Institut Paoli Calmettes (IPC) is a comprehensive cancer center with three missions: patient care, research and education

- Private non for profit hospital
- French Network (Unicancer)
- 3rd for activity and budget: ~150 000 000 euros
- ~ 1 300 staff including 250 people in research
- ~ 6200 new patients/year
- ~ 22500 patients/year
Medical activity at IPC

Type of Cancer

Number of new patients per year

Breast: 1100
Pancreas: 260
Colon: 250
Rectum: 138
Hematology: 1010
- NH Lymphoma: 336
- Acute Leukemia: 175
- Myeloma: 170
Research at Institut Paoli Calmettes

Center for Cancer Research of Marseille (CRCM)
UMR 1068 Inserm, UMR 7258 CNRS

Cancer, Biomedicine and Society
UMR912
Understanding of cancer complexity……
… and development of novel therapeutic strategies

Diagnosis

Treatment
Molecular basis of oncogenesis and dissemination
D. Birnbaum / V. Géli

Epigenetic control of normal and pathological hematopoiesis
Estelle Duprez

Tolerance of lesions in DNA
Robert Fuchs

Telomeres and senescence
Vincent Géli

Genome Dynamics and Recombination
Bertrand Llorente

Mechanisms of DNA double strand break repair: homologous recombination and NHEJ
Mauro Modesti

Control of structure-specific endonucleases and genome stability
Pierre-Henri Gaillard

Innovative therapeutic approaches
A. Gonçalvês / J. Iovanna

Immunity and cancer
Daniel Olive

Integrative structural and chemical biology
Yves Collette/Xavier Morelli

Antibody therapeutics and immunotargeting
Daniel Baty

Cell stress
Juan Iovanna

Computational Biology and Drug Design
Pedro Ballester

Molecular Oncology
Daniel Birnbaum

Cell Polarity, Cell Signaling and Cancer
Jean-Paul Borg

Signaling, hematopoiesis and mechanisms of oncogenesis
Patrice Dubreuil

Tumor Cell Motility
Ali Badache

Adhesion Molecules in Tumour/Host Interactions
Michel Aurrand-Lions

Spatio-temporal regulation of cell signaling – scaffolds and phosphoinositides
Pascale Zimmermann

Molecular basis of oncogenesis and dissemination
D. Birnbaum / V. Géli

Epigenetic control of normal and pathological hematopoiesis
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Tolerance of lesions in DNA
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Telomeres and senescence
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Mechanisms of DNA double strand break repair: homologous recombination and NHEJ
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Adhesion Molecules in Tumour/Host Interactions
Michel Aurrand-Lions

Spatio-temporal regulation of cell signaling – scaffolds and phosphoinositides
Pascale Zimmermann
Technologies and platforms

- Cell imaging
- Animal facility and transgenesis
- Preclinical platform (TrGET)
- Flow cytometry and cell sorting
- Bioinformatics, Biostatistics
- Experimental histo-pathology
- Genomics and sequencing
- Cell culture
- Datacentre IT and Scientific Computing
- Department of Clinical Research and Development
- Data management and analysis center
- Biotherapy and Cell therapy

- Early Phase Trial center (ETOH)
- Nanobodies
- Proteomics
- Immunomonitoring
- Biological Resource Centre
Topics at CRCM
« From bench to bedside »

Mechanisms of oncogenesis, and tumor cell dissemination: cell signaling, host-tumor interactions, genome instability, DNA repair, DNA replication, epigenomics, cellular stress

New therapeutic targets and biomarkers improving patient care (breast cancer, hematology, pancreatic cancer)

Innovative clinical trials linked to onsite translational and fundamental research.
## Clinical trials at IPC

### Clinical research

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of clinical trials in 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promotor: Institut Paoli Calmettes</td>
<td>20</td>
</tr>
<tr>
<td>Promotor: other French public/private hospitals</td>
<td>47</td>
</tr>
<tr>
<td>Promotor: Unicancer, French federation of cancer centers</td>
<td>16</td>
</tr>
<tr>
<td>Promotor: other French cancer center</td>
<td>32</td>
</tr>
<tr>
<td>Promotor: associations</td>
<td>19</td>
</tr>
<tr>
<td>Promotor: industry</td>
<td>86</td>
</tr>
<tr>
<td>Promotor: French Cancer Institute (INCa)</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>221</td>
</tr>
</tbody>
</table>

### Early phase trials in 2013

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of patients</th>
<th>Number of protocols</th>
<th>Number of patients included</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>94</td>
<td>34</td>
<td>1238</td>
</tr>
</tbody>
</table>

### Clinical trials in 2013

<table>
<thead>
<tr>
<th>Condition</th>
<th>Protocols</th>
<th>Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast Cancer</td>
<td>31</td>
<td>481</td>
</tr>
<tr>
<td>Pancreatic cancer</td>
<td>9</td>
<td>73</td>
</tr>
<tr>
<td>Acute Leukemia</td>
<td>24</td>
<td>72</td>
</tr>
<tr>
<td>Myelodysplastic syndromes</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Allogenic grafts</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

- **immunotherapy**
- **cytotoxics**
- **mAbs**
- **targeted inhibitors**
Objectives

A basic-translational-clinical continuum in cancer research

Development of cutting-edge platforms and resources

Collaborative programs with industries and technology transfer

Training of Scientists, MDs and PharmDs
Publications 2013-2014 (#140 in 2014)


The COMPASS Subunit Spp1 Links Histone Methylation to Initiation of Meiotic Recombination

Laurent Acqua Viva,1* Lorian Székely,1,4*, Bernhard Dichtl,1† Beatriz Solange Dichtl,1 Christophe de La Roche Saint Andre,1† Alain Nicolas,1† Vincent Gelli1†

MAY 2013 NATURE STRUCTURAL & MOLECULAR BIOLOGY

Regulation of Mus81–Eme1 Holliday junction resolvase in response to DNA damage

Pierre-Marie Dehj1,2,6, Stéphane Coulon1,2,6, Sarah Scaglione1,2, Paul Shanahan3, Arato Takedachi1,2, James A Wohlschlegel1,2, John R Yates III4, Bertrand Llorente1,2, Paul Russell5 & Pierre-Henri L Gaillard1,2

Please cite this article in press as: Guervilly et al., The SLX4 Complex Is a SUMO E3 Ligase that Impacts on Replication Stress Outcome and Genome Stability, Molecular Cell (2015), http://dx.doi.org/10.1016/j.molcel.2014.11.014

The SLX4 Complex Is a SUMO E3 Ligase that Impacts on Replication Stress Outcome and Genome Stability

Jean-Hugues Guervilly,1,3,6,7 Arato Takedachi,1,3,6,7 Valeria Naim,1 Sarah Scaglione1,2, Charly Chawhan,1 Yoann Lovera,1,2 Emmanuelle Desgams,1,2,5 Isao Kuraoka,1 Patricia Kannouche,1 Filippo Rosselli,2 and Pierre-Henri L Gaillard1,2

1Centre National de la Recherche Scientifique, Unité Mixte de Recherche 7258, Inserm-Unil 1068, Centre de Recherche en Cancérologie de Marseille, Institut Paoli-Calmettes, F-13095 Marseille, France
2Aix-Marseille Université, F-13284 Marseille, France
3Université Paris-Sud, UMR 8200 CNRS, Équipe Labilise La Ligue Contre le Cancer, Institut Gustave Roussy, 114 rue Édouard Vaillant, 94805 Villejuif Cedex, France
4Genome Damage and Stability Centre, University of Sussex, Brighton BN1 9RA, UK
5Department of Chemistry, Graduate School of Engineering Science, Osaka University, 1-3 Machikaneyama, Toyonaka, Osaka 560-8531, Japan
6Co-first authors
7Correspondence: jean-hugues.guervilly@inserm.fr (J.-H.G.), pierre-henri.gaillard@inserm.fr (P.-H.G.)

http://dx.doi.org/10.1016/j.molcel.2014.11.014
Publications 2012-2013

Prevalence, Specificity and Determinants of Lipid-Interacting PDZ Domains from an In-Cell Screen and In Vitro Binding Experiments

Yaiva Ivarsson1, Anna Maria Wawrzyniak1, Rudra Kashyap1,2,3,4,5, Jolanta Polanowska1,2,3,4,5, Stéphane Betzi1,2,3,4,5, Frédérique Lembo1,2,3,4,5, Elke Vermeiren1, Driss Chihel1, Nicolas Lenfant1,2,3,4,5, Xavier Moret1,2,3,4,5, Jean-Paul Borg1,2,3,4,5, Jérôme Reboul1,2,3,4,5, Pascale Zimmermann1,2,3,4,5.

MCP Papers in Press. Published on May 30, 2013

The human PDZome: a gateway to PDZ mediated functions

Edwige Belotti1,2,3,4, Jolanta Polanowska1,2,3,4,5, Avais M. Daulat1,2,3,4,5, Stéphane Audébert1,2,3,4, Virginie Thomé5,6, Jean-Claude Lissitzky1,2,3,4,5, Frédérique Lembo1,2,3,4,5, Karim Billek1,2,3,4,5, Shizue Omi1,2,3,4,5, Nicolas Lenfant1,2,3,4,5, Akansha Garg1,2,3,4,5, Mireille Montouchet-Marie-Josée Santon1,2,3,4, Michael Sebbagh1,2,3,4, Michel Aurand-Lion1,2,3,4, Stéphane Angers5,6, Laurent Kojadachian1,5, Jérôme Reboul1,2,3,4,5, and Jean-Baptiste1,2,3,4,5.

Biochemical evaluation of virtual screening methods reveals a cell-active inhibitor of the cancer regenerating liver

Pascal Hoang1, Marion Giehler1, Pedro J. Ballester1,4,8,9, and Maia Klein1,4,8,9

1European Molecular Biology Laboratory, Genome Biology Unit, Meyerhofstr. 1, 69117 Heidelberg, Germany
2European Molecular Biology Laboratory – European Institute for Molecular Medicine, Wellcome Trust Genome Campus, Hinxton CB10 1SD, United Kingdom
3Inserm U1066, Centre de Recherche en Cancérologie de Marseille, France
4Inserm U1066, Centre de Recherche en Cancérologie de Marseille, France, Email: pedro.ballester@inserm.fr
5Corresponding author. Email: hoang.pascal@embl.de
6Corresponding author. Email: klein.maia@embl.de

The Thymus-Specific Serine Protease TSSP/PRSS16 Is Crucial for the Antitumoral Role of CD4+ T Cells

Lydie Brisson,1,2,3,4,6 Laurent Pouyet,1,2,3,4 Prudence N’guessan,1,2,3,7 Stéphane Garcia,1,2,3,4 Noëlle Lopes,1,2,3,4 Gilles Warcollier,2 Juan L. Iovanna,1,2,3,8 and Alice Carrier,1,2,3,4

1Inserm, U1068, CRCM, Marseille 13009, France

Cancer Cell

Article

Copy Number Gain of hsa-miR-569 at 3q26.2 Leads to Loss of TP53INP1 and Aggressiveness of Epithelial Cancers

Pradeep Chaluvally-Raghavan,1,7,8 Fan Zhang,1 Sunila Pradeep,1,7,8 Mark P. Hamilton,11 Xi Zhao,10,12 Rakesha Rupaimoole,2 Tyler Moss,1 Yilong Lu,7 Shuangping Yu,7 Chad V. Pecot,6,10 Miriam R. Aune,12,13 Sylvain Pouget,14,15 Cristian Rodriguez-Aguayo,15 Hee-Dong Han,16 Dong Zhang,1 AnjushREEFebruaryaay,16,17 Vesselia N. Kristensen,15,17 Miha I Agea,17 Prahlad Ram,1 Wenbin Liu,2 Gabriel Lopez-Berestein,16,19 Philip L. Lorenzi,16 Anne-Lise Bornesen-Dale,10,15 Koei Chin,17 Joe Gray,17 Nelson J. Dusset,14,15,16 Sean E. McGuire,6,11,13 Elsa R. Flores,6,15,16 Anil K. Sood,9,16,17 and Gordon B. Mills2,3,4

1Department of Systems Biology
2Department of Neurology, Psychiatry, and Medicine

ARTICLE

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DOI: 10.1038/ncomms6505

AmotL2 disrupts apical–basal cell polarity and promotes tumour invasion

Mahdi Mojailla,1* Yujuan Zheng,1* Sara Hultin1, Stéphane Audebert,2,3,4,5, Tanja van Ham1, Per Johansson1, Cébés Lenander1, Nicolas Fritz6, Christin Mielth7, Martin Corcoran1, Frédérique Lembo2,3,4,5, Marja Hallström1, Johan Hartman1, Nathalie M. Mazuir8, Thomas Weide6, Dan Grandè1, Jean-Paul Borg2,3,4,5, Per Uhlén9 & Lars Holmgren1
Technology Transfer 2012-2013

- Use of small molecule inhibitors/activators in combination with (deoxy)nucleoside or (deoxy)nucleotide analogs for treatment of cancer and hematological malignancies or viral infections. S Audebert, P Dubreuil, L Gros. AB Science. Filed in 2012
- Human Anti-ICOS mAb as a new therapeutic option for Graft-vs-Host-Disease. September 2012 - EP 12306046.9
- Design of Triplex Forming Tag cassettes and the corresponding Triplex Forming Oligonucleotide probes. S. Fuji, A. Isogawa, R. Fuchs / 01/06/2012/ Brevet européen dépôt Numéro d'enregistrement: 12 170 553.7.
Prix Innovation 2012

Marc Lopez, PhD
Marseille SIRIC (Site for Integrated Cancer Research)

Director: Professor Patrice Viens

Groupement de Coopération Sanitaire
Pôle régional de référence en cancérologie de PACA-Ouest: IPC and AP-HM
The assets of the Marseille SIRIC to tackle the challenges in cancer research

- **Aix-Marseille University**
- **Hospitals**: IPC and AP-HM
- **Patients**: IPC and AP-HM, Active file ~34,000
- **Research Centers**: CRCM and CRO2, CAN-BIOS and EA 3279
- **Pharma and biotech companies**
- **Networks, national and international collaborations**
- **750 scientists and physicians**

**Key Activities**
- Innovation of standards of advanced care
- Dissemination of standards of advanced care
- Prevention and follow up of survivors
- Technology transfer and valorisation
- Innovative therapeutic applications
- Training and education
4 research programs

1- Breast Cancer: D Birnbaum

2- Glioma: D Figarella-Branger O Chinot

3- Leukemia: N Vey

4- Pancreatic Adenocarcinoma D Lombardo IR Delpero

- Basic Research
- Translational Research
- Clinical Research
- Socio-economic Research

Improve patient care
Main topics of research

1- Breast Cancer: D Birnbaum
- Genomics and personalized medicine
- Psycho-social and economic aspects
- Prevention, treatment and quality of life
- Molecular mechanisms of oncogenesis and identification of potential biomarkers and therapeutic targets
- Cancer stem cells
- Epigenetics, genome instability and DNA repair

2- Glioma: D Figarella-Branger O Chinot

3- Leukemia: N Vey

4- Pancreatic Adenocarcinoma D Lombardo JR Delpero
The Marseille SIRIC in numbers

4 integrated research programs
7,5 millions euros over 5 years

23 research teams
4 research centers
14 technological platforms
30 recruitments funded by the SIRIC