUPH, 2 MCU, 3 MCU-PH, 1 CRCN, 1 PH) and twenty non-permanent, including PhD students. Over the assessment period the unit obtained three Inserm permanent positions (two researchers and one engineer), and hosted three foreign researchers and several foreign students. Four members were invited scientists in international labs. The unit developed an IC-SCAN technical facility for testing natural and synthetic chemicals and created a core facility of R&D named CalciScreen.

Assessment on the scientific objectives of the unit

Overall, this is considered excellent. The scientific objectives of the unit are clearly established. The unit is well integrated in national networks (ARTP, PEDSTART) is a founding member of French networks (NACRE, CRNH, APPICOM), and plays an important role in the Canceropole Grand-Ouest.

Assessment on the functioning of the unit

Overall, the functioning of the unit is very good. It offers an appropriate and safe working environment. The absence of scientific presentations in English is a weakness in terms of student training. There is no shared computer backup system.

1/ The unit has resources that are suited to its activity profile and research environment.

Strengths and possibilities linked to the context

The unit is composed of 51 members including five PU, seven PUPH, two MCU, three MCU-PH, one researcher (CRCN INSERM), one PH, and two permanent researchers (100% University and Hospital). Non-permanent staff includes 1 CCA/AHU, 21 Biatss (Engineers, Technicians). The unit operates in a network of academic institutions (Université de Tours, Institut Universitaire Technologique) and University Hospital (CHRU) in Tours and has a long-standing expertise in research at the interface between nutrition and cancer. Interaction between clinicians and researchers fosters the development of translational studies, including the establishment of biobanks.

Excluding salaries of the permanent staff, over the assessment period the Unit had a total budget of around 900 K€ a year, 88% of which was obtained from external grants. The unit allocates part of its own resources (10%) to fund projects of incoming researchers.

They have recruited two Inserm researchers (1 from other institutes, one through concours), one Inserm engineer. The unit also hosted three foreign researchers (2 from the USA and 1 from Spain) and students from Birmingham (UK) and Padova (Italy).

The unit contributes to and benefits from core facilities. It has developed an IC-SCAN technical facility for testing natural and synthetic chemical molecules modulating ion channels. This platform is now a part of an R&D and Service core facility, CalciScreen. It benefits from the platforms of Université de Tours (PCR, mass spectrometry, microscopy and cytometry).

Weaknesses and risks linked to the context

Given the increasing activity of the unit and its association with another group, the space dedicated to research labs and offices appears undersized. The perspective of a rise in area (from 430 to 710 m2) is welcome.
The needs in terms of bioinformatics skills are acute.

2/ The unit has set itself scientific objectives, including the forward-looking aspect of its policy.

Strengths and possibilities linked to the context

Over the years, N2C has acquired national visibility and recognition in the field of nutrition and cancer, as illustrated by its implication in the founding on national networks including GDR APPICOM 'Integrative approaches for the study of membrane proteins', which gathers 91 research teams from 49 research institutes, NACRE, and CRNH. Unit members are also part of ARTP and PEDSTART networks. The team's benefit within the hospital of spaces dedicated to translational research, through its partnership with the CHRU.

The unit has a steering committee composed of all PIs (for discussions concerning grants, collective work, equipment needs), and a unit council with representatives of all categories, including students (for activity reports, recruitment, evaluations, health and safety issues, and rules of ethics and integrity). Laboratory scientific meetings are held weekly. In this context the unit meets its objectives.

Weaknesses and risks linked to the context

The participation of the unit to international networks and the organisation of international meetings to gain visibility is weak

3/ The functioning of the unit complies with the regulations on human resources management, safety, the environment and the protection of scientific assets.

Strengths and possibilities linked to the context

The unit offers an appropriate and safe working environment. Parity men/women is respected throughout the unit. The unit council, which represents all the personnel in the team, is organised on a parity basis (9 women and 7 men). The unit's management respects gender equality: the director of the lab is a man and the deputy director a woman. There is a correspondent for professional equality in the unit.
The unit's organisation involves a laboratory council that includes director, deputy director and elected members that are representative of all staff categories. Its role includes the coordination of research (redaction of unit's activity reports), managing human resources (staff recruitment, the program training) and all measures related to the organisation and functioning of the unit. The steering committee, composed of the Director, the Deputy Director and all researchers of the Unit, has a role in developing scientific strategy (scientific and budgetary policy and distribution of resources, purchase of equipment).
Safety procedures are in place and is the responsibility of two Prevention Officers.
The unit is aware of its duties regarding environmental protection, and takes appropriate steps when needed.
The unit has procedures for protecting its scientific assets. This includes making sure everyone keeps a record of its scientific activities. Computer data is also protected.
The scientific animation is ensured by laboratory meetings, organised weekly (presentation of experimental projects and/or results). The computer system and network are secure within the Unit. The unit is located in an environmentally responsible building and has adopted a sustainable management policy. The unit has a BCP which is updated regularly.

Weaknesses and risks linked to the context

It is not clear what actions the unit has in place to promote career advancement.
No dedicated procedures are in place to specifically prevent or report harassment and mobbing.
Given the number of staff (51 members), the size of the research laboratories and offices seems insufficient
The awarding of scholarships for PhDs is unclear and seems independent of scientific criteria.

EVALUATION AREA 2: ATTRACTIVENESS

Assessment on the attractiveness of the unit

The unit has an excellent capacity to attract new high-level collaborators, including the recruitment of two INSERM researchers, and one INSERM engineer. One member obtained an IUF junior member position. The academic reputation is excellent at the national level, with a unique national expertise in nutrition and cancer. Their success in competitive calls at regional and international levels is excellent (leader in 3 European grants).

N2C is part of the 'Grand Ouest network' and leader of two axes including the AFNOR-labelled tumour biobank. It is a founding member of the international GDR APPICOM, and the national networks NACRe and CRNH. The unit is also involved in the LabEx MabImprove.

1/ The unit has an attractive scientific reputation and contributes to the construction of the European research area.

Strengths and possibilities linked to the context

N2C participated, as coordinator, in three European networks (two Innovative Medicines Initiative – IMI – program grants and one PHC Ulysse), four national public grants (1 INCa PLBio, 1 ANR, and 5 grants as partner) and 21 regional grants (11 as partner).

Two members participated in the organisation of international meetings: 2016 STUDIUM 'Lipids, Nanotechnology and Cancer'; 2018 Annual Meeting of ISCaM) and 29 attended international congresses (e.g. Meeting of the European Association of Urology in 2019, COST action in 2018, European cooperation in Science and Technology in 2018, 4th meeting of the International Society of Cancer Metabolism in 2017), but none as invited speaker

Members have served as guest editors for (2019: 2X Cell Calcium, 2021: Bioelectricity); Three are members of editorial boards (American Journal of Pathology, Frontiers in Cardiovascular Medecine; Scientific Reports, Frontiers in Pharmacology and Frontiers in Cellular Biochemistry; Frontiers in Oncology and Cancer Cell International).

Members of the unit took part in several steering committees or scientific expertise bodies including the International Society of Cancer Metabolism, the 'Association de recherche sur les Tumeurs Prostatiques', the 'Association d'Urologie française', and the 'Réseau National Cancer Alimentation Recherche'. The unit is involved in the French network of excellence LabEx MAbImprove

Several members were visiting scientists in international laboratories (University of Edmonton, Institute of Cardiology of Montreal, Penn State College of Medicine, USA).

Three foreign researchers and numerous foreign students have been hosted during the period.

Weaknesses and risks linked to the context

The unit resources have slightly decreased since 2016 and no international grant was obtained since 2019.
No scientist obtained prestigious prizes/awards for their scientific expertise.
Their participation at international meetings as speakers is limited, and invitations regard only a few N2C members.

2/ The unit is attractive for the quality of its staff hosting policy.

Strengths and possibilities linked to the context

The unit has recruited two INSERM researchers (one in 2018 who left in 2021 for familial reasons and one in 2019) and one INSERM assistant engineer.

The unit has funded nineteen PhD students (2 Region Centre Val de Loire, 12 doctoral schools, 2 INSERM/Région, 3 hospitals), six postdoctoral contracts (Région Centre Val de Loire, Prestige Campus France, STUDIUM, INCa), one engineer (Région), four technicians (INCA and Région). Three researchers were recruited (2 from the US, of which one with a STUDIUM research fellowship, one from Madrid with a Marie-Curie PRESTIGE fellowships). The unit also hosts students from Birmingham medical school (UK) and University of Padua (Italy).

Weaknesses and risks linked to the context

Attraction of international post-doctorates could be further increased (only 2 currently)

3/ The unit is attractive because of the recognition gained through its success in competitive calls for projects.

Strengths and possibilities linked to the context

N2C participated, as coordinator, in three European networks (two Innovative Medicines Initiative – IMI – program grants and one PHC Ulysse), four national public grants (1 INCa PLBio, 1 ANR, and 5 grants as partner) and 21 regional grants (11 as partner).

Weaknesses and risks linked to the context

Few successes in ANR calls taking into account the size of the unit (only 1 in 2019).
The three EU grants were all obtained before 2019 and will end in the near future.
Most funding are local/regional.

4/ The unit is attractive for the quality of its major equipment and technological skills.

Strengths and possibilities linked to the context

The unit funded or co-funded major equipment for the laboratory for approximately a total of 600 k€ (an Isotope Ratio Mass Spectrometer, an imager for chemiluminescence multiplex fluorescence and normalisation stain-free, a High-performance PCR cycler, a High Performance Thin Layer Chromatography-densitometry system, a hypoxia workstation, XCelligence, a time-lapse epifluorescence microscopy, a fluorescence imaging workstation, oxygraphes, a conventional patch-clamp system equipped with epifluorescence imaging, a miniaturised bilayer workstation and a giant unilamellar vesicles preparation system.
The unit has developed an IC-SCAN technical facility for testing natural and synthetic molecules modulating ion channels. This platform has moved to a GIS (groupement d'intérêt scientifique) named CalciScreen.

Weaknesses and risks linked to the context

The maintenance of equipment is costly and financed by their recurrent resources. Alternative financing or the integration of equipment into common site platforms must be found to sustain the equipment.

EVALUATION AREA 3: SCIENTIFIC PRODUCTION

Assessment on the scientific production of the unit

The scientific production of N2C is very good, with a large volume of scientific production (total of 342, of which 25% signed in leader positions in very good, specialised journals (Hepatology, J. Pathology, Clin Cancer Re.). The team has developed very good and coherent translational research with dedicated clinical trials, including the identification of drug targets or development of tools to evaluate tumour progression and resistance mechanisms with a strong potential in future treatments.

1/ The scientific production of the unit meets quality criteria.

Strengths and possibilities linked to the context

Between 2016 and 2021 N2C produced 342 articles including original articles and reviews. Twenty-five percent of these are signed as the first or last author in very good journals. Original articles were published in Hepatology, J. Pathology, Clin Cancer Res. Reviews were published in J Cachexia Sarcopenia Muscle, Rev Physiol Biochem Pharmacol, Pharmthera, Sem Cell Dev Biol.
The team has made many breakthroughs, including novel insight into mechanisms underlying muscle wasting in cancer cachexia (JCSM 2022). They reported for the first time an increase in mitochondrial energy wasting in the skeletal muscle, and observed a deficit in protein expression of MAFbx, a marker of proteolysis. This study is based on samples collected in a clinical trial in which patients with advanced colorectal or pancreatic cancer had a pectoral muscle biopsy at study entry. They also identified a new mitochondrial target (NCLX) controlling mitochondrial calcium signalling and oxidative phosphorylation in cancer cells and involved in tumour progression, and a mechanism of ROS-dependent mitophagy involved in chemoresistance (Int J Mol Sci. 2021).

The constitution of large 'niche' banks of tumours and adipose tissues, labelled and annotated, allows unique translational research work. The team has developed tools to analyse the mechanisms of resistance to cancer treatment or toxicity of chemotherapeutic agents (Eur J Cancer 2018).

Developed 'bench to the bed' approaches include the use of a macroscope to measure calcium and membrane potential on organotypic sections of patient tissue.

Weaknesses and risks linked to the context

There is a great deal of disparity in the clinical projects and it is difficult to find a common thread in the research projects.
While 70% of the total number of clinical articles arises from national or international collaborations, or reflects involvement in national and international scientific societies, thereby testifying to the team's influence, only 25% of these collaborative works are signed as first/last/corresponding author.

2/ Scientific production is proportionate to the research potential of the unit and shared out between its personnel.

Strengths and possibilities linked to the context

Between 01/01/2016 and 12/31/2021 the unit published 342 peer-reviewed articles: 130 original articles (52 signed as first/last/corresponding author), 38 review articles (19 signed as first/last/corresponding author) and 174 clinical articles (45 signed first/last/corresponding author) of which 43 articles in the context of international collaboration.

Publications of the unit largely include researchers, students as well as engineers as authors.
PhD Students are authors on 39 publications and twenty reviews.

Weaknesses and risks linked to the context

The project is very ambitious and the difficulty is to maintain coherence between the two major axes of research (cancer and nutrition).

3/ The scientific production of the unit complies with the principles of research integrity, ethics and open science.

Strengths and possibilities linked to the context

All experiments were stored using the Electronic Laboratory Notebook and storage system provided by Inserm (Labguru) and validated weekly. The unit also uses the Open access (Green Open Access, HAL Tours University or HAL Inserm) as well as a deposit in the preprint archives (bioRxiv). Thirty percent of the original articles are in Open access which represents a total of 38 original articles.
The strategy concerning the laboratory notebook and the use of Open Access is very good.

Weaknesses and risks linked to the context

Nothing was specified concerning the courses on ethics and scientific integrity for the researchers and the ITA.

EVALUATION AREA 4: CONTRIBUTION OF RESEARCH ACTIVITIES TO SOCIETY

Assessment on the inclusion of the unit's research in society

N2C is excellent in its interactions with the non-academic world and society. Unit members have three R&D contracts with private companies (ERBC, Synthelis, Orgapharm), developed four patents and have four ongoing clinical trials. A company is being launched (Lifesome Therapeutics) whose aim is to develop a method for drug delivery to block metastasis. Unit members will make specific recommendations on technological development and data analysis. Unit members show less involvement in public outreach activities.

1/ The unit stands out by the quality of its non-academic interactions.

Strengths and possibilities linked to the context

The unit collaborates with four companies (ERBC, Synthelis, Orgapharm, Atlantic Bone Screen). These collaborations are supported with two CIFRE grants for PhD students (in particular with ERBC). These partnerships allow the development of new therapeutics molecules.
The laboratory is directly involved in four clinical trials (METERMUS-IMC, METERMUCADIG, SONCHIMIO and EITHICS) and associated with seven other clinical studies.
They are also involved in a partnership with IRCM (Montpellier) to develop new antibodies against ion channels.
They also developed a technical facility IC-SCAN to screen molecules or classes of compounds potentially important for ion channel function modulation which is part of CalciScreen (an R&D and service core facility).
All this has allowed 174 clinical peer-reviewed publications (45 signed as first or last author).
One of these involves the association between the lipid composition of prostate adipose tissue and prostate cancer aggressiveness according to ethno-geographic origin following the establishment of a multicenter biobank (ReSCaP) of prostate adipose and cancer tissues for 1500 patients.

Weaknesses and risks linked to the context

All clinical studies have come to an end (METERMUS-IMC ended in 2021; METERMUCADIG in 2018, SONCHIMIOin 2022; EITHICS in 2021; QUISERMAS in 2018; SALPINGOVA in 2018; CHRONO is up to now; SENTICOL in 2018, ROBO-GYN in 2019; Fimbriectomy in 2021 and SHAPE in 2022.).
The unit is only weakly invested in citizen participatory science activities

2/ The unit develops products for the socio-economic world.

Strengths and possibilities linked to the context

The laboratory has four patents (1 European, 2 worldwide and 1 Mexican), one of which is licensed in the context of the creation of a European company (Lifesome Therapeutics) in the field of nanotechnology.

The laboratory is involved in a medical and surgical encyclopaedia. Experts from the laboratory are involved in national recommendations (INCa, CNGOF) as well as evaluation committees (ANRT, LNCC, ANSES, CNU..) The unit also provided documentation mostly for medicine applications. The unit promoted the development of an original synthetic lipid with anti-metastatic and nanovector properties leading to the creation of a company (Lifesome Therapeutics).

Weaknesses and risks linked to the context

None of the patents are licensed yet, but the European one is ongoing.

3/ The unit shares its knowledge with the general public and takes part in debates in society.

Strengths and possibilities linked to the context

The unit is involved in the dialogue between science and society (Institut Européen d'Histoire et des Cultures de l'Alimentation, Pôle Alimentation de l'Université, Réseau Thématique de Recherche-Cultures et sciences de l'alimentation, Les DéTours des Science).
Members of the unit are present in social media (Twitter) and the internet (website). Members held a few conferences for the general public (Inserm, LNCC, Université du temps libre, Radio campus).

Weaknesses and risks linked to the context

Communication for patients and the general population is lacking.

C - RECOMMENDATIONS TO THE UNIT

Recommendations regarding the Evaluation Area 1: Profile, resources and organisation of the unit

In order to advance with the chemistry (synthesis and analytics), hiring a full-time researcher/engineer in this specific field is recommended.
Global training for new people in the laboratory based on practical formation and booklet seem necessary.
The Ibiza label for the platform is required for a better scientific and economic valorisation.

Recommendations regarding the Evaluation Area 2: Attractiveness

The recruitment of the best PhD students could be improved at the local, national and international levels by increasing the visibility of the centre for master students. Increasing the international network will allow the P.I.'s to be invited in major meetings. The attractiveness of some of the unit's members still needs to be improved by increasing the number of invitations to international conferences as speakers and as members of scientific committees or organising committees.

Recommendations regarding Evaluation Area 3: Scientific Production

The unit is encouraged to increase the level of publications in more generalist journals.

Recommendations regarding Evaluation Area 4: Contribution of Research Activities to Society

Improved interfaces and communication with the general population and the patients is suggested.

CONDUCT OF THE INTERVIEWS

Date(s)

Start: 30 janvier 2023 à 8 h 30

End : 30 janvier 2023 à 18 h

Interview conducted: online

INTERVIEW SCHEDULE

HCERES ASSESSMENT
N2C Université de Tours
January 30, 2023

Comité Hceres : Philippe VALET (Chairman) ; Jennifer RIEUSSET (CSS3) ; Marie DEMION (CNU 66), Véronique PARIETTI (PAR), Xavier COLLET (expert) ; Frédérique PENAULT-LLORCA (expert) ; Olivier PEYRUCHAUD (CSS2) observer
zoom #1 : 8 h 30-9 h 40 (open to all the unit)
https://hceres-fr.zoom.us/j/98845256906?pwd=Vy9IeDhwNmQ1ZHcxNVBxN3dVa1FwUT09
ID de réunion : 988 4525 6906
Code secret: 900,415
Protocole SIP 98845256906@zoomcrc.com
Contact: francesca.palladino@hceres.fr

8:30 a.m.-8:50 a.m.: Time for everyone to connect

8:50 a.m.-9 a.m. Presentation of the committee

9 a.m.-9:40 a.m.: Presentation: Highlights of the Unit by the Director, Christophe VANDIER 20 min presentation+ 20 min questions (leaders Axe 1: Stéphane SERVAIS, Axe 2 : Gaëlle FROMONT will answer questions)

zoom #2 9:40 a.m.-3:30 p.m. (closed doors)
https://hceres-fr.zoom.us/j/92603633670?pwd=ZW1kNjVPbnMzdEhQNTIlajBoc3BEUT09
ID de réunion : 926 0363 3670
Code secret: 366,104
Protocole SIP 92603633670@zoomcrc.com
Contact: francesca.palladino@hceres.fr

9:40 a.m. – 10:10 a.m.: **Committee debriefing**

10:10 a.m.-10:40 a.m.: Meeting with PhD and postdocs (closed doors)

Participants:

LOBET	SARAH
CANCEL	MATHILDE
CHADET	STEPHANIE
CROTTES	DAVID david.crottes@univ-tours.fr
PAPIN	MARION
MANTHA	OLIVIER
NASERI	SEYEDEH TAYEBEH
ROBERT	ALISON
ROMITO	OLIVIER

10:45 a.m.-11:15 a.m. Meeting with technicians and administrative staff (closed doors)

Participants:

BOUAFIA	NAOUEL
DROUARD	ANNE
FLAMEIN	FLORENCE
LEMETTRE	AUDE
MICHEL	CORINNE
OPINCANE	ZANE
PEDROSA	OLINDA
PIERRE	SABRINA
PORTEFAIX	AURELIE
VANHECKE	AURE
WACK	SEVERINE
BELLANGER	DORINE
DOMINGO	ISABELLE isabelle.domingo@univ-tours.fr
GENTY	MURIELLE
GUERIN	VIOLETTA
GUIMARAES	CYRILLE
LE ROY	CATHERINE
LECAILLE	AURORE
MOUSSET	CORALIE
PINAULT	MICHELLE

11:20 a.m.-11:50 a.m.: Meeting with researchers (without team leaders)

Participants:

CHAUTARD	ROMAIN
CHANTOME	AURELIE
DE LUCA	ARNAUD
DUMAS	JEAN-FRANCOIS
ELKRIEF	LAURE
FROMONT-HANKARD	GAELLE
GOUPILLE	CAROLINE
GUEGUINOU	MAXIME
HANKARD	REGIS
LABARTHE	FRANCOIS
LECOMTE	THIERRY
LEFORT	BRUNO
LEGRAS	ANTOINE
MAHEO	KARINE karine.maheo@univ-tours.fr
OULDAMER	LOBNA
POTIER-CARTEREAU	MARIE
RAOUL	WILLIAM
RENAUD	MATTHIEU
SELINOVIC	DENIS
SERVAIS	STEPHANE
VANDIER	CHRISTOPHE
WEBER	GUNTHER

11:55 a.m.-12:25 p.m.: meeting with the representatives of the local institutions, governing bodies:

Catherine BEAUMONT, VP Recherche de l'Université de Tours
Fréderic DELALEU ; Délégué Régionale INSERM
Alain EYCHENE ; Institut Thématique Cancer
Hélène BLASCO ; VP Recherche du CHU

12:25 p.m.-1 p.m. lunch

1 p.m.-1:30 p.m. Meeting with Director and Deputy Director

1:30 p.m.-3:30 p.m.: Closed-door meeting of the HCERES committee

GENERAL OBSERVATIONS OF THE SUPERVISORS

université de TOURS

Présidence

Monsieur le Président

Hcéres
Département d'évaluation de la recherche

Tours, le 28 juin 2023

Objet : **DER-PUR230023319 - N2C - Nutrition, croissance et cancer.**

Au nom de l'unité de recherche N2C, j'adresse mes sincères remerciements aux membres du comité de visite HCERES pour leur rapport et leurs recommandations.

L'unité de recherche N2C n'a pas d'observations de portée générale à formuler.

Je vous prie d'agréer l'expression de mes salutations distinguées.

Le Président de l'université de Tours

A. Giacometti

Arnaud GIACOMETTI

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37020 Tours Cedex 1

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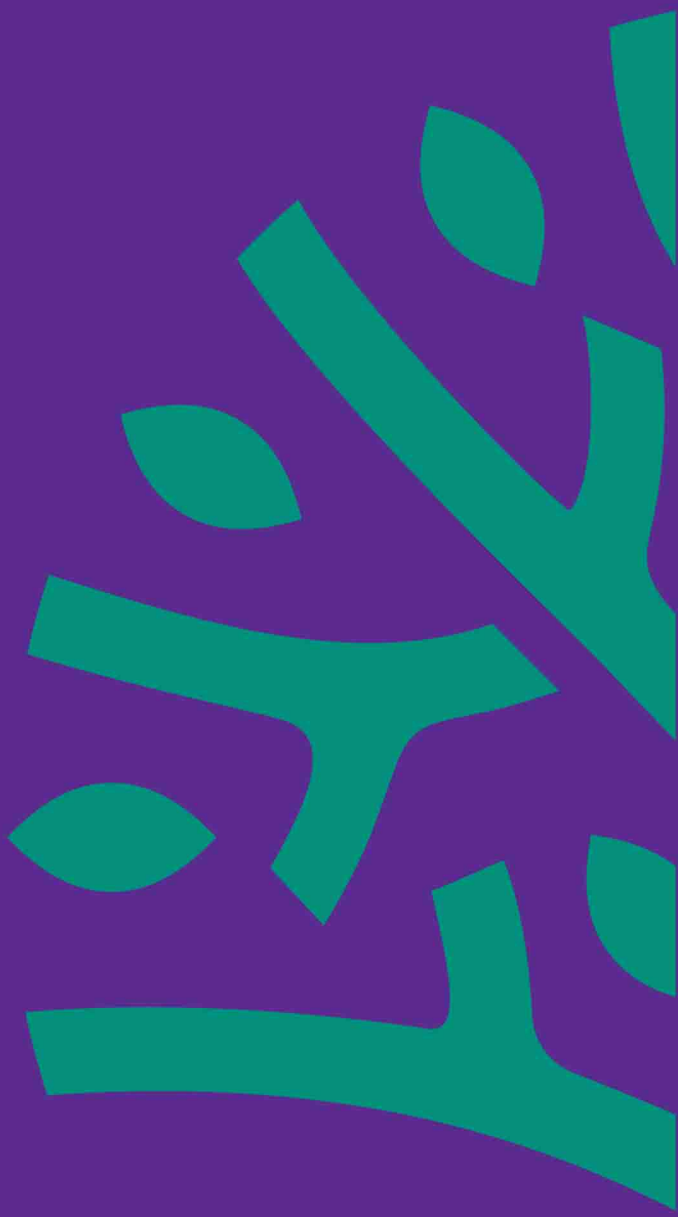

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