

RADIOTRANSNET Partners

| Nbr-(City) Teams: name, identification, team leader, laboratory, administrative institutions | Axe in the project | Domains of expertise and research | Constitution: number of equivalent full time senior researchers of the team, Doc and Post-doc. Specific equipment | Collaborations: running collaboration, national, international | Funding: recurrent resources, research contract, etc. |
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| Alphabetic classification with some regional grouping when appropriate, networks are at the end | | | | | |
| 1-(Angers) team- GLIAD Design and Application of Innovative Local treatments in Glioblastoma Emmanuel Garcion CRCINA INSERM U1232 INSERM - Université d'Angers, IBS - CHU, 4 Rue Larrey, F-49933 Angers | 1,3 | <ul style="list-style-type: none"> • Glioblastoma • Nuclear medicine • Vectorized radiation therapy • Preclinical models • miRNA targeting and delivery • Micro and Nanomedicine • Drug delivery • Imaging • Theranostics | 8 Principal investigators 5 ITA 3 postdocs 12 PhD students Specific equipment: Shielded enclosure Synthesis robotic platform Hypoxic chamber L2 cell culture rooms Stereotaxic injection platform Analytic apparatus (microplate reader, cytometric station, HPLC, etc...) | <ul style="list-style-type: none"> • <u>National</u> CBM Orléans GIN Grenoble ONIRIS Nantes Univ. Lille 2 CRCINA Team 4, 13, 14 • <u>International</u> University of Liège (Be) University of Nottingham (UK) University of Santiago de Compostela (Spain) University of Modena (Italy) Technion (Israël) University of La Plata (Argentina) University of Western Cape (South Africa) Unicamp (Brazil) | INSERM University of Angers European Commission NANOFAR ANR – LABEX IRON Inca PL_BIO MARENGO Ligue Nationale contre le Cancer Région PDL MECASTEM NANOFAR+ Cancéropole GO |
| 2-(Nantes) Nuclear oncology & innovative radiopharmaceuticals Michel Chérel CRCINA: Nantes-Angers Cancer & Immunology Research Center, UMR INSERM 1232 ERL 6001 Nantes University. IRS UN 8 quai Moncoussu F-44000 Nantes | 1,2,4 | Fundamental and translational research in: <ul style="list-style-type: none"> • Metabolic imaging (PET) • Tumor targeting with innovative α, β- et $\beta+$ radionuclides. • Radiobiology (relationship between ionizing radiation and immune response) • Quantitative imaging • Dosimetry • Radiophysic | 16 FTE + 10 Doc. and 2 post-docs Specific equipment: Preclinical imaging platform : macroPET, macroSPECT, Mice and Rats : μ TEP/Scan and μ TEM/MR, Optical Animal facilities (in radioactive area) Arronax facilities :Time lapse microscopy, radiobiological platform | <ul style="list-style-type: none"> • Regional: ICO-CHU, CRCINA, CNRS (Subatech, Ceisam), Oniris and Tumor targeting & radiotherapies network of the CGO. • National : GDR CNRS ACCITH, Labex IRON & IGO International: ITU, Germany ; Immunomedics, USA, | recurrent resources INSERM, CNRS, University of Nantes research contract INCa, ANR, Region Pays de La Loire, Ligue, CGO, industrial grants Atlab/Telix Pharma, Immunomedics, Roche, Amgen, Siemens and Kéosys |
| 3-(Bordeaux) POPRA : Programme Optique, Physique Radiothérapie en Aquitaine) Pr Guy Kantor Consortium: <ul style="list-style-type: none"> • Institut Bergonié, | 2,3,4 | <ul style="list-style-type: none"> • Algorithms of dose calculation (CELIA), for external- internal- and brachy radiotherapy, MRI and LINAC • Energetic Sources created by ultra- | <ul style="list-style-type: none"> • Institut Bergonié 0,2 ETP admin. 0,4 ETP med. 0,75 ETP med. phys. • CHU : 0,25 ETP med. phys. • CELIA: 2x 0,5 phys.; 4 PhD (1 past) | <ul style="list-style-type: none"> • <u>National</u> : – Pôle de compétitivité laser (RLH) – Canceropôle GSO (axe technologie et santé) – Oncopôle Toulouse, – Centre Antoine Lacassagne de Nice | Conseil Regional Nouvelle-Aquitaine (co-funding) and European FEDER funds |

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| <ul style="list-style-type: none"> • CHU Bordeaux • CELIA (University, CNRS, CEA) • CENBG(CNRS IN2P3, University) • INRIA (équipe Monc, IMB) <p>LaBRI</p> | | <p>intense laser (CELIA) protontherapy</p> <ul style="list-style-type: none"> • Comparative dosimetry • Nano medicine <p>CENBG radio enhancement measurements</p> <ul style="list-style-type: none"> • Spectral Measurements beams (CHU, CENBG) • Adaptative radiotherapy, Evaluation (MONC/INRIA) <p>X rays produced by laser for imaging (Alphanov)X-pulse project</p> | <p>CENBG : iRiBio : 4 x 0,5 ETP, 2 Doc (1Past), 2 Post-doc (2 Past)</p> <ul style="list-style-type: none"> • LaBRI : 0,5 ETP; 1 doc • Inria : 2 doc (past) | <ul style="list-style-type: none"> – CEA – ICMCB (nano chemistry) – Aquitaine sciences transfert (AST/SATT) – Industrial partnership <u>International</u>: Univ of Dresden (Germany) | <p>University of Bordeaux ; CNRS ; CEA ; IDEX; ANR; Canceropôle GSO European PM Curie program</p> |
| <p>4-(Brest) LaTIM, Team ACTION, Dimitris Visvikis INSERM UMR1101, UBO, IMT Atlantique,</p> <p>CHRU Morvan, Bat 1, 2 Av. Foch, 29609 Brest cedex</p> | <p>1,4</p> | <ul style="list-style-type: none"> • Image guided radiotherapy • Multimodality quantitative imaging • Intra-operative radiotherapy • Image processing • Tumor modeling | <p>11,5 FTE senior researchers Postdocs : 6 PhD students : 10</p> <p>Equipment:</p> <ul style="list-style-type: none"> • TheraFonc Platform: • Varian TrueBeam Novalis (50% temps R&D) • Aixplorer US imaging platform (100% R&D) • Dual energy CT scan (dedicated to R&D in radiotherapy) <p>Intensive computing and modelling platform (1000 CPUs, 40 Tflops; 100 GPUs, 380 Tflops)</p> | <ul style="list-style-type: none"> • <u>Regional</u>: Director: CGO network on “Targeting and Radiotherapies” 25 labs and 17 clinical teams INSERM Tours, CRCINA, LTSI, CRCINA, LabEx CominLabs: image processing; multi-scale modeling for radiotherapy treatment • <u>National</u> TIMC, ICUBE, CHU Grenoble, LabEx CAMI • <u>International</u> MAASTRO, CHU Liege, Torino, DKFG Heidelberg, Dresden,SIEMENS, Montreal; Univ Patras, BET solutions (Grece); Libra (UK), St Thomas. | <p>INSERM lab recurring funding Industrial contract: VARIAN, SIEMENS Research contracts: MC ITN PREDICT; ANR: tGATE, FOCUS; CGO: Mumofrat, MATURE; INCA : PRINCE; LaBEX CAMI: project CAPRI; CE: project ERROR</p> |
| <p>5-(Brest) Radiotherapy department, CHRU Brest Pr Olivier Pradier</p> <p>CHRU Morvan, 2 av. Foch, 29200 Brest</p> | <p>1,3</p> | <ul style="list-style-type: none"> • Radiomics in radiotherapy • Adaptive radiotherapy Image guided radiotherapy • Combination treatment: Chemotherapy/US mediated radiobiology effects | <p>3.5 FTE senior researchers; 4 Doc., 1 Post-doc</p> <p>Equipment: Cellular Analysis laboratories Varian TrueBeam Novalis (50% R&D) INTRABEAM platform (50% R&D)</p> | <ul style="list-style-type: none"> • <u>Regional</u>: INSERM Tours, LTSI, CRCINA, LaBEX CominLabs: image processing; multi-scale modeling for radiotherapy treatment • <u>National</u> TIMC Grenoble: intra-operative radiotherapy | <p>Research contracts: MC ITN PREDICT ANR : FOCUS Cancéropole GO: Mumofrat</p> <p>Industrial contract: VARIAN</p> |
| <p>6-(Caen) Medical Applications Group, Jean-Marc Fontbonne, LPC-CAEN UMR6534,</p> | <p>4</p> | <ul style="list-style-type: none"> • Nuclear physics : fragmentation and beta+ emitters in hadrontherapy • Instrumentation : beam diagnostics, | <p>6 Senior researchers (4.7 FTE) 5 doc and post-doc A large vacuum chamber for detectors</p> | <ul style="list-style-type: none"> • IPHC (Strasbourg) • ICPO (Orsay) • Centre François Baclesse (CFB, Caen) • Centre Paul Strauss (CPS, Strasbourg) | <ul style="list-style-type: none"> • CNRS/IN2P3 • ANR (EquipEx) • Possible Regional funding |

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| <p>Normandie Univ, ENSICAEN, UNICAEN, CNRS/IN2P3, LPC Caen</p> | | <p>monitors units and dosimetry devices. • Computing : multiscale modeling of clinical outcomes in radiotherapy and protontherapy.</p> | <p>Proximity of GANIL and CYCLHAD</p> | <ul style="list-style-type: none"> • CIMAP, GANIL, ARCHADE (Caen) • IMPT (Nice) | |
| <p>7-(Caen) CERVOxy group Myriam Bernaudin & S Valable ISTCT laboratory GIP CYCERON, CNRS-CEA-UNICAEN</p> | <p>1,2,3</p> | <p>Translational research in hypoxia and brain tumors, with multidisciplinary approaches (from molecular biology to imaging).</p> | <p>27 FTE: 3 CNRS researchers, 10 prof/lecturers, 6 engineers/tech, 10 Doc.; 3 Post-docs <u>Specific equipment</u> for cell and mol. biology (hypoxic chambers, time-lapse), animal surgery. Own non-human primate breeding (marmosets) Access to animal care facility (ONCOModels/CURB) and imaging platform (CYCERON)</p> | <ul style="list-style-type: none"> • <u>National</u> – UGA 7442 RSRM, Grenoble – CRCINA Inserm U1232, Nantes – CLCC Becquerel, Rouen – CLCC Baclesse, Caen – LCS UMR6506, Caen – LARIA UMR6252, Caen – LPC UMR6534, Caen • <u>International</u> CRUK/MRC Oxford Institute for Radiation Oncology | <ul style="list-style-type: none"> - CNRS, UNICAEN - ANR: Maestro, Labex IRON, EquipEx Rec-Hadron, France HADRON - INCa PLBIO Zeoxy - Région Normandie MET-Oxy (RJC) - Cancéropôle Nord-Ouest (Emergence) - Ligue Contre la Cancer |
| <p>8-(Caen) LDM TEP group, Pr Louisa Barré & C Perrio ISTCT laboratory GIP CYCERON, CNRS-CEA-UNICAEN</p> | <p>1</p> | <p>LDM TEP team develops and evaluates novel PET probes using radionuclides as ^{11}C, ^{18}F, ^{68}Ga..</p> | <p>3 researchers (2CEA, 1CNRS), 6 engineers / tech., 4 Doc, 2 Post-docs Specific equipment Labs for radiochemistry and quality control of radionuclides and radiopharmaceutics</p> | <ul style="list-style-type: none"> • <u>National</u> – CLCC Baclesse, Caen – CERMN, Caen – COBRA, Rouen – Subatech , Nantes – CRCINA, Nantes – IMIV, Orsay – CHRU, Caen • <u>International</u> – Rotterdam /Erasmus center – Barcelona/ IMIM Hospital del Mar research center – Louvain/ UCL – Texas University /A&M | <ul style="list-style-type: none"> -CEA -CNRS -ANR IRON -SANOFI -Cancéropôle Nord-Ouest -Région Normandie -Fédération INC3M |
| <p>9-(Caen) LARIA Laboratoire d’Accueil pour la Recherche sur les ions Accélérés Yannick Saintigny IRCM /CEA/GANIL</p> | <p>Cf (Fontenay-aux-roses, CEA) IRCM</p> | | | | |
| <p>10-(Caen et Rouen) ABTE EA4651 Pr François Sichel Université de Normandie (Caen et Rouen)</p> | <p>2,4</p> | <p>Radiobiology, toxicology, genotoxicology, analytical chemistry, mitochondrial biology, oxidative stress Research in radiobiology: Toxicity</p> | <p>SR : 2 FTE Doc : 1 FTE Post-doc : 1 FTE HPLC-MS/MS, HPLC-UV array, fluorescence microscope, image analysis software,</p> | <ul style="list-style-type: none"> • National : CRLCC F Baclesse, Caen Curie Institute, Orsay | <ul style="list-style-type: none"> • Etat • Europe, • Région Normandie • Cancéropôle Nord-Ouest |

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| | | of radiotherapy on normal tissues (skin, lung, heart and vessels). | echograph. | | |
| <p>11-(Clermont-Ferrand) (hors LabEx PRIMES, cf plus loin)</p> <p>UMR 1240 INSERM IMoST : Imagerie Moléculaire et Stratégies Théranostiques</p> <p>Directrice : D^r E Miot-Noirault</p> <p>Directrice adjointe : P^r Frédérique Penault-Llorca</p> <p>Equipe 1 : Cibles et outils pour l'imagerie et la thérapie D^r F Degoul</p> <p>Equipe 2 : Recherche translationnelle en imagerie fonctionnelle, radiopharmaceutiques et biomarqueurs théranostiques P^r F Cachin</p> <p>UCA : Université Clermont Auvergne ; CRLCC Jean Perrin ; INSERM ; CHU Clermont Fd</p> | 1,2,3,4 | <ul style="list-style-type: none"> Targeted Radionuclide Therapy, External radiation therapy, Radiobiology, Dosimetry, Metrology, Chemistry, Radiochemistry. | <p>20 FTE: Senior researchers : 12 Doc : 7 Post-Doc : 1</p> <p>Specific Equipment <u>Plateforme d'imagerie préclinique</u> : IVIA : PET, SPECT CT, imagerie de fluorescence et de bioluminescence, scanner X haute résolution, imagerie ex vivo, radiochimie, enceinte et automates de radiomarquage pour les isotopes gamma et beta+, Autoradiographie quantitative corps entier rongeurs, <u>Plateforme d'imagerie clinique</u> : CIRMEN : Centre d'Innovation et de recherche en Médecine Nucléaire : Radiopharmacie expérimentale dédiée au « first into humans » de radiopharmaceutiques PET-CT, SPECT-CT. Automates de synthèse et de radiomarquage, chambres radioprotégées</p> | <ul style="list-style-type: none"> National : IRCM - Montpellier UPS- Strasbourg ISA - Lyon LPC – Clermont Fd Cyclopharma-Clermont Fd Caminnov, Alès CLB – Lyon ILM – Lyon ISPB/UCBL – Lyon IPHC – Strasbourg UCBL – Lyon - EA3738 Institut de Cancérologie de L'Ouest, Nantes | <p>UCA INSERM CRLCC Centre Jean Perrin Ligue Contre le Cancer INCA/PRTK CPER FEDER ANR</p> |
| <p>12-(Dijon) Radiobiology/Radiotherapy research team Céline Mirjolet Radiation Therapy Department, CRLCC G-F Leclerc</p> | 3 | <ul style="list-style-type: none"> - Preclinical Development of 3D image guided radiotherapy -Nanoparticles for RT -RT schedule to improve Immunotherapy - Radiosensitivity predictive parameters | <p>Constitution: 2,1 FTE 1 radiobiologist 1 technician; 0,1 radiophysicists, + master student</p> <p>Specific equipment : SARRP 3D (X-Strahl) with variable collimator</p> | <ul style="list-style-type: none"> National –netwo. RESPLANDIR –UMR 6303 CNRS, Equipe MaNaPi, Dijon –Le2i UMR CNRS 6306, Dijon –Lipide, nutrition, cancers UMR INSERM 866, Dijon –Lab Radiobiologie – EA3430, CRLCC P Strauss, Strasbourg –ICMUB UMR CNRS 6302, Dijon –EPHE, Immuno et Immunothér cancers, Dijon | <p>Ligue contre le cancer Cancéropôle Grand est Conseil régional Bourgogne Franche Comté BPI Service Contract</p> |

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| 13-(Lille) Radiotherapy & Medical physics Departments, CRLCC O. Lambret Dr X Mirabel, T Lacornerie, Pr E Lartigau (Lille) IEMN, UMR CNRS 8520 | 4 | MRI dosimetry | 4 researchers MRI 3T, 1.5 T Dosimetry | <ul style="list-style-type: none"> • Institut J. Bordet, • Bruxelles, | <ul style="list-style-type: none"> • Physicancer • Siric ONCOLille |
| | 1 | <u>NAMASTE</u> (Nanomaterials and Soft Matter Theory and Modeling) | 3 researchers 1 doctorant Molecular and multi- cellular modeling | <ul style="list-style-type: none"> • Small Systems Laboratory, U. Barcelona • Catholic Univ. Leuven | <ul style="list-style-type: none"> • CNRS • INSERM • Siric ONCOLille |
| | 3 | <u>NanoBioInterfaces</u> , nanoparticles, nano compounds, graphene | 4 FTE SPR Spectroscopy Surface chemistry Nanoparticle synthesis | | <ul style="list-style-type: none"> • ANR Générique "SINCOLISTIN" • ANR PRCI "2DPS" • H2020-MSCA- RISE-2015 • FLAG-ERA JTC 2015 • INCa • CPER « Photonics for Society » |
| | 1,3 | <u>AIMAN/LIA LICS</u> , « théranostique », imagerie médicale multimodale | 6 researchers | <ul style="list-style-type: none"> • Univ. of Illinois at Urbana-Champaign • Catholic Univ. Leuven Campus Kortrijk | <ul style="list-style-type: none"> • CNRS • Ecole Centrale Lille |
| 14-(Lille) SMMIL-E D. Collard UMI CNRS 2820 | 3 | BioMEMS, microfluidiques and <i>Silicon nano tweezers</i> (SNT) pour la <i>biomécanique sous</i> <i>faisceau</i> | 6 researchers | Institut des sciences Industrielles, Tokyo | <ul style="list-style-type: none"> • CNRS • CPER IRICL • Centre Oscar Lambret |
| 15-(Lille) Plasticity and Cancer » X Le Bourhis INSERM U908 « Cell | 2 | Stem cells Preclinical models (Zebra, transgenic mice) | 2 researchers | | <ul style="list-style-type: none"> • INSERM • Centre Oscar Lambret |
| 16-(Lille) « Approches Génétiques » Fonctionnelles et Structurales des Cancers » C Abbadie CNRS UMR 8161 | 2 | Cellular senescence, Oxidative stress, DNA damage, | 3.5 FTE researchers | <ul style="list-style-type: none"> • Univ Ghent • Univ Libre de Bruxelles | <ul style="list-style-type: none"> • CNRS • Univ Lille • Institut Pasteur de Lille • Ligue contre le cancer • Siric ONCOLille • SFR Cancer • Cancéropôle Nord-Ouest |
| 17-(Lille) Plateforme PRECI www.oncovet-clinical-research.com www.plateforme-prec.fr Dr Dominique TIERNY, DVM, CEO | 2,3 | <ul style="list-style-type: none"> • Comparative Oncology : Clinical studies in dogs with spontaneous tumors for accelerating therapeutic development in human health (in particular | Team research radiotherapy : 8 FTE 4 DVM, 1 ingeneer,2 technicians, 1 supervisor Specific Equipment (accreditatio n ASN & DDPP) - Dual energy accelerator (Precise, Elekta, 6MV | National collaborations with : Lille University, Oscar Lambret anticancer center COL, Pasteur Institute, CNRS and INSERM teams : Mixed team O'Dreams : OCR- PRISM (Inserm U1192) | - Research contracts for biotechs and pharmaceuticals laboratories. - Innovative research program Immunodog |

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| <p>OCR (Oncovet Clinical Research)</p> <p>OCR Parc Eurasanté Lille Métropole 80 Rue du Docteur Yersin 59120 Loos - France</p> | | <p>combination treatments with radiation)</p> <ul style="list-style-type: none"> • Radiotherapy Platform for research use. <p>Dedicated housing facilities for rodents and large mammals with DDPP accreditation.</p> | <p>photons and electrons)</p> <ul style="list-style-type: none"> - 3D treatment planning software, Oncentra and Mosaik, Elekta - HDR Brachytherapy (microselectron-HDR) - Low-energy photon unit - Nuclear medicine service with gamma-camera - CT scanner - Fully equipped surgical theaters - Housing facilities | <p>International collaborations :</p> <p>Project CoBra approved (Nov 2017) : Interreg 2seas European Program (Lille University; COL, Oncovet-OCR, Delft University –NI, Portsmouth Hospitals NHS –UK,...)</p> <p><i>Aims to develop a new medical robot prototype for treatment of localized cancers by brachytherapy under guidance of MRI.</i></p> | <p>(combination therapy : PRI BPI)</p> <ul style="list-style-type: none"> - Application for collaborative research projects with academic teams : regional (Haut de France Region), national (FUI, ANR, INCa) and European funds (Interreg2 Seas) |
| <p>18-(Lyon and Auvergne-Rhône-Alpes) LabEx PRIMES Françoise Peyrin 8 teams</p> | | <p>Physique, Radiobiologie, Imagerie Médicale et Simulations</p> | <p>Federates 16 teams including 8 teams directly involved in preclinical research in radiotherapy</p> | | <p>Each team has its own funding and the LabEx has specific ANR funding</p> |
| <p>19-(PRIMES Lyon) PRISME-LRCM Development of fundamental and translational research in radiobiology for innovative radiotherapies Pr Claire Rodriguez-Lafrasse IPNL UMR5822 (CNRS/IN2P3, Univ Lyon1) Fac. de Médecine Lyon-Sud</p> | <p>1,3</p> | <ul style="list-style-type: none"> • Radiobiology for innovative radiotherapies (cell response to carbon ions, protons and radiosensitizing nanoparticles) • Predictive biomarkers of response to radiotherapy in tumors and liquid biopsies (CTCs) | <p><u>11 FTE:</u> 3 PU-PH, 1 Pr, 1 MCU-PH, 1 Engineer, 1 AHU, 3 Techs, 1 post-doc, 5 Doc. <u>Equipment</u> Xray Irradiator (XRad320), cell. and mol. biology (hypoxic chambers, video microscopy, Nanostring, NGS...), animal facilities</p> | <ul style="list-style-type: none"> • <u>National :</u> LabEx PRIMES, France Hadron. • <u>International :</u> ENLIGHT, NIRS (Chiba, Japon), GSI (Germany) University of Montreal. | <p>IN2P3, Labex PRIMES, INCa, ANR, UCBL, CLARA, Ligue contre le cancer, EDF</p> |
| <p>20-(PRIMES Lyon) PRISME-PHABIO Modelling and instrumentation for control and optimisation of innovative radiotherapies Pr Michaël Beuve IPNL-UMR5822 (CNRS/IN2P3, Univ Lyon 1) Faculté des Sciences</p> | <p>2,3,4</p> | <ul style="list-style-type: none"> • Radiobiology (experiments and multiscale modelling from atoms to tumor control), • Instrumentation <ul style="list-style-type: none"> - for cell irradiation dosimetry - for on-line control of treatments | <p><u>7 FTE:</u> 1 Pr, 2 MCU, 1 CR, 1 Engineer, 1 Post-doc, 5 Doc. <u>Equipment</u> - Proton beam line; - cell biology laboratory; - instrumentation laboratory.</p> | <ul style="list-style-type: none"> • <u>National :</u> LabEx PRIMES, France Hadron, CIMAP • <u>International :</u> ENLIGHT (UE) ; IFIR (Argentine) ; Univ. St Petersburg (Ru); Univ. Duisburg-Essen (D); | <p>IN2P3, Labex PRIMES, INCa, UCBL, FRM, Bourse P&M Curie</p> |
| <p>21-(PRIMES Lyon) Tomoradio Françoise Peyrin & David Sarrut CREATIS team 4, UMR 5220 INSERM 1206 (CNRS, INSERM, Univ. Lyon 1, INSA-Lyon)</p> | <p>1,4</p> | <p>Image processing, tomographic reconstruction, registration and simulations in radiation therapy and nuclear medicine</p> | <p>2.5 FTE; 3 Doc; 4 Post-doc</p> <p>Access to micro SPECT imaging and to the technical platform of the Lyon CRLCC</p> | <ul style="list-style-type: none"> • <u>National</u> Nantes Cancer center on XRad small animal irradiators France HADRON • <u>International</u> D. Sarrut is member of the ESTRO ACROP (Advisory Committee on Radiation Oncology Practice) ENLIGHT | <p>Univ.Lyon1, Labex PRIMES, INCa Physicancer SPEDIV, ANR tGATE, Lyric project (SIRIC INCa funds), FRM</p> |

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| 22-(PRIMES Lyon) SAARA Behzad Shariat LIRIS, Univ. Lyon 1 | 1,4 | Moving organs modeling (biomechanics) | 2 pers, 1 FTE | <ul style="list-style-type: none"> • <u>National</u> : LabEx PRIMES, France HADRON • <u>International</u> : ENLIGHT | Labex PRIMES, Univ. Lyon 1, INSA, ANR |
| 23-(PRIMES Clermont-Ferrand) Department of Physics for Health, Environment and Energy Gérard Montarou LPC Clermont CNRS/IN2P3 Univ. Clermont Auvergne (UCA) | 2,4 | <ul style="list-style-type: none"> • <u>Particle Therapy</u>: instrumentation and simulation • <u>Radiobiology</u> : experimental and modeling • <u>Multiscale Dosimetry</u> • <u>Multiscale simulation</u> of the radiation in cells and tissues • <u>Biomaterials</u>: elaboration and characterization | <u>12,5 FTE</u> 8,5 Senior researchers; 3 Doc 1 Post-Doc <u>Specific equipment</u> : <ul style="list-style-type: none"> • X ray Irradiation facility (PXI XRAD320) • 2.4 MeV Neutron Tube (G16 SODERN) • TIRF Microscope (Eclipse Ti-E NIKON) | <ul style="list-style-type: none"> • <u>National</u> LabEx PRIMES, France HADRON • <u>International</u> H2020- European Nuclear Science and Application Research2 : MediNet OpenGATE coll. Geant4-DNA ENLIGHT | <u>Recurrent resources</u> : – CNRS/IN2P3, – Univ. CA – Labex PRIMES <u>Research contract</u> – ANR, – INCa – CLARA <u>Regional fundings</u> on specific contract |
| 24-(PRIMES Grenoble) Rayonnement Synchrotron et Recherche Médicale (RSRM) EA 7442 Pr Sam Bayat Univ. Grenoble-Alpes | 1,2,3 | <ul style="list-style-type: none"> • In-vitro and in-vivo micro imaging, • Experimental synchrotron radiation therapy (SSRT, MRT), • Nanoparticle preclinical studies. | 9 pers, <u>5,5 FTE</u> , team located at ESRF/ID17 | <ul style="list-style-type: none"> • <u>National</u> : LabEx PRIMES, CEA • <u>International</u> : European MRT coll., Australian Synchro., Daegu Synchro. (Korea) | Labex PRIMES, INCa/DGOS, UGA, FRM, Région AuRA |
| 25-(PRIMES Grenoble) SyMMES UMR5819 Jean-Luc Ravanat CEA, CNRS, UGA | 2 | Approches thérapeutiques ou diagnostiques innovantes par de nouvelles molécules ou biomolécules ou agents génotoxiques | 8 pers.; <u>2,2 FTE</u> | LabEx PRIMES | Labex PRIMES, CEA segment radiobiology, INCA, UGA,ANSES, ANR |
| 26-(PRIMES Grenoble) ProMD Serge Candéias LCBM, UMR5249 CEA/CNRS/UGA | 1 | <ul style="list-style-type: none"> • Radiobiology; • Immunology; • Low dose effects | 4 pers., <u>2,8 FTE</u> | <ul style="list-style-type: none"> • <u>National</u> : LabEx PRIMES, CEA • <u>International</u> : PHE (UK), UKER (D), SUT (Pol) | Labex PRIMES, CEA segment radiobiology, EDF |
| 27-(PRIMES Grenoble) Physique pour les Applications Médicales Denis Dauvergne LPSC, UMR 5821, CNRS/IN2P3 UGA | 2,3,4 | Detectors for online control of radiotherapy | 14 pers., <u>5,8 FTE</u> | <ul style="list-style-type: none"> • <u>National</u> : LabEx PRIMES, France HADRON • <u>International</u> : ENLIGHT | LabEx PRIMES, IN2P3, INCa Physicancer CLARYS-UFT, UGA, CLARA |
| 28-(PRIMES Lyon) FENNEC Olivier Tillement ILM, UMR 5306 | 1,3 | Nanoparticles for radiosensitisation (from synthesis to clinical development) | 7 pers., <u>3,5 FTE</u> | <ul style="list-style-type: none"> • <u>National</u> : LabEx PRIMES, CHU de Grenoble, IGR, Institut Curie, LCAM Orsay • <u>International</u> : European network ITN Argent ; Mecanistic modelization, Queen's university Belfast; Harvard medical school; Stanford. | ILM Lyon, LabEx PRIMES, Research contracts |
| 29-(Grenoble) | 1,3 | • High-Z/Gold | 3,5 Senior researchers; | • <u>National</u> : Grenoble | • Institutional |

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| <p>Team COLL Institute for Advanced Biosciences Jen Luc Coll INSERM U1209 CNRS UMR5309 Univ Grenoble-Alpes Collaborators : L Sancey, X Le Guevel, B Busser</p> | | nanoparticles • PDT activated by x-rays • Biodistribution's optimization and elimination process' elucidation Delivery of Boron for AB-NCT | Doc : 1 Post-doc : 2 <u>Small X irradiator</u> (120kV) | RSRM/ILL/ESRF/CHU/CERMAV ; Dijon C Goze • <u>International</u> : K Butterworth, Queen's Univ. Irlande ; I Porras, Univ de Granada Spain | fundings (INSERM, CNRS) • Regional funding (NEPTUNE project) |
| <p>30-(Lyon) Group of P Pittet INL: Institut de nanotechnologie de Lyon, UMR5270 Univ. Lyon 1 - INSA de Lyon - ECL - CPE - CNRS</p> | 4 | • Instrumentation for dosimetry and medical physics applications | 4 FTE (2 professors, 1 assistant professor and 1 research engineer) Highly resolved point dosimeter (patented technology), Tomographic dosimetry (patent pending). | • <u>National</u> : Medical physics department of HCL, CREATIS, TIMC-IMAG, IPNL • <u>International</u> : Dosilab AG (Swiss) Univ. Uppsala (Sweden) | • Partnership with Dosilab AG, • ANR TECSAN DoRGaN (finished in 2016) • ANR NEWLOC (generic call 2018) • QASys project (physic cancer call 2018) |
| <p>31-(Montpellier) Radiation Oncology Department - Montpellier Cancer Institute Pr David Azria</p> | 2,3,4 | • Large-scale clinical translational studies on radiotoxicity biomarkers • Preclinical/clinical studies on new drug and radiotherapy combinations • Preclinical and clinical dosimetry | 6 linear accelerators 1 MRI accelerator <i>(ViewRay's MRIdian Linac system, ongoing implementation)</i> | • <u>National</u> : - UNICANCER group for translational research and development in radiation oncology (UNITRAD, Head D. Azria) - Other national thematic networks (SFRO, GETUG, SFPM, ...) - Regional Univ. Federation of Radiation Oncology (ICM and CHU of Nîmes) • <u>International</u> : - European FP-7 Requite consortium - International RadioGenomics consortium (RGC) - Univ. of Arizona, Mount Sinai Hospital of New-York (US) - CHUV, Lausanne (Switzerland) | • Institutional funding: INCa, DGOS • Charities: League against cancer, ARC Foundation, FRM • Industry contracts (Roche, Genentech, Novartis, Varian) • Territorial authorities: Montpellier Metropole "Health Capital", Occitanie Region |
| <p>32-(Montpellier) Experimental radiotherapy platform – Montpellier Cancer Research Institute Dr Muriel Brengues</p> | 2,3 | • Radiobiology studies on cells and animal models (whole body mice and subcutaneous grafted tumours) | 4 FTE: 1 senior researcher 2 engineers 1 physicist X-ray irradiator (SARRP Lite Xenx - XStrahl) | • <u>National</u> : - ITMO-Cancer PROUST network • <u>International</u> : - European FP-7 Requite consortium • <u>Industrial collaborations</u> : NovaGray, Varian | • SIRIC Montpellier Cancer • European Fund for regional development (FEDER) • ITMO Cancer • Others: GEFLUC, League against Cancer |

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| | | | | | <ul style="list-style-type: none"> Services provision to academics and private companies |
| 33-(Montpellier) Micro-PET-CT imaging platform - Montpellier Cancer Research Institute Dr Jean-Pierre Pouget <i>(Emerging platform to be delivered by Q2 2018)</i> | 1 | <ul style="list-style-type: none"> Imaging of small animals and plants | 1 senior researcher 1 nuclear medicine physician 2 engineers 1 physicist Micro-PET-CT imaging system | <ul style="list-style-type: none"> SIRIC Montpellier Cancer BionanoMRI consortium (Montpellier University) Others to come | <ul style="list-style-type: none"> European Fund for regional development (FEDER) ITMO Cancer SIRIC Montpellier Cancer |
| 34-Montpellier) Immunotargeting and radiobiology in oncology Dr André Pèlerin | 2,3 | <ul style="list-style-type: none"> Correlation studies between lymphocyte apoptosis and radio-induced late toxicities Radiotherapy Biologics associations | 3 senior researchers 1 PU-PH 1 MCU-PH 2 engineers 1 PhD student | <ul style="list-style-type: none"> <u>National</u> SIRIC Montpellier Cancer CEA (Fontenay-aux-roses) <u>International</u> University of Leicester | <ul style="list-style-type: none"> SIRIC Montpellier Cancer Labex MablImprove Plan Cancer (Proust) GEFLUC |
| 35-(Montpellier) Radiobiology and targeted radiotherapy Dr Jean-Pierre Pouget | 1,3 | <ul style="list-style-type: none"> Radiobiology of targeted radiotherapy (ovarian and colorectal cancers) Development of radiopharmaceuticals for theranostic approaches of ovarian cancer | 2 senior researchers 1 MCU 2 MCU-PH 1 PH 1.5 post-doc 2 PhD student <ul style="list-style-type: none"> Specific equipment SPECT-CT/PET-CT | <ul style="list-style-type: none"> <u>National</u> collaborations ONIRIS Nantes CRCT Toulouse IBMM Montpellier INSERM Clermont Ferrand <u>International</u> Queen Mary University London NRG Petten Netherlands NECSA South Africa ITU Karlsruhe Germany | <ul style="list-style-type: none"> Nordic Nanovector, Oslo Norway Physicancer SIRIC Montpellier Labex MablImprove/Labex Chemisyst Others: Bionov, EDF, LNCC, Canceropole (CGSO), GEFLUC |
| 36-(Montpellier) Cancer bioinformatics and systems biology Pr Jacques Colinge | 1,4 | <ul style="list-style-type: none"> Methods of large-scale dataset analysis and systems biology applied to cancer research Computational modeling program for personalized cancer radiotherapy | 1 senior researcher 1 post-doc | <ul style="list-style-type: none"> SIRIC Montpellier Cancer | <ul style="list-style-type: none"> ANR, INCa, ARC Foundation, SIRIC Montpellier Cancer |
| 7-(Montpellier) Immunity and cancer Dr Nathalie Bonnefoy | 2,3 | <ul style="list-style-type: none"> Relationships between cancer and immune cells within the microenvironment Immune-based combined therapies (chemo-and radiotherapy) In vitro and in vivo | 2 senior researchers 1 PhD student 1 engineers <ul style="list-style-type: none"> Mass Cytometry and Imaging Mass Cytometry | <ul style="list-style-type: none"> <u>National</u> : - CRCT Toulouse - Labex IGO Nantes - CHU Montpellier <u>Industrial collaborations</u>: - OREGABioteck - InnatePharma | <ul style="list-style-type: none"> INCa, ITMO Cancer, ANR Labex MablImprove, SIRIC Montpellier, Canceropole GSO League against Cancer, GEFLUC, |

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| | | preclinical syngenic tumour models (melanoma, fibrosarcoma, colon, breast, pancreatic, cervix cancer) | | - Varian - Roche | interregional clinical research program (API-K) • Industry contracts (Roche, Varian Medical systems) |
| 38-(Nancy ICL) IMOPA, Team 1, Group radiobiology Leaders: Guillaume Vogin & Isabelle Behm-Ansmant Head: Bruno Charpentier UMR 7365 CNRS-UL | 1,2 | <ul style="list-style-type: none"> • RNA maturation and splicing • RNP biogenesis and functions • Epitranscriptomics • Molecular radiation response (healthy tissues and tumors) • Radiomics | <p><u>Team 1</u>: 3PU, 3MCF, 1 MCU-PH, 4 senior researchers, 7 technicians, 5 Doc. <u>Group RB</u>: 1 MCU-PH, 1 senior researcher, 1 PhD st, 1 M2 st</p> <p><u>Platforms</u>: next generation high-throughput DNA-sequencing platform, Imaging Platform for Cell and Tissue analysis (IbiSA), Quality of Life and Cancer Platform, CIC-IT, Clinical Molecular PET Imaging Platform (NANCYCLOTEP)</p> | <ul style="list-style-type: none"> • <u>National</u> Institut de Cancérologie de Lorraine CHRU Nancy IMOPA team 2, Nancy CRAN-UL, Nancy LORIA, UMR 7503 (CNRS – INRIA – UL) IGBMC Strasbourg U866 Inserm, Dijon • <u>International</u> Maastricht Univ. (NL) Liege Univ. (BE) Luxembourg (LU) Saarlandes Univ. (DE) Mainz Univ. (DE) | Ligue CCIR-GE Institut de Cancérologie de Lorraine PHRCi SFCE AFREth EU (INTERREG) |
| 39-(Nice) TIRO laboratory Thierry Pourcher & Béatrice Cambien UMRE-4320, Nice cambien@unice.fr | 3 | <p>Translational research:</p> <ul style="list-style-type: none"> • radio-sensitization • radioprotection, with multidisciplinary approaches (preclinical expertise from in vitro to in vivo, nuclear imaging and spectrometric platform). | <p><u>14 FTE</u>:</p> <p>4 senior researchers (INSERM, CNRS, CEA) 1 faculty researcher, 2 MD, 4 engineers /tech., 4 Doc., 1 Post-doc.</p> <p><u>Specific equipment</u> micro SPECT/CT imaging, nuclear imaging and radioisotope handling, animal care facility, animal models, cellular biology, spectrometric platform.</p> <p><u>Access to medical irradiators</u>: EBRT (Cyberknife, protontherapy: Medicyc 65 Mev, ProteusOne 235 MeV) in the Centre Antoine Lacassagne.</p> | <ul style="list-style-type: none"> • <u>National</u> IRSN; IRBA; CEA Saclay & Cadarache ; CLCC Baclesse, Caen ; INRIA & IPMC at Sophia Antipolis, Inserm (Nice). • <u>International</u> Colombia, Madrid, USA. • <u>Industrial</u> : Theraguix, Lyon. | - CEA/PTTox, DRF impulsion - ANR PRIODAC - Cancéropôle Sud-Est - Plan Cancer |
| (Paris, Ile de Fr) | | | | | |
| (Institut Curie) | | | | | |
| 40-Institut Curie Department of medical physics; Alejandro Mazal Institut Curie Paris – St. Cloud – Orsay | 1,4 | <ul style="list-style-type: none"> • Medical Physics and Engineering: measurements, models, calculations, procedures | In total <u>2 FTE</u> shared among all medical physicists and engineers + in general 1-2 docs and/or post docs | <ul style="list-style-type: none"> • <u>National</u> : CNRS, CEA, • <u>International</u> : IAEA • <u>Industrial</u> : Varian, IBA, Siemens, ... | Institut Curie foundation, Migac, PhysiCancer, industrial contracts, European grants |

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| 41-Institut Curie Department of radiation oncology; Pr Philip Poortmans Institut Curie Paris – St. Cloud – Orsay | 1,4 | <ul style="list-style-type: none"> • Modulation of radiation therapy parameters; • Combination therapy with systemic agents. | In total <u>2.45 FTE</u> shared among all senior radiation oncologists: 3 as major occupation; 4 as minor occupation. | <ul style="list-style-type: none"> • <u>National</u> : UNICANCER; GORTEC; GETUG • <u>International</u> : EORTC | Institut Curie foundation |
| 42-Institut Curie Marie Dutreix Centre de Recherche, Orsay | 1,2,3 | <ul style="list-style-type: none"> • Preclinical models, normal and tumor tissue differential index • FLASH irradiation (high dose rate irradiation) • Protons • Development of new radiosensitising molecules • Preclinical studies on combined treatments • biomarkers | <u>5 teams</u> 7 senior researchers, 3 post-doc, 4 doc, 8 engineers, technicians | <ul style="list-style-type: none"> • <u>National</u>: F. Lemoine, CHU Salpêtrière, Paris ; E. Charafe, IPC,Marseille NANOTHERAD network • <u>European</u>: ITN-RADIATE R. Michel, University, Oxford, UK; P. Lambin et al., Maastricht, NL ; Cordes, Dresden, D; V. Gregoire, P. Sonveaux, Brussel ; V. Jendrossek, Essen, D. • <u>USA</u>: S. Bhaskara, Huntsman Cancer Center,Utah,USA | Institut Curie foundation, INSERM, CNRS, Institut Curie centre de recherche, Univ. Paris-Saclay, INCA, Onxeo, EU |
| 43-Institut Curie RadeXp (Experimental Radiotherapy Platform), Translational Research Department Frédéric Pouzoulet Centre de Recherche, Orsay | 1,2,3,4 | Translational research Medical physics Radiotherapy Preclinical models | <u>Staff permanent position</u> : 1 radiation biologist 1 Medical physicist 3 engineers <u>Specific equipment</u> : - XRAD320(X-rays) - SARRP (Xrays + imaging + TPS) - CIXD (double x-rays) - GSRD1 (¹³⁷ Cs) - KINETRON (HDR Linac) - Medical proton beamline (ICPO) | <ul style="list-style-type: none"> • <u>National</u>: RESPLANDIR network Y Prezado (IMNC/IN2P3) C Laurent (ToxEMAC ABTE, univ. Caen) Khe Hoang-Xuan (ICM/APHP) • <u>International</u> : F Lebrin (Leiden univ. medical center, NL) Han Tun (Mayo Clinic, Jacksonville, FL, USA) | <u>Recurrent resources</u> – Invoicing – institutional <u>Research contract</u> – INCA (PRT-K, canceropole IDF2016) – ITMO Cancer – Equipment (2015 regional funding) <u>And 4 Industrial contracts</u> |
| (AP-HP) | | | | | |
| Research Network :  | 2,3,4 | Groupe de Recherche en Radiothérapie de l'Assistance Publique - Hôpitaux de Paris (AP-HP) | Domain of Translational Research: <u>Prediction of efficacy of radiotherapy and combined radiotherapy to new drugs</u> <u>Prediction and prognostic of radiation-induced damage in healthy tissues</u> | | |
| 44-GRRAP Member: Recombinaison DNA repair and cancer: “de la molécule au patient” Laurent Quéro Inserm U1021 / CNRS UMR3347 , Orsay (lab of M Dutreix, cf Institut Curie just above) | 3 | <ul style="list-style-type: none"> • DNA repair • Anticancer drugs combination • Translational research | <u>6,5 FTE</u> : 3 Seniors researchers 1 Professor 2 Doc 1 Post Doc | Pharma Industry Paris VI university | Institut Curie CNRS INCa |
| 45-GRRAP Member: Recherches en Hématologie Edgardo Carosella, CEA/SRHI , | 2,3 | <ul style="list-style-type: none"> • Tumors immunology • HLA-G and immune checkpoints | <u>6,5 FTE</u> : 5 Seniors researchers 3 Prof. and Assoc. Prof. | IUH Paris VII HLA-G working group (international) | CEA Univ. Paris 7 Pharma Industry |

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| Assoc. GRRAP member: Pr Ch. Hennequin Univ. & AP-HP St Louis | | | | | |
| 46-GRRAP Member: IMRB Alexandre de La Taille INSERM 955 EQ 07 Univ. Paris Est Créteil Assoc. GRRAP member: Pr Yazid Belkacemi Department of radiation oncology and Breast Center CHU AP-HP H. Mondor | 2,3 | Microenvironment and biopathologic markers: - Predictive factors for efficacy of chemo- radiotherapy in triple negative breast cancers; - Biological markers of severe RT toxicity. Proust project | <u>6 FTE:</u> 4 Seniors researchers 3 Professors 1 Assistant Professor | <ul style="list-style-type: none"> • <u>National :</u> Pathology lab of CRLCC Clermont-Fd INSERM Montpellier INSERM Lyon Univ. Paris Est Créteil | INSERM, INCa grant (Proust project) |
| 47-GRRAP Member: Cancer biology and therapeutics Annette Larsen Centre de Recherche Saint-Antoine UMR_S 938 – INSERM Univ. P et Marie Curie Assoc. GRRAP member: Pr Florence Hugué Depart. Radiation Oncol, CHU AP-HP Tenon | 2,3 | Mechanisms driving of tumor progression and plasticity to identify novel targets and biomarkers of response to novel agents and combinations | <u>15 FTE:</u> 3 Seniors researchers 1 Professors 10 University-associated clinicians 6 Doc. 3 Post-doc | <ul style="list-style-type: none"> • <u>National :</u> UPMC • <u>International :</u> - EU network of excellence - EORTC-PAMM - National University of Singapore - French-Brazilian univ. research network (CAPES- COFECUB) • <u>Industrial pharma:</u> - Europe, USA, China | Univ. Paris VI INSERM Grants |
| 48-GRRAP Member: Personalized medicine, pharmacogenomics, therapeutic optimisation Pr Pierre Laurent-Puig INSERM UMR-S 1147 : Univ. Paris Descartes Assoc. GRRAP member: Pr Florence Hugué Depart. Radiation Oncol, CHU AP-HP Tenon | 3 | <ul style="list-style-type: none"> • Pharmacogenetic -metabolism and drugs transporters -intra-tumoral metabolism of pro- drugs - nucl. gene transfer • Molecular mechanisms of cytotoxicity • Tu. pharmacogenomics prediction / monitoring of response and prognosis | <u>14 FTE:</u> 2 Seniors researchers 1 Professors 10 University-associated clinicians 5 Doc. 4 Post-doc | <ul style="list-style-type: none"> • <u>National :</u> CICB Paris CARPEM Paris V Paris VI UPMC | Univ. Paris V INSERM Grants Emergence grant (RADON project) |
| 49-GRRAP Member Department of radiation oncology and Breast Center Pr Yazid Belkacemi CHU AP-HP H. Mondor INSERM 955 EQ 07 Univ. Paris Est Créteil | 1 | Target volumes imaging by PET-MRI | <u>2.5 FTE:</u> 1 Assistant professor 2 Senior researchers | <ul style="list-style-type: none"> • <u>Local:</u> - Dept. Nuclear Medicine E Itti - Dept. Medical Imaging A Luciani | Univ. Paris Est Créteil INSERM |
| 50-GRRAP Member Radiotherapy Department Pr Philippe Maingon CHU AP-HP Pitié- Salpêtrière | 1,4 | <ul style="list-style-type: none"> • PET-MRI in whole- body oncology imaging • MRI evaluation in the Linac-MR concept. | <u>2.5 FTE</u> senior researchers | <ul style="list-style-type: none"> • <u>Local:</u> Lab. of parametric imaging (LIP) UMR 7623 CNRS/Univ Paris VI | CNRS |

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| <p>51-TEAM 02 “In Vivo Imaging Research” Bertrand Tavitian Laure Fournier Charles-André Cuenod Olivier Clemend Philippe Halimi Philippe Giraud Inserm UMR-970 Paris Cardiovascular Research Center</p> | <p>1</p> | <p>Target volume definition, MRI, PET-CT</p> | <p>Team: <u>16 FTE</u> 5 PU-PH 1 PH 1 Post-Doc 8 Doc 4 engineers</p> <p><u>Equipment:</u> Small animal PET-CT Small animal 4.7T MRI</p> | <p>• <u>National</u> : Inst. Langevin, Inst. Cochin, Odontology school, Biomedical Faculty, INRA Toulouse, INSERM 1146, MSC lab (lab. matières et systèmes complexes, UMR 7057 CNRS, Univ. Paris-Diderot.); lab. biosurgical sciences (INSERM U633)</p> <p>• <u>International</u> : TRANSACT consortium (EU); Argentina (D Craeim, Favaro Univ., ECOS grant). Univ. Federal do Rio Grande do Norte in Natal, Brazil (Pr. I. Araujo Filho).</p> | <p><u>National:</u> BIMUPET, Plan Cancer; HECAM; CARPEM; SIRIC InCA; PETRUS; France Life Imaging; RIHDO; FUI; RADIOMICS (FRM)</p> <p><u>European:</u> ENCITE, UE FP7;</p> <p><u>Industrial contracts.</u></p> |
| <p>52- Service de radiothérapie HEGP Dr Jean-Emmanuel Bibault Pr Philippe Giraud Pr Catherine Durdux Pr Anita Burgun Hôpital Européen Georges Pompidou – AP-HP</p> | <p>1,4</p> | <ul style="list-style-type: none"> Intensity Modulated Radiation Therapy, Stereotactical Body Radiation Therapy, Gating | <p>9 physicians including three full time Professors</p> | <p>INSERM UMRS 1138 Team 22 – Centre de recherche des Cordeliers – Anita Burgun Radiomics, Machine Learning, Big Data</p> | <p>BPI : Invest Public Bank</p> |
| <p>53-(Paris AP-HP) Laboratory of Integrative Cancer Immunology, Jérôme Galon INSERM UMRS1138, (INSERM, HEGP, AP-HP) Paris,</p> | <p>3</p> | <ul style="list-style-type: none"> Immunology, tumor-immunology, immune response to cancer, immunotherapy, impact of radiotherapy on immune microenvironment, defined the concept of immune contexture, and the Immunoscore. | <p>2.5 FTE senior researchers ; 2 Doc; 6 Post-Doc</p> | <ul style="list-style-type: none"> <u>Local:</u> Radiotherapy department, IGR, Villejuif, immune response after radiotherapy ± immunotherapy. <u>Multiple International collaborations</u> PI of the Worldwide Immunoscore consortium | <p>Recurrent resources (INSERM laboratory, LabEx immunology)</p> <p>Co-funding from EU (ERAnet Transcan and APERIM);</p> |
| <p>54-(Villejuif) Molecular radiotherapy Pr Eric Deutsch INSERM 1030 Gustave Roussy (IGR)</p> | <p>1,2,3</p> | <ul style="list-style-type: none"> Preclinical models, normal and tumor tissue differential index, Lung and head and neck models Radiomics and functional imaging Biomarkers Immunotherapies combined to radiotherapy | <p>2 senior researchers, 6 doc., 4 post-docs</p> | <ul style="list-style-type: none"> <u>Nationale:</u> - Ecole central Paris, - LOA école polytech., - Dosisoft, IRSN, CEA, - A Boissonnas UPMC-INSERM, - P Sansonetti Institut Pasteur, - I Buvat, SHFJ CEA Orsay. - J Galon U1138 (immunology) | <p>INSERM, FRM, Ligue contre le cancer, ARC, EDF, INCA. NanoH, Nanobiotix, + pharma</p> |
| <p>55-(Villejuif) Cell death and aging Jean Luc Perfettini INSERM 1030, IGR</p> | <p>2,3</p> | <p>Cell death, immune response</p> | <p>2 senior researchers, 6 doc., 3 post-docs</p> | <p>CEA, IRSN</p> | <p>INSERM, Labex Lermitt, INCA, ARC,EDF</p> |

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| 56-(Villejuif) Espèces Réactives de l'Oxygène et Radio carcinogène Corinne Dupuy, UMR 8200, IGR | 2 | <ul style="list-style-type: none"> • Radiation induced fibrosis, Free radicals, • Carcinogenesis and X-ray induced mutagenesis | 1 senior researchers, 2 doc., 2 post-docs | INSERM U1030 | CNRS, INCA, EDF |
| 57-(Villejuif) Epidémiologie des radiations, Florent de Vathaire, U1018, IGR | 2,4 | Dose modelling and cancer risk | 2 senior researchers, 2 doc., 3 post-docs | | INSERM, INCA, H2020, |
| 58-(Villejuif) Dosimetry Platform, Ibrahima Diallo, U1018-CESP, IGR | 4 | <ul style="list-style-type: none"> • Dosimetry for late effects studies • Out-of-field dose measurements and modelling • Organ modelling • RT patient phantom development • QA of late effects dosimetric studies | Constitution <ul style="list-style-type: none"> • 2 Principal investigators. • 1 ETP postdoc • 1 ETP MD • 1 Master II student • 1 Master I student Specific equipment <ul style="list-style-type: none"> • Library of whole body of phantoms for paediatric and adult RT patients. • Software for whole body dose calculations. • Radiophotoluminescence (RPL) dosimetry system. • Specially dedicated water tank for out-of-field dosimetry. | National Gustave Roussy, Villejuif Curie Institute, Paris Dosisoft, Cachan Equal-Estro, Villejuif Centre G.F. Leclerc, Dijon Centre L. Bérard, Lyon ICL, Nancy International Univ. of Birmingham, UK NKI, The Netherlands ISGLOBAL, Spain MD Anderson Cancer Center, USA | INSERM Plan Cancer Inca Dutch Cancer Society European Commission |
| 59-(Villejuif) Medical Physics Department, IGR Dimitrios Lefkopoulos | 4 | Medical Physics and Engineering : Radiation metrology, Adaptive planning and dosimetry, target deformation Dose modelling, Quality assurance, transit dosimetry. Quantification and patient dosimetry in medical imaging. | Constitution <ul style="list-style-type: none"> • 1.5 FTE Medical Physicists • 1 ETP QA technologists • 2 Master/year • 1-2 docs and/or post docs Specific equipment <ul style="list-style-type: none"> • High level technological platform • TPS VOLO Tomotherapy • TPS PRECISION Cyberknife | National INSERM, Villejuif Curie Institute, Paris Dosisoft, Cachan Equal-Estro, Villejuif Raysearch ELEKTA International IAEA | INSERM Plan Cancer Inca European Commission |

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| | | | <ul style="list-style-type: none"> • TPS Raystation (VMAT) • 10 Linacs • Brachy dedicated TPS. • PLANETDose (Targeted Radionuclide Therapy) | | |
| 60-(Fontenay-aux-roses, CEA) Institut de radiobiologie cellulaire et moléculaire iRCM, Paul-Henri Romeo 14 teams: LRIG: Pablo Radicella LION: Karine Dubrana LTR: Stéphane Marcand LRGM: Eric Coïc LRP: François Boussin LREV: Pascale Bertrand LGAG: Isabelle Allemand LDG: Gabriel Livera LSHL: Françoise Pflumio LRTS: Paul-Henri Romeo LGRK (Evry): Michèle Martin LCE: Sylvie Chevillard LRT: Jaime Angulo LARIA (Caen): Yannick Saintigny CEA, Direction de la Recherche Fondamentale | 1,2,3 | Radiobiology Radiotherapy Individual sensitivity to irradiation | 86 Full time researchers 35Technicians 29 Doc 20 Post Doc Specific Equipment : iRCM Platform equipments <ul style="list-style-type: none"> • SARRP (small animals radiation research platform) XRray generator with CBTC (cone beam computed tomography) • GSRD 1: source of Cesium 137 • Irradiateur X Rec-Hadron et plateforme d'irradiation par ions accélérés du GANIL (CIRIL) | <ul style="list-style-type: none"> • <u>National</u> collaborations through several ANR and Inca programs • <u>International</u> collaborations Japan, EU, USA • <u>Industrial</u> collaborations AREVA, EDF | 2017 Recurrent : Logistic : 1,8 M€ Contracts : 3 M€ Plateforms : 0,75 M€ |
| 61-(Fontenay-aux-roses, CEA, suite) PROCyTox, Michelle Ricoul Scientific director : Laure Sabatier CEA/Paris-Saclay Fontenay-aux-Roses | 2 | <ul style="list-style-type: none"> • New approaches in molecular cytogenetics including telomere length measurements. • Biological dosimetry with cytogenetics biomarkers. • International intercomparison exercices for dose estimate. | 4,2 FTE: 1,2 researchers, 2 technicians, 1 Post-doc <u>Specific equipment</u> cellular and molecular cytogenetics, image analysis with Metasystems set-up. <u>PROCyTox acts as a platform</u> for characterization of genotoxic damages. | <ul style="list-style-type: none"> • <u>National</u> - Neurospin, Saclay Joliot/SPI/ LERI Saclay - CEA/BIG/Grenoble - IGR Radiotherapy - INSERM Nantes • <u>International</u> - RENEB Network (17 labs all around Europe) - SUBI (South Ural) | -CEA (3,2 FTE) -EC-Eurotalents (1 Post-doc) - NRBC-E -EC- EJP-CONCERT (Radiation Protection) -External resources coming from platform activities. |
| (Fontenay-aux-roses, IRSN) | | | | | |
| 62-Laboratoire de Dosimétrie des Rayonnements Ionisants (LDRI) Carmen Villagrassa, PhD, | 2,3,4 | External dosimetry: micro/nano-dosimetry, dosimetry for medical applications | 5.5 FTE researchers + 3 doc. students. <u>Equipment:</u> Medical Linear accelerator, Metrological photon and | EURADOS members, Geant4-DNA/Geant4 collaboration, European project MEDIRAD, EURAMED, EURAMET | IRSN recurrent resources; EU |

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| IRSN, Fontenay | | | beta calibration laboratory, ESR spectrometers. OSL/TLD dosimetry capabilities; Calculation cluster | | |
| 63-Laboratoire of Radiobiologie des expositions médicales (LRMed) Fabien Milliat, PhD IRSN, Fontenay | 1,2,3 | Normal tissue response to cancer treatment, therapeutic approaches to treat severe radiation injury | 8 FTE researchers + 4 FTE technical support+ 4 Doc. students <u>Equipment:</u> Small Animal radiation Research Platform (SARRP, X-Strahl) | INSERM U1030 Gustave Roussy, Centre de Recherche sur l'inflammation Bichat, CDR Saint Antoine, INSERM UMR 1229 Nantes, INSERM U1180 Faculté de Pharmacie | IRSN recurrent resources; INCa, ANR |
| 64-Laboratoire d'évaluation de la dose interne (LEDI) David Broggio, PhD IRSN, Fontenay | 3 | Internal dosimetry, medical physics, computational human phantoms development | 2.5 FTE researchers + 2 Doc. students <u>Equipment:</u> TPS for external and internal dosimetry, calculation clusters | OpenDose, Claudius Regaud Hospital (Toulouse), EURADDOS members, EU-CONCERT. | IRSN recurrent resources; EU |
| 65-Unité d'expertise medicale Cécile Etard IRSN, Fontenay | 1, 4 | Medical Physics, Radiation protection in medical field, lessons learned for incidents / accidents in radiotherapy | 5 equivalent full time medical physicists + 1 equivalent full time radiation protection engineer | <u>National</u> collaboration with UNICANCER (training) <u>International</u> Member of advisory board of EUCLID EU Project | IRSN recurrent resources; |
| 65-Laboratoire de micro-irradiation, de métrologie et de dosimétrie neutrons (LMDN) Jean Marc Such, PhD IRSN, Cadarache | 2,3,4 | Micro-irradiation | 1.4 FTE researchers + 0.6 FTE technician <u>Equipment:</u> Micro-beam for heavy particles (MIRCOM) | CENBG (Bordeaux) | IRSN recurrent resources; |
| 67-(Saclay / CEA) 3 teams and 1 experimental platform: LM2S : modelling and simulation systems laboratory, Dephine Lazaro LMD : dose metrology laboratory, Valentin Blideanu LSOC : Oxydative Stress & Cancer laboratory Carl Mann DOSEO Platform, Bénédicte Poumarède http://www.plateformedoseo.com/en/ | 2,4 | Dose modelling Monte Carlo simulations (PENELOPE, MCNP, EGSnrc, GATE) for radiotherapy, associated imaging (kV- and MV-imaging, radiology), out-of-field dose,QA using EPIDs, TPS quality control. Statistical methods and nonparametric approaches radiotherapy, PET, radiomics Metrology for ionizing radiation (LNHB primary laboratory "Laboratoire National Henri Becquerel") Instrumentation : diamond technology | <u>22 FTE</u> researchers 1 doc; 3 post doc Specific Equipment : DOSEO Platform equipments • 1 Elekta LINAC "Versa HD" • 1 Varian Linac "Truebeam" • 1 GE CTscan "DT 750 HD Discovery" • Brachytherapy projector with ⁶⁰ Co and ¹⁹² Ir • 1 ⁶⁰ Co irradiator | • National : several ANR and Physicancer projects (clinical centers (IGR, Curie Institute, CLCC, ...), CEA/SHFJ, CEA/IRCM • International BIPM, European metrological centers • Industrial : AQUILAB, RTC, DOSISFOT, ELEKTA | CEA recurrent : 1,2 M€ Contracts : 1,4 M€ |

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| CEA, Direction de la recherche technologique | | and OSL dosimeters primary and secondary metrology, expertise in commercial use of dosimeters. Experimental measurements: dose, in vivo dosimetry. | | | |
| 68-(Palaiseau, X) Laboratoire d'Optique Appliquée (LOA), team SAPHIR, Alessandro Flacco, CNRS-7639, ENSTA-PARISTECH, Ecole Polytechnique | 2,3,4 | <ul style="list-style-type: none"> • Protons acceleration by ultra-intense laser plasma technology, • Radiobiology of pulsed protons: short pulse (ns) & ultra-high dose rates (10^8Gy/s) in vitro (in vivo coming) | 4 FTE: 2 senior researchers (1 physicist, 1 radiobiologist), 1 Doc 1 engineer <u>SAHIR Laser facility:</u> pulsed protons (electrons and X ray coming) <u>Cell culture lab</u> | <ul style="list-style-type: none"> • National : U1030-IGR (E.Deutsch), ISMO (S.Lacombe), ICPO, CEA (IRAMIS) IRS Nanotherad Network Amplitude Technologies • International : Helmholtz-Zentrum Dresden-Rossendorf (D) Weizmann Institute (Is) CHUV (CH) | CNRS, ENSTA, Ecole Polytechnique, IRS Nanotherad, EDF |
| 69-(Orsay) New Approaches in Radiotherapy, Yolanda Prezado, IMNC : Imagerie et Modélisation pour la Neurobiologie et la Cancérologie CNRS, Univ. Paris VII et Paris XI | 2, 3 | <ul style="list-style-type: none"> • Medical Physics (Experimental dosimetry, Monte Carlo simulations) • Radiobiology (in vivo studies) • Development of new strategies in RT using the spatial fractionation of the dose | 2 seniors, 2 post-doc fellows, 1 PhD student. | <ul style="list-style-type: none"> • National : <ul style="list-style-type: none"> – ICPO (Institut Curie) – RadExp (Institut Curie) – IR4M (Paris Sud) – Human path and animal models (Institut Pasteur) – Institut Neurosciences Paris Saclay – LOA • International : <ul style="list-style-type: none"> – ALBA synchrotron – Centro nacional de Microelectronica – Univ. de Santiago de Compostela – Hospital Clinico de Santiago (Spain) – HIMAC (Japan) – Univ. medizin Berlin | <ul style="list-style-type: none"> • CNRS • ERC |
| 70-(Orsay) Nom : PRAZERES Rui Projet : ESCULAP Labo. : LCP/CLIO Bât.201P2 Université Paris-Sud 91405 Orsay cedex | 2, 4 | • Production de pulses d'électrons de haute énergie (>200MeV) et durée femtoseconde | ½ senior researcher | • CNRS & Université Paris Saclay : LAL, LPGP, LCP | • CNRS |
| 71-(Brétigny s/ Orge) IRBA Pôle NRBC - DEBR/RAD (Dépt. Effets biologiques des rayonnements, unité RADiologie) Dr Michel DROUET | 3 | <ul style="list-style-type: none"> • Diagnostic/Pronostic des irradiations (Dosi. bio. cytogénétique et biomarqueurs), • Prophylaxie des RI (radioprotecteurs et radiomitigateurs), • Thérapeutique: <ul style="list-style-type: none"> - irradiation globale (cytokine et | 11,5 FTE: 8 chercheurs (dont 3 militaires), 1 radiothérapeute (IGR/IRBA) 3 techniciens. <u>Equipement</u> : irradiateur ^{60}Co (IRDI 4000); X auto-protégé (SARRP, Culture cellulaire, Microscopes motorisé, comptage | <ul style="list-style-type: none"> • National : Institut Curie (plateforme RadeXp), IGR, CEA, IRSN, Inserm Lyon (N. Foray) etc., • International : Bundeswehr, réseau OTAN dont l'AFRRI (USA)... • Industrial : (start-up Acubens, MEDESISPharma, ...) | DGA (programme Biomedef spécifique au Service de Santé des Armées), DGCIS (projets RAPID ou ASTRID), EDF, voire projets ANR ou européens... |

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| <p>DAR/SCR (Division Appui à la Recherche-Scie Compétent radioprotec.) Dr Patrick Martigne</p> <p>IRBA (Institut de Recherche Biomédicale des Armées)</p> | | <p>facteurs de croissance) - localisée (R&D thérapie cellulaire et génique)</p> | <p>automatisé (MetaSystems, Biodosimetry), Modèles animaux, <u>Plateformes mutualisées</u> de BM, histologie, RMN liquide/HRMAS, microscopie photon./électro. etc.</p> | | |
| <p>72-(Rennes) Laboratory of Signal and Image Processing: LTSI, IMPACT team, Pr Renaud De Crevoisier UMR INSERM 1099, Rennes University.</p> <p>Campus de Beaulieu, Université de Rennes 1 F-35042 Rennes</p> | <p>1,4</p> | <ul style="list-style-type: none"> • Image processing • Predictive modeling • Adaptative radiotherapy • Functional imaging | <p>7 FTE senior researchers 10 post-docs and PhD students</p> | <ul style="list-style-type: none"> • <u>National:</u> LaMCoS CNRS UMR 5259 Lyon, CIS-ENSMSE Ecole des Mines Saint Etienne, TIMC-IMAG CNRS UMR 5525 Grenoble, LATIM Inserm U1101 - Institut Telecom Brest, LabTau INSERM U1032, Lyon, UTC CNRS UMR 7338 Compiègne). • <u>International:</u> LIST-CRIBs, SouthEast University, Nanjing, China; CSIRO, Australia; Ryerson University, Toronto, Canada; UNET, Tachira, Venezuela; UNC- Universidad Nacional de Colombia, Bogota | <p><u>recurrent resources:</u> INSERM <u>research contract:</u> INCa ANR- Labex CominLabs & CAMI IResP CGO <u>Industrial partners:</u> ANSYS (Lyon), AQUILAB (Lille), EDAP (Vaulx-en-Velin), ELEKTA (Paris), KEOSYS (Nantes), THERENVA (Rennes), PHILIPS (Aachen, Best), SIEMENS (Forchheim, Paris), GE (Horten, Norway).</p> |
| <p>73-(Strasbourg) Département de Radiobiologie, Hadronthérapie et Imagerie Moléculaire: DRHIM Patrice Laquerière IPHC: Institut Pluridisciplinaire Hubert Curien, CNRS, Univ. de Strasbourg.</p> | <p>2,3</p> | <ul style="list-style-type: none"> • Chimio-radiothérapie, • Fortes doses • Radiobiologie des protons et ions | <p><u>5 FTE:</u> 3 senior researchers: (1PUPH-HDR,1MCU-HDR,1CR), 2 Doc; 1 Post-doc. <u>Equipment</u> • Plateforme de radiobiologie expérimentale in vitro et in vivo proton (25 MeV) • Biobeam 8000 (¹³⁷Cs), • LINAC, • dosimétrie associée.</p> | <ul style="list-style-type: none"> • <u>National :</u> laboratoires CNRS-IN2P3, CRLCC Dijon, CRLCC Nancy, CHU Bordeaux. • <u>International :</u> Equipes radiobiologie Namur et Liège (Be) | <p>CNRS, INCa, Région grand-Est, Eurométropole Strasbourg, CRLCC Paul Strauss, Ligue régionale contre le cancer, Alsace contre le cancer, Département du Bas-Rhin, EDF.</p> |
| <p>74-Groupe de radiobiologie, Pr. Georges Noël CRLCC Paul Strauss, Université de Strasbourg</p> | <p>2,3</p> | | | | |
| <p>75-(Toulouse) Imagerie et balistique en radiothérapie Pr Anne Laprie</p> | <p>1,4</p> | <ul style="list-style-type: none"> • Pediatric and adult brain tumors • Head and neck tumors | <p>3 FTE senior researchers 1 Doc 1 post-doc</p> | <ul style="list-style-type: none"> • <u>Past International collaborations :</u> FP7 Marie Curie SUMMER (Aquilab, Delft, Roma, | <p>Ligue contre le Cancer SFCE INCa</p> |

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| <p>Part of the DEVIN TEAM (Development and Evaluation of Imaging Biomarkers) Unité INSERM UMR 1214 ToNIC (Toulouse Neuro Imaging Center)</p> <p>Toulouse III University and IUCT-Oncopole</p> | | <ul style="list-style-type: none"> • Metabolic and functional imaging, particularly MRI, MRSpectroscopy. • Radiomics • Prospective translational clinical trials • In Silico photons and protons dosimetric studies | | <p>Vienna, Friburg)</p> <ul style="list-style-type: none"> • <u>Running national collaborations</u> : - PAIR pediatric - PEPPI Study -SPECTRO GLIO Trial • <u>Running International collaboration</u>: RETRACE Study (Maastricht, Dresden, Toulouse) | <p>Fondation pour la Recherche Médicale</p> <p>Industrial contract : Accuray</p> |
| <p>76-(Toulouse) Team 11 “Glioblastoma radioresistance :from signalling to clinical trial” INSERM Team</p> <p>Pr Elizabeth Cohen-Jonathan Moyal</p> <p>CRCT, UMR1037</p> | <p>1,3</p> | <ul style="list-style-type: none"> • Radioresistance mechanisms deciphering • Glioblastoma stem cells radioresistance mechanisms, radiation-induced plasticity • Invasion and hypoxia pathways • Study of glioblastoma heterogeneity • In vitro and in vivo target validation (orthotopic xenografts) • Study of the radiosensitizing effect of targeted drugs against the previously studied targets and radiotherapy in vitro and in vivo. • Clinical trial design coming from the lab results • Validation of the targets on national data base | <p>Senior researcher ETP : 4 ETP Tech and engineers : 2.5 ETP Post-doc : 1.5 ETP PhD students :3</p> <p><u>Specific equipment</u> : Currently Gamacell Nordion that will be replaced in march 2018 by an animal irradiator for precise irradiation as well as in vito irradiation</p> | <ul style="list-style-type: none"> • Coordination of the of the national MOGLIMAGING project (National HTE program) • Coordination of the clinical trial and biologic project STEMRI (Radiomics and GBM stem cells) • Coordination of the study of the radioresistance signature of the patients included in the national POLA data base • WP radioresistance of the RAD 18 program (national program granted by ARC) • WP1 of the CAPTOR PHUC program (FGFR and radioresistance) • Proteomic study of the clinical trial (coordination E Moyal) associating cilengitide and radiochemothera in stade III NSCLC (with Meck KGa) | <ul style="list-style-type: none"> • Plan cancer/ITMO/A viesan (HTE program) • INSERM (Gros équipement) • ARC • Ligue contre le Cancer • RITC / Region • PHUC |
| <p>(Réseaux)</p> | | | | | |
| <p>(Réseau régional, Région Normandie) ARCHADE : Advanced Resource Centre for HADrontherapy in Europe</p> | | <ul style="list-style-type: none"> • Hadrontherapy research • Development of hadrontherapy technology • Facility for research | <p>8 teams mainly included in this table</p> | <p>Federates about 8 teams from Caen University and associated institutions</p> | <p>Teams own funding plus Région Normandie (CPIER)</p> |
| <p>(Réseau national) RESPLANDIR : Réseau de plateformes de radiothérapie préclinique</p> | | <ul style="list-style-type: none"> • <u>Translational research</u> • <u>Medical Physics</u> • <u>Preclinical radiation therapy</u> | <p><u>Constitution</u> : 14 ETP - Radiobiologists - Radio physicists - Technicians - Students</p> | <p>RESPLANDIR is a National Network of -PAVIRMA (IN2P3, UCA) : G Montarou</p> | <p>Each team has its own funding to perform their research activity but currently,</p> |

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| | | | <u>Specific equipment:</u> - 3 Xrad320 - 4 SARRP - 2 linac - 1 neutron generator - 1 proton device - 1 CIXD Access to proton medical beam line | -Plateforme d'Imagerie et de Radiothérapie préclinique (Dijon, CGFL) : C Mirjolet - RadExp (Curie) : F Pouzoulet - Lyon University : G Alphonse - IRSN, Paris : M Dos Santos - CEA, Paris : V Ménard - IRBA, Paris:PMartigne | RESPLANDIR has not specific funding |
| (Réseau national) Ex-France HADRON | | 4 WP Hadrontherapy research: - Clinical research - Data for dose modelling - Radiobiology - Instrumentation | 26 teams mainly included in this table | Federates 26 teams from all over France International collaborations: ENLIGHT | Teams own funding plus network funding by ANR (2013-2017) |
| (Réseau national) Cancéropôles | | - reinforce the mobilization of research teams - boost clinical research - enable the emergence of innovative research projects - anchor within the European collaborative dynamic - contribute to position France as an international reference in cancer research | 7 Cancéropôles : - Nord Ouest - Ile de France - Grand Ouest - Est - Grand Sud Ouest - CLARA - PACA | Federate research institutions, university hospitals, cancer centers, pharmaceutical and biotech companies and are supported by French Cancer Institute (INCa) and many local governments | INCa Local & regional authorities Foundations & associations, pharmas, ...etc. |