

Team Activity Report – 2020 (Period: 01.01 - 31.12)

Deadline: February 15th, 2021

Unit	U1288
Team	Laboratory of Translational Imaging in Oncology (LITO)
Team leader	Irène Buvat
Title (Pr or Dr)	DR1 CNRS
Label (ex: Ligue, Labex, ATIP-Avenir,...)	n/a
Researcher unique identifier(s) (such as ORCID, Research ID, etc.)	ORCID : 0000-0002-7053-6471
SCIENTIFIC PRODUCTION	
List of Publications indicating -Impact factor (IF) if known -DOI	1. Perret P, Slimani L, Barone-Rochette G, Voltaire J, Briat A, Ahmadi M, Henri M, Desruet MD, Clerc R, Broisat A, Riou L, Boucher F, Frouin F, Djaileb L, Calizzano A, Vanzetto G, Fagret D, Ghezzi, C. Preclinical and clinical evaluation of a new method to assess cardiac insulin resistance using nuclear imaging. Journal of Nuclear Cardiology. In press. DOI: 10.1007/s12350-020-02520-7 IF=3.366 2. Chaouni S, Leduc A, Pouzoulet F, De Marzi L, Megnin-Chanet F, Stefan D, Habrand J-L, Sichel F, Laurent C. Biological Effects of Scattered Versus Scanned Proton Beams on Normal Tissues in Total Body Irradiated Mice: Survival, Genotoxicity, Oxidative Stress and Inflammation. <i>Antioxidants</i>. 9:1170, 2020. DOI: 10.3390/antiox9121170 IF=5.014 3. Cottreau AS, Meignan M, Nioche C, Capobianco N, Clerc J, Chartier L, Vercellino L, Casasnovas O, Thieblemont C, Buvat I. Risk stratification in diffuse large B cell lymphoma using lesion dissemination and metabolic tumor burden calculated from baseline PET/CT. <i>Ann Oncol</i>. 2020. in press. DOI: 10.1016/j.annonc.2020.11.019 IF=18.274 4. Saint Martin MJ, Orlhac F, Akl P, Khalid F, Nioche C, Buvat I, Malhaire C, Frouin F. A radiomics pipeline dedicated to Breast MRI: validation on a multi-scanner phantom study. <i>MAGMA</i>. 2020. in press. DOI: 10.1007/s10334-020-00892-y IF=1.832 5. Weber WA, Czernin J, Anderson CJ, Badawi RD, Bartel H, Bengel F, Bodei L, Buvat I, DiCarli M, Graham MM, Grimm J, Herrmann K, Kostakoglu L, Lewis JS, Peterson T, Schelbert H, Schoder H, Siegel BA, Strauss HW, Townsend DM. The future of nuclear medicine, molecular imaging, and theranostics. <i>J Nucl Med</i>. 61: 263S-272S, 2020. DOI: 10.2967/jnumed.120.254532 IF=7.887 6. Sundar LKS, Muzik O, Buvat I, Bidaut L, Beyer T. Potentials and caveats of artificial intelligence in hybrid imaging. <i>Methods</i>. 2020. in press. DOI: 10.1016/j.ymeth.2020.10.004 IF=3.812 7. Orlhac F, Leclerc A, Savatovski J, Goya-Outi J, Nioche C, Charbonneau F, Ayache N, Frouin F, Duron L, Buvat I. How can we combat multicenter variability in MR radiomics? Validation of a correction procedure. <i>Eur Rad</i>. 2020. in press. DOI: 10.1007/s00330-020-07284-9 IF=4.101 8. Lamirault C, Doyère V, Juchaux M, Pouzoulet F, Labiod D, Dendale R, Patriarca A, Nauraye C, Le Dudal M, Jouvion G, Hardy D, Massioui NE, Prezado Y. Short and long term evaluation of the impact of proton mini beam radiation therapy on motor, emotional and cognitive

	functions. Sci Rep. 10:13511, 2020. DOI: 10.1038/s41598-020-70371-w IF=3.998 9. Capobianco N, Meignan M, Cottureau AS, Vercellino L, Sibille L, Spottiswoode B, Zuehlisdruff S, Casasnovas O, Thieblemont C, Buvat I. Deep learning FDG uptake classification enables total metabolic tumor volume estimation in diffuse large B-cell lymphoma. J Nucl Med. 2020. in press. DOI: 10.2967/jnumed.120.242412 IF=7.887 10. Wimberley C, Nguyen DL, Truillet C, Peyronneau MA, Gulhan Z, Tonietto M, Boumezbeur F, Boisgard R, Chalon S, Bouilleret V, Buvat I. Longitudinal mouse-PET imaging: a reliable method for estimating binding parameters without a reference region or blood sampling. Eur J Nucl Med Mol Imaging. 2020. in press. DOI: 10.1007/s00259-020-04755-5 IF=7.081 11. Zwanenburg A, Vallières M, Abdalah MA, Aerts HJWL, Andrearczyk V, Apte A, Ashrafinia S, Bakas S, Beukinga RJ, Boellaard R, Bogowicz M, Boldrini L, Buvat I, Cook GJR, Davatzikos C, Depeursinge A, Desseroit MC, Dinapoli N, Dinh CV, Echegaray V, El Naqa I, Fedorov AY, Gatta R, Gillies RJ, Goh V, Guckenberger M, Götz M, Ha SM, Hatt M, Isensee F, Lambin P, Leger S, Leijenaar RTH, Lenkowicz J, Lippert F, Losnegård A, Maier-Hein KH, Morin O, Müller H, Napel S, Nioche C, Orlhac F, Pati S, Pfaehler EAG, Rahmim A, Rao AUK, Scherer J, Siddique MM, Sijtsema NM, Fernandez JS, Spezi E, Steenbakkers RJHM, Tanadini-Lang S, Thorwarth D, Troost EGC, Upadhyaya T, Valentini C, van Dijk LV, van Griethuysen J, van Velden FHP, Whybra P, Richter C, Löck S. The Image Biomarker Standardization Initiative: standardized quantitative radiomics for highthroughput image-based phenotyping. Radiology. 295:328-338, 2020. DOI: 10.1148/radiol.2020191145 IF=7.931 12. Lemaître S, Poyer F, Fréneaux P, Leboucher S, Doz F, Cassoux N, Thomas CD. Low retinal toxicity of intravitreal carboplatin associated with good retinal tumour control in transgenic murine retinoblastoma. Clin Exp Ophthalmol. 48:500-511, 2020. DOI: 10.1111/ceo.13711 IF=2.832 13. Tanaka I, Chakraborty A, Saulnier O, Benoit-Pilven C, Vacher S, Labiod D, Lam EWF, Bièche I, Delattre O, Pouzoulet F, Auboeuf D, Vagner S, Dutertre M. ZRANB2 and SYF2-mediated splicing programs converging on ECT2 are involved in breast cancer cell resistance to doxorubicin. Nucleic Acids Res. 2020. DOI: 10.1093/nar/gkz1213 IF=11.147 14. Lacroix M, Frouin F, Dirand AS, Nioche C, Orlhac F, Bernaudin JF, Brillet PY, Buvat I. Correction for magnetic field inhomogeneities and normalization of voxel values are needed to better reveal the potential of MR radiomic features in lung cancer. Front Oncol. doi: 10.3389/fonc.2020.00043, 2020. DOI: 10.3389/fonc.2020.00043 IF=4.848 15. Cottureau AS, Nioche C, Dirand AS, Clerc J, Morschhauser F, Casasnovas O, Meignan MA, Buvat I. 18F-FDG-PET dissemination features in diffuse large B cell lymphoma are predictive of outcome. J Nucl Med. 61. 40-45, 2020. DOI: 10.2967/jnumed.119.229450 IF=7.887 16. Provost C, Mammar H, Belly-Poinsignon A, Madar O, Champion L. Pharmacokinetic Analysis of [18F]FAZA Dynamic PET Imaging Acquisitions for Highlighting Sacrum Tumor Profiles. Clin Nucl Med. 45:e36-e38, 2020. DOI: 10.1097/RLU.0000000000002813 IF=6.587
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	17. Seban RD, Assie JB, Giroux-Leprieur E, Massiani MA, Soussan M, Bonardel G, Chouaid C, Playe M, Goldfarb L, Duchemann B, Girard N, Champion L. FDG-PET biomarkers associated with long-term benefit from first-line immunotherapy in patients with advanced non-small cell lung cancer. Ann Nucl Med. 34(12):968-974, 2020. DOI: 10.1007/s12149-020-01539-7 IF= 2.607 18. Seban RD, Assié JB, Giroux-Leprieur E, Massiani MA, Soussan M, Bonardel G, Chouaid C, Playe M, Goldfarb L, Duchemann B, Mezquita L, Girard N, Champion L. Association of the Metabolic Score Using Baseline FDG-PET/CT and dNLR with Immunotherapy Outcomes in Advanced NSCLC Patients Treated with First-Line Pembrolizumab. Cancers. 10;12(8):2234, 2020. DOI: 10.3390/cancers12082234 IF= 6.126 19. Seban RD, Bozec L, Champion L. Clinical Implications of 18F-FDG PET/CT in Malignant Glomus Tumors of the Esophagus. Clin Nucl Med. 45(6):e301-e302, 2020. DOI: 10.1097/RLU.0000000000003029 IF= 6.587 20. Provost C., Champion L. Nasopharyngeal tuberculosis incidentally diagnosed on 18F-FDG PET/CT. Inter J of Infectious Diseases. 93: 295-296, 2020. DOI: 10.1016/j.ijid.2020.02.010 IF= 3.202
H factor for team leader and average citation index, indicating source (Webscience, etc.)	H-index Web of Science Core Collection = 38 Average citation index (articles only, without abstracts) Web of science = 49.27 H-index google scholar = 46 Total number of citations google scholar = 12 294
List of Patents -Title -Reference N° -Date -List of people involved	1. Method for assisting with prognosis EP19305697.5 31/05/2019 Irène Buvat, Anne Ségolène Cottereau, Michel Meignan, Christophe Nioche
List of scientific highlights in 2020 (Publication or other) - 5 max.	1. Introduction and validation of a new predictive PET imaging biomarker to characterize the dissemination of the disease in lymphoma patients, with 2 associated publications (Cottereau et al J Nucl Med 2020 IF=7.887 and Ann Oncol 2020 IF=18.274) demonstrating the validity of that biomarker in 400 patients. 2. Participation to the international Image Biomarker Standardization Initiative (Zwanenburg et al Radiology 2020 IF=7.931, 94 citations WoS, "highly cited paper" = top 1%). 3. Production of new version of the LIFEx software that we freely distribute to the community, with now > 4000 users. The Cancer Research paper published in 2018 to describe the software has already been cited 147 times (WoS) and is a "highly cited paper" (top 1%). Christophe Nioche, the research engineer in charge of the development of LIFEx, has received the UniCancer award in 2020 in the "Artificial Intelligence and Data Sciences" category for the development of LIFEx. 4. Validation of solutions for harmonizing imaging biomarkers in MRI across scanners and coils (Orlhac et al Eur Radiol, Lacroix et al Front Oncol 2020, Saint Martin et al MAGMA 2020). This work expands on previous work that we performed in PET and CT (Orlhac et al J Nucl Med 2018 and Radiology 2019, these 2 papers being highly cited papers, top 1%, 115 citations in total).

	5. Funding of the “Artificial Intelligence for Diagnostic, Review and radiomics Acceleration in Medicine” (AI.DReAM) project by BPI France, led by General Electric Healthcare and in which LITO is the only academic partner involved in methodological developments for AI applications in medical imaging. LITO will receive 710 k€ in 4 years as part of this collaborative project.
Other written productions of the team (e.g.: book chapter, etc.) - 5 max.	1. Contribution to an “outlook” article published in the J Nucl Med regarding the future of Nuclear Medicine. Weber WA, Czernin J, Anderson CJ, Badawi RD, Bartel H, Bengel F, Bodei L, Buvat I, DiCarli M, Graham MM, Grimm J, Herrmann K, Kostakoglu L, Lewis JS, Peterson T, Schelbert H, Schoder H, Siegel BA, Strauss HW, Townsend DM. The future of nuclear medicine, molecular imaging, and theranostics. <i>J Nucl Med</i>. 61: 263S-272S, 2020. DOI: 10.2967/jnumed.120.254532 IF=7.887
List of software developed -Name -Version -Release date	LIFEx, version 6.00 to 6.51 (debug version). https://lifexsoft.org/index.php/product/overview-of-versions Three official releases in 2020, latest one on July 2020.
List of startup -Name -Date of creation -Team members	n/a
ORGANIZATION OF SCIENTIFIC MEETINGS - INSTITUTIONAL RESPONSABILITIES	
List of invitations to meetings and seminars (in France or international) -Meeting title -Date -Place -Presentation title -Authors	- Adjunct Professors Welcome Event at the Medical University of Vienna, December 3rd 2020, Virtual. “Artificial Intelligence in Medical Imaging: hype, hope, and hurdles”, Irène Buvat - Scidoni workshop at IRSN, November 12-13 2020, Virtual. « Apport et potentiel de l’IA en imagerie médicale nucléaire TEP (Tomographie par Emission de Positons) », Irène Buvat - CHILI3 : Conference in Hybrid Imaging live, European Society of Hybrid, Molecular and Translational Imaging, November 13th 2020, Virtual. “Evolving clinical applications for artificial intelligence in hybrid imaging”, Irène Buvat - European Association of Nuclear Medicine meeting 2020, October 22nd, 2020, Virtual. Plenary session: “Total body PET: Is dynamic PET imaging ready for prime time?”, Irène Buvat - European Association of Nuclear Medicine meeting 2020, October 22nd, 2020, Virtual. “Challenges for heterogeneity evaluation in the era of new PET technologies”, Irène Buvat - European Society for Radiotherapy and Oncology (ESTRO) 2020, November 29th 2020, Virtual. “On the crucial importance of image preprocessing and harmonization for robust AI-based models”, Irène Buvat. - Hivernales 2020, Société Française de Médecine Nucléaire, January 22th 2020. Serre-Chevalier. « Innovations technologiques : Traitement des données et interprétation », Irène Buvat - Exchange between Institut Curie and University of Sherbrooke, February 27th 2020. Sherbrooke, Canada. « Décrypter le radiome pour la médecine de précision », Irène Buvat - RedTalks: a series of scientific webinars by CALYM Institute. November 5th 2020, Virtual. “Combining artificial and human intelligence for enhancing PET image interpretation in lymphoma patients”, Irène Buvat

	10. APRAMEN workshop. February 4th, 2020, Paris. « Intelligence Artificielle : Fondamentaux nécessaires aux applications en imagerie médicale », Irène Buvat 11. Society of Nuclear Medicine meeting 2020, July 13th 2020, Virtual. “Summary Session Data Analysis and Management: latest developments presented at the SNMMI annual meeting”, Irène Buvat 12. APRAMEN workshop. February 4th, 2020, Paris. « Intelligence Artificielle : quelles applications en Médecine Nucléaire ? », Fanny Orlhac 13. 2020 Tracy Lynn Faber Memorial Award. June 30th, Virtual. « Radiomics in PET imaging », Fanny Orlhac 14. Journées Francophones de Radiologie. October 4th, 2020, Virtual. «Radiomique : comment ne pas tomber du côté obscur de la force ! », Fanny Orlhac 15. 4th International Caparica Conference on Ultrasonic-based Applications: from analysis to synthesis 2020, July 20th 2020, Virtual , “Detection of vocal fold paralysis after neck surgery: how can ultrasound, image processing and AI help?”, Frédérique Frouin 16. SIOPE BTG Imaging Group, September 16th 2020, Virtual, “Multi-site/multi-scanner harmonization for DIPG radiomic studies using ComBat” Frédérique Frouin
List of organized meetings, workshops, seminars (indicate if at Curie, in France or international) <i>-Meeting title</i> <i>-Date</i> <i>-Place</i> <i>-Presentation title</i> <i>-Authors</i>	1. International: 1st Virtual Training School “Radiomics and AI for Molecular Medicine”, August 31-September 2 2020, Virtual, organized by Thomas Beyer (MUW), Fanny Orlhac (LITO), and Irène Buvat (LITO). 2 talks given + 3 hand-on sessions. 2. International : Society of Nuclear Medicine meeting 2020, July 13th 2020, Virtual. Organization of the “Physics, Instrumentation & Data Sciences” session building. 3. Lab e-seminar at Curie : « Biomarqueurs prédictifs en cancérologie pulmonaire et mammaire: de l'unique au multiple », Dr Olivier Humbert, Centre Antoine Lacassagne, Nice, 17 novembre 2020.
Public outreach (TV, radio, press...), specify if PI or Team members name: <i>-Topic</i> <i>-Audience (eg. Researchers, general public)</i> <i>-Media</i> <i>-Date</i>	None.
Expertise: commissions of trust (ERC panel, CNRS & Inserm Committees, advisory boards, etc.) <i>-Name</i> <i>-Elected or nominated member</i> <i>-Period of mandate (start & end if known)</i>	1. Irène Buvat, member of the Artificial Intelligence Task Force of the Society of Nuclear Medicine and Molecular Imaging, USA (nominated), 2019-now 2. Irène Buvat, Christophe Nioche, Fanny Orlhac, members of l’International Biomarker Standardization Initiative (IBSI), 2018-now 3. Irène Buvat, ATIP-Avenir committee member LS7 (nominated), 2015, 2016, 2019, 2020 4. Irène Buvat, ITMO Cancer expert (nominated), 2014-2022 5. Irène Buvat, IBISA, member of the scientific committee (nominated), 2020-2021 6. Irène Buvat, Institut Pascal, Université Paris Saclay, member if the scientific committee (nominated), 2016-now 7. Fanny Orlhac, member of Artificial Intelligence working group of Unicancer, 2019-now 8. Frédérique Frouin, Inserm, Scientific Advisory Board, member (elected), 2017-2021

	9. Frédérique Frouin, Labex PRIMES, Scientific Advisory Board, member (nominated) 2019-now
Board memberships (e.g.: journal editor, etc.)	1. Associate editor of the “Journal of Nuclear Medicine” (IF=7.887): management of ~ 60 manuscripts every year, since 2020. Irène Buvat 2. Associate editor of “Molecular Imaging and Biology” (IF=3.341): management of ~ 4 manuscripts every year, since 2020. Irène Buvat 3. Board member of “European Journal of Nuclear Medicine and Molecular Imaging” (IF=7.081): management of ~ 5 manuscripts every year and 1 special issue / year, since 2019. Irène Buvat 4. Board member of “European Journal of Nuclear Medicine and Molecular Imaging Research” (IF=2.640): management of ~ 5 manuscripts every year. Irène Buvat 5. International Board member of “Physics in Medicine and Biology” (IF=2.883): adjudication of ~ 10 manuscripts every year. Irène Buvat 6. International Board member of “Physics in Medicine and Biology” (IF=2.883): adjudication of ~ 12 manuscripts every year. Frédérique Frouin
Memberships of Scientific Societies	1. Member of the Society of Nuclear Medicine and Molecular Imaging, Irène Buvat, Fanny Orlhac 2. Member of the European Association of Nuclear Medicine, Irène Buvat, Fanny Orlhac 3. Member of the Société Française de Photobiologie, Carole Thomas 4. Member of the IEEE Engineering in Medicine and Biology Society, Frédérique Frouin
Other expertises (reviewer for scientific journals, expert for national and international funding bodies, e.g. ANR, ERC, etc)	1. Regular reviewers for Journal of Nuclear Medicine (I Buvat, F Orlhac), Physics in Medicine and Biology (I Buvat, F Frouin), Medical Physics (I Buvat, F Frouin), IEEE Transactions on Medical Imaging (I Buvat, F Frouin), IEEE Transactions on Nuclear Science (I Buvat), European Journal of Nuclear Medicine and Molecular Imaging (I Buvat, F Orlhac), European Journal of Nuclear Medicine and Molecular Imaging Research (I Buvat), European Journal of Nuclear Medicine and Molecular Imaging Physics (I Buvat, F Orlhac), Scientific Reports (I Buvat), IEEE Transactions on Biomedical Engineering, Journal of the American College of Cardiology (I Buvat), Medical Image Analysis (I Buvat, F Frouin, F Orlhac), Eur Radiology (F Orlhac), Plos One (F Orlhac), Am J Nanotechnology and nanomedicine (C Thomas), Cancers (C Thomas), Cancer management and research (C Thomas), Int J Nanomed, International Journal of Molecular sciences (C Thomas), International Journal of Radiation Oncology Biology and Physics (C Thomas), I Investigative Ophthalmology and visual science (C Thomas), J Material chemistry B (C Thomas), J Porphyrin Phthalocyanines (C Thomas), Marine drugs (C Thomas), Nanoscale (C Thomas), Photochemical and Photobiological Sciences (C Thomas), Sci Pharm (C Thomas), Cancer management and research (C Thomas), PhotoDiagnosis and Photodynamic Therapy (C Thomas). 2. Expertise for international funding bodies: • FWO (Research Foundation – Flanders), Belgium (I Buvat) • the Hanarth Fonds, The Netherlands (I Buvat) • Technical University of Munich (TUM), Germany (I Buvat) • Institut Jules Bordet, Belgium (I Buvat) • MUI-START Program, Medical University of Innsbruck, Austria (F Orlhac) 3. Expertise for national funding bodies: • ANR (I Buvat, F Frouin) • ANRT CIFRE grants (I Buvat) 4. PhD thesis committees:

	• Kibrom Berihu Girum, « Artificial intelligence for image-guided prostate brachytherapy procedures », Université Bourgogne Franche-Comté, 2020, I Buvat Member. • Catherine Scott, « Joint Analysis of PET/MR data for improved PET quantification », University College London, UK, 2020, I Buvat Reviewer. • Julien Salvadori, « Caractérisation, optimisation et simulation des performances d'un TEP-TDM numérique », Université de Lorraine, 2020, I Buvat Reviewer. • Amandine Crombé, « Développement des approches radiomics à visées diagnostique et pronostique pour la prise en charge de patients atteints de sarcomes des tissus mous », Université de Bordeaux, 2020, I Buvat Reviewer. • Matthijs C.F. Cysouw, « Quantitative Imaging of Small Tumours with Positron Emission Tomography », Vrije Universiteit, Amsterdam, 2020, I Buvat Reviewer. • David Morland, « Evaluation et correction du flou respiratoire en médecine nucléaire sans matériel externe », Université de Reims Champagne-Ardenne, 2020, F Frouin Reviewer. • Sahadatou Touré, « Optimisation de la radiothérapie interne des tumeurs du foie par microsphères radiomarquées : du recueil de données anatomiques et fonctionnelles à la modélisation spécifique-patient », Université de Rennes 1, 2020, F Frouin Reviewer. 5. Habilitation committees: • Simon Rit, HDR « Fourth dimensions of computed tomography: motion corrected CT, spectral CT and multi-variate proton CT », Université Claude Bernard Lyon I, 2020, I Buvat Reviewer.
CLINICAL ACTIVITIES	
Link with Curie Hospital or other -Person -Project -Fundings	1. Hervé Brisse / Caroline Malhaire (Medical Imaging department) : Neotex, Evaluation de la radiomique en IRM mammaire pour prédire la réponse à la chimiothérapie néoadjuvante, « Temps Médical Protégé » 2. François Clément Bidard (Medical Oncology) / Olivier Madar (Dpt of radiopharmacology) / Fatima Mechta Grigoriou (Research center) : Ga68-FAPI synthesis for clinical imaging of Fibroblast Activation Protein activation, PMS Sein funding 3. Laurence Champion / Romain-David Seban (Dpt of Nuclear Medicine, Saint Cloud) : Prediction of Axillary lymph node involvement and Metastasis occurrence in BREast cancer PET imaging using Artificial Intelligence, no specific funding 4. Hamid Mammar (Dpt of Radiation Oncology), Laurence Champion (Dpt of Nuclear Medicine, Saint Cloud) : Radiomic approaches for enhanced treatment planning – Protonchord project, CIFRE grant supported by Dosisoft 5. Nicolas Girard (Dpt of Thoracic Oncology), Alain Livartowski (Direction of Data), Nina Jehanno and Marie Luporsi (Dpt of Nuclear Medicine, Paris), Hervé Brisse (Dpt of Radiology, Paris): Radiomic approaches for lung cancer precision medicine, RALUCA (LITO funding), PANACEE project (Janseen Horizon funding), TIPIT project (Fondation Arc funding), Precision Predict project (BPI and Health Data Hub funding)

	- Gilles Créhange, Valentin Calugaru, Arnaud Beddok (Dpt of Oncology – Radiotherapy): Radiomics for the characterization of tissue damages induced by radiation therapy and optimization of re-irradiation treatment plans, supervision of PhD thesis of Arnaud Beddok - Jacques Darcourt, Olivier Humbert, Anne-Capucine Rollet (Dpt of Nuclear Medicine, Centre Antoine Lacassagne, Nice): Distinction between radionecrosis and progression based on 18F-FDOPA PET images for glioma patients (LITO funding) - Anne-Ségolène Cottureau (Dpt of Nuclear Medicine, Cochin Hospital, Paris), Design and validation of PET imaging prognostic biomarkers for lymphoma patients, supervision of PhD thesis of Anne-Ségolène Cottureau - Nathalie Cassoux (Dpt of Onco-ophtalmology), François Doz (Dpt of Onco-pediatrics), PhotoDynamicTherapy project for retinoblastoma treatment, Retinostop (PSL and Fondation l'Occitane fundings) - Pierre-Yves Brillet (Dpt of Radiology, Avicenne Hospital, Bobigny), IRMomics in lung cancer patients (LITO funding)
DISTINCTIONS	
List of Awards for PI -Title -Date -Country	2020, « The Best of the AACR Journals collection » award for the article « LIFEx: a freeware for radiomic feature calculation in multimodality imaging to accelerate advances in the characterization of tumor heterogeneity », Cancer Res 2018, 78:4786-4789. Irène Buvat, Frédérique Frouin, Christophe Nioche, Fanny Orlhac. 2020, Adjunct professor at Medical University of Vienna, Austria, Irène Buvat.
List of Awards for Team Members -Title -Date -Country	- Fanny Orlhac: Tracy Lynn Faber Memorial Award, by The Physics, Instrumentation and Data Sciences Council (PIDSC) of the American Society of Nuclear Medicine and Molecular Imaging to support advancement of women in medical imaging sciences. For “outstanding contributions to Radiomics in PET imaging, including advances in methodological rigor and strengthened biological and clinical relevance”. - Christophe Nioche: Unicancer innovation - 2020 award in the Artificial Intelligence and Data Sciences category for “LIFEx, an integrated software for a reproducible and transparent research in radiomics”.
List of Promotions (CR1, DR1, etc.) for PI & Team members - Name -Date -Grade	None
List of Recruitments (new permanent CNRS, Inserm, Univ.) for Team members - Name -Date	Fanny Orlhac : confirmed as a CRCN Inserm (CSS 6) in 2020 following the 1-year training period.
List of Researchers HDR for PI & Team members	- Hervé Brisse, PH Curie - Irène Buvat, DR CNRS - Frédérique Frouin, CRCN Inserm - Michaël Soussan, PUPH Paris 13 - Carole Thomas, CRCN Inserm
ON-GOING FUNDED PROJECTS & COLLABORATIONS	

NATIONAL - Individual projects Project Title Translational or not Funding source Managed by Curie, CNRS... Total Amount - k€ Period (start-end) Publications or Patents <i>Indicate the number in your list</i>	1. PANACEE , translational , PI: Fanny Orlhac, funded by Janssen Horizon, managed by Curie, 150 k€, 2020-2023. Publications: not yet
INTERNATIONAL - Individual projects Project Title Translational or not Funding source Managed by Curie, CNRS... Total Amount - k€ Period (start-end) Publications or Patents <i>Indicate the number in your list</i>	
INDUSTRIAL - Individual projects Project Title Translational or not Funding source Managed by Curie, CNRS... Total Amount - k€ Period (start-end) Publications or Patents <i>Indicate the number in your list</i>	1. CIFRE grant funded by Dosisoft : Development of radiomic models for treatment planning and patient monitoring in PET/CT/MRI, funded by Dosisoft, managed by Curie, 60 k€ for Curie + 118 k€ for the PhD salary directly supported by Dosisoft, 2020-2023. Publications : not yet.
NATIONAL - Collaborative projects Project Title Translational or not PI role: PI Role: <i>Coord. or Part.</i> Funding source Managed by Curie, CNRS... Total Amount - k€ Period (start-end) Publications or Patents <i>Indicate the number in your list</i>	1. Precision-Predict , translational , PI : Nicolas Girard, Co-PI in LITO : Irène Buvat and Fanny Orlhac (partners), funded by BPI France and Health Data Hub, managed by Curie, 300 k€ for Curie, 2020-2022. No publication yet. 2. TIPIT , translational , PI : Emmanuel Barillot, PI in LITO : Irène Buvat and Fanny Orlhac (partners), funded by Fondation Arc, managed by Curie, 600 k€ (~180 k€ for LITO), 2020-2023. No publication yet. 3. AgeMed 2.0 , translational , From aged cells to medical applications, PI : Eric Gilson, PI Curie : Irène Buvat (partner), managed by Inserm, 61.5 k€, 2020-2024. No publication yet. 4. BIOMEDE-IA , Artificial Intelligence tools for DIPG characterization PI : Frédérique Frouin, funded by Gustave-Roussy, managed by Inserm, 120 k€, 2020-2023. No publication yet. 5. VOCALÉ : Detection of recurrent nerve palsy using echography, PHRC-I PI C Trésallet, coPI Frédérique Frouin, managed by Inserm, 110 k€, 2019-2022. No publication yet.
INTERNATIONAL - Collaborative projects Project Title Translational or not PI role: PI Role: <i>Coord. or Part.</i> Funding source Managed by Curie, CNRS... Total Amount - k€ Period (start-end) Publications or Patents <i>Indicate the number in your list</i>	1. HYBRID , translational , PI in France: Irène Buvat (partner), funded by ITN (H2020-MSCA-ITN-2017), managed by Curie, 70 k€, 2020-2021. Publications: 6 (DOI: 10.1016/j.ymeth.2020.10.004) 2. HOLY2020 , translational , PI in France: Irène Buvat (partner), funded by EraCoSysMed3rd joined transnational call (ANR-19-SYME-0005-03 contract), managed by Curie, 237 k€, 2020-2023. Publications: not yet.

<i>the number in your list</i>	
INDUSTRIAL - Collaborative projects Project Title Translational or not PI role: PI Role: <i>Coord. or Part.</i> Funding source Managed by Curie, CNRS... Total Amount - k€ Period (start-end) Publications or Patents <i>Indicate the number in your list</i>	AI.DReAM, translational, PI : Baptiste Perrin GE Healthcare, PI Curie : Irène Buvat (partner), funded by BPI France, managed by Curie, 710 k€, 2020-2025. Publications: not yet. PDT to treat retinoblastoma, translational, PI Curie : Carole Thomas collaboration with the Laboratoires Synth-Innove, funded by PSL pré-maturation 70K€, Fondation l'Occitane 10k€. Publications : not yet, confidential data
Other collaborations	
Other Highlight for the year	320 k€ obtained from Region Ile de France through the Sesame call to contribute to the purchase of a microPET/CT scanner in 2021. - MTA signed with the US Sofie company to get access to the precursor of FAPI-46 for the radiosynthesis of Ga68-FAPI so as to start Ga68-FAPI PET clinical trials in 2021.
Comments	