ANNUAL REPORT

IGR *in* 2010

Institut de cancérologie
GUSTAVE ROUSSY
VILLEJUIF - www.igr.fr

Personalised Medicine: IGR looks to the future

2010, a return to lasting financial balance

A round table interview with Professor Alexander Eggermont, Charles Guépratte and Professor Éric Solary

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The Institute

A world renowned institution in cancer research, the Institut de Cancérologie Gustave Roussy (IGR), located in Villejuif to the south of Paris, caters to all patients, adults and children alike, suffering from common or rare forms of cancer at all stages of the disease. Since October 1st, 2010, the Centre has been headed by Professor Alexander Eggermont, Charles Guépratte, deputy Director General and Professor Éric Solary, director of Research.

IGR's goal is to become an internationally renowned reference centre, a guiding light for the medicine of the future.

Prof. Alexander Eggermont,
IGR's Director General

A hospital where care, research and teaching dovetail into one, IGR bases its uniqueness on therapeutic innovation, the development of personalised medicine and the quality and safety of its care. With its multi-disciplinary approach, 2,700 professionals work constantly to improve the overall treatment of patients.

IGR's staff includes 220 tenured physicians, 890 care-givers and 305 researchers. 168,000 consultations were carried out in 2010 and nearly 11,300 new patients were treated, 20% of whom took part in biomedical research as part of a clinical trial.

Institut de Cancérologie Gustave Roussy on its Way to Molecular Oncology

Innovative technologies, scientific discovery and targeted therapies are a few of the factors shaking up oncology, its practices and its players. With Professor Eggermont taking over the helm at IGR it is an opportunity to examine the strategy and ambitions announced for the coming years. As a first clear signal of his determination to highlight teamwork, Prof. Alexander Eggermont, wanted to carry out this interview with his deputy Director General, Charles Guépratte, and the Director of Research, Prof. Eric Solary.

In its corporate strategic plan the Institut de Cancérologie Gustave Roussy (IGR) states that its care and research policies place the accent on personalised medicine. With this in mind what happened in 2010 in terms of innovation, organisation and investment?

Prof. Eggermont: Before going over the year 2010, it's probably useful to define what "personalised medicine" means and avoid whatever ambiguity might derive from it. For the past several years patients have enjoyed personalised medicine at IGR because therapies, determined by multi-disciplinary committees, are adapted to each individual case. The personalised medicine we are talking about today is in fact molecular medicine. In today's medicine we use the progress made in molecular biology by identifying the root molecules responsible for cell anomalies and counter them with molecule-based drugs. This oncological molecular medicine, as stressed in our corporate strategic plan and our application to be certified as a teaching hospital (IHU), is one of our front-line strategies in the fight against cancer.

Oncological molecular medicine is one of our strategic focuses in fighting cancer.

Prof. Solary: In scientific research terms this kind of medicine, led in particular by molecular anomalies, calls for considerable investment. In 2010, IGR accomplished two major thrusts: increasing the number of molecular analyses of tumours through classic controlled technological approaches (candidate gene sequencing, CGH arrays and immunohistochemistry); the installation of new-generation sequencing by buying a Roche 454 sequencer for the integrated biology platform and an HP2000 Illumina sequencer for Inserm Unit 985.
As far as organisation is concerned, all technical support centres have become joint research services. The Integrated Biology Platform, led by Vladimir Lazar, unites all the "omics" including genomics. Its purpose is to see to the technological development of battery sequencing of candidate genes. It uses for that purpose a sequencer provided by Roche Diagnostics for six months, after which time IGR will once again have to invest in equipment adapted to it needs. The Translational Research Laboratory headed by Ludovic Lacroix, sees to implementing controlled technologies in order to meet present needs while collaborating with integrated biology by participating in the implementation of new generation sequencing. Now headed by Philippe Vielh, the Biological Resources Centre is in charge of managing sample collections from tumor biopsy specimens at diagnosis. The main doubts for the coming years concern our bioinformatics needs to analyse data generated by various broadband approaches we are presently installing.

Mr. Guépratte: Supporting this molecular medicine, even if it is only a minority part of our activities today, implies quantifying our needs precisely, planning for the time needed to carry out our objectives and the budgetary mass to mobilise. It is an essential

From left to right Mr Guépratte, Prof. Eggermont and Prof. Solary

step that offers a precise, multi-annual vision of our work. Above and beyond these matters of methods, we have substantively supervised the development of personalised medicine by mobilising our Research Foundation which funded the installation work for the broadband sequencers and enabled the recruitment of people able to operate them. The fund-raising campaign, "Capital Campaign", rebaptised "Révolution Cancer" in 2011, enabled us to invest 1.5m euros in the programme. Institut Gustave Roussy was also able to invest an additional 0.5m euros to go with the fund-raising money.

Prof. Eggermont: Allow me to add that the new generation of sequencers mentioned by Prof. Solary has been operational since early 2011 both in the hospital and the research facilities. The biomarker programme and the new-drug development programme carried out by SITEP are its direct beneficiaries. These two programmes are at the core of our ambitions and place us among the key players in European molecular oncology. Then we want to install a functional trials platform so we can be well kitted out and meet the scientific challenges in this field. The phase Ia to IIb therapeutic trials have become an important strategy for us and encourage us to re-orient our clinical and translational research priorities.

Is the purpose of this re-orientation to anticipate the consequences that molecular medicine might have in turning cancer into a chronic disease?

Prof. Solary: You're right to imply that controlling classic therapeutic approaches and developing new drugs will enable us to improve overall survival in patients even if it doesn't always lead to a cure. Response to treatment may only be partial with a residual disease more or less easy to detect, a source of relapse or rapidly progressing disease. That this situation is occurring more frequently raises several questions.
Understanding the notion of chronic disease first of all means understanding the complexity of tumour cells and their behaviour, something that calls for very elaborate upstream research. Tumour stem cells will be one of the themes in the Institut Gustave Roussy's call for tender as it looks to recruit new teams in 2012.
The spectacular progress reported over the past few months in immunotherapy-treated melanomas leaves room for hope that the growing expertise in this therapeutic approach might help eliminate residual tumour cells after surgery, chemotherapy or radiotherapy. IGR possesses expertise in this field, and the "exosomes" therapeutic trial like the projects aimed at boosting the work of the URM 753 unit bear witness to the Institute's ability to explore these therapeutic pathways.

>>>

Prof. Alexander Eggermont
Institut de Cancérologie Gustave Roussy's Director General

Professor Alexander Eggermont has been IGR's DG since October 1st, 2010. As an oncological surgeon at Rotterdam's Daniel de Hoed Centre from 1988 to 2010, he specialised in immunotherapy research, melanoma and sarcoma care and basic research in tumour pathophysiology and immunology. He was appointed University Professor in 2003, and from 2003 to 2006 was Chairman of the EORTC (European Organisation for Research and Treatment of Cancer). He also presided over the European CanCer Organisation (ECCO) from 2008 to 2010. He is presently head of the European Academy of Cancer Sciences.

IGR is a leader by nature entirely dedicated to serving cancer patients

Prof. Eggermont: "Transforming" cancer into a chronic disease is both a medical goal and a considerable source for new challenges. We know how to handle the medical-social needs of patients who live a long time with the disease. It is important knowledge possessed by IGR on both the medical-scientific and care levels. But the question as to how society is going to be able to tolerate the high cost of third-, fourth-, even fifth-line treatments still goes unanswered.
It is therefore of primary importance to focus on tomorrow's curative medicine, but it is equally important not to let ourselves be lured into thinking only of the great advantage of a disease becoming chronic.

Mr. Guépratte: In real terms, when a disease becomes chronic there is a parallel need for the patient to be monitored by the Institute over the long term. On the strength of this observation, we have launched institutional brainstorming about accompanying the patient and the personalisation of services rendered in close connection with the V2010 certification for which the visit will take place next January.
By establishing new links with the public and by offering new means of communication to facilitate the life of a former cancer patient, we wish to participate in a return to normal life and accompany the post-cancer period as flexibly and easily as possible for everyone.

Institut de Cancérologie Gustave Roussy enjoys an international reputation in the fight against cancer. What partnerships do you maintain with public authorities, the world's big oncological institutes and private labs?

Prof. Eggermont: Our primary role is to integrate into the university world. We have noted that within France the means are concentrating henceforth in universities. To believe that IGR is strong enough to do without the university network would be a fundamental mistake. In both medicine and research we want to enter into a rationale of inclusiveness. Secondly we are looking to build a long-lasting partnership with the Paris Region Public Hospitals (AP-HP). We are sure that in many cases we'll be able to reach agreements that benefit both sides. We feel that our relationships with the Institut Curie are solid enough to contribute to redefining the oncological landscape in Paris, the Greater Paris region and even all of France. IGR and the Institut Curie are remarkably complementary in terms of clinical programmes and research activities. It is clear that we must work together on all fronts.

Prof. Solary: With these perspectives in mind, the Cancéropôle Ile-de-France is called upon to be one of the initiatives leading to strong links between IGR, the Institut Curie and those AP-HP sites structured around onco-haematology, mainly Saint Louis Hospital and the association Paris 5 HEGP/Necker/Cochin. IGR has also signed a teaching hospital convention with Paris-Sud CHU which situates it completely in a teaching hospital environment.

Mr. Guépratte: Preparing our application to become a University Teaching Hospital gave us an opportunity to open IGR up to companies and partnerships. We feel that developing IGR also means linking civil society to the major projects that ensure IGR's development. The active renewal of our Foundation provides a powerful tool that is autonomous from IGR, ensuring fund raising and the piloting of our research projects funded by public donations.
At the same time as this new process, we have strengthened our bonds with Europe's and the world's "guiding light" institutes: the Descartes network and our strategic partnership with the MD Anderson Oncology Centre in Houston, of which we are a "sister institution". Last but not least, our strong involvement in the WIN consortium, this year celebrating its third anniversary, has mainly enabled us to structure our partnerships in research and help co-ordinate major trials.
To wrap up this point about our major partnerships it is good to remember that we are also a member of the new UNICANCER hospital group, bringing together 20 cancer research centres (CLCC) with a view to enhancing their organisational model in oncology and pooling their resources and skills so as to lend a new dynamic to patient treatment.

Can you tell us in conclusion what are IGR's medium-term plans?

Mr. Guépratte: IGR has to maintain financial balance that allows it to move constantly ahead. To do that the basics have got to be solid. All of the Institute's collaborators must feel personally involved in this balance. It is our brief that we are a major player in world oncology, so we have to give ourselves the means. Developing contracts aimed at delegating certain resources to departments contributes to this will to balance our accounts permanently. Regarding the hospital, we must also supervise the modernisation of our technical centres, starting with radiotherapy then imaging and the operating rooms where we hope to implement a far-reaching out-patient project.

Prof. Solary: Over the coming five years, IGR is going to systematically gather correctly annotated and analysed tumour samples on the molecular level, at the diagnosis and when there are relapses or rapid progression. This information will guide the therapeutic choices made in multi-disciplinary consultation meetings, serve as support to therapeutic trials and accompany the introduction of new molecules to humans.

The Institute hopes to recruit new certified research teams on a contractual basis on themes like tumour stem cells, epigenetics, bioinformatics, in silico modelling, molecular pharmacology and examine the installation of a preclinical facility through a public-private partnership.

Prof. Eggermont: IGR has to see itself as a key player on the international oncological stage. Its innovative programmes, its special relationship with its peer group (MD Anderson in Houston, Karolinska University in Stockholm, NKI in Amsterdam), the pathways to be developed with Erasmus MC Rotterdam (public health, neuro-endocrinology, bioinformatics, nanotechnologies and intravital microscopy) and with the Deutsche Kerbs Forschungs Zentrum in Heidelberg in Europe and with targeted institutes elsewhere, its strategy of university integration, closer relations with Institut Curie and the AP-HP in Paris give it a unique dimension.
I think with its ability to think autonomously but with the goal of integration and co-operation, the Institut de Cancérologie Gustave Roussy possesses the characteristics of a leader working entirely for patients with cancer.

IGR Networks

Europe's leading oncology cancer centre, the Institut de Cancérologie Gustave Roussy is at the heart of networks, projects and fundamental partnerships for its equilibrium and development. Its basic missions (patient care, research and teaching) are fulfilled by its own departments or entities and in collaboration with academic and research partnerships

A private institution, IGR, possesses the dimension and authority of a public service thanks to its working with government agencies to which it is accountable, Paris-Sud 11 and local and national communities. It maintains multiple partnerships with care and research networks both in scale (from the local to the international) and with other entities (from associations to world leaders in oncology). It is because of this ability to act and incite others to action in these complex networks that IGR must encourage the emergence of molecular medicine in oncology.

The regional network

In France, along with the Institut Curie, IGR has a lead role in the UNICANCER hospital group, derived from the FFCLCC (the French Federation of Cancer Control Centres). On the medical level the Institute also works as much with professional networks (ONCO 94, Medicen, Cancer Campus, etc.) as with humanitarian associations (*Ligue Nationale contre le Cancer*, ARC, Odysséa, etc.). In research, our preferred partners are the CNRS, Inserm and Université Paris-Sud 11, which is also one of the prominent pillars for teaching at IGR. The Institute works together with public authorities, from ministries to regional or departmental bodies and nation-wide initiatives such as Plan Cancer 2 and INCa.

The international network

To maintain its rank as a major player in worldwide oncology, above and beyond its innovative scientific programmes, IGR has to create or consolidate partnerships with leading hospitals on the international stage. And here, you have in particular MD Anderson, Karolinska University and NKI-Amsterdam. Simultaneously, bonds have also been forged with DKFZ-Heidelberg, Erasmus University MC Rotterdam, Vall d'Hebron-Barcelona and the Royal Marsden-London because of their infrastructures that are complementary to IGR's and their capacity to be a part of a European-wide strategy process.

IGR already plays a big role in Europe and shares responsibility for the Eurocan Translational Platform FP7, which unites the main European CCCs (Comprehensive Cancer Centres).
Moreover, the WIN (Worldwide Innovative Networking) started with Houston's MD Anderson and housed by IGR is making impressive headway and is honoured to have as its president Professor John Mendelsohn, one of the world's leading cancer experts.

Acronyms and abbreviations

AERES French Evaluation Agency for Research and Higher Education

ANR French National Research Agency

ARC French Cancer Research Association

CLCC The National Federation of French Cancer Centres

CNRS French National Scientific Research Centre

DISSPO Interdisciplinary Department of Supportive Care for Onco-haematology Patients

DRC Department of Clinical Research

ERI Patient Drop-in Centre

FFCLCC French National Cancer Treatment Centres

HAS High Authority for Health

INCa French National Cancer Institute

INSERM French National Institute of Health and Medical Research

IGR&D IGR Research and Development

IRCIV Institute for Integrated Research in Oncology of Villejuif

MEDICEN High-tech Competitive Sector for Drugs and Health

NKI Netherlands Cancer Institute

ODYSSEA A running and walking race to raise funds for breast cancer research

ONCO 94 French Network of community Doctors in the Val-de-Marne

PARIS-SUD 11 French University

PLAN CANCER 2 French National Cancer Plan

SITEP Department of Early Innovative Therapies

WIN CONSORTIUM Worldwide Innovative Networking in Personalised Cancer Medicine

Care-providing establishments

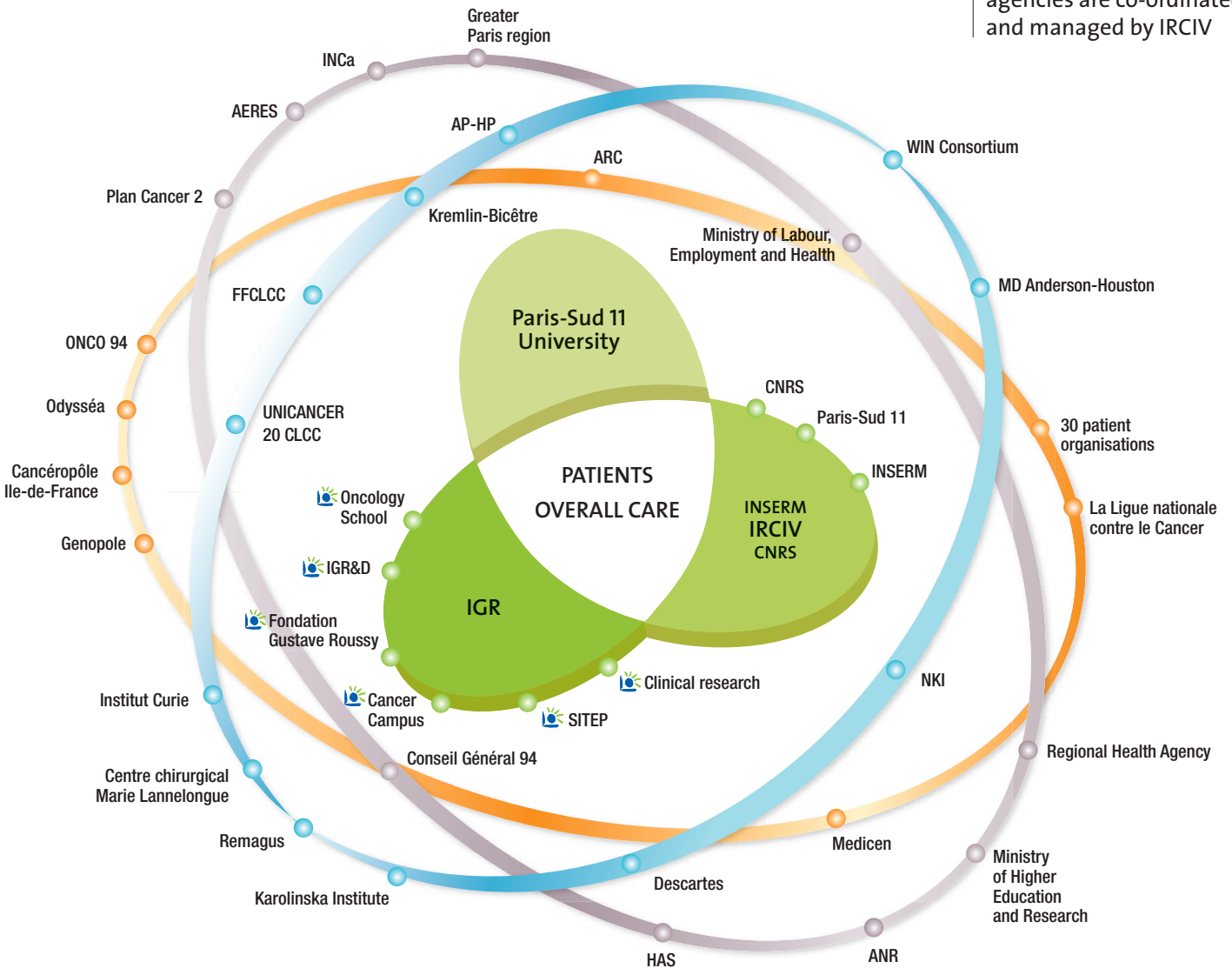
IGR is partner to the world's main establishments

Support

All of the largest French facilities involved in oncology have links with IGR

Research

French national research agencies are co-ordinated and managed by IRCIV



Internal and external networks

With a highly structured internal network, IGR is as well organised internally as it is outward looking

Public leaders

IGR maintains direct relationships with all oncology bodies and public initiatives in France

Board of Directors

Decree no. 2006-261 of 3 March 2006 – Decree no. 2006-571 of 17 May 2006

June 2011

Chairman: Mr Daniel Canepa
Prefect of the Ile-de-France Region, Prefect of Paris

Ex officio Members (18)

Mr Laurent Garnier
Member, General Council of the Val-de-Marne

Mr Jean-Marie Le Guen
Member, Paris Council

Prof. Serge Bobin
Dean of the *Faculté de Médecine* (Medical School)

Mrs Véronique Paquis
Representative of the Ministry of Higher Education and Research

Prof. Fabien Calvo
Representative of the *Institut National du Cancer*

Mr Thierry Damerval
Representative of INSERM

Mrs Mireille Faugère
Representative of the AP-HP (public hospitals of the Paris region)

Mr André Rouquier
Member of the *Conseil Économique et Social* (Economic and Social Council)

Prof. Claude Huriet
Mr Jean-Pierre Davant
Mr Alain Coulomb
Qualified persons

Mrs Catherine Vergely
Mr Jean-Pierre Escande
Users' representatives

Dr. Dominique Valteau-Couanet
Dr. Sylvie Bonvalot
Members of the medical staff

Mrs Christine Pourre
Dr. Pierre Duvillard
Members of the employees' council

Members with advisory votes

Mr Pierre Dartout
Prefect of the Val-de-Marne *Département* represented by Mr Marc-Étienne Pinauldt Sub-Prefect of L'Haÿ-les-Roses

Prof. Alexander Eggermont
Director General, Institut de cancérologie Gustave Roussy

Mr Claude Évin
Director of the Regional Health Agency

Guest members

Mr Gérard Delanoue
ARS Regional Representative of Val-de-Marne

Mr Charles Guépratte
Deputy Director General

Prof. Éric Solary
Director of Research

Prof. Michel Ducreux
Medical Co-ordinator

Prof. Gilles Vassal
Director, Clinical and Translational Research

Mr Robert Servat
Director, Financial Affairs, Treasurer

Dr. Ellen Benhamou Borowski
Chairwoman of the IGR Medical Conference

Mrs Sophie Beaupère
Director, Activities and Finance

Mr Philippe Bourassin
Director, Human Resources

Mr Antoine Crouan
Director of Communications

Mrs Nicole Leroy
Executive Assistant of the Director

Mr Jean Gatinaud
Auditor, KPMG

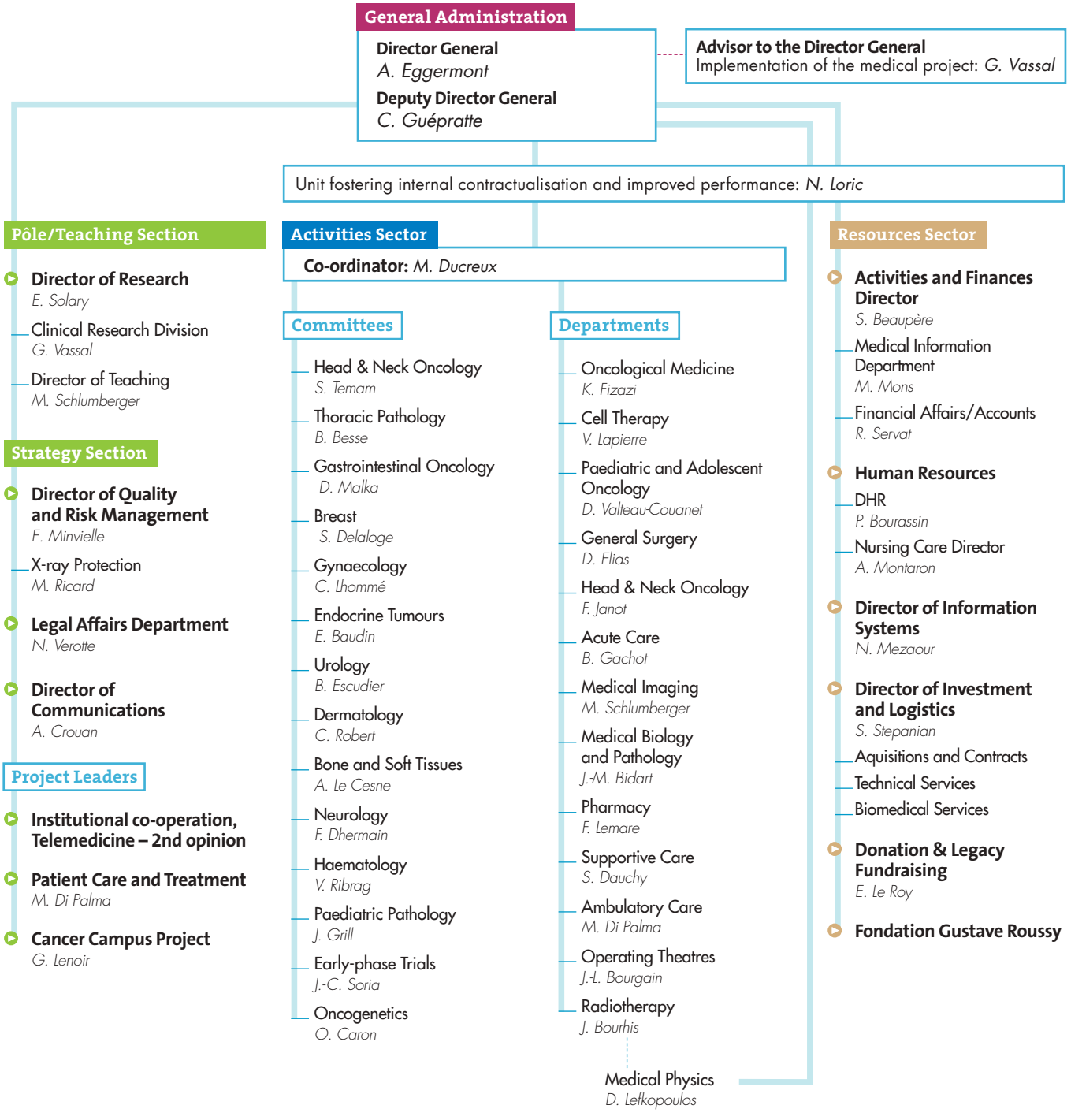
Mrs Psylvia Dewas-Tasseau
Representative of the Regional Prefect

Secrétariat

Mrs Séverine Lerouge
Assistant to the Director General

General Management

June 2011



How IGR Works

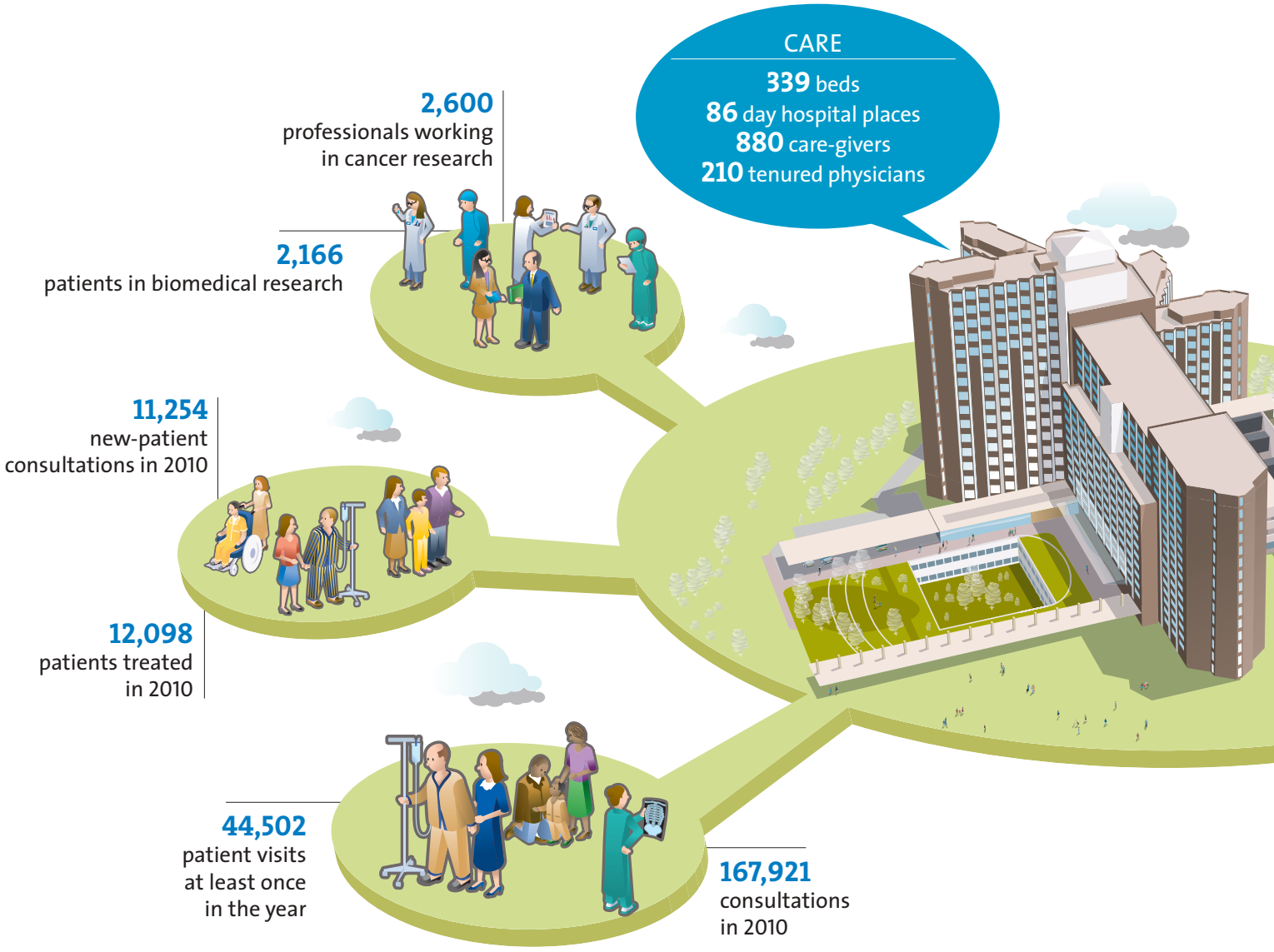
Status

The Institut de Cancérologie Gustave Roussy is a cancer research centre the legal nature of which depends on private law. It provides the services of health establishments and public service hospitals in oncology. Its status is defined by order no. 45-2221 of 1 October, 1945, appended by order no. 2005-406 of 2 May, 2005. IGR is a not-for-profit private health establishment providing public health care (ESPIC).

Like the other French Cancer Treatment Centres (CLCC), IGR is a member of the UNICANCER hospital group and a part of the *Fédération Française des Centres de Lutte Contre le Cancer* (FFCLCC, the French Federation of Cancer Control Centres) governed by articles L6162-1 to L6162-11 of the *Code de Santé Publique* (the public health code).

Governance

Institut de Cancérologie Gustave Roussy is governed by a Board of Directors which determines general policy and assessment and monitoring policies. It is composed of 18 ex-officio members two of whom are appointed by the Minister for Research and by the National Institute of Health and Medical Research.



Three members have advisory votes, i.e. the Prefect of the Val-de-Marne département, IGR's Director General and the Director of the Regional Hospitalisation Agency. The board of directors is chaired by the Prefect of the Ile-de-France region, the Paris Prefect. At the executive level IGR is run by a Director General with a medical-scientific background and appointed for a five-year period after consultation with the Board of Directors and the National Federation of the Cancer Treatment Centres by the Minister of Health. The Director works in close collaboration with the Deputy Director General who sees to IGR's operational management and with the Director of Research for the implementation of policies in basic, translational and clinical research.

Consultational bodies and networks

IGR is endowed with a certain number of consultational bodies and committees that do not depend on the Board of Directors:

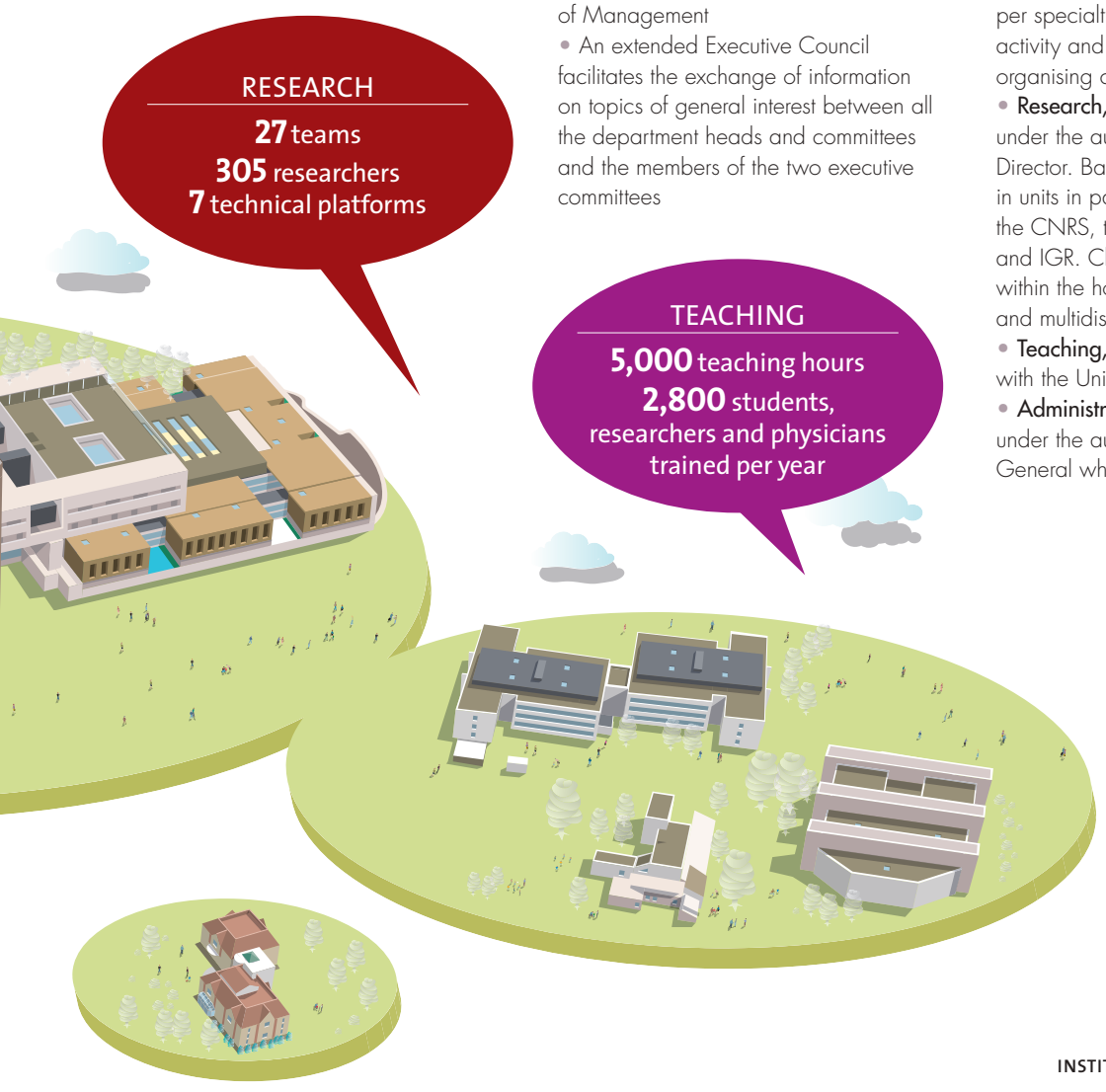
- A Board of Management chaired by the Director General and composed of nine members in charge of strategic issues
- Two Executive Committees, one devoted to organising care and allocating resources, chaired by the Deputy Director General, while the other oversees research and is run by the Director of Research. These committees take part in implementing the decisions of the Board of Management
- An extended Executive Council facilitates the exchange of information on topics of general interest between all the department heads and committees and the members of the two executive committees
- A Medical Commission
- An international Scientific Advisory Board
- A Scientific Commission for Therapeutic Trials
- Medical committees per organ and medical/technical departments

Moreover the IGR network includes in particular the National Federation of Cancer Treatment Centres, international oncology centres, the AP-HP establishments, national research bodies, Genopole®, the Val-de-Marne département, etc.

IGR's services

Services are structured around four main branches:

- **Medical,** medical care is placed under the responsibility of the department heads per specialty, who implement hospital activity and actively participate in organising clinical research
- **Research,** research activities are placed under the authority of the Research Director. Basic research is structured in units in partnership with INSERM and the CNRS, the Université Paris-Sud 11 and IGR. Clinical research is done within the hospital in cross-sectional units and multidisciplinary committees
- **Teaching,** mainly in collaboration with the Université Paris-Sud 11
- **Administration,** placed directly under the authority of the Deputy Director General who runs and supervises it.

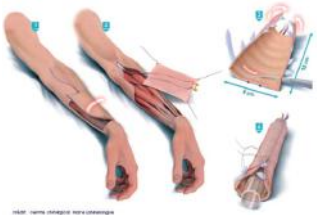


2010, an Eventful Year

A WORLD FIRST

► Autologous transplant of an artificial windpipe

November 2010. An artificial windpipe graft was successfully carried out by Prof. P. Dartevelle (Centre Chirurgical Marie Lannelongue) and Dr. F. Kolb (IGR) at the Marie Lannelongue Surgical Centre. A world first that gives reasonable hope to patients whose windpipe has been invaded by cancer.



ONCOGENIC RETROVIRUS

► A "secret weapon" of oncogenic retroviruses

February 2010. Thierry Heidmann and his colleagues of the CNRS/Institut Gustave Roussy/Université Paris-Sud 11 Laboratory ("Endogenous retroviruses and retroid elements of the higher eukaryotes") identified a "virulence factor" that inhibits the immune response by the host and enables the virus to spread through the body. This factor is a sequence of amino acids located in the virus envelope proteins. The scientists also showed that once mutated to lose its immunosuppressive capacity, the envelope protein can be used as a base for developing vaccines.

PROSTATE CANCER

► Abiraterone, a very effective treatment

October 2010. A phase III multicentric and randomised trial concluded there was a strong benefit from abiraterone with a 36% reduction in the risk of death in patients with progressive metastatic cancer after one or two lines of chemotherapy.

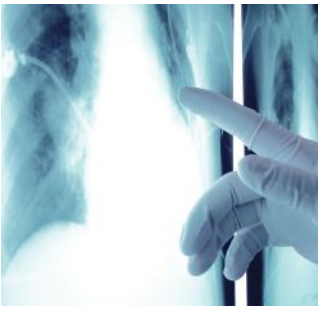
► GETUG12 study: preliminary conclusive results

March 2010. GETUG12 is a phase III trial co-ordinated by Prof. Karim Fizazi, an oncologist at the Institut Gustave Roussy and promoted by the French National Federation of Cancer Centres (FNCLCC). The outcome shows a benefit from chemotherapy containing docetaxel and estramustine in terms of a major reduction in the rate of PSA without an excess risk of death or a negative impact on the quality of life at one year in patients with localised prostate cancer with a high risk of metastases. Dr. Fizazi presented the preliminary results to the Annual Genitourinary Cancers Symposium of the American Society of Clinical Oncology in San Francisco, California. The study's findings in terms of relapse-free survival should be available in 2011.

LUNG CANCER

► Chemotherapy increases the survival of operable patients

March 2010. Dr. Jean-Pierre Pignon of the meta-analysis unit in IGR's biostatistics department, Dr. Sarah Burdett of the meta-analysis unit of the Clinical Trials Unit of the Medical Research Council (MRC, London) and some fifty of their colleagues from the Non-small Cell Lung Cancer Collaborative Group conducted two meta-analyses, which concluded that adding chemotherapy to local treatment (surgery or surgery followed by radiotherapy) improves the survival of patients with non-small-cell lung cancers.



► A therapeutic vaccine

November 2010. A phase II trial testing the effectiveness of a therapeutic vaccine in patients with advanced, inoperable small-cell lung cancer was opened by Prof. Laurence Zitvogel (IGR oncologist and immunology researcher) and his colleagues. This is not a vaccine to prevent people falling ill but a therapeutic vaccine for treating patients by stimulating their natural defence mechanisms in order to stabilise or make the tumour regress.

LEADERSHIP

► Professor Alexander Eggermont named Director General of IGR

September 2010. The Minister of Health and Sports named Professor Alexander Eggermont Director General of the Institut de Cancérologie Gustave Roussy by a decree on August 31, 2010 for a five-year period. He took over his new job on October 1st, 2010 and is the first non-French European to hold a director generalship in a French Cancer Treatment Centre.

EVENT

► Mobility day

September 2010. As part of European Mobility Week, IGR held a "Mobility Day" to introduce its company mobility plan (PDE) to employees, patients and visitors. Information stands and events were set up in front of the Institute's main entry and in the parking lot to promote alternative and ecological ways of moving about.

BREAST CANCER

► Treatment with accelerated partial radiotherapy in 1 week

October 2010. The purpose of a phase II trial led by Dr. Céline Bourgier, an IGR radiotherapist, was to define the optimum dose of accelerated partial irradiation to deliver for a benefit at least on a par with conventional irradiation to patients with breast cancer. It was the only trial in

France where accelerated partial irradiation was delivered by 3D conformal radiotherapy. It is a highly accurate technique which allows the healthy but fragile tissue of adjacent organs (heart and lungs) to be protected, because they are excluded from the irradiation beam.

► One-day diagnosis

September 2010. The "one-day diagnosis" for breast cancer at IGR is for women who have a suspected breast cancer after undergoing a mammogram elsewhere.
The purpose of this day is to reduce the waiting time and wandering from diagnosis to diagnosis. Six years after the service was set up and with nearly 9,000 women tested, IGR is one of the world's most extensively experienced in the field. Starting on September 28th a second "one-day diagnosis" was launched for women requiring an urgent diagnosis.

RESEARCH

► The second annual

WIN congress

July 2010. The WIN consortium is a joint initiative by IGR and the University of Texas M.D. Anderson Cancer Center in association with several other eminent specialist institutions in treating cancer in Europe, the United States, Canada and Asia. The second WIN symposium made it possible to highlight the technological advances and the first scientific results in personalised cancer medicine with a special focus on the early diagnosis of cancers.

ASCO CONGRESS

► IGR's results presented

June 2010. The physicians-researchers of the Institut Gustave Roussy presented their clinical and translational research work at the 46th Congress of the American Society of Clinical Oncology, the world's biggest oncological congress. This year IGR's work was selected for 12 oral presentations –5 of which were given by IGR physicians-researchers– 20 poster-discussions, 53 posters and 11 publications.

PAEDIATRIC CANCER

► Rhabdomyosarcomas: treatment duration

June 2010. Dr. Odile Oberlin, an oncologist at IGR, presented to the ASCO Congress the combined analyses of the European and American findings of 14 trials. These trials included 643 patients with rhabdomyosarcoma, a rare cancer in children and adolescents. The analysis confirmed that several clinical factors, in particular the duration of treatment with chemotherapy, are prognostic factors in the disease and that they have an impact on overall survival.

UNICANCER

► A group for co-operation in health

November 2010. The French cancer treatment centres announced the creation of the UNICANCER hospital group whose goal is to develop all types of co-operation and sharing between its members: clinical research, developing human resources, strategic analysis and hospital management tools, indicators and quality programmes, information systems, etc. The Group also intends to guarantee the same quality of care in all its establishments and give rapid and sure access to innovations in care and research.

UNICANCER
Fédération Française des Centres de Lutte contre le Cancer

THYROID CANCER

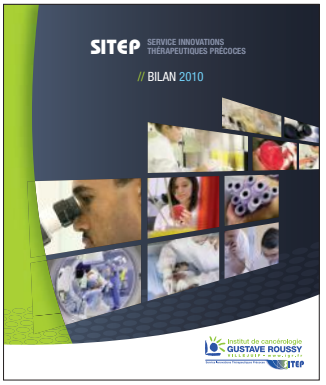
► ITC: 14th International Congress

September 2010. Nearly 2,500 thyroid experts from 60 different countries took part in the 14th International Thyroid Congress (ITC) that took place at Paris' *Palais des Congrès*. Chaired in 2010 by Prof. Martin Schlumberger (IGR), the Congress was co-organised by AOTA *(Asia and Oceania Thyroid Association)*, ATA *(American Thyroid Association)*, ETA *(European Thyroid Association)* and LAT *(Latin American Thyroid Society)*.
http://www.itc2010.com/

DRUG DEVELOPMENT - SITEP

► Accelerating therapeutic innovation in oncology

April 2010. The SITEP held a round table at IGR on the theme "Therapeutic Innovation, Early Trials and Personalised Medicine". All the main players in France involved in therapeutic innovation were present: patient representatives, practitioners, researchers, representatives from several pharmaceutical companies, INCa, people's protection committees, the French Agency for the Safety of Health Products, The National Federation of Cancer Centres, LEEM (drug companies), the *Ligue Contre le Cancer* and the Association for Cancer research. This round table was a call for "working together" by Prof. Gilles Vassal, Clinical and Translational Research Director at IGR, to all players in therapeutic innovation and early trials in France.



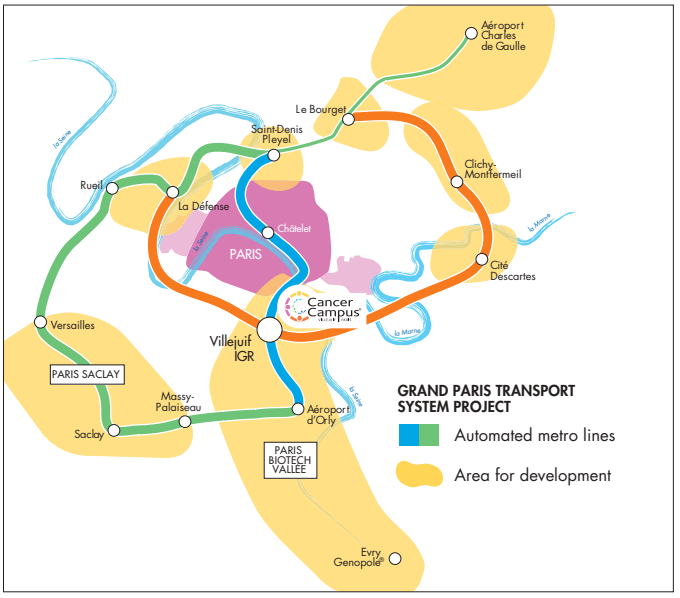
Cancer Campus, A Major Undertaking for IGR

Since 2006 Cancer Campus has been developing a research and innovation park that has progressively grouped together the players of the future in oncology medicine: researchers, health professionals, companies and associations.

Cancer Campus relies on the skills of the Institut Gustave Roussy and its research teams as well as the health and research institutions in the Greater Paris region. The project is part of the extension of the oncology plan and the rationale of the Medicen competitiveness centre and the plans for embellishing the "Grand Paris". The idea is to federate around IGR a series of means and services dedicated to innovation that form a research and training sector at the highest level, an industrial fabric of start-up and mature companies as well as innovative services for accompanying patients.
In 2010, Cancer Campus developed in four areas.

Cancer Campus is run by an association composed of IGR, Paris' Public Hospitals, local communities (the General Council of the Val-de-Marne, the Val de Bièvre Agglomeration Community, the city of Villejuif) and Paris' Chamber of Commerce and Industry. The French Consignments Office is a partner in the project as are the Medicen Competitiveness Centre, Genopole and Incuballiance.

▼ *The 8 areas of the Grand Paris project and the new public transport system serving, in particular, IGR.*



Territorial and urban anchoring

2010 was a confirmation year for the recognition of Cancer Campus as an innovation centre within the Grand Paris scheme and one of its 8 "project areas". An agreement signed between the government and the Ile-de-France Region (end of 2010) confirmed the building of the "IGR" metro station at the intersection of an extended line 14 and the "Orbival" east-to-west line. It is planned to open in 8 years' time, and an ambitious architectural project for the station is already underway. This is a major improvement for IGR, its patients, their families and its collaborators, for Cancer Campus will be just a few minutes from Orly airport and the centre of Paris. Links with the La Défense business district and Roissy-Charles de Gaulle International Airport will make it exceptionally attractive for companies, health and research professionals and students. Located in the "territoire de projet" (project area), the Paris Biotech Valley between Paris and Évry, the association signed a collaboration convention at the Ile-de-France Regional Council for working with Genopole for mentoring start-up companies. It is the sign that skills can be pooled and organised between the complementary venues of the Paris Biotech Valley. It also provides a convincing setting in the negotiations carried out with the public authorities and Paris 11 to transfer all or a part of the Pharmacy University between Kremlin-Bicêtre and Villejuif. Cancer Campus plays an important driving role by liaising with the local authorities.

An innovative centre for innovating companies

Cancer Campus has confirmed itself as one of the main welcoming centres in the Greater Paris region for innovative companies specialising in cancer.

A start-up centre/business complex to open in September 2011

Work on the start-up centre/business complex, the first project of the biopark, is on-going under the guidance of project owner SEM SADEV. The project manager (the Paris Chamber of Commerce) and the director have been chosen. The building is set to be inaugurated in September, 2011.
To best prepare for this opening, Cancer Campus is mobilising its network and is studying applications from big companies while also looking at smaller creative projects. Agreements signed with Genopole and the "Incuballiance" start-up centre enables project proposers to be housed at the venue and to benefit from professional mentoring. The activity has received European funds (FEDER).

▼ *The business incubator, set to open in September, 2011.*

Taking part in the network of innovation for the future biopark in the Greater Paris area

Cancer Campus is part of a network composed of the Greater Paris Region Centre for Innovation, the "Innovation 94" network, the Val-de-Marine Development Agency, the Regional Development Agency, the ENS-Cachan development unit, Inserm Transfert, Incuballiance, Genopole, Agoranov, Pasteur Biotop, Biocitech and the Medicen Centre. Cancer Campus is looking forward to the arrival of companies at the start-up centre along with the Technology Transfer Bureau and the industrial partnerships of the Paris region public hospitals (AP-HP). In this spirit of pooling resources, the association took part, as it does every year, in the Bio fair in the United States with Medicen, the AP-HPs, ARD and Genopole, also in fairs such as APinnov (an AP event mainly for companies). The Institut Gustave Roussy and IGR&D work together in this activity through a monitoring committee set up to assess the applications of companies wishing to be invited to the venue and the partnership perspectives it offers. Likewise Cancer Campus works with these same partners in defining and sizing the future biopark intended to welcome companies to the venue that wish to interact with IGR. Cancer Campus also contributed to the Institute's application to be classified as a teaching hospital, which shows the firm consistency between these two development projects.

Finishing development studies

The development study submitted by TVK and SADEV in the spring of 2010 very clearly translates Cancer Campus' vision and perspectives. It draws the circumference and contents of the future concerted developing zone (ZAC) created in 2011, a surface area of at least 60 hectares. Public meetings were held in November for the residents of the Val-de-Bièvre which made it possible to inform them of the project and to outline its prospects. These six meetings (including one devoted to IGR), preceded by a big communications campaign, united important partners: Paris 11's president, Genopole, Medicen, the Consignments Office, elected officials and the leaders of IGR. This study's quality also made it possible to inform the dossier proposing the inclusion of the Pharmacy University on the venue.

Confirmation of the "Pôle Citoyen"

2010 saw the "Pôle Citoyen" take its place as one of the hinge elements between the scientific-economic project and its regional setting. It places the patients and their families as players in the innovation and as stakeholders in and contributors to improving cancer treatment.
Based on patient know-how, Cancer Campus wants to anticipate society's expectations and inspire innovative actions and offer answers for better support during and after the disease.
The Pôle developed its tools, mainly the "Cancer Campus Horizon" conferences and a "Web 2.0" platform.

The conferences adhered to precise specifications. By organising encounters between players who might otherwise not know of each other and leaving the biggest space to users and their representatives, the goal was to highlight information or exemplary experiences in changing practices. The Pôle also wants to inspire research-actions and/or lobby for changes in rules or legislation.

The "Web 2.0" platform

The platform offers a new use of the Internet for people involved in cancer. Through the plurality of approaches and exchanges it organises, it hopes to be a tool for sharing knowledge and experiences, brainstorming, critical analysis and incentives for action. It wants to contribute to improving the health system for the benefit of patients, care-givers and the community.
2010 was devoted to launching the platform, i.e. working on editorial contents, defining technical aspects, seeking an operational service provider and preparing the partnership with the *Ligue Nationale Contre le Cancer*.

Pôle Citoyen
Cancer Campus

▼

Two symposia held in 2010

"Physical Activity and Cancer: Can Do!" With the CAMI (Cancer and the Martial Arts), the Fédération Sportive et Gymnique du Travail (Sports Gymnastics Federation at Work), the city of Villejuif, the *Ligue Contre le Cancer* and Institut Gustave Roussy.

"Cancer and Regional Inequalities" in the French Senate in partnership with the *Ligue Contre le Cancer*.

The Six Strategic Orientations of the 2009–2013 Corporate Strategic Plan

1. COMMON AND RARE CANCERS

► The response to public health issues

Goals

- Reposition IGR in cancers with a high incidence and/or mortality
- Confirm its leadership by relying on innovation
- Strengthen IGR's role as a reference centre for rare cancers
- Continously improve quality with a watchful eye

Key factors for success

- Use innovative cutting-edge radiotherapy
- Adapt technical platforms to changes in activity
- Develop contractualisation practices with committees and departments

2. PERSONALISED MEDICINE

► Short-term reality

Goals

- Developing new therapeutic agents and their efficacy biomarkers
- Implementing biology- and imaging-driven treatments (chemotherapy, surgery, radiotherapy, etc.)
- Assess the psycho-social and medical/economic impact of new treatments and innovation

Key factors for success

- Strengthen the innovative capacity in imaging
- Give proper dimension to biology and pathology to meet the challenges of personalised medicine
- Reorganise clinical and translational research to improve performance and quality

3. COMPREHENSIVE PATIENT CARE

► Patients become partners

Goals

- Strengthen the continuity and co-ordination of patient care
- Make Supportive Care one of the corporate strategic plan's hallmarks in serving patients
- Develop a co-ordinated and competitive care offer for adolescents and young adults
- Improve care management for the elderly

Key factors for success

- Develop the Patient Care Project in harmony and complementarity with the Medical Project
- Develop research in the human and social sciences in support of comprehensive patient care

4. RESEARCH AND TEACHING

► Developing an integrated sector

Goals

- Strengthening the venue's university dimension
- Developing basic research through dynamic integration
- Be a major contributor in building Cancer Campus as part of the Grand Paris project

Key factors for success

- Implement efficient co-ordination between fundamental, translational and clinical research

5. MANAGEMENT AND ORGANISATION

► For a dynamic of change

Goals

- Implement a human resources policy based on attractiveness, employee loyalty and the development of skills (Social Project)
- Make management accountable and improve governance
- Implement the dynamics of continually improving organisations

6. PARTNERSHIPS AND ENVIRONMENT

► Successful and genuine integration

Goals

- Make strategic alliances in the Greater Paris region (Ile-de-France)
- Better organise the patient care itinerary through a policy of upstream and downstream regional partnerships
- Enhance patient recruitment through an active relational policy with health professionals
- Strengthen European and international partnerships through dynamic networking
- Develop IGR's renown with a strong brand image

General Services, Guaranteeing smooth functioning of IGR's technical services

As part of the Department of Investments and Logistics, The Works and Technical services Department (DST) is a company in its own right. Night and day, 24/7 it is responsible for all technical aspects of the buildings, their security, logistics and renovation and/or extension work. The DST employs some fifty FTEs.

A company within IGR

Under the leadership of Jean Tarbès, the DST's activities focus on three main areas: repair, preventive maintenance and developing infrastructures. The goal is to rationalise operations, the diversity of which demands highly specific management and monitoring, and concerns things as varied as building infrastructure, technical equipment and cutting-edge surveillance. The highly trained teams that are in charge of these tasks rely on exact procedures (120 standardised actions), carry out continuous surveillance of 12,000 sensitive points concerning the vital fluids (oxygen, nitrous oxide, vacuums), electricity or air flows, manage 1,200 tons of waste per year (see the box) and the "works" item whose budget amounts to 4.5 million euros in 2010. The 43 surveillance agents carried out 7,817 actions including 265 fire alerts. The DST regularly uses external service providers who are chosen according to government contract regulations.

From the short term to future projects

In 2010, the DST combined its regular services with projects committing IGR to the future. Long-term projects were begun with a view to improving infrastructures and facilitating their use. Among these works, two new radiotherapy bunkers were built, hospital units were restructured on the third floor, laboratory infrastructures were redeployed as well as a certain number of technical infrastructure renovations (including the creation of a cryogenics room). The balance sheet for the more common activities per sector is satisfactory (Works, Interior, Management/Logistics, Electricity-SSI, Electromechanics, Fluids, Hygiene and laboratory security), in particular insofar as the interventional rate under two weeks reached nearly 90% (compared to 85% in 2009 and 80% in 2008).

The CAMM for 2011

Computer-assisted Maintenance Management (CAMM) is one of the major objectives for 2011. It is a tool that should enable major progress in terms of planning preventive maintenance. The DST includes in its perspectives improved reactivity in its interventions, the inclusion of renovated structures (radiotherapy bunkers, hospitalisation units) and the reorganisation of radiation protection in the radiology platforms.

Worksite of the new radiotherapy bunkers. ▲

> TWO ACTIONS FOR SUSTAINABLE DEVELOPMENT

In 2010, the DST carried out two extensive actions that combined the virtues of ecology and savings.

By opting for a heat-pump system (a two-year project), IGR has lowered its consumption of fossil fuels by 20% and its energy bill by 600,000 euros.

Waste management has made it possible, to save 100,000 euros and involve numerous players at IGR by striking a balance between infectious and domestic waste.

Donations and Bequests: Essential Private Resources

A private health establishment declared in the public interest, Institut Gustave Roussy is authorized to received donations, gifts, life insurance policies and bequests.

Donations and bequests, essential support for innovation

Fund-raising from the general public is a fairly new activity for Institut Gustave Roussy. This strategy of appealing to public generosity enabled IGR to raise over 12.7 million euros in 2010 in the form of donations and bequests to fund cancer research. The public's enthusiasm in supporting the Institute's research efforts and its excellent care was confirmed again in 2010. The donations and bequests made it possible to launch a wide-ranging project aimed at expanding the Institute's radiotherapy department and make it one of the Greater Paris region's most efficient. The inclusion of new technologies in radiotherapy will enable patients to benefit from the latest therapeutic innovations such as stereotaxic radio-surgery, image-guided radiotherapy, rotational radiotherapy, etc.). This cutting edge equipment will allow us to operate on hitherto inoperable patients. This technology is enabling us to accomplish more precise treatments, faster, safer and more effectively in order to save more lives.
Donations and bequests have also contributed to the purchase of high-tech equipment for research and care and to finance numerous research projects. The biomedical equipment acquired benefits from the latest therapeutic innovations. The new equipment in diagnostic imaging and nuclear medicine make it possible to have better quality images faster (with better contrast and definition).

Public generosity contributes to a great degree to the research innovation carried out at the Institut Gustave Roussy.
Throughout the year numerous fund-raising events were held. The following are just a few:

Odyssea-Paris race

On Sunday, October 3rd, 2010 over 18,500 people participated in the Odysséa running and walking race. For the second time the Institut Gustave Roussy was the happy beneficiary of the race. The Institute mobilised a team of 1,300 staff members for the event: physicians, researchers and administrators along with their friends and families. This joyous and fraternal event collected some 185,000 euros through participation fees, which were entirely donated to the Institute, not to mention the donations made by race partners. This money helps to fund the innovative research programmes for the personalised treatment of breast cancer. Other initiatives were held around this wonderful event such as "shopping solidaire" (solidarity shopping).

The start of the Odysséa to Paris race 2010. ▼

Innovation Gustave Roussy

In 2010, the Institute innovated by opening up fund-raising activities on the Net by offering its donors a "key in hand" tool for making personal donations.
Donors attuned to the Web tool gave over 36,000 euros, which boosted the research budget for personalised treatments in breast cancer.
Heartfelt thanks to all those who helped us along this new fund-raising path.

An auction at the Molitor baths ▲ for the benefit of the Gustave Roussy Foundation (May, 2010).

"Shopping solidaire" at the Printemps department store at *Place de la République*

In conjunction with the Odysséa to Paris charity running and walking race, the Printemps department store on Paris' *Place de la République* held sales ("Shopping Solidaire") over two days (September 25th and October 2nd, 2010), with the proceeds going to the Institut Gustave Roussy. 25,000 euros were raised and helped fund the Institute's breast cancer research.

The Gustave Roussy Research Foundation

Founded in 2005, this research foundation, recognised as a public utility, exists to find complementary financial means to help accelerate research done at the Institut Gustave Roussy. Mrs Simone Veil is its Honorary Chairwoman.

In 2010, the Foundation considerably strengthened its fund-raising endeavours by targeting sponsor companies and major donors. To do so, it launched a big campaign called "Révolution Cancer" in order to raise €10m in donations over a three-year period to fund research in personalised cancer care.

The TEPA law ISF Campaign: over €600,000 raised in 2010

The tax break for people subject to the wealth tax in France was renewed in 2010 (law no. 2007-1223 of August 21st, 2007, called the TEPA law), so the Gustave Roussy Foundation ran a big fund-raising campaign in the written press to encourage people subject to the tax to make a donation.

And a big private party was thrown on May 6th, 2010 at the former Molitor baths for the 200 biggest donors. Fully paid for by a generous sponsor, "Colony Capital", over €144,000 were raised for research into personalised treatments at the Institut Gustave Roussy.

CERTIFIED BY THE COMITÉ DE LA CHARTE don en confiance

▼

The *Don en confiance* label (Donate in confidence) attests to the transparency of fund-raising procedures and the good management of the donations received from the general public. It was renewed in December, 2010 both for the Institut Gustave Roussy and the Gustave Roussy Foundation.

Actions funded by the Foundation in 2010

The €2m subsidy transferred every year since 2005 by the Institut Gustave Roussy to the Gustave Roussy Foundation enables the Foundation to develop and implement a genuine research strategy by covering the annual salaries of researchers and research technicians, developmental work and the equipment vital for the technological platforms and research labs, co-ordinating international research programmes, etc.

With collaboration from a Scientific Assessment Committee the Gustave Roussy Foundation calls for tenders in order to attract and select the most innovative and promising research projects submitted.

In addition, €550,000 of funds raised *via* the "Révolution Cancer" campaign allowed the Institute to buy and install a broadband sequencer, a vital tool for molecular portraits and better genetic analysis of tumours.

A Dynamic Policy for Supporting the Corporate Strategic Plan

Thanks to negotiation and the development of organisations enabling the modernisation of the social contract that IGR offers its employees, several pathways were successfully concluded in 2010. Guiding employment so as to better adjust the needs went hand in hand with concrete efforts to support personal investment by recognising each person's legitimacy.

A rich social dialogue leading to substantive solutions

After 31 negotiation meetings with the unions, the directors laid the foundations that should make it possible to control psycho-social risks, implement a system of profit-sharing that recognises the quality of our development and construct the "complementary health" system made operational in November, after a very broad period of communications with the staff.
The social survey begun late in 2010 will bear fruit in early 2011 and should make it possible to suggest an action plan for improving current management and facilitate the daily professional exercise by IGR's staff in the best possible conditions.
The Human Resources Department (HRD) implemented the principles derived from federal agreements, in particular the national agreement of April, 2010 concerning sensitive jobs and in anticipation of the reform known as "LMD" (Licence (Degree)/Masters/Doctorate) concerning care-givers. 2010 was the first year of this application *via* an assessment system that is unique to the Institute, and it will continue over the coming years.

An HRD in close connection with employees and their leaders

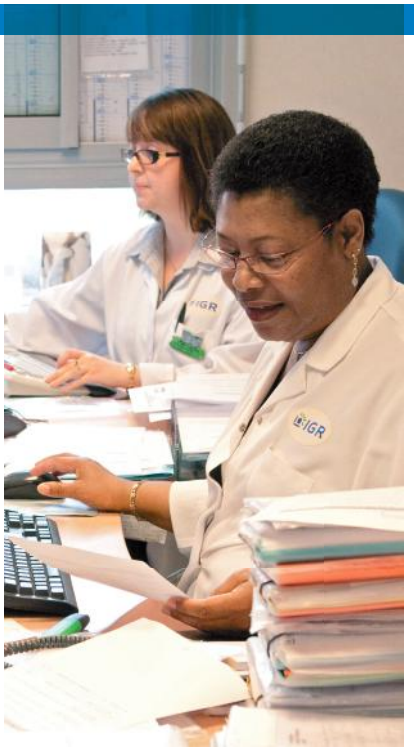
On the one hand, leaders receive active daily support and can develop their expertise by using the training offer best matched to their needs; on the other hand, each careers officer in the HRD manages a hospital sector with a reasonable staff volume so as to handle each case individually.
Automated work-time management continued by deploying AGILETIME to all hospital sectors. We shall continue this development by making a self-service available that will allow each employee to consult and express requests, which will then be more easily endorsed by management.
Throughout the 2010 financial year, the Medical Affairs Office deployed an unprecedented form of support to our hospital's physicians by defining certain avenues of the Managerial Development Plan created for all of IGR supervisors. Individual interviews therefore made it possible to define the needs of individual mentoring towards greater control of working relationships. This should be beneficial to both practitioners, making them more comfortable in their professional relationships beyond the mere exercise of medicine, and to their teams whose working methods should reap the benefits.
A simultaneous study was carried out throughout 2010 about IGR's attractiveness in terms of physician pay. This brainstorming led to the implementation of a salary policy that will facilitate our attracting and keeping both young and mature practitioners in a strong competitive setting. This brainstorming will continue in 2011 and 2012 by the development of variable remuneration as well as a new approach to end-of-career salary management.

A structured activity to ensure stable management principles

The HRD also implemented the conditions set out in previous collective agreements, in particular the different quality features of the September 11th, 2009 agreement:
- 97 interviews for staff in the second half of their careers
- 66 senior interviews

In this regard, the *Observatoire des Métiers* (professions watchdog) met 4 times in 2010 to assess how our commitments are applied, in particular all aspects concerning senior staff members.

Various sectors were mentored in their organisational evolution and their management principles, the complexity and volume of activity leading naturally enough to an increase in the demands for guidance and internal relations. The Pharmacy, Radiotherapy, Medical Physics and the Medical Secretariat received near continuous support to meet the changes concerning them.
The Human Resources Department consolidated its collaborative working methods with the other IGR departments in charge of budget control by continuing the fundamental work that enables the continuous adjustment of employment levels to operating needs. The job arbitration committees in 2010 facilitated the structuring of the demands of various hospital sectors and processed them in the light of the Directors' priorities. The growth of the salary mass was controlled in accordance with the 2010 EPRD (revenue & expenses forecasts) goals by taking the various job creations and salary measures for the financial year into account in line with the policy already described in this present article.



The Pharmacy, Radiotherapy, Medical Physics Units and the Medical Secretariat received near continuous support to meet the changes concerning them. ▲

▼

IGR took the initiative of enlarging the deployment of national provisions to medical secretaries as well as to management assistants and pharmaceutical assistants, a sign of strong recognition of these professional staff who deserve a career path that matches their particular expertise.

> 2011: PRIORITY PATHWAYS

The Human Resources Department will strive in 2011 to continue the following developments that were implemented over the previous years:
Consolidate the *Mutuelle Complémentaire Santé* (complementary health insurance) as part of the payment of a larger share of the social charges by the employer for the benefit of employees.
For the first time pay a profit-sharing bonus to employees by offering them the chance to invest all or part of a tax-free sum that would be contributed to by IGR.
Take into account the 2010-2011 social survey by implementing an action plan after extensive consultation with the staff.
Continue the implementation of the "sensitive jobs" agreement in its broader definition at IGR.
We will also open negotiations on the conditions for employing disabled persons in order to clarify the Institute's possibilities and commitments on this issue both in terms of the number of jobs and actions for retaining them.
In 2011, we will negotiate an agreement on professional equality to guarantee equity of treatment in comparable professional situations.
The Human Resources Department will implement staff reviews with the idea of leading to personalised quality processes. Physicians, in 2011, will have a programme for managerial development on a par with all hospital executives, adapted to the needs of each individual.
HRD will consolidate its ties with IGR's departments and executives via closer support through contractualisation.
HRD and the Department of Information Systems will co-operate in the federal SIRH (Human Resource Information Systems) project for a new management system starting on January 1st, 2013, which will involve the teams as of 2011.

Obtaining the Means for a Demanding Care Policy

In IGR's Resources sector, the Care and Treatment Department (DS) plays an important role in the general organisation and care policy. Reporting directly to the Director General, it defines and implements the care project, in particular co-ordinating care continuity and the consistency of the patients' itinerary. It is responsible for organising paramedical care.

A collection of diversified profession skills

Under Anne Montaron's leadership, the DS in 2010 was staffed by 880 health providers including the certified paramedical professions–registered and specialist nurses (about 500), auxiliary nurses (150), x-ray technicians (70)–cross-sectional jobs required in patient care–dieticians, physiotherapists, social assistants, stretcher bearers and morgue staff.

A supervisory team made up of co-ordinators and proximity supervisors co-ordinates the organisation of care and all staff. Their job is to define the paramedical care needs (nursing, medical-technical and re-education) in their department, to ensure consistency in the qualitative and quantitative management of the care-giving staff in the departments concerned, ensure the co-ordination of care activities with the other departments, guarantee patient safety, the reliability and quality of care in their sector, take part in the economic and financial management of the sector concerned and staff recruitment. As managers they must pay attention to the management of people by employing values such as equity and care.

Risk-detection for better prevention has been a part of the Care and Treatment Department's good practices since 2009. Managing the declarations of falls is done by the Quality and Risk Management Department, which, with the ergonomist, is responsible for the proper recording and the accuracy of information concerning the nursing diagnosis or circumstantial situations, with a view to risk prevention.

Organising care

Organising care calls for the constant updating of processes so as to remain on the therapeutic and technological cutting edge. In this framework, the DS steers the formalisation of the organisation of patient care, care circuits and procedures and participates in building quality care indicators and care supervision. The computerisation

of the paramedical care project should begin in 2011 with the DS steering it as part of the project management methodology used by the Department of Computer Services. In the staff shortage context of the past few years, the DS has been handling the cross-sectional follow-up and management of staff with the Director of Human Resources. It indicates to HR the training plan for paramedicals and participates in staff career management.

The DS also works closely with the Department of Financial Activities especially in identifying care-load indicators such as patient co-morbidities.

The Care Department handles staff follow-up and management cross-sectionally with the Human Resources Department. ▲

Computerising the care files opens up the possibility of carrying out cost studies. In 2010, the DS finalised the implementation of practice audits, enabling the facilitation of professional exchanges and enhancing the quality of care.

Making the professions prosper

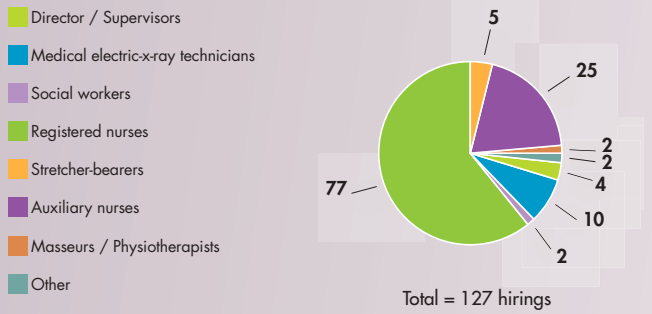
The DS relies on its strategic vision to get involved particularly in professional tracks. It organises the reception, training and assessment of students in their initial training courses; it finds partnerships with paramedical training institutes and co-ordinates the organisation of training courses with department leaders. Looking outwards, it wants to develop paramedical professional careers in oncology and strengthen the "city-hospital" relationship, prepare for the evolution of registered professions, participate in assessing professional practices and on-going professional development and hold professional days and events. To supervise and support new collaborators, it promotes and develops cross-sectional tutelages. In 2010, emphasis was placed on making the new nursing training programme more university oriented (BA, Masters & Doctorate).

> THE OUTLOOK FOR 2011

Developing nursing skills in oncology is one of the main focus sectors for the coming years, in particular with the possibility of developing advanced practices. This will mean launching a Masters project in oncology in connection with the Université Paris-Sud 11. The job of electro-radiology technician should also evolve. The DS would also like to relaunch paramedical research by promoting publications and participation in congresses. And lastly, by offering international exchanges, it intends to contribute to IGR's international dimension.

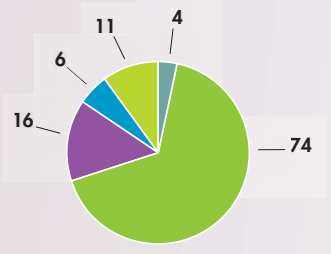
Key figures

Distribution of open-term contracts in 2010



Total = 127 hirings

Distribution of the number of departures in 2010



Total = 106 departures

The therapeutic strategies tailored to each patient, the financial efforts made for so many years both on the buildings and the equipment and the human excellence demanded all led to significant responses in 2010:care is progressing faster than the disease. These results combined with IGR's involvement in the medical-scientific community confirm the Institute's place as a European leader in the fight against cancer.

IGR partners in care

> Assistance Publique-Hôpitaux de Paris > Centre chirurgical Marie Lannelongue
> CHU de Bicêtre > Centre hospitalier Sainte-Anne > Institut Curie > 30 patients associations
> MD Anderson Cancer Centre > Karolinska Institute > Netherlands Cancer Institute

CARE AT IGR IN 2010

Comprehensive Patient Care

11,254
new patient consultations in 2010

167,921
overall consultations in 2010

44,502
patients visiting at least once in 2010

IGR Looking to the Future

IGR is committed to a development policy that marries the quality of patient care, the quality of cancer treatment, the development of research transfer, the inclusion of basic research and the hospital. By relying on these elements, IGR has continued its profound mutation in order to give itself the means needed to meet the challenges of the 21st century.

For many years IGR with its forbidding architecture projected an image of a state-of-the-art technological centre more focused on malignant tumours than the patient. This misleading image, quickly contradicted by the warm greeting received by patients from all our care-giving staff, has also been radically improved by strong actions.

Quality care for patients

An architectural make-over now makes it possible to welcome patients in an open, modern and luminous setting. IGR is implementing a general policy for treating patients, in particular a wide-ranging pain plan that will make it possible to better understand this problem, which can have such an impact on patients' quality of life. This focused care is comprised of aspects that at first glance might seem marginal to the issue of such a serious disease as cancer, but which do indeed have a profound impact on patients' daily lives (beauty and beautician care, podology and auriculotherapy, to name just a few).
IGR has specialised nursing staff for cancer patients and provides all the attention and empathy needed for good-quality care while interacting very effectively with the medical staff.

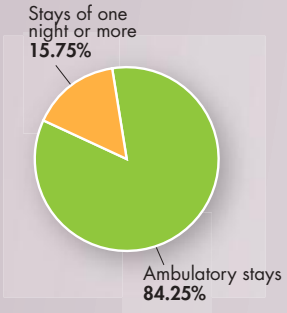
The Operating Room Complex has 14 rooms for procedures under anaesthesia, equipped with medical ventilators and centralised monitors with a computerised anaesthesia sheet. 10 rooms are devoted to surgical operations, the others to interventional radiology and endoscopies.

Quality care for cancer as a disease

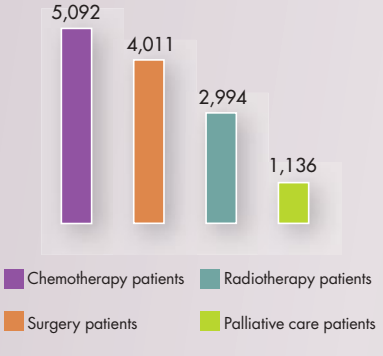
IGR has 14 multidisciplinary committees for the purpose of providing optimum care in a multidisciplinary framework to patients with common or rare cancers. By the number of patients treated every year, these multidisciplinary committees, comprised of from 8 to 20 specialist physicians, constitute a "library of oncological knowledge" that is unrivalled in France, even in Europe. Consultation meetings organised by these

Key Data

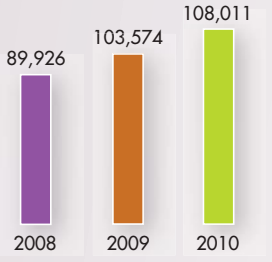
Number of stays in 2010



Treatments carried out in 2010



Number of stays



committees are veritable crucibles for elaborating the best solutions tailored for each patient's specific situation. Since the creation of the cancer plan, all the establishments hold multidisciplinary consultation meetings, but the real osmosis which takes place in the IGR committees, whose members are used to working together –sometimes for as long as 25 years– goes well beyond a simple comparison of points of views between committee members.
Along with this close relationship between physicians goes a strong sense of sharing of responsibilities and expertise with the non-medical auxiliary teams. Patient care thus relies on teams interacting to make the treatments and their effects on the patients as tolerable as possible.
Coupled with these human elements are the considerable technical resources with a modern imaging platform (from ultrasound to positron-emission tomography to MRI and CT scan), the images of which are available on all computers connected to the network in the Institute (PACS), molecular biology laboratories including an identified translational research laboratory and a functional genomics platform.
Such tools help in certain specialities to map tumours, which is how specific consultation meetings based on the tumour's biological classification (lung cancers, for example) were created.

Developing transfer research

Seeing as how knowledge and the complexity of cancers is developing, it is obvious that research known as "transfer" is going to assume a growing place in treating cancer patients. It has already become vital to have analytical results of molecular biology to prescribe certain drugs. IGR has been a pioneer in this process and has included it as a priority in its development strategy. With the patient's consent, numerous samples are thus analysed to determine the potential targets of treatment or modifications provided by some of them to the tumour. IGR has created an innovative therapies unit (SITEP) the purpose of which is to develop new molecules in this specific situation of determining the treatment's target and the best weapon to reach it. The translational research laboratory, the functional genomics platform and the installation of other modern technological tools such as broadband sequencers should lead to a gradual increase in the number of patients able to benefit from this approach in clinical practice.

Including basic research in the hospital

Restructuring basic research and its clearer implication in national research bodies as well as the joint appointment by the Ministries of Higher Education and Health of a research director have made it possible to position this upstream research in the centre of the Institute's development strategy. This co-existence of highly specialised basic research units and very active clinical and translational research on the same campus constitutes the basis for developing the model of a competitive, integrated oncology centre at an international level.

Continuously expanding activities

IGR teams have been able to adapt their practices and their quality requirements to the difficult general health situation in France and to the institution in particular. In this situation, it has been possible to increase activity in all care domains, medicine, surgery and radiotherapy. This increased activity has helped the Institute return to financial solvency and was achieved through the considerable efforts made by all staff members in order to optimise organisations and to care for a larger number of patients with the same financial means. Simultaneously with these dynamics concerning clinical activity, there was increased productivity in teaching, publications and the percentage of patients included in research protocols, thus increasing the Institute's visibility both nationally and internationally.
2010 has been a year for renewal and performance, whose positive dynamics presage well for the IGR of tomorrow.

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Contribute to developing major therapeutic advances...

At the start of the year we carried out our 500th intraperitoneal hyperthermic chemoperfusion (IPHC) at IGR. In the early 1990s we began working on a new concept that consisted in treating all visible tumour nodules in the abdominal cavity with surgery and treating the residual occult disease with a high-concentration chemotherapy bath, heated to 43°C. We were the pioneers, and it was a long haul, but this approach made it possible to improve the situation of patients with carcinomatosis of colon cancer origin whose five-year survival rate rose from about 3% to 48%. With IGR's expertise recognised internationally, this has been a fine success for the numerous IGR teams involved in developing this technique.

Dr. Dominique Elias
Head of the General Oncological Surgery Department

1979
Medical thesis
1981
Joins IGR
2001
Scientific thesis, HDR, PhD
2006
Appointed head of the General Oncological Surgery Department

Multidisciplinary medical committees

The multidisciplinary committee serves as the model of the multidisciplinary consultation meeting that was generalised by the first Cancer Plan. They operate per organ speciality, i.e. lung, breast, head and neck, genito-urinary, gynaecology, paediatrics, digestive, thyroid, dermatology, haematology, bone and soft tissue and neurology. They still function that way. More cross-sectional committees have more recently been formed, first an early trials committee in 2007, an endocrine tumour committee and an oncogenetics committee. Every committee is composed of at least three specialists with different training for cancer treatment: a medical oncologist or organ specialist, a surgeon and a radiation therapist, in general. A radiologist and a pathologist are often added to these three specialists. Above and beyond treatment, they pool their medical practice, their knowledge and their specific expertise on the patients' behalf to individually define the best adapted comprehensive care for each situation.

The committees' purpose

- Organising multidisciplinary care
- Defining and formalising therapeutic strategies
- Organising care pathways
- Defining research priorities and implementing research policy
- Recruiting new patients

Resumption of the activity already noted in 2009 continued in 2010 with a progression of full admissions greater than 4% over that of 2009 with over 11,000 surgical interventions carried out (with cumulative activity exceeding 4% over the previous year). All of which made it possible to finish the year with a slight budgetary surplus.

Lung Committee

Physician in Charge Dr. Benjamin Besse

	2009	2010
Number of new registrations	**745**	**756**
incl. % of new patients treated in the year of participation	37	43
Number of patients cared for	**548**	**630**
incl. % patients in a trial	34	40

This committee meets the challenges of major public-health issues (first cause of mortality by cancer in France) and recorded a strong progression in its activity in both medicine and radiotherapy 2010. The lung committee treats adult bronchopulmonary cancers (non small-cell and small-cell carcinomas), pleural tumours (mesotheliomas and others), mediastinal tumours (epithelial thymic tumours and others) and pleural lung metastases requiring local treatment.
In 2010, the committee continued organising clinical research with a highly diversified set of therapeutic trials. In 2010, it got involved in the personalised medicine programme with the implementation of IGR's first molecular RCP (Multidisciplinary Committee Meeting). It was also named by the INCa (French National Cancer Institute) as the national co-ordinator of the epithelial thymic tumours network.

Haematology Committee

Physician in Charge Dr. Vincent Ribrag

	2009	2010
Number of new registrations	**615**	**630**
incl. % of new patients treated in the year of participation	54	59
Number of patients cared for	**841**	**842**
incl. % patients in a trial	10	7
Number of publications		**7**

The haematology committee arranges for the overall treatment of patients with haematological malignancies. The treatments offered are elaborated as part of national and European co-operative groups. The committee also offers access to molecules in early development as part of the SITEP. Patients can benefit from intensive treatment followed by the re-injection of autologous or allogeneic stem cells.
The clinical activity takes place in consultations, conventional hospitalisation (on protected or unprotected wards) and the patient Day hospital. Numerous therapeutic trials are at present active, and new therapeutic methods are also being tested.

Urology Committee

Physician in Charge Dr. Bernard Escudier

	2009	2010
Number of new registrations	**931**	**1,039**
incl. % of patients treated in the year of participation	36	35
Number of patients cared for	**824**	**755**
incl. % patients in a trial	26	32

This committee is the recognised national leader in France in medical oncology for treating testicular, renal and prostate cancers. For prostate cancer, the multidisciplinary therapeutic offer, in particular, includes brachytherapy and conformal radiotherapy. Over 100 patients with germinal tumours are seen at the Institut Gustave Roussy, and IGR is one of the cornerstones in developing research protocols in this field.
Prostate cancer is a priority for the oncology urology team with patients seen by medical oncologists at earlier and earlier stages (high-risk localised tumours, isolated biological relapses, etc).
The Institut Gustave Roussy actively participated in and co-ordinated randomised trials in metastatic renal cancer, which established and better defined the role played by immunotherapy through interleukin-2 and interferon.

Early trials Committee

Physician in Charge Prof. Jean-Charles Soria

	2009	2010
Total number of patients included	**227**	**327**
Number of patients included from outside	**79**	**125**
Number of patients we responded positively to from their screening sheet and seen in consultation from outside	**115**	**205**

The committee's goal is to facilitate access to innovative molecules, in particular for patients having failed to respond to therapy. Treating patients relies on a dedicated care structure, SITEP (the Therapeutic Innovations and Early Trials Unit), opened in September of 2008.
In 2010, the committee produced 17 abstracts in international congresses and 16 publications in English.
Over the coming three years, the Early Trials group's goals will be to continue strengthening its international competitiveness and its attractiveness as a venue for early clinical assessment and therapeutic innovation.

Breast Committee

Physician in Charge Dr. Suzette Delaloge

	2009	2010
Number of new registrations	**2,153**	**2,077**
incl. % of new patients treated in the year of participation	73	67
Number of patients cared for	**3,266**	**3,073**
incl. % patients in a trial	15	20

The breast pathology unit treated patients with benign and malignant breast lesions. This organ-oriented committee is organised around different specialist platforms such as diagnostic and treatment-oriented biopathology, reconstructive and repair surgery, conventional and innovative imaging, innovative translational research and a lot of activity in medical and radiotherapy treatments of early and advanced stages as well as innovation for comprehensive care.

Gynaecology Committee

Physician in Charge Dr. Catherine Lhommé

	2009	2010
Number of new registrations	**859**	**804**
incl. % of new patients treated in the year of participation	57	55
Number of patients cared for	**949**	**910**
incl. % patients in a trial	7	14
Number of publications		**6**

The leading committee in the Greater Paris region, it is a "Reference Centre" for rare ovarian cancers, trophoblastic diseases and cancers diagnosed during pregnancy. It develops research for these diseases and offers therapeutic innovations. *Accueil en un jour* (Single-day Diagnosis) was started in 2010 for patients who have just been diagnosed with peritoneal carcinomatosis of gynaecological origin. Various examinations and a consultation with several specialists (surgeon, anaesthetist, dietician and nutritionist) lead to a complete work-up, then it is explained to the patient, and the very same day the recommended treatment is proposed. The expertise of this committee's members is recognised as proven by the number of guidelines (national and international) for good clinical practices it has participated in, often as the lead writer, no matter what the speciality. Numerous research directions are being developed in each speciality for the various cancers treated, often in collaboration with national or international groups.

Thyroid and neuroendocrine tumours Committee

Physician in Charge Dr. Éric Baudin

	2009	2010
Number of new registrations	**543**	**961**
incl. % of new patients treated in the year of participation	46	41
Number of patients cared for	**915**	**916**
incl. % patients in a trial	15	6

This committee is in charge of care, clinical and translational activities and teaching endocrine oncology. This includes thyroid, adrenal gland and neuroendocrine tumours. This activity is accomplished in close collaboration with the Head & Neck, Digestive and Thoracic Departments. The committee is an international leader in thyroid tumours through strongly structured integrated research and therapeutic innovations. It is also recognised as a "European expert centre" for treating malignant tumours of the adrenal gland and is now undergoing validation for neuroendocrine tumours. The committee members also provide consultations, hospital care, replies to requests for advice, participate in national conference networks, therapeutic protocols, clinical research and teaching. The endocrine oncology department is recognised as an "INCa reference centre" for three tumour types (thyroid, adrenal gland and neuroendrocrine tumours: the TUTHYREF, INCa-COMET and RENATEN networks respectively). In this framework, it participates in structuring care and research throughout France, including weekly participation in nationwide conferences. Its members participate in scientific boards of various European networks for endocrine tumours.

Oncogenetics Committee

Physician in Charge Dr. Olivier Caron

	2009	2010
Number of new registrations	**12**	**329**
incl. % of new patients treated in the year of participation	–	4
Number of patients cared for [1]	**344**	**480**
Number of consultations in oncogenetics	**1,332**	**1,591**
Number of publications	**10**	**10**
Number of communications at international congresses	**2**	**1**
Number of communications at French congresses	**1**	**4**

(1) The number of patients treated corresponds to the people coming to IGR not just for oncogenetics. Most of the consultants are IGR patients and are thus listed in their home organ committees.

Formed in March, 2009, the committee's goal is to identify factors predisposing people to cancer so as to improve therapeutic care, follow-up and prevention in cancer patients and their relations. This care relies in particular on oncogenetic consultations and the genetics laboratory. The co-ordination of people at high risk of cancer is done by all IGR activities such as senology, gynaecology, gastroenterology, paediatrics, dermatology and endocrinology. The oncogenetics committee's activities are developing with 329 new patients in 2010, as opposed to just 12 in 2009, as well as 136 hospitalised patients (+40%) and 259 additional consultations (+19%) in 2010. The directions under development at present are reinforcing the identification and management of patients with a predisposition to digestive cancers, paediatric cancers and multiple cancers. A computerised tool common to all disciplines associated with genetics is presently being parametered.

Dermatology Committee

Physician in Charge Dr. Caroline Robert

	2009	2010
Number of new registrations	**929**	**1,090**
incl. % of new patients treated in the year of participation	40	38
Number of patients cared for	**734**	**773**
incl. % patients in a trial	10	15

The committee's activities focus almost entirely on oncodermatology. The committee enjoys major surgical and plastic expertise for a disease whose incidence has increased two-fold in 10 years. Research focuses mostly on the factors that predispose people to the onset of cutaneous melanomas, imaging of these tumours and their treatment by biologically targeted innovative therapeutics.

Sarcomas (bone/soft tissue) Committee

Physician in Charge Dr. Axel le Cesne

	2009	2010
Number of new registrations	**543**	**529**
incl. % of new patients treated in the year of participation	45	39
Number of patients cared for	**502**	**489**
incl. % patients in a trial	14	14

This committee's brief is to optimise the multidisciplinary care of soft tissue and bone sarcomas and adult mesenchymatous tumours. A leader in France, it deals only with rare cancers and benefits from major surgical expertise and medical oncology. Its strong advances over the past few years have been due to broad international recognition of its clinical research.

Neurology Committee

Physician in Charge Dr. Frédéric Dhermain

	2009	2010
Number of new registrations	**140**	**162**
incl. % of new patients treated in the year of participation	74	71
Number of patients cared for	**185**	**217**
incl. % patients in a trial	4	NC

This "rare tumour" committee develops care for treating patients with benign and malignant neurological tumours and works in close partnership with the Bicêtre University Teaching Hospital and the neurological experts of the Saint-Anne Hospital complex. The committee's vision is to consider patients as "unique in their diversity" and likewise for their disease. The overall, diagnostic, therapeutic and support approach therefore takes into consideration all aspects of their individuality and their tumour so as to offer the most individualised care possible. A personalised plan is explained to them and given to them personally by the IGR consulting specialist, who then ensures co-ordination. There is close connection, should there be need, between the paediatrics committee for very young adults and the "new drugs" committee. Our major research directions are at present conditioned by a search for the best compromise between efficacy/toxicity and providing each patient with the diagnostic and therapeutic tools that are best adapted to their specific case.

Digestive Committee

Physician in Charge Dr. David Malka

	2009	2010
Number of new registrations	**1,129**	**1,106**
incl. % of new patients treated in the year of participation	46	47
Number of patients cared for	**1,177**	**1,229**
incl. % patients in a trial	7	10
Number of publications		**41**

This committee includes 9 organs. Its expertise is recognised for rare and common cancers thanks to the contribution of all the disciplines at IGR. In a delicate regional setting, the committee tries to increase patient recruitment through a proactive policy that relies on its expertise and innovation both in the early stages of the disease and for referrals in providing rapid work-ups and care. It strives to offer integrated and innovative care for cancers of the colon and rectum. The committee also treats all digestive cancers and the resulting clinical activity is triple, i.e. consultation, hospitalisation and digestive endoscopy. In 2010, 1,229 of the digestive committee's patients were hospitalised at IGR, a 4% rise in one year (+52 patients). The main research projects and pathways concern on the one hand identifying prognostic and predictive biomarkers for effective treatments of digestive cancers, and on the other, clinical research (over 20 trials and studies undertaken in 2010, including phase II trials, randomised phase II trials and phase III trials promoted by IGR and/or co-ordinated nationally or internationally by a digestive pathology committee member).

Paediatrics Committee

Physician in Charge Dr. Jacques Grill

	2009	2010
Number of new registrations	**347**	**378**
incl. % of new patients treated in the year of participation	70	65
Number of patients cared for	**555**	**554**
incl. % patients in a trial	51	34

The paediatrics committee provides overall care for cancers in children and adolescents. The initial work-up, chemotherapy and radiotherapy are done at IGR while surgery is carried out in partnership with other reference hospitals. The leader in the Île-de-France, the committee benefits from expertise recognised both nationally and internationally, strong dynamics in integrated research and international visibility. A project for developing and improving overall care for adolescents in collaboration with other IGR committees is ongoing.

Head & Neck Committee

Physician in Charge Dr. Stéphane Temam

	2009	2010
Number of new registrations	**935**	**1,054**
incl. % of new patients treated in the year of participation	62	61
Number of patients cared for	**1,403**	**1,437**
incl. % patients in a trial	11	14

This committee is widely acknowledged for its multidisciplinary expertise in surgery, radiotherapy and chemotherapy for treating squamous cell carcinomas and the rarer varieties of head and neck cancers. Treatment relies on targeted therapies at all phases of the disease, making it possible to conserve organs at the maximum while maintaining the possibility of doing complicated surgery, in particular with reconstructive flap surgery. It also develops innovative radiotherapy, in particular IMRT for small tumours.

Departments

The diagnosis and treatment of cancer patients are performed in multidisciplinary departments and committees. IGR offers the most specialised units in the fields of oncology.

Oncological Medicine

The Oncological Medicine Department cares for cancer patients whatever their primary sites requiring the use of cancer drugs (chemotherapy, hormonotherapy, targeted therapies and immunotherapy). It is the biggest oncological medical team in France and makes it possible to appoint at least one specialist and often several for each tumour pathology. Clinical research is dominated by the assessment of new molecules by conducting pharmacokinetic and recent therapeutic studies such as gene therapy or immunotherapy programmes. Department members are very involved in the multidisciplinary care of patients and take active part in all organ committees. The department also comprises teams in haematology, cell therapy, oncogenetics and gastrointestinal and bronchial endoscopy. With 102 complete hospital beds and 66 day hospital places, the Oncological Medicine Department is by far the biggest in terms of installed capacity.

Activities in 2010

In 2010, the department carried out 77,000 consultations, 29,737 day hospital stays and 5,517 full hospital stays.
In 2010, 29% of the patients treated in the department for a malignant tumour and hospitalised were suffering from breast cancer and 13% from gastrointestinal cancers. The cancers showing the most marked rise in frequency were the malignant tumours of the respiratory tract (+13%), gynaecology (+26%), dermatology (+45%), head and neck (+41%) and neurological tumours (+39%). Urogential tumours on the other hand dropped by 10%. Excluding the patients followed up in consultations, chemotherapy remains the main method for treating patients followed up in the Oncological Medicine Department, with a rise of 2% compared to 2009, for both full hospital and ambulatory stays.
Consultations are also on the increase with 4% of additional specialist consultations in 2010, +13% of multidisciplinary consultations and +51% of nursing consultations. 35% of the department's patients spent at least one night in hospital in 2010. The length of stay remained constant at 5.9 days for a bed occupation rate of 95%, an equivalent figure to last year's.

Oncological Medicine	2009	2010
Number of patients as of 31 Dec.	163	168
Number of patients	5 821	5,758
Number of stays	37,965	36,775
Average number of stays (1 night or more)	6	5.9

Person in charge Prof. Karim Fizazi

Fatima Belal
Oncological Medicine
Department Care Co-ordinator

Nursing know-how in the patient's co-ordinated care pathway

Back in the nineties, sensitive to the consideration taken of the patient's clinical pathway and what that meant in terms of treatment content, with Dr. Ruffié, I took part in the first meetings of the Onco 94 network. Working with the haematology medical team we innovated by setting up real care partnerships between the city and the hospital. The special relationships started back then and maintained today with certain healthcare facilities (both downstream and up) by doctors, the social services and Nursing Care Executives contribute to maintaining these institutional dynamics for developing care networks.

1978
Graduates from the IGR Nurse Training Institute
2002
Health supervisor of 4 care units in the Medicine department
2010
Care Co-ordinator of the Oncological Medicine Department

Childhood and Adolescent Oncology

The Paediatrics Department's brief is to diagnose and treat solid tumours in children (0 to 12 yrs.) and adolescents (13 to 20 yrs.), do research into paediatric cancers and teach childhood oncology.
There are few similarities between adult cancers and childhood and adolescent cancers. Contrary to adult cancers, childhood cancers are uncommon (1% of total cancers) and are therefore often poorly understood. They are dissimilar in nature and occur at different sites from adult cancers, mostly happening in a growing body, and treatment must take this essential point into account.

Activities in 2010

The Paediatrics Department's activity registered 3.4% growth in 2010 over 2009. Two cancers are representative of the mixed cases in paediatrics: malignant neurological tumours (brain tumours and neuroblastomas) and bone and soft tissue tumours. Between them they accounted for 70% of the admissions for malignant lesions in the department. There was a decrease in malignant bone and soft tissue tumours in 2010 (–5.6%). Chemotherapy remained the main treatment method during full hospital stays, with the use of such treatment in 62% of cases, a 19% rise compared to 2009. Most of the Department's new patients came from the Île-de-France region (41%) or the French provinces (36%). 22% of the new patients came from France's overseas dominions and territories (6%) or from abroad (16%).
In 2010, the bed-occupation rate in paediatrics was 82% compared to 64% in 2009 with 5.8 being the average number of stays of one night or more in the Department, a rise of 4%.

Childhood and adolescent oncology	2009	2010
Number of patients as of 31 Dec.	40	40
Number of patients	490	498
Number of stays	3,924	4,056
Average number of stays (1 night or more)	5.7	5.9

Person in charge Dr. Dominique Valteau-Couanet

General Surgery

The General Surgery Department treats most adult cancers. The surgical techniques used combine minimally-invasive surgery using endoscopic techniques, plastic and reconstructive surgery and aggressive surgery.
All operations are done in a unique operating room complex. It includes surgeons, radiologists, gastroenterologists, pulmonologists, paediatricians and anaesthetists and surgeons who devote all their activity to cancer surgery. Teams ensure service round the clock, including Emergency assistance for patients under treatment at IGR.

Activities in 2010

The Surgery Department's activities increased in 2010 over 2009 with 3.4% more patients and 6.4% additional stays.
Breast cancers remained the main lesions treated in the department (36% of the total) with a 3% increase in the number of patients presenting with a tumour affecting this site. Treatment for a malignant skin tumour recorded a growth of 15% in 2010.
Logically enough, the first treatment method used in the department is surgery, which meant 3,051 stays in 2010, or on a par with the previous year.
In 2010, the bed-occupation rate in general surgery was 89% compared to 83% the previous year. The average number of stays of one or more nights in this department was 5.9, a decrease of 2%.

General surgery	2009	2010
Number of patients as of 31 Dec.	85	85
Number of patients	3,541	3,662
Number of stays	4,364	4,645
Average number of stays (1 night or more)	5.9	5.8

Person in charge Dr. Dominique Elias

Head & Neck Surgery

The Head & Neck (H&N) Surgery Department treats tumours of the head and neck. It also treats thyroid and skin cancers. It is one of France's biggest H&N surgery departments.
The department offers patients overall care, i.e. surgery, medical oncology, radiotherapy, odontology, speech therapy, nutrition, psychology and follow-up care. It focuses on complex care and cutting-edge techniques: reconstructive surgery in particular with microsurgery, sarcomas, combined treatments and treatment of recurrences. The department has also developed micro-invasive surgery: laser, the sentinel lymph node technique and organ preservation techniques, in particular larynx preservation.

Activities in 2010

In 2010, the department's activities remained on a par with the previous year, with the number of stays reaching 2,694 compared to 2,699 in 2009, a rise of 1% in the number of patients treated. 64% of the hospitalised patients in the department for a malignancy presented with a H&N lesion in the following locations: the mouth, the oropharynx, larynx, rhinopharynx, hypopharynx, the face or the salivary gland. Dermatological tumours were the second most frequent activity in the department representing 12% of the lesions (an increase of 7%). The treatments carried out in the department during full hospital stays focused mainly on surgical operations (32% of stays), chemotherapy (29% of stays) and H&N endoscopies (28% of stays).
Laryngeal fibroscopy (89% of the procedures, an increase of 10%) accounted for most of the minor H&N surgery activity which also performed punctures and biopsies (3% of the procedures, a decrease of 13% after a 51% rise from 2008 to 2009), fitting and changing vocal organ prostheses (3% of the procedures, an increase of 50%).
In 2010, the bed-occupation rate in H&N cancer surgery was 88.6% compared to 86% in 2009. The average number of stays of one or more nights in this department was 6.5, an equivalent level to 2009.

H&N surgery	2009	2010
Number of patients as of 31 Dec.	52	52
Number of patients	1,511	1,523
Number of stays	2,699	2,694
Average number of stays (1 night or more)	6.5	6.5

Person in charge Dr. François Janot

Operating Theatres

Installed in the new IGR building, the Operating Room Complex offers all of IGR's surgical and interventional activities in a unique anaesthesia facility comprising 14 rooms, i.e. general surgery, H&N surgery, digestive endoscopies, interventional radiology, the placement of a central venous catheter, radiology and paediatrics.

Activities in 2010

Excluding surgery under local anaesthesia which has been performed on the consultations platform since May, 2009, the number of patients treated in the Operating Room Complex progressed between 2009 and 2010, 11,511 compared to 11,060 (+4%). Strong disparities nonetheless exist, and there was a sharp rise in H&N (+8%), digestive (+10%), and digestive endoscopies (+9%).
And the average operating time increased by 5%, signifying a more complex treatment of patients in a good number of specialties, in particular, H&N, breast, digestive and gynaecological surgery.
15% of activity is done outside usual working hours. The overall activity of the platform remains very intense with sessional work exceeding 90%.
The Anaesthesia Department's activities naturally increased a lot both in terms of placing central venous catheters and anaesthesia consultations or operating room activity.
11 children were also treated in the department for a total of 120 radiotherapy sessions in 2010.
The quality indicators progressed: post-operative nausea and vomiting, pain upon arrival in the post-operative recovery room (PORR) and the number of patients justifying controlled ventilation in the PORR.

Operating theatres	2009	2010
Number of patients in ambulatory surgery	2,222	2,028
Number of stays in ambulatory surgery	2,540	2,244
Overflow rate	13%	15%

Person in charge Dr. Jean-Louis Bourgain

Interdisciplinary Department of Supportive Care (DISSPO)

The DISSPO (Interdisciplinary Department of Supportive Care for Oncohaematology Patients) organises and co-ordinates complementary care to treat the disease in an interdisciplinary way.
The department comprises multidisciplinary teams which intervene upon the request of the lead medical team or patients themselves. The DISSPO's remit is wide-ranging, i.e. pain control, palliative care, psychological care, social accompaniment, dietary and nutritional follow-up, massage and physiotherapy, relaxation therapy, speech therapy and body image and aesthetic care. It also co-ordinates volunteer work inside the Institute and participates in family support. Teaching and research are other important aspects of the DISSPO's activities, in particular concerning pain and drugs offering added comfort to patients, but also concerning the human sciences *via* the psycho-oncology unit.

Activities in 2010

In 2010, 6,761 different patients benefited from at least one intervention of one of the supportive care professionals, this active sector increasing by 2%. These patients are followed up on average by at least two different supportive care units. The supportive and palliative care activity decreased by 26% for medical consultations and 5% for nursing consultations. The continuing decrease in medical consultation activities for out-patients is due to the creation of the day hospital for palliative care and to the decision to progressively replace isolated medical consultations for non-complicated palliative cases by less numerous day-hospital stays but reserved for truly complicated cases.

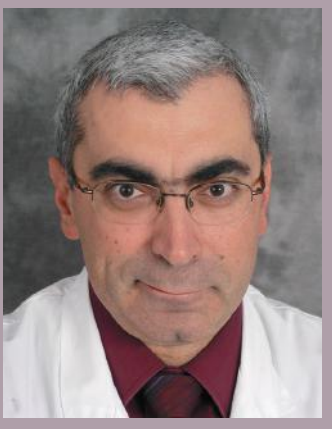
The Analgesia Unit (analgesics and auriculotherapy) carried out 4,042 medical consultations and 713 nursing consultations. For the Psycho-Oncology unit there were 1,781 psychiatric consultations and 6,307 psychological consultations done with an on-going follow-up of 1,834 patients for the psychologists alone whose activities increased by 23%. In 2010, 2,234 patients received help from the social services, or 9,414 procedures/sessions, including 4,174 consultations with the patients themselves and 1,681 meetings with families. The physiotherapy activities fell by 6% (2,221 different patients treated), whereas the dietary activity remained stable (8,959 consultations), and relaxation therapy increased by 29%.

DISSPO	2009	2010
DISSPO on-going patient follow-up	6,657	6,761
Number of nursing consultations for palliative care	3,799	3,626
Number of medical consultations for palliative care	3,091	2,299

Person in charge Dr. Sarah Dauchy

That was a day I was proud to work in the IGR Emergency unit...
It was the kind of day you seem to see more and more often in IGR's Emergency Unit. The staff meeting had just finished when patients started coming in, one with a digestive haemorrhage, a feverish syndrome and unstable blood pressure, another had to have a gastric catheter changed, another one was taking a drug with only letters and numbers for a name and another on a stretcher followed by his family in mourning, and in need of support. It's not just a random list. I have always admired the ability of the IGR auxiliaries and teams to cope with and adapt to the patient's situation whether in cutting-edge treatments or cutting-edge "humanity". It worked that day. By the end of the day the reception board was almost empty, and the patients had been well cared for. It was a day I was proud to work in IGR's Emergency unit.

1989
Joins IGR as an intern
1996
Tenured
2002
Joins the Emergency Unit



Dr. Sami Antoun
Head of the Rouergue Emergency Unit

Acute Care

The Acute Care Department houses the Intensive Care Unit, the Continuous Medical and Surgical Care Units and the Infectious Diseases Unit.
The Intensive Care Unit treats patients suffering from vital-organ failure. The purpose of the continuous surveillance and monitoring units is to treat patients for whom there is a fear of the onset of one or several vital-organ failures and who, as such call for constant and methodical clinical and biological observation. The new 12-bed Continuous Surgical Care Unit (USCC), transferred at the end of 2008 to the acute-care platform, treats such patients in the immediate post-operative period. The cross-sectional and ambulatory Infectious Diseases Unit provides its support for the diagnoses and treatment in the clinical units for infectious complications occurring during cancer treatment.

Activities in 2010

In 2010, the number of stays in intensive care and the Continuous Medical Care Unit (USCM) fell by 3%. The main tumours causing a transfer into intensive care or the USCM are digestive, haematological and H&N malignant tumours that together account for 60% of the cases.
The number of stays in intensive care and the USCM with mechanical ventilation increased by 4% in 2010 while non-invasive ventilation stays in 2010 dropped by 15%. There was also an increase in the number of patients treated for extra-renal purification (37%). In 2010, the acute-care platform had an overall occupation rate of 78% compared to 73.4% the previous year.

Acute Care	2009	2010
Number of patients (Medical Unit price info Resume)		
Intensive Care + USCM	455	422
USCC	1,442	1,397
Number of stays		
Intensive Care + USCM	515	499
USCC	1,627	1,607
Average stay (in days)		
Intensive Care	7.9	8.4
USCM	5.9	7.3
USCC	1.4	1.5
Mortality rate in intensive care	21.7%	18.8%

Person in charge Dr. Bertrand Gachot

Ambulatory Care

The Ambulatory Department is composed of three entities: consultations, the Emergency Unit and External Care Co-ordination (CSE) Unit.
This platform provides consultations for different IGR medical and surgical departments (except paediatrics and DISSPO). It comprises 63 consultation rooms, including four technical rooms enabling external surgery under local anaesthetics and three rooms for committee meetings. It also has an 8-place samples room where blood tests and electrocardiograms are done. Nearly 150 physicians (tenured, part-time or interns) use the premises.

Activities in 2010

2010 saw 133,126 medical consultations and 2,204 nursing consultations, which correspond to an increase of 6% over 2009. The Emergency Unit is open 24 hours a day, seven days a week and only provides care for IGR patients. It contains six examination rooms for patients and six individual hospital rooms. Emergency consultation activities remained stable with 5,435 visits in 2010. 72% of the patients in 2010 came to the Emergency Unit on their own initiative. In over half the cases (55%) hospitalisation was required for most of them at IGR, often in the Emergency Unit. The CSE is staffed by four nurses and an auxiliary. Its role is to organise the return home of patients requiring complex care. In such cases, after assessment, the CSE either calls in freelance nurses and service providers or sends the case to a home hospitalisation service (HAD), in particular to Santé Service. The CSE also provides patient follow-up for patients in their care after a return home. In 2010 the CSE provided 2,190 treatments corresponding to 1,797 new patients.

Ambulatoy Care	2009	2010
Number of consultations on the platform	126,035	133,126
Number of emergency consultations	4 ,826	5,435
Number of CSE treatments	1,913	2,190

Person in charge Dr. Mario Di Palma

Radiotherapy

The Radiotherapy Department works with surgery and chemotherapy to treat and cure cancers. External radiotherapy (known as transcutaneous), where the source of radiation is located outside the patient, is distinguished from internal radiotherapy, known as brachytherapy where the radioactive source is located directly inside the tumour tissue or in a natural cavity.
The department carries out its activities on all types of cancer, developing modern techniques of conformal radiotherapy and intensity modulation radiotherapy (IMRT). Total body radiotherapies are also done along with all brachytherapy techniques. Several paths are being explored to increase and improve the effect between healthy and tumour tissue. The combination of radiotherapy and chemotherapy; changes in fractionation; research into radiosensitization phenomena and on radiosensitizing or radioprotective drugs; improving radiation ballistics for better tumor targeting and more sparing of healthy tissue and optimising the treatment of recurrences. Brachytherapy is used to treat small well circumscribed tumours such as certain gynaecological, breast, H&N, digestive, pulmonary or urological cancers.

Activities in 2010

In 2010, the Radiotherapy Department treated 3,084 patients, an 8% increase over 2009. The number of days spent in radiotherapy and the number of stays increased in 2009 by 5.5% and 8.8% respectively. There was also an increase in the number of stays in ambulatory care and hospitalisations by 8% and 11% respectively. There was an increase in the number of ambulatory stays and a drop in the number of full admissions. In 2010, the number of specialised consultations increased by 13% while the number of multidisciplinary consultations rose by 17%. Brachytherapy accounted for over 13% of the department's consultations, with transcutaneous radiotherapy accounting for the remaining 87%. Scanner activities continued to increase in 2010 with a rise of 13% in terms of both the number of examinations performed and visits and of 11% in terms of patients. The average number stays of one night or more also increased, reaching an average of 6.1 (compared to 5.2 in 2009). The department's admissions service showed an occupation rate of 84%, on a par with 2009.

Radiotherapy	2009	2010
Installed capacity as of 31 Dec.	26	26
Average number of working external radiotherapy accelerators	6	6
Number of patients	2,852	3,084
Number of stays	49,791	55,424
Average number of stays (1 night or more)	5.2	6.1

Person in charge Prof. Jean Bourhis

Medical Imaging

The Medical Imaging Department's activities focus on diagnostics and certain therapeutic activities. This department houses diagnostic ultrasound, interventional radiology, diagnostic radiology and nuclear medicine.
The department contains a state-of-the-art technical platform including a scanner and MRI, diagnostic ultrasound, digital mammography, stereotactic scintimammography biopsy and positron-emission tomography (PET).

Activities in 2010

Activity increased significantly in 2010 with a 19% rise in the number of patients, +13% in stays with the number of days remaining stable. This increase was mainly due to the development of ambulatory activity, which rose by 37% in 2010 both in terms of patients and patient care. This increase is due to initiating the single-day diagnosis for breast and thyroid lesions.
Malignant tumours of the thyroid and neuroendocrine system remain the primary cause of hospitalisation in the department with 338 in-patients given in 2010, an increase of 59% of all hospitalisations for malignant tumours in the department. 86% of stays of one or more nights included treatment with radio-isotopes or chemotherapy. Palliative care treatment remained stable whereas stays with transfusions rose by 58%.
More generally, consultation activity increased by 5% in 2010 with a 7% rise in endocrine consultations, 13% for interventional radiology consultations and 24% for consultations based exclusively on the patient file.
In 2010, the occupation rate in nuclear medicine was 85% which was on a par with the previous year. The average number of stays of one or more nights also remained stable at 4.8.

Medical Imaging	2009	2010
Installed capacity as of 31 Dec.	12	12
Conventional radiology (N° of procedures)	18,792	18,876
Interventional radiology (N° of procedures)	2,217	2,232
CT scan (N° of procedures)	11,306	12,202
MRI (N° of procedures)	4,640	4,738
Ultrasound diagnostics (N° of procedures)	11,932	12,679
Breast-centred activities (N° of procedures)	11,441	11,763
Scintigraphy incl. PET (N° of procedures)	7,161	7,083
Nuclear medicine		
Number of patients	713	845
Number of stays	1,016	1,152
Average number of stays (1 night or more)	4.9	4.8

Person in charge Prof. Martin Schlumberger

Medical biology and pathology

The Department has the resources that make it possible to manage biology and pathological anatomy examinations in a co-ordinated manner on a daily basis. They are prescribed by the committees and care departments. The department also carries out examinations for prescriptions from outside IGR.
This department is composed of six services, divided into two sections: the "Tumour" section with activities in pathology (a morphological pathology service and a molecular pathology service) and the "Patient" section with medical biology activities (biochemistry, haematology/immunology, microbiology and genetics services).
The "Tumour" section aims to give daily diagnoses to clinicians based on cytological and histological samplings carried out at IGR and histological documents addressed from outside concerning patients coming for a consultation at IGR (a morphological pathology service). Equipped with an efficient automated platform, the "Patient" section provides biological assessments in under 2 hours.
The laboratories also do tests concerning genetic predisposition to cancer (a genetics service) and those aimed at detecting the presence of a cancer and to monitor its evolution. The department complies with the good laboratory practices recommendations (GBEA, AFAQAP) and contributes to improving the relevance of requests for examinations through the participation of biologists and pathologists in the multidisciplinary committees. The department's practitioners also contribute to teaching activities, and basic translational research done at IGR as part of their specialised field.

Activities in 2010

The biochemistry, haematology and microbiology laboratories increased the number of examinations by about 4% over 2009. This growth did not translate into a key-letter (B) rating due to the decrease in the rating of a large number of tests since 2009.
The laboratories in the molecular biology section also recorded an increase in activity in 2010, especially in somatic genetics (molecular pathology service) and with the implementation of new tests carried out on tumours, making it possible to predict response to the targeted molecular therapeutics. The overall increase in Pathology-related activities was linked to greater clinical activity which increased by 11% over 2009, to image-guided biopsies and microbiopsies and to therapeutic protocols.

Medical biology and pathology	2009	2010
Number of biology tests invoiced (excl. B non-nomenclature)	36,456,409	36,296,054
Number of pathology tests invoiced (excl. P non-nomenclature)	4,025,855	5,441,635

Person in charge Prof. Jean-Michel Bidart

Christine Proust
Executive Secretary
Oncological Medicine
Department

Combining effectiveness and humanity...

The medical assistants play a vital role between physicians, patients, care-givers and the institution. They contribute to the quality of patient care all along the patient pathway. With a new working organisation and evolving technology, they do their job efficiently and humanely. Oncology requires specific know-how and a high level of adaptability when confronted by sometimes difficult situations, while adhering to the principles of discretion and ethics. It is one of IGR's strongest values.

1980
Joins IGR secretary pool
2005
Executive Secretary Oncological Medicine Department

Patient care at the Day Hospital. ▲

Pharmacy

The Pharmacy Department includes all pharmaceutical activities enabling the supply, proper use and therapeutic follow-up of pharmaceutical products, covering drugs and sterile medical systems. The Department is divided into five functional units:

Drugs Functional Units (FUs), Medical device and traceability FUs, which manage supplies and are developing a policy for the control of costs and the proper use of drugs for better patient care.

Medical devices and traceability FU handles the supply of sterile medical devices (MD) for the Institute as well as the traceability of the implantable MDs and blood-derived drugs. The FU actively participates in the quality of medical device circuits and *via* medical device surveillance, among others, the management of the centralised endoscope disinfection section and the follow up of external sterilisation services.

Chemotherapy preparation FU: for over two years this unit has carried out all chemotherapy preparations, thus contributing to the security and quality of the drugs circuit.

The FU for Clinical Trials and Out-Patient Drug Dispensation is finishing a major reorganisation by moving into more adequate facilities that match the volume of activity of clinical trials and expanding computerisation. There has also been an increase in management activity and the traceability of the temporary use permits.

SiPAM – Pharmaceutical technology FU: created in late 2009 its remit is to give IGR a platform for drug and pharmacological analysis worthy of the challenges that go with personalised medicine.

Within the Nuclear Medicine and Endocrine Oncology Department, Radiopharmacy takes part in the quality of radiopharmaceutical drug traceability by providing supplies, preparations, checks, dispensation and the disposal of these products.

Activities in 2010

2010 was highlighted by a few key elements:

- management: a particular effort was made to rationalise orders (an overall drop of 21%) without changing the overall value of the stock
- the number of chemotherapy preparations stabilised at a very high level, making our Clinical Trials Unit one of the biggest in Europe
- the clinical trials activity is also stronger with a clear-cut evolution in the number of preparations dispensed that clearly shows the strong development of oral treatments.

Pharmacy	2009	2010
Number of drugs ordered	6,869	5,310
Number of authorised (AMM) injectable chemotherapy preparation	67,250	65,249
Number of preparations for clinical trials	7,402	6,259
Number of non-injectable preparations	1,633	1,775
Number of repackagings	9,536	6,240

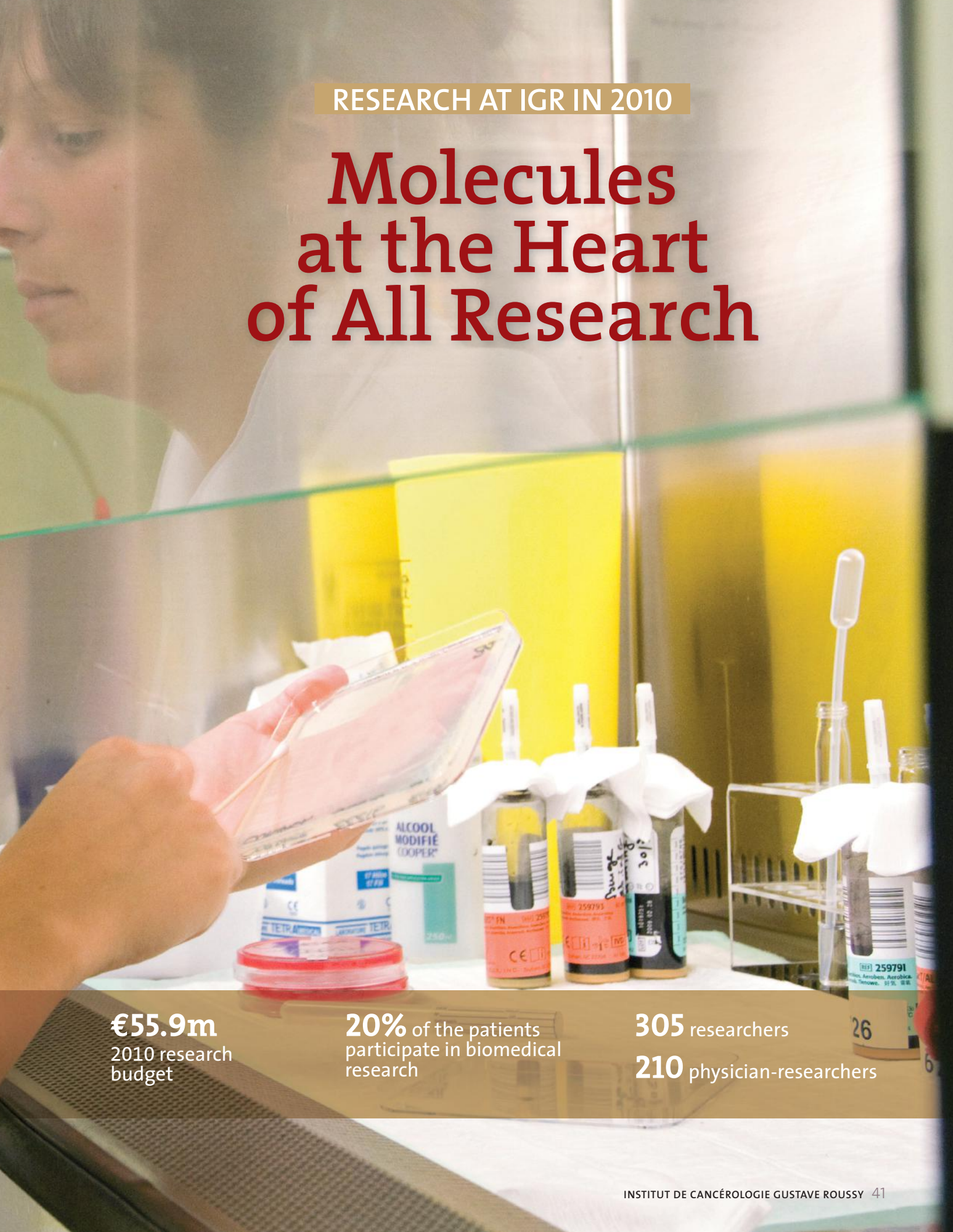
Person in charge Dr. François Lemare

In 2010, research at IGR was highlighted by two projects that led to a reorganisation of the tools shared by the 16 mixed-research units. On the one hand an increase in the number of molecular analyses of tumours by conventional and controlled technological approaches and, on the other hand, the implementation of new generation sequencing by the purchase of two sequencers.
As a result all technical platforms have become shared services for research.

IGR partners in research

> Université Paris-Sud 11 > CNRS > INSERM > Cancer Campus

Molecules at the Heart of All Research



€55.9m
2010 research budget

20% of the patients participate in biomedical research

305 researchers

210 physician-researchers

Research Teams Mobilised to Push Forward Personalised Medicine

The Institut de Cancérologie Gustave Roussy (IGR) pools the expertise needed to develop integrated cancer research, from basic to applied, from epidemiology to the clinic, from sociology to psycho-oncology. Researchers' and clinicians' goals alike are to enable cancer patients to benefit from research breakthroughs as quickly as possible.

The IGR Research Strategy is defined by the Research Division through its "Executive Committee", according to the recommendations of IGR's International Scientific Advisory Board. This strategy is implemented within:

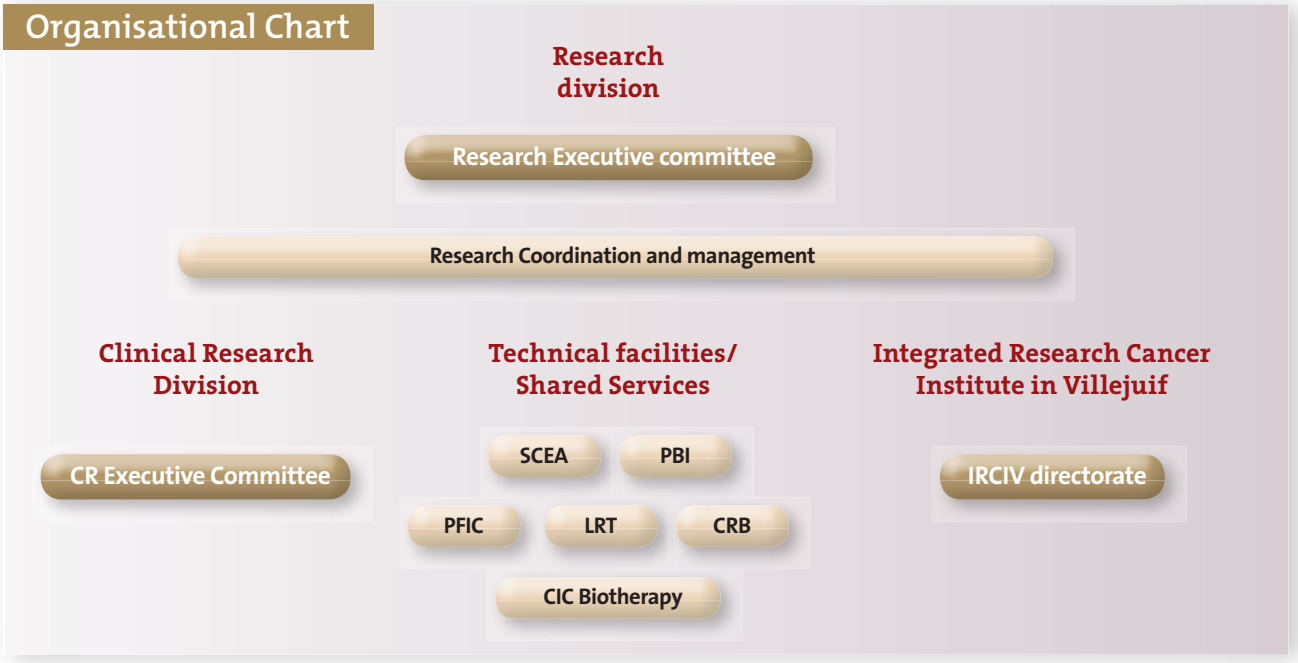
- the Integrated Research Cancer Institute in Villejuif (IRCIV)
- the IGR Clinical Research Division (DRC)
- the Common Technological Facilities whose use is shared between IRCIV and DRC

Organisation serving therapeutic innovation

The setting up of collegial governing bodies improves the synergies between the different fields of research (basic, epidemiological, clinical, translational, and technological) within the IGR and the interactions between the institute and its partners. The aim is to ensure the research continuum from bench to bedside.

Prospects

The 2009-2013 Corporate Strategic Plan will make the concept of personalised medicine a reality, that is to say a treatment guided by molecular biology and imaging. This project requires a suitable organisation, the implementation of cutting edge technologies such as next-generation sequencing, and the recruitment of new research teams dedicated in particular to bioinformatics, stem cell research and epigenetics.



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Science Policy Executive Committee ("Research Executive Committee")

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Éric Solary

William Vainchenker

Gilles Vassal

Laurence Zitvogel

Fabrice André, appointed to replace *Suzette Delaloge* or *Jean-Charles Soria*, when necessary.

MISSIONS

Definition of IGR's major science directions

Associated technological development

Recruitment of new research teams– junior and senior – and funding

Organisational aspects

Financial resources

Implementation of SAB recommendations

The "Research Executive Committee" meets every month and two of its meetings are joint sessions with the "Hospital Executive Committee" directed by Charles Guépratte.

Thomas Mercher
Researcher

Doing research at IGR means benefiting from a setting vital for effective and dynamic research...

Cancer research requires close scientific interaction between physicians in daily contact with their patients and basic researchers. That's why we joined IGR in 2010. We have benefited from support from the Fondation Gustave Roussy, which was very helpful in moving our young team in and developing our research projects on human leukaemia.
The determination to attract recognised new teams is also going to make it possible to continue developing effective and dynamic research.

2003
Thesis on human genetics
2010 (January)
Joins IGR
2010 (March)
Funding by the Fondation Gustave Roussy

Uniting doctoral and post-doctoral candidates to promote exchanges...

Bringing together doctoral and post-doctoral candidates from the different IGR-based research units (one of the strongest for research in the world) was one of the major events in early 2010 when the Association des jeunes chercheurs de l'IGR *(AJCI, IGR Young Researchers Association) was created with the goal of promoting exchanges about scientific and professional projects. It is nothing short of a major challenge. As a place of sharing science and hope, IGR is a fertile place for developing such co-operation.*

2009
Joins IGR in the UMR 8126 unit (internship)
2010
Masters in Genetics
2011
Elected Chairman of the IGR Young Researchers Association

Charles-Henry Gattolliat
Doctoral undergraduate and Chairman of the PhD/post-PhD Graduates

SCGR

Research Co-ordination and Management Department

The Research Co-ordination and Management Department was created at the same time as IGR's Research Department. It is composed of the main administrative support elements required to implement and steer all aspects of IGR's research as well as research projects. The SCGR is directly linked to IGR's administrative Departments and oversees that IGR's rules and procedures be complied with in its research setting. It is made up of two main entities:

Human Resources, staffed by a research personnel officer and an HR management assistant

Management/Finance, staffed by a research budget officer and a management assistant

Remits and Goals

The section's main remits are the following:

Personnel management (staff, careers, skills) of the Research services; permanent and temporary staff recruitment for research projects to guarantee compliance with legislation and budgetary envelopes; constant visibility of staff with a view to helping in decision-making and to guarantee that strategic decisions made by Departments be applied in matters concerning staff, welcoming internees and endorsing the administrative conformity of dossiers.

Research institutional budget management by elaborating the forecast budget and by optimising the use of available resources; carrying out and endorsing research project financial assessments; ensuring that resources be applied in compliance with contract rules; ensure the proper use of funds with funders; execute or endorse financial conventions between partners; invoice IGR research service activities and control internal and external financial flows; ensure fund management of the Fondation Gustave Roussy at IGR; ensure financial visibility with the General Administration and with institutional partners required for guiding the Institute's strategies and remits.

Activities in 2010

IGR's research budget for 2010 was €44.2m in expenditures (+9.2% over 2009), funded by, among others, €23m (+13.9% over 2009) external resources or MERRI on projects paid for in 2010. This corresponds to about 600 active project accounts (about 100 INCa and 50 PHRC/STIC).

Fund-raising for projects in 2010 was well supported, either from calls for tender, funding clinical trials, IGR&D contracts or various subsidies coming to over €40m of signed contracts, including about 30 new projects selected by the INCa (INCa and/or DGOS funding) and 70 industrial contracts funding therapeutic trials (sources: BRE 20100).

In staffing terms, the SCGR employs 200 permanent staff: 182 FTE paid for from external resources in 2010, or 170 new contracts and 300 trainees.

Director Prof. Éric Solary

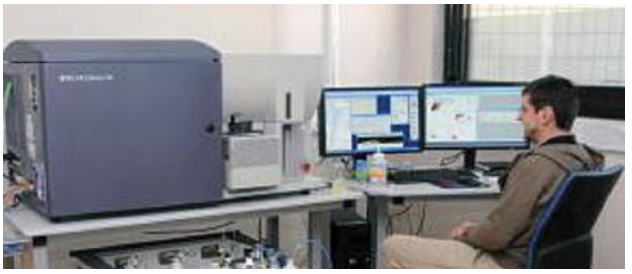
PFIC

Imaging and Cytometry

The PFIC, whose activity is not restricted to the teams within the IGR, is a service and development platform in photonic imaging as well as image and flow cytometry. In addition to the technical assistance brought to the scientists for the analysis of their samples, the engineers on the platform also advise on the implementation and the development of new tests in imaging and flow cytometry. Moreover, the PFIC ensures specific methodological and/or technical developments, in collaboration with the research teams and the engineers also bring their expertise for data processing and interpretation. In addition, this platform has an important mission, namely that of training students and researchers in the use of cytometry and imaging techniques.

In 2010

Thanks to support from the Région Ile-de-France and the Gustave Roussy Foundation, the PFIC was totally restructured and relocated in a new dedicated space of 300 sqm in order to pool the expertise and the dozen of last generation instruments installed on the platform (among which two high throughput cell sorters).
This year, the activity has also significantly increased both in terms of the performance of the service (+ 72%) as well as the training of the researchers in these technologies (226 hours of theoretical and practical training in flow cytometry and confocal microscopy).



Flow cytometry, cell sorting and cloning laboratory. ▲

Moreover, extensive industrial collaboration has been implemented to develop a new cellular imaging system for clinical purposes. (PERSEE Project).

Perspectives

In 2011, the PFIC will focus its activities of wide-field imaging and high throughput quantitative imaging as well as the development of high resolution in vivo imaging and the automation of image processing.

Scientific Manager Corinne Laplace-Builhé (PhD)
Team Muriel Abbaci (PhD) – Sophie Desnoulez Salomé Yann Lécluse – Philippe Rameau – Valérie Rouffiac (PhD)

PBI

Integrated Biology

The analysis of the complex mechanisms related to cancer now requires the integration of several areas of research. Thus, the Integrated Biology technical platform (PBI) was set up and comprises the proteomics, metabolomics, lipidomics and functional genomic platforms, as well as a bioinformatics unit.

In 2010

The functional genomics platform has been given the responsibility of setting up a high throughput sequencing unit. Moreover, in 2010, there has been an increase in the magnitude of activity related to the "Apprenticeship Tax" programme, of interaction with the translational research laboratory and the biological resources centre, as well as of the integration of the activities related to the Personalised Medicine Program.
The proteomics platform also participated in the "Apprenticeship Tax" programme by performing several projects.

The lipidomics Platform participated in the large European prospective study EPIC by studying, in 5,000 breast cancer cases and 5,000 control cases, the relationship between plasmatic fatty acids and the risk of breast cancer.
The metabolomics platform was implemented in summer 2010 and is completing the elaboration of protocols required for the services it is expected to provide.
An integrated biology pilot study which includes all the platforms started in autumn 2010.

Perspectives

Strategic orientations revolved around integrating proteomics, lipidomics and metabolomics activities with the same concept of service provided. The programme consists of the following:
- projects with various technological approaches on the same biological samples
- developing integrative bioinformatics tools
- the evolution of tools to analyse physiopathological pathways

Coordinator Dr. Vladimir Lazar
Managers Dr. Vladimir Lazar (functional génomics)
Prof. Guido Kroemer (metabolomics) – Vassily Ogryzko (proteomics) – Véronique Chajès (lipidomics)
Philippe Dessen (Bioinformatics)

SCEA

Joint Animal Experimentation Unit

Supply & analysis of animal models and in vivo techniques

Research report for 2010

This platform is dedicated to providing researchers at the Institute with adequate animal models of disease:

- As part of cognitive or mechanistic research
- Or to determine the effectiveness and safety of new therapeutic modalities in the cancer field

Specific techniques are being developed for researchers in the fields of cognitive and therapeutic cancer research, cancer-related immunity, radiotherapy, haematopoiesis, and innovative therapies. Animal models are mainly immune-deficient mice, used to create human cancer models after human tumour grafting, and transgenic animals for fundamental research on in vivo oncogenesis and anti-tumour immunity. Research undertaken with these models may also contribute to personalised cancer treatments.

Perspectives

The co-ordination of similar services has been implemented for the Université Paris-Sud 11, and the renewal was requested for 2012-2014 (P. Brousse, Kremlin-Bicêtre, Clamart-Beclère, Châtenay-Malabry, Orsay).

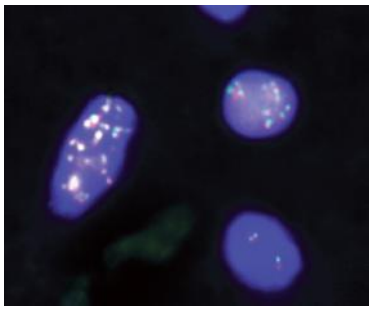
Animal cancer model housing isolators. ▲

During 2010/2011, housing means were and will be thoroughly increased (around 40%), by the acquisition of a significant number of individually ventilated cage racks. The total amount of transgenic mouse strains has significantly increased as well.

Head Dr. Patrick Gonin
Animal Resources Team Head: Patrick Gonin, DVM, PhD – Deputy head: Karine Ser-Le Roux **Experimental Pathology** Head: Dr. Patrick Gonin, engineer: Olivia Bawa

LRT

Translational Research Laboratory



▲ *ASPM staining in Ependymomas, Peyre M. et al. PloS one 2010.*

Objectives/Mission

Created in 2005, the Translational Research Laboratory (LRT) is composed of units dedicated to the implementation of the IGR translational research project in collaboration with clinical and research teams. On the one hand, a large part of activity is devoted to clinical trials and the Personalised Medicine Program. On the other hand the LRT units participate in research or technical innovation projects. The mission of the LRT is to ensure, through its fields of expertise, the cognitive research–clinical research continuum by aiming to transfer the latest findings as quickly as possible for the patients' benefit. In 2010, the Translational Research Laboratory participated in more than a hundred clinical or translational projects.

Activities in 2010

The Molecular Biopathology Unit (BMO) analysed about 120 tumours, with SeqCan panel, in the context of the Personalised Medicine Programme. It performed many molecular analyses for clinical trials or research projects. It also collaborated with surgeons and the Animal Experimentation Unit, in xenograft programmes (CREM & XenoSA) and the molecular characterisation established models ready for researchers to use.

The HistoCytoPathology unit (HCP) performed morphological analysis, starting from pre-analytical steps (fixation, slide preparation, TMA…) to most advanced analyses (histological/cytological characterisations, ImmunoHisto/CytoChemistry, FISH…) in collaboration with Pathologists or Cytogeneticians from IGR. In 2010 the HCP Unit participated in many clinical trials as well as several projects aimed at tissue biomarker analysis (e.g. MET amplification) and preanalytical and analytical steps for several biomarkers. The unit was also involved in a biomarker analysis project (e.g MET amplification) in several tumour types.

The Biology of Circulating Cells Unit (BCC) developed specific measurement methods for Circulating Tumour Cells and Circulating Endothelial Cells/Progenitors. It participated in the evaluation of prototypes through several collaborations; and many clinical trials analysing CEC/CEP or CTC. Moreover, the BCC unit co-ordinates with the other units, a LRT transversal project concerning the molecular characterisation of CTC linked to various clinical questions.

Person in charge Dr. Ludovic Lacroix
Persons in charge of the Units Dr. Jacques Bosq – Dr. Françoise Farace – Dr. Ludovic Lacroix – Dr. Philippe Vielh

L'Institut de recherche intégrée en cancérologie de Villejuif (IRCIV)

The *Institut de Recherche Intégrée en Cancérologie à Villejuif* (the Integrated Research Cancer Institute in Villejuif, IRCIV) is a federating research institute uniting Université Paris-Sud 11, the French National Health and Medical Research Institute (INSERM), the French National Scientific Research Centre (CNRS) and Institut de Cancérologie Gustave Roussy.

Directed by Professor Éric Solary, IRCIV is composed of 24 teams in 13 constituent units and 3 affiliated research teams. At the cutting edge of oncological research, these teams explore the mechanisms of the onset of malignant infections, the factors that predispose people to these infections and the role played by immunity and inflammation in their development. The teams look for therapeutic targets and markers likely to help in screening or treatment by developing, among other things, new technological imaging approaches. Working for IGR's overall strategy, the teams take part in the transfer of research activities towards clinical applications.

Examples of scientific progress

Haematology

After identifying mutations of the TET2 gene in the tumour cells of 15% of patients with myeloid haematology, UMR 1009 undertook the functional study of TET2 anomalies and continued studying the consequences of JAK2 mutations in preclinical models.
Using preclinical models, UMR 985 succeeded in showing that certain proteins (SFR and MRTF) control the motility, the number and evolution of haematopoietic stem cells and can be disturbed in malignant human haemopathies.

Immunology

UMR 753 showed the role of hypoxic stress in altering the lymphocytic effector function and in acquiring resistance to apoptosis.
UMR 848 discovered that a mutation in the coding gene for a receptor of the innate immune system (TLR4, toll-like receptor-4) exercises a strong influence on the immunogenic response of human colorectal cancers to chemotherapy with oxaliplatin.
UMR 1015 found the role of gramma/delta lymphocytes (producing the Intereukin-17s, immune system messengers) in the immunogenicity of apoptosis.

Biomarkers

UMR 981 identified 5 new molecular anomalies involved in the onset of breast cancer and is presently developing 3 new treatments specifically targeting these anomalies.

Oncogenesis

UMR 8126 highlighted the role of the nuclear architecture and its changes in the oncogenesis of mantle cell and Burkitt's lymphomas and the disruptive role played by the Epstein-Barr virus in this nuclear architecture.

Technology

UMR 8126 also developed a new technique for determining protein/protein and proteins/nucleic acid interactions in order to study the state of surface proteins in vivo. It also found new applications for the technique of analysing protein/protein interactions by "proximity biotinylation".

DNA repair

One of the UMR 8200 teams, which focuses on efforts to characterise the XP disorder, a genetic disease of hypersensitivity to the sun related to cancer incidence 2,000-fold higher than in the general population, discovered a characteristic mutation in North African patients.
Another UMR 8200 team working on a specific type of the XP disorder, the XP Variant (XP-V), demonstrated that the ATR/CHK1 pathway was crucial for stabilising the replication forks blocked by UV lesions in XP-V patients in the absence of the specialised polymerase eta.

> IMPORTANT MOMENTS

January 1st, 2010: Creation of the "*Predictive Biomarkers and new molecular strategies in cancer therapy*" research unit (UMR 981) headed by Fabrice André.

Spring, 2010: The units "*Signalling, Rho GTPases and tumour progression*" (UMR 749) directed by Jacques Bertoglio, and "*Tumour genetics*" (UMR 985), directed by Olivier Bernard, move into IGR premises.

November 2010: A 4-year extension of the IRCIV agreement signed by its partners.

Epidemiology

Thanks to information derived from its 100,000-woman cohort (E3N), team 9 of UMR 1018 was able to answer a certain number of questions, in particular about the factors linked to the risk of breast cancer such as hormonal treatments, food typologies, the characteristics of the metabolic syndrome, serum concentrations of fatty acids and vitamin D.

Team 3 of UMR 1018 completed a wide-ranging case-control study on the environmental and genetic risk factors for thyroid cancer in eastern France. It is presently being analysed.

IRCIV Board of Directors

Ex-officio Members

IRCIV DIRECTOR	*Éric Solary*	
UNIT DIRECTORS	*Fabrice André* – U 981	*Patricia Kannouche* – UMR 8200
	Olivier Bernard – U 985	*Guido Kroemer* – U 848
	Jacques Bertoglio – U 749	*Lluis Mir* – UMR 8203
	Jean Bourhis – UPRES EA 2710	*Joëlle Wiels* – UMR 8126
	Salem Chouaib – U 753	*Laurence Zitvogel* – U 1015
	Thierry Heidmann – UMR 8122	

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		Substitutes
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Guest Members Belonging to an External Team

Françoise Clavel-Chapelon – UMR 1018 team 3 – Hôpital Paul Brousse
Florent de Vathaire – UMR 1018 team 9 – Hôpital Paul Brousse
Nathalie Lassau – team from UMR 8081 – UPS Orsay

Standing Guests

Alexander Eggermont – IGR Director General
Charles Guépratte – IGR Deputy Director General
Gilles Vassal – Director of Clinical and Translational Research
Gilbert Lenoir – "Cancer Campus" representative
Isabelle Pelletier-Bressac – IGR&D Director
Martine Barray, Pierre Beuchet, Anne-Marie Cutino, Viviane Menguy – SCGR
Agnès Rabeux – IFR Co-ordinator
David Boucard – Representative
Virginie Joulin – Representative
Christine Scamps – Hygiene and Security

UMR 8203

Vectorology and Anticancer Therapies

Research report for 2010

On January 1st, 2010, the unit became the laboratory of Vectorology and Anticancer Therapies, UMR 8203 (CNRS – Université Paris-Sud 11 – IGR), directed by Lluis Mr Mir, DR1 CNRS. This new unit aims to explore new anticancer therapeutics and targets. Distinct therapeutic approaches are focusing on either the viral (Karim Benihoud), chemical (Angelo Paci – Claude Malvy) or physical (Lluis Mr Mir) delivery of nuclear acids or anticancer agents. New potential therapeutic targets have been identified and validated preclinically in paediatric neuronal tumours (Birgit Geoerger, Gilles Vassal, former Unit UPRES EA3535) or tumours with junction oncogenes, such as Ewing sarcoma and thyroid cancers (Liliane Massade). The viral vectorology group elaborated adenoviruses with modified capsids for antitumour strategies based on antiangiogenesis approaches. The nonviral vectorology groups develop physical methods for the delivery of nucleic acids and anticancer drugs (like the use of electric pulses of 100 microseconds duration: electrochemotherapy, electrotransfer of plasmids) or innovative chemical methods (for example, the squalenisation of oligonucleotides, siRNA or busulphan).

Perspectives

Significant interactions were developed in 2010 between the groups that have formed this unit. Besides the previous programs, opportunities exist for the use of ultrashort electrical pulses (lasting a few nanoseconds) for the imaging of cells in three nanoseconds and the generation of Raman spectra of cells exposed to physical disturbances, the use of nanodiamonds as agents for the targeting of siRNAs, the squalenisation of new molecules (ifosfamide), and for the understanding of the underlying molecular mechanisms. The viral vectorology group will continue to develop approaches for improved metabolic radiotherapy with iodine-131 and vaccination, and will assess the antitumour efficacy of oncolytic adenovirus-chemotherapy combinations. The development of new treatments of paediatric neuronal tumours will be continued.

Director Dr. Lluis Mr Mir
Research groups L.Mr Mir – K. Benihoud
C. Malvy/A. Paci – L. Massade – B. Geoerger

UMR 8122

Endogenous Retroviruses and Retroid Elements of Higher Eukaryotes

Research theme

Our laboratory is primarily interested in the study of both infectious and endogenous retroviruses in humans. We have identified a highly conserved domain within the envelope proteins of these elements, which are endowed with immunosuppressive properties and play a critical role in (i) enabling retroviruses to invade their host, (ii) allowing cancer cells to escape antitumour immune responses, (iii) contributing to the formation of the maternofetal barrier within the placenta of mammals. This research project, encompassing the fields of virology, oncology, immunology and development, offers insights into novel vaccine and therapeutic approaches that take into account the properties of newly characterised protein domains.

Research report for 2010

The year 2010 was marked by the characterisation of the immunosuppressive domain harboured by animal oncogenic retroviruses (e.g. murine MLV, feline FeLV) and of human (e.g. HTLV) origin, and the discovery of specific mutations leading to a marked increase in the immunogenicity of viral antigens (Schlecht-Louf et al., PNAS 2010), thus allowing the design of novel vaccine approaches (generation of an "optimised" veterinary vaccine against FeLV, through collaboration). The envelope proteins encoded by endogenous retroviruses involved in placentation (Dupressoir et al., PNAS 2009) were characterised further, with the generation of mice knocked-in specifically for the immunosuppressive activity of these proteins.

Perspectives

- Characterisation of the mechanisms of immunosuppression mediated by infectious and endogenous retroviruses of human origin at both the cellular and molecular levels
- Impact of the immunosuppressive function on (i) viremia of human pathogenic retroviruses (HTLV, HIV), (ii) cancer progression and tumour immune escape (melanoma, prostate and breast cancer models; role of the human endogenous retrovirus HERV-K), (iii) placentation and maternofetal tolerance under normal and pathological conditions (e.g. preeclampsia, intrauterine growth retardation, hydatidiform moles and choriocarcinomas)
- Design of therapeutic and vaccine approaches targeting the immunosuppressive domains (recombinant antibodies, vaccines)

Director Thierry Heidmann, DR1 CNRS

UMR 8126

Signal Transduction, Nucleus and Innovations in Oncology

Activities in 2010

In 2010, Pierre Busson and his team explored further tumour exosome content and functions in two different types of tumours (nasopharyngeal carcinomas and ovarian carcinomas). Proteomic analysis of various tumour exosomes has revealed nuclear proteins involved in DNA repair. The next aim is to investigate the link between the malignant phenotype and the extra-cellular release of these proteins. Jean Bénard and his team have analysed micro-RNAs in more than 200 neuroblastoma samples and delineated microRNA alterations predictive of the risk of disease relapse. These results should help to refine the prognostic classification of neuroblastomas. Joëlle Wiels' group has continued its studies on apoptosis of B cell lymphoma and on mechanisms of resistance to apoptosis exhibited by cells infected by the Epstein-Barr virus. Strategies are being developed to overcome this resistance. In mantle cell lymphoma, the group led by Yegor Vassetzky made use of the 3D FISH technique to demonstrate a drastic change in intranuclear localisation of the cyclin D1 gene following the specific t(11;14) translocation. Similar studies are ongoing for other lymphomas. Vasily Ogryzko and collaborators have developed a new proteomics approach termed "proteome footprinting", and set up several applications of Proximity-Utilizing Biotinylation. Using proteomic techniques Svetlana Dokudovskaya, an expert in the analysis of molecular complexes who joined our unit in March 2010, will work on the identification of molecular mechanisms of a novel tumour suppressor, NPRL2. Eric Le Cam and his team, in collaboration with Xavier Veaute (CEA), have shown the specific role of the Srs2 helicase 2B subdomain in the control of homologous recombination. The involvement of the different helicase domains in genome maintenance will be further analysed.

Directors Joëlle Wiels and Marc Lipinski
Teams Pierre Busson – Jean Bénard – Marc Lipinski
Svetlana Dokudovskaya – Vasily Ogryzko – Yegor Vassetzky
Joëlle Wiels – Éric Le Cam

UMR 8200

Genetic Stability and Oncogenesis

Main objectives

The main objectives of the unit are to identify the molecular responses and cellular consequences of exposure to genotoxic agents. Mutations in proteins involved in DNA repair often lead to genomic instability, a major component of the tumour process, and are responsible for rare genetic predisposition to cancer.

Research report for 2010

F. Rosselli's team, which is working on understanding the biological mechanisms affected in Fanconi anemia, showed the involvement of FANC proteins in controlling the activity of the CHK1 protein that regulates progression in the cell cycle and in the recombination process during viral replication. A. Sarasin's group focuses on the characterisation of the XP syndrome, a genetic disorder associated with a high predisposition to sunlight-induced skin cancer (2,000-fold higher than in the general population) and has revealed a mutation characteristic of patients from North Africa. P. Kannouche, who is working on a particular type of XP, the XP variant (XP-V), showed that the ATR/CHK1 pathway is crucial in the stabilisation of replication forks blocked by UV damage in XP-V patients in the absence of the specialised polymerase eta. Mr Saparbaev's team, which is studying alternative pathways involved in the repair of oxydized bases, has characterised the mechanism of nucleotide incision by human and E. coli AP endonucleases. Finally, C. Dupuy's team which is working on the impact of reactive oxygen species on thyroid carcinogenesis, showed that NADPH oxidase 4, an H2O2 generating system is a critical mediator in the response to DNA damage induced by HRASV12 which is expressed in follicular thyroid cancer.

Director Patricia Kannouche
Teams F. Rosselli – C. Dupuy – Mr Saparbaev
S. Aoufouchi – P. Kannouche

UMR 753

Human Tumour Immunology: Cytotoxic Effector-tumour System Interactions

The unit project was focused on three areas of research with the primary objective of incorporating tumour biology into innovative immunotherapy approaches. A new team specialised in the genetics of renal cancer (RCC) and headed by Prof. Stéphane RICHARD, joined the Unit in January 2010.

Major achievements in 2010

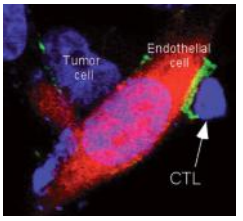
Tumour antigens and T-cell reactivity: We have demonstrated that the α_E(CD103)β_7 integrin plays a unique role in T-cell adhesion to epithelial target cells and that it provides a costimulatory signal for tumour-specific CTL activation. It is induced on the surface of tumour-infiltrating T lymphocytes upon TCR engagement and TGFβ1 secretion within the tumour microenvironment. We have also demonstrated in a murine cancer model that the TCR inhibitory molecule CD5 plays a major role in the regulation of antitumour CD8+ T-cell immunity.

Tumour cell lysis and the influence of the tumour microenvironment: regulation and resistance: We were particularly interested in investigating the regulation of the cytotoxic response by the tumour microenvironment with particular emphasis on the influence of hypoxic stress and the endothelial system.

We have shown that hypoxia stress negatively impacts the antitumour response by affecting effector T cell function and contributing to the acquisition of tumour resistance to CTL-mediated cell death. The role of FasL in shaping the tumour microenvironment was also investigated.

Translational research: Anti-leukemic potential of allogeneic NK cells for the treatment of leukemias.

Biology and genetics of renal cancer: 1) We have identified a large number of novel *FH germline* mutations in patients with hereditary leiomyomatosis, a disease associated with a risk of very aggressive renal cancer and demonstrated that RCC can be the only manifestation; 2) we have also functionally characterised novel *VHL* and *PHD2* mutations; 3) our team is associated with the identification of a new major gene involved in sporadic clear-cell RCC.



Recognition of an endothelial cell by a tumour-specific cytotoxic clone. ▲

Perspectives

Besides the development of innovative vaccine approaches acquired through basic findings, we will focus on the elucidation of the dialogue between cytotoxic effectors and stromal tumours (RCC and melanoma) as well as the in vivo targeting of stress associated pathways. Team 3 will focus on the molecular signature of hereditary and sporadic renal cancer, including the search for predictive biomarkers, and the functional characterization of mutants of the HIF pathway.

Director Dr. Salem Chouaib

UMR 1009

Normal and Pathological Haematopoiesis

The Université Paris-Sud 11/Inserm unit 1009 "Normal and pathological haematopoiesis", directed by Eric Solary, was created in January 2010 replacing the Université Paris-Sud 11/Inserm unit 790 "Normal and leukaemic haematopoietic stem cells", headed by William Vainchenker.

Research report for 2010

After having identified mutations in the TET2 gene in tumour cells of 15% of patients with a myeloid malignant disease and a germinal mutation in the CSFR3 gene involved in a familial chronic neutrophilia in 2009, the team has initiated functional studies of TET2 protein and the consequences of its deregulation, together with Olivier Bernard's team in UMR 895. Work published in 2010 deals with senescence and normal megakaryocytic differentiation, the function of Aurora B in in the differentiation of this cell line, the role of TGFb in the homing of hematopoietic stem cells and the consequences of JAK2 mutations explored in a murine model. The teams also explore the myeloproliferative and myeloproliferative/myelodysplastic diseases at the cellular and molecular level, and the generation of normal, e.g. from ES cells, and pathological monocytes.

Perspectives

In 2011, the three teams will further explore various aspects of normal myeloid cell differentiation, including megakaryocytes and platelets, erythroid cells and monocytes, and their deregulation in acute and chronic haematological diseases, with a special interest in the role of genes whose germinal or somatic mutation was identified in normal haematopoiesis.

Director Prof. Éric Solary
Teams Dr. Fawzia Louache – Dr. William Vainchenker
Prof. Éric Solary

UMR 985

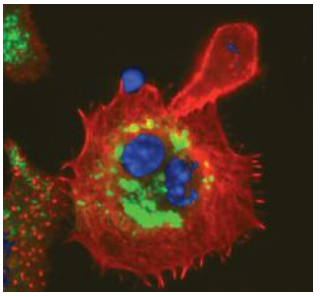
Genetics of Tumours

Research report for 2010

The team is continuing the functional characterisation of different molecular abnormalities identified in human malignancies. We are studying the activity of the SRF and MRTF proteins which are essential for the interaction between hematopoietic stem cells and their direct microenvironment (marrow stromal). As shown by our analysis of conditonal mouse models, these genes control motility, the number and fate of these stem cells and may be deregulated in human malignancies. Acute myeloid leukemia with megakaryoblasts (M7) is a heterogeneous subtype of acute leukemia whose molecular bases are poorly understood. We are continuing our characterisation of M7 by comparing a mouse model of oncogene expression OTT-MAL fusion specifically found in M7 with data obtained in humans. This year, we have developed several xenograft models of human M7 cells in immunodeficient mice.

Perspectives

This allows us: 1- to search for OTT-MAL targets, 2- to identify new genetic defects, 3-to test new therapeutic approaches for M7 through collaboration.

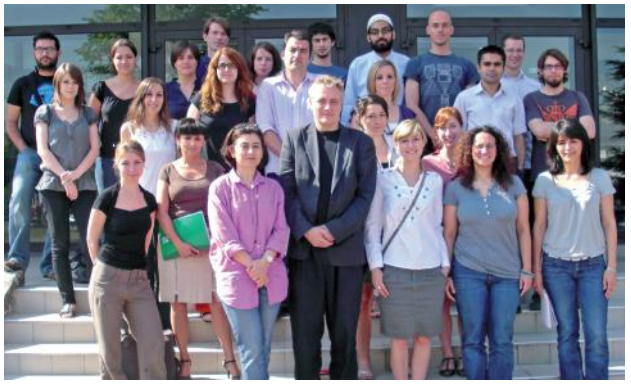


Megacaryocyte attached to a fibronectin matrix. ▲

Director Olivier Bernard

UMR 848

Apoptosis, Cancer and Immunity



Research report for 2010

Our Unit has progressed in several areas:

Autophagy and cell death: In accord with the hypothesis that autophagy is rarely (or perhaps never) responsible for cell death, we observed that the pharmacological stimulation of autophagy augments the longevity of several model organisms and human cells in vitro. We discovered that resveratrol or the genetic activation of sirtuin 1 increase longevity and protect human cells against stress *via* the induction of autophagy. We also found that the IKK complex (which is required for the activation of NF-kappaB) is necessary for the stimulation of autophagy both in vitro and in vivo.

New functions of p53 and Mos in depolyploidization. Tetraploid cells can be metastable precursors of cancer cells. We discovered that tetraploid cells can reduce their chromosome content by multipolar divsions that give rise to pseudo-diploid daughter cells. We found that the process of depolyploidization functions like a genetic lottery leading to the near-to-random distribution of chromosomes. This lottery is under the control of two important genes, the tumor suppressor gene p53 (depolyploidization requires the inactivation/deletion of p53) and the oncogene Mos (depolyploidization requires the aberrant expression of Mos). We found that Mos, a gene that is normally only expressed during meiosis, is expressed by genetically unstable p53-negative tetraploids and that its presence can inhibit the chromosome coalescence that is required for the bipolar division of tetraploid cells. To facilitate the study of mitotic catastrophe that often results from the asymmetric division of tetraploids, we developed a semi-automatic videomicroscopic system that detects aberrant mitoses.

Immunogenic apoptosis. We propagate the hypothesis that anticancer chemotherapy only leads to long-term success if it induces an immune response against dying tumour cells. We found a polymorphism in the gene coding for TLR4 (Toll-like receptor-4), a receptor of the innate immune system that has a strong influence on the response of human colorectal cancer to oxaliplatin-based chemotherapy. We deciphered the mechanisms responsible for the exposure of calreticulin on the surface of dying tumour cells, knowing that calreticulin exposure is one of the signs of immunogenic cell death. We developed a semi-automatic videomicroscopic assay to quantify the exposure of calreticulin on the cell surface, and we have used this system to screen chemical libraries and to identify agents that induce calreticulin exposure in the presence of cisplatin (which in contrast to oxaliplatin induces non-immunogenic cell death). This procedure led to the identification of thapsigargin (an inhibitor of the SERCA pump of the endoplasmic reticulum) as an agent that induces the immunogenicity of dying cancer cells.

Perspectives

These results will contribute to personalised cancer therapy.

Director Dr. Guido Kroemer

UMR 1015

Tumour Immunology & Immunotherapy

Research report for 2010

The unit U1015 INSERM embarked on the study of the biology of dendritic cells (DC) and the effectors of antitumour immunity to design innovating vaccines. The description of the immunogenicity of DC exosomes led us to launch a Phase II clinical trial in inoperable non small cell lung cancer. The discovery of the immunogenicity of cell death generated by some chemotherapies or tyrosine kinase inhibitors made it possible to describe new predictors of response to conventional antitumour therapies and to find compensatory therapies to improve the response rate. Thus, the description of the role of TLR4, P2RX7/NLRP3 and of IL-17 producing γδ T cells and IFNγ producing αβ T cells in response to anthracyclines and oxaliplatin could modify the treatment of patients carrying breast or colon cancer respectively. The impact of NK lymphocytes in the course of Glivec-treated gastro-intestinal sarcomas (GIST) is pivotal and allowed us to describe a new prognostic factor, the isoforms of the receptor NKp30 (published in Nat. Med.). These insights will be implemented in the clinical management of GIST at IGR.

Person in charge Prof. Laurence Zitvogel

UMR 749

Intracellular Signalling, Rho GTPases and Tumour Progression

Research theme

During the development of the embryo, a number of cells undergo morphological changes known as epithelial-mesenchymal transition (EMT), a process whereby they lose their adhesion and acquire migratory properties to colonise distant areas of the embryo. Similar changes occur during tumour progression and underlie the formation and dissemination of metastases.

Metastasis also involves increased resistance to cell death induced by activation of death receptors or by loss of adhesion.

Tumour aggressiveness and metastases are caused by deregulation of the signalling machinery that controls the survival and the division of normal cells. We have been studying the expression and activity of several oncogenes and tumour/metastasis suppressor genes. Our programs are analysing how these genes are involved in colon cancer progression.

Amongst the genes we are studying, GTP-binding proteins of the Rho family have been identified as essential regulators of the actin cytoskeleton, which controls cell morphology and motility. Rho GTPases mediate these functions through a large array of effector proteins, and are themselves regulated by GDP/GTP exchange factors (GEF) and GTPase inactivating proteins (GAP). Our research here aims at understanding the role of Rho GTPase signalling pathways in oncogenesis and cell migration.

Director Dr. Jacques Bertoglio, Research Director INSERM
Teams Jacques Bertoglio, DR1 INSERM – Josiane Pierre, DR2 INSERM – Joël Raingeaud, CR1 CNRS – Martine Pomerance CR1 INSERM – Muriel David, Junior INSERM – Sophie Cotteret, Post-doc ARC – Aurélie Cadet, M2 student – Rama Ibrahim, PhD student – Catherine Crouin, IE INSERM – Martine Letourneur, AI INSERM
Kadhie Kouyate, AJT INSERM

UMR 981

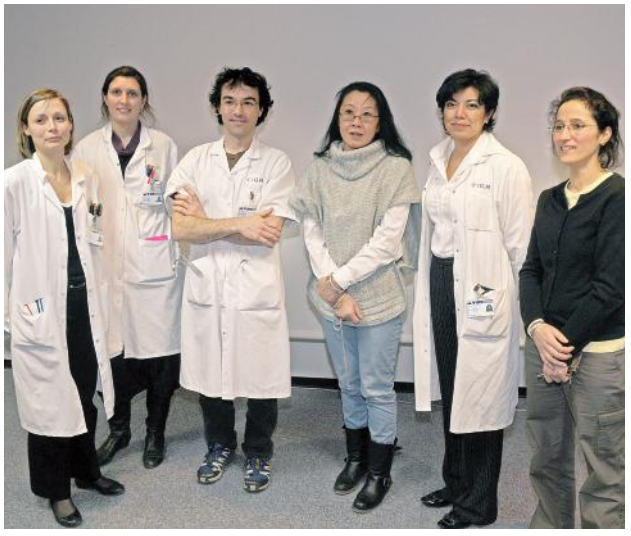
Predictive Biomarkers and New Therapeutic Targets in Oncology

Research theme

The goal of the unit is to identify and to validate predictors for cancer outcome, including the prognosis and treatment. This includes the discovery of new therapeutic targets, mechanisms of resistance to conventional treatments and the development of new technologies to monitor treatment response. The projects focus on lung, prostate, gastrointestinal and breast cancers.

Perspectives

The unit was created in 2010. One of its mid-term goals is to launch biology-driven trials and to develop personalised medicine in oncology. Moreover, our CANTO project for the establishment of a cohort dedicated to the study of the chronic toxicities of cancer treatment in patients with localised breast cancer was selected through the call for proposals "Cohorts" of the program "Investments for the Future".



Director Dr. Fabrice André
Teams Jean-Charles Soria (professor) – Jean-Charles Ahomadegbe (MCU) – Anne Chauchereau (INSERM researcher) – Valérie Boige (clinician, GI cancers) Ken Olaussen (PhD) – Stephan Vagner (INSERM)

UMR 1030

Molecular Radiotherapy

Research theme

Radiotherapy is the second most important treatment modality after surgery in the treatment of cancer, and sixty to seventy percent of cancer patients are treated with radiation therapy in France. One great challenge of modern radiation therapy is the development of individualised treatment regimes by increasing the tolerance of normal tissues and the enhancement of tumour local control. In this context, our translational research unit aims at developing new-targeted therapies in combination with radiotherapy and our previous research has provided the rationale for several clinical trials conducted now at IGR (PHRC 2006/2009/2010).

Research report for 2010

We previously explored the molecular mechanisms involved in normal tissue response to radiotherapy and were the first to show the activation of the Rho/ROCK/CTGF signalling cascade in radiation induced fibrosis. Interestingly, this pathway can be targeted with a drug called pravastatin that prevents and reverses experimental radiation fibrosis (currently assessed in a clinical trial). More recently, we explored further the complex scarring aspects of tissue response to ionising radiation and postulated that radiation-induced stromal activation, desmoplastic reactions surrounding tumours and even metastatic dissemination might depend upon this common scar-healing signal. In addition, the involvement of survival oncogenic signals in the modulation of tumour radioresistance is being explored and a new model of residual disease induced by radiotherapy is being developed in order to study radiation resistance of cancer stem cells.

Director Prof. Jean Bourhis
Teams Dr. Marie Catherine Vozenin – Prof. Éric Deutsch

UMR 1018 Centre for Research in Epidemiology and Population Health

TEAM 3 Epidemiology of Cancer : Radiocarcinogenesis & Iatrogenic Effects of Anticancer Treatments

Research report for 2010

In 2010, we completed dispatching the 1st questionnaire of the Euro2K cohort, which includes 4,500 children cured for at least 3 years of a cancer treated before 1986 and followed up for approximately 30 years. We began the study of the risk factors for secondary cancers, and cardiac and cerebrovascular diseases occurring a very long time after treatment. These 3 types of diseases alone explain more than 90% of the very high excess mortality observed among survivors of a childhood cancer. One of our most important results is the characterisation of the role of radiotherapy and chemotherapy in the risk of developing different cardiac diseases. Except for valvulopathies, which seem more radiation-specific, the risk for cardiac diseases are the amount of radiation received by the heart, anthracyclines, and to a lesser extent, alkylating agents. We also established a link between the amount of radiation received by the brain during radiotherapy and the risk of cerebrovascular disease. Chemotherapy does not have a clear role in the occurrence of these diseases.

In 2010, we also completed a wide case/witness study on the environmental and genetic risk factors for thyroid cancer in Eastern France, whose analysis is ongoing.

Person in charge Florent de Vathaire – DR1 INSERM
Teams Carole Rubino – Ibrahima Diallo – Nadia Haddy – Chiraz El-Fayech – Angela Jackson – Stéphane Maillard Enora Cléro

TEAM 9 Nutrition, Hormones and Women's Health

Research theme

Cancer epidemiology. Our research group studies cancer risk factors, in particular dietary and hormonal factors, using data from the E3N cohort, which included 100,000 female volunteers, aged 40 to 65 years in 1990, and followed up through nine questionnaires on lifestyle (diet, anthropometric characteristics, physical activity, alcohol, smoking, use of hormonal treatments, etc.) and health status. All cancers reported since baseline are histologically confirmed and annotated.
Between 1994 and 1998, around 25,000 women in the cohort gave a blood sample, allowing a biorepository of blood fractions (serum, plasma, DNA, erythrocytes) to be set up. In addition, in 2010-2011, over 50,000 women gave a saliva sample, resulting in around 75,000 women for whom DNA extraction will be possible.

Research report for 2010

With this large and detailed database, our team has been able to answer various scientific questions, mostly, on risk factors for major diseases in 2010. For instance, in relation with breast cancer, we studied the use of hormonal treatments, dietary patterns, characteristics of metabolic syndrome, serum fatty acid concentrations, and serum vitamin D concentrations. In relation with thyroid cancer, we analysed the anthropometric characteristics; with skin melanoma, we analysed the history of endometriosis and hormonal factors; with colorectal adenomas, we analysed weight gain.
We have published around 300 peer-reviewed articles relying on data from the E3N and/or the EPIC (European Prospective Investigation into Cancer and Nutrition) cohorts (E3N is the French part of EPIC).

Perspectives

We will follow-up the analyses of the E3N cohort, notably by i) studying relationships between dietary habits, anthropometric characteristics, physical activity, and other cancer sites, ii) studying factors related to cancer recurrence and survival, iii) setting up a tumour bank of cancers diagnosed among E3N participants.
In addition, our project of a new cohort, named "E4N" (for Epidemiology 4 kNowledge) was selected for an "investment for the Future" grant from the French Ministry for Research.

Head Françoise Clavel-Chapelon, DR1 INSERM

Certified Research Units

CERMES (INSERM-CNRS-Ehess)

Projet COMPAQ-HPST

Coordination for Performance Measurement and Quality Assurance (Hospitals, Patient, Safety, Territory)

Research theme

Research project aimed at developing quality indicators in health care and analysing the effective use of these indicators (Quality improvement in Health Care Organisations, Public Disclosure, Payment according to Performance).

Research report for 2010

- Transfer for national diffusion to Ministry of Health and High Authority for Health of validated Quality indicators (as a result, 27 indicators developed by Compaq-Hpst have been diffused nationally)
- Pursue the development of validated quality indicators on the following themes: psychiatry, emergencies, breast cancer, post-partum haemorrhage, screening for alcohol-dependent patients, haemodialysis, stroke, diabetes, heart attack
- Two reports: a report on patient experience, and a report on composite scores

- Administration of a questionnaire of key factors on health improvement based on Quality measurement

Perspectives

The current issues are:

- To develop Hospital indicators identified as priorities by health institutions
- To develop managed care and outcome indicators
- To continue research, particularly into the use of indicators inside the establishment and the possibilities of developing composite scores

In addition, an ANR project aimed at analysing new effective ways to use Quality indicators will begin in 2011 with the participation of 4 research teams (Essec, Cnam, Montréal and Cermes). Etienne Minvielle will co-ordinate this project.

Director Dr. Étienne Minvielle (CNRS Economics/ Management/gestion)

UMR 8081 Medical Magnetic Resonance and Multimodality Imaging (IR4M)

TEAM 5 Multimodality Imaging in Oncology

Research focus

- To develop multimodality imaging tools with a strong link with engineering
- To develop knowledge and the tools to characterise the tumour microenvironment by integrating biology and imaging

The objective of this strategy is the transfer results into clinical applications in oncology.

Research report for 2010

- **Reinforcement of some areas of expertise** (image processing, modelling, photonic imaging, computer science) through recruitment or partnerships. Creation of a research interface with histocytopathology
- **Three imaging platforms are operational:** Cellular imaging and cytometry – IGR (Corinne Laplace-Builhé), Image processing and modelling (Jérémy Coulot), Ultrasonography for small animals (Ingrid Leguerney)
- **Enhanced value**

– Patent registered with an exclusive license for Toshiba: "Method and system for quantification of tumour vascularisation"

– Diffusion of the methods developed in the laboratory and nation-wide evaluation within the STIC "Innovation in cancer imaging" framework. 539 patients included in 19 centres with 2 000 DCE-US and 1 200 CT-scans stored in a unique database located at IGR

- **Partnerships**

– Academic: The EPITA Research and Development Laboratory, INRIA – modelling and simulation for biology and medicine team (D. Drasdo, I. Vignon-Clément)

– National companies: TRIBVN (Transmatch project) and Maunakea tech (MEC-ORL project)

– International companies: Toshiba Japan, Bracco, Philips USA, Hoffman-Laroche, Astra-Zeneca, VisualSonics

Perspectives

2011: integration in the IRCIV of the entire IR4M including 5 teams "Medical Magnetic Resonance and MultiModality Imaging" (UMR 8081), Director: Luc Darrasse, Co-Director: Nathalie Lassau.
2 locations: IGR and ORSAY University
5 MRI: from 0.1 Tesla to 9.4 Tesla

Director Dr. Luc Darrasse **Joint-Director** Dr. Nathalie Lassau
Team Dr. Nathalie Lassau

A Company for Enhancing Oncology

Founded on August 1st, 2000, IGR&D is a limited liability company with a capital of €200,200. The main stakeholder is IGR at 98.8%. It is chaired by Prof. Alexander Eggermont, IGR's Director General.

IGR&D is dedicated to transferring innovative oncology technologies with a brief to acquire all intellectual property or industrial elements relating to it and transfer all technology, expertise and/or skills emerging from research laboratories and hospital departments to the regional, national or international industrial ecosystem for the ultimate benefit of patients *via* transfer contracts, licenses, partnerships or company creation. IGR&D thus favours industrial partnerships as being the active interface between researchers, especially inventive or highly skilled physicians and drug or biomedical companies. This activity generates financial return for research and caregiving teams, thus enabling the funding of new programmes.

Research enhanced value

Enhancing the value of research is a general term that includes not only the transfer of technology, know-how and research laboratory skills but, more broadly, all activities that link laboratories to the economic and social spheres. Enhancing the value of research is done in the following ways:

- Publication of findings
- Training and teaching
- Researcher mobility
- Partnerships (contracts) with public or private entities
- Marketing research findings, e.g. patents protecting intellectual property, to existing companies or start-ups
- Company creation

A multidisciplinary team focusing on industrial and scientific skills

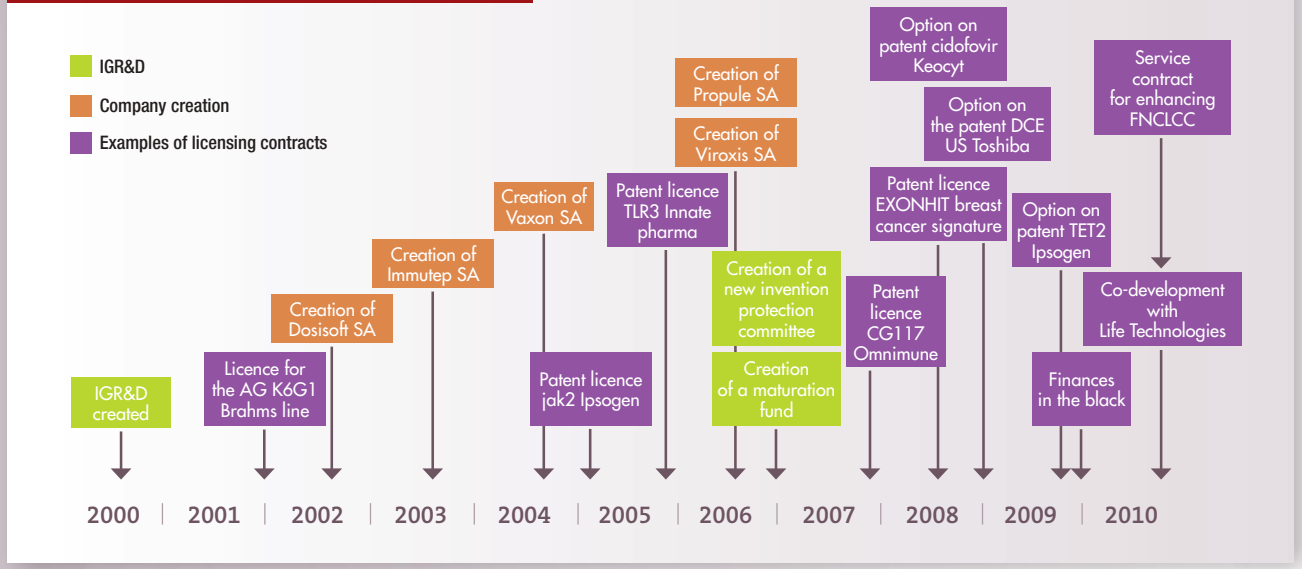
IGR&D relies on a multidisciplinary team of 6 collaborators, specialists in oncology, with experience in both the industrial world and academic research. Their being located on IGR's campus amidst the research facilities (PR2) is a real advantage and enables special relations with the venue's researchers and physicians.

Highlights and outlooks

IGR&D celebrated its tenth anniversary on September 13th, 2010. On the strength of its experience IGR&D now manages a portfolio of nearly 100 families of patents, owns over ten active patent licensing agreements and has mentored the founding of six companies based on IGR innovations.

IGR&D's aim is to become a unique front office of proximity for all IGR staff, develop services with other partners specialising in oncology, continue its participation in company creation by collaborating closely with Cancer Campus and especially transferring therapeutic and diagnostic innovations for the benefit of its patients.

IGR&D, 10 Years of Added Value



Clinical Research

The Clinical Research Department (DRC) was created on January 1st, 2011. With Professor Gilles Vassal in charge, it implements IGR's clinical research strategy with the integration of care and research remaining one of the core values in the Institute's Corporate Strategic Plan.

The DRC does diagnostic research, therapeutic research, psychological, sociological and health economics research and all research involving patients. The clinical research strategy is deployed in the committees and departments through four main programmes:

- Develop new anti-cancer agents and their efficacy biomarkers by relying on efficient upstream research
- Prove the concept of biology- and imaging-driven treatments
- Assess innovation's psychosocial and medical/economic impact and new patient and family treatments
- Develop technological innovations to improve locoregional treatments

The DRC relies on a clinical research steering committee and implements the following:

- The Institute's clinical research strategy
- The industrial policies and academic partnerships likely to reinforce it
- A policy for improving quality and performances
- Promoting scientific projects and the Institution on a European level
- Links between clinical research teams and the technical platforms structured around the Research Department

◀ *In 2010 20% of our patients participated in biomedical research.*

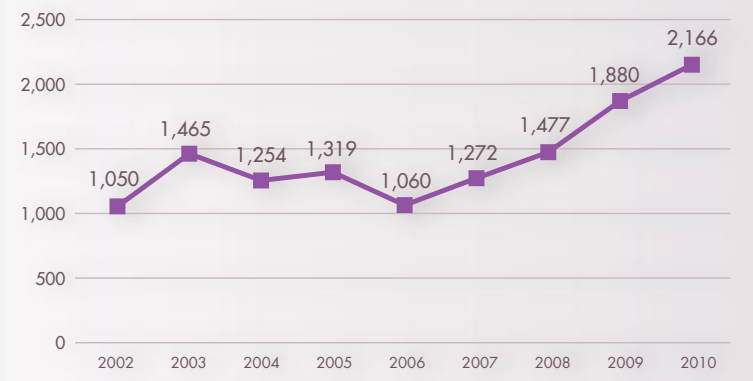
DRC organisation

To attain these goals, the DRC relies on the multidisciplinary committees and the clinical and medical/technical departments as well as on its own sections:

- **The promotion and partnership section**, which deals with submissions to the regulatory agencies, logistics, monitoring and funding of the clinical trials promoted by

Key Data

The number of patients participating in biomedical research



10,796 patients treated for a malignant tumour in 2010

2,166 patients included in biomedical research in 2010

20% patients participating in biomedical research in 2010

800 hits per week on the IGR clinical trials website

IGR, whether they be national, European or international.

- **The biostatistics and epidemiological section** devotes part of its activities to designing trial methodology–data management, their analysis and publication of their findings, especially for all trials promoted by IGR – and developing methodological and statistics research in genomics in the early trials and metaanalyses.
- **The clinical research operations section (SORC)**, created on March 1st, 2011, supervises the operational definition of all trials, whether institutional or industrial.
- **The European and international affairs section** manages IGR team participation in European-wide research projects.
- **The human and social sciences research unit** develops research projects on the social aspects of cancer.

The two priority projects in 2011

Implement the pangenomic tumour molecular portraits to guide the therapeutic choice. This means implementing a fluid organisation at the core of the hospital in a research and assessment area that enables it to suggest orientations for the proposed therapy (in case of failure of standard treatment) *via* the anomalies that characterise their tumour. The goal is to make a molecular portrait for a therapeutic decision in less than 3 weeks. It also means creating a clinical and biological database of nearly 2,000 patients in three years that will be treated at IGR by new anticancer agents presently under development.

Improve the quality and performances of clinical research by focusing research on innovative and strategic trials, improving the match between resources and projects and by implementing a training programme. The information system required for this guidance to be effective will be developed.

Reconciling innovation and budgetary constraints...

The economic assessment of health strategies takes into account the double dimension of costs and health benefits. When innovation translates into a better survival rate, society is ready to pay the additional costs. It is up to us to provide this information and spread the innovation when the cost-effectiveness is favourable. It is what we did, for example, with intraperitoneal chemotherapy.

Julia Bonastre
Health Economist

2002
Joins IGR
2007
PhD in economics
2010
Teaches "Economic Assessment in Health Strategies" (Univ. Paris 12 – ENSAI Rennes)

Europe

IGR strengthened its European partnerships by becoming a partner in and co-founder of two excellence networks as part of the 7th framework research programme of the European Union. The EurocanPlatform is a network of 28 European partners who will create a translational and innovation research platform for adult cancers. The ENCCA (European Network for Cancer Research in Children and Adolescents) is a network of 34 institutes that will structure European paediatric oncology research for the two coming decades.

Clinical trials at IGR

With impetus from the Clinical Research Department, the annual number of patients participating in biomedical research grew in five years from 1,060 to 2,166, from 10 to 20% of the patients treated for a malignant disease.

This is a remarkable result, placing IGR among the leaders in Europe. It is a tribute to our teams' motivation and their exponential efforts to contribute therapeutic and diagnostic innovation to patients by combining treatment and research.

The trials, which increased from 195 to 289, have become significantly heavier and more complex with regulatory requirements becoming stricter and hospital activity increasing in a major way. The situation will grow in complexity as molecular diagnosis transforms common malignancies (breast, pulmonary, colon cancers, etc.) into numerous rare biology-defined diseases. Which is why improving performances and quality is at the core of reorganizing clinical research operations now implemented by the SORC.

IGR-Promoted Clinical Research

Since 2005 IGR has considerably strengthened and expanded its capacity to encourage biomedical research thanks to Carole Lafontaine, her team and all IGR researchers with innovative projects.

Between 2005 and 2010, 55 IGR-promoted trials were either completed or are still being monitored. They recruited 6,947 patients, 2,668 of whom at IGR.
In 2010 49 active trials recruited 673 patients at IGR (or 31% of all patients participating in research).
This research is underpinned by the methodological and statistical expertise in the Biostatistics & Epidemiology Unit (Ellen Benhamou) and the Pharmacosurveillance of Clinical Trials Unit (ISO9001 approved), the only certified unit in a French academic institution.
Some of the following research has changed medical practices and standard treatments:

- The development of intra-peritoneal hyperthermic chemotherapies (CHIP) by Dominique Elias and his team, which has transformed the prognosis of patients with peritoneal metastases (JCO 2009 and 2010).
- Chemotherapy with Busulfan/Melphalon, designed by Olivier Hartmann at IGR in the 1990s has been shown to be significantly superior to the American standard (Carboplatin/Etoposide/Melphalan) for children with high-risk neuroblastomas. The findings of the European phase III trial, in which Dominique Valteau-Couanet is the main co-investigator, were presented during a plenary session at the ASCO 2011 Congress.
- Contrast-enhanced Doppler ultrasound which provides an early assessment of response to antiangiogenic treatments, a project led by Nathalie Lassau as part of a STIC programme.

The trials are multicentric in over 80% of the cases deploying in France and Europe. IGR is in fact the co-ordinating promoter of two European trials and in 2011 is preparing to co-ordinate the promotion of six new international trials.

Rituximab: a phase III trial of Rituximab in childhood Burkitt lymphomas.

Firstmap: a randomised phase II double-blind trial assessing Sunitinib vs. placebo for the treatment of advanced progressive pheochromocytoma-paragangliomas.

Abiraterone: a randomised phase III study of an androgen inhibitor with or without abiraterone in patients with metastatic prostate cancer.

Bingo Phase III: extension in Phase III of the randomised Phase II trial comparing the impact of Gemcitabine/Oxaliplatin chemotherapy with or without Cetuximab in patients with advanced cancer of the bile ducts.

▲ *IGR is one of the leading academic promoters of clinical research in France.*

CUP: a randomised Phase III trial on treating carcinomas of unknown primary with Cisplatin/Gemcitabine chemotherapy or a treatment based on the findings of a pangenomic molecular analysis.

O3K: a bioequivalence trial of an oral liquid form of Cyclophosphamide for the treatment of relapsed or resistent paediatric solid tumours.

Each trial promoted by IGR is funded as part of an industrial partnership, a European contract, a PHRC or a STIC. Since 2005 IGR has obtained 41 PHRCs, 28 of which include a therapeutic trial.
Having become one of the primary academic promoters of clinical research in France, IGR actively participates in co-ordinating institutional promoters and in several working groups on revising the European directive on clinical trials and pharmacosurveillance.

Why does IGR promote clinical research?

- to accelerate the clinical application of on-site discoveries in basic research
- to be on the cutting edge of therapeutic and diagnostic innovation
- to address difficult situations, the orphan but strategic diseases
- to improve overall and personalised patient care

What are the research fields promoted by IGR?

- biology and imaging-driven treatments
- therapeutic segments (rare cancers and situations)
- technological innovations
- quality of life and research in the human and social sciences

SORC

The Clinical Research Operations Service

The Clinical Research Operations Service (SORC) began operating on March 1st, 2011 as part of the Clinical Research Department. It is headed by Dr. Nadia Amellal, a physician specialising in oncology who worked for a long time in research and development for the pharmaceutical industry on innovative oncology products.
The SORC sees to operationally defining all IGR's therapeutic trials and clinical studies, whether promoted by an academic institution (including IGR) or industry.
By establishing the SORC, which defragments the clinical research activities conducted by investigators, IGR's strategic ambition is to improve the quality and performances of this biomedical research.

This means the following:
- To facilitate patient treatment in a clinical trial as well as the associated logistics in all departments and committees
- Control increased activity by sizing the necessary human resources and technical means
- Ensure improved quality by initiating a quality control system and a training programme for all staff

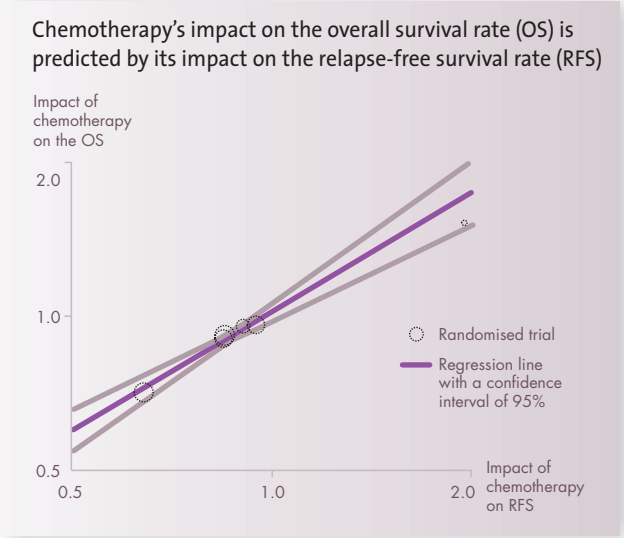
To achieve this, the SORC with help from a Bureau chaired by Dr. Bernard Escudier does the following:
- Contractualise with committees and departments
- Ensure the organisation and co-ordination of means made available
- Check and endorse study feasibility by co-ordinating cost and impact studies after implementation
- Ensure that resources match projects
- Oversee good practices and the quality of studies
- Optimise resources to cover the operational needs of studies/trials that take place at IGR

With 61.8 FTEs, the SORC is composed of six basic professions: hospital clinical research agents, clinical research nurses, medical research assistants, samples managers, quality-insurance agents and finance and contract management of studies.

Person in charge Dr. Nadia Amellal

SBE

Biostatistics and Epidemiology



Metaanalysis of adjuvant chemotherapy in non-small cell lung cancers. ▲

Structure and remit

The biostatistics and epidemiology service (SBE) was founded in 1968 and includes physicians, biostatisticians, data managers and two computer experts. Its was integrated into the DRC (Clinical Research Department) in January 2005. Its two main remits are: 1) clinical and translational research through the management and implementation of clinical trials and studies, especially those promoted at IGR and 2) clinical research outside of European directives as well as methodology research, especially genomics, metaanalyses, early trials and small-scale trials. It is also responsible for monitoring cancer frequency in France. The SBE also oversees studies from their inception (protocol and questionnaire) to their analysis and publication. It has been certified as a "Data-processing Centre" by the INCa and contains two units certified by the LNCC (metaanalyses and early therapeutic development in paediatric oncology).

Activities in 2010

Since 2005 the SBE has been mandated (with exceptions) to control all IGR-promoted trials. This explains the increase in the number of data managers after 2005, simultaneously with an increase in the volume of these promotions. In 2010 the SBE managed 47 clinical trials (still recruiting) with a total of almost 6,400 patients, of whom nearly 2,000 were in 2010, 40 on-going trials (follow-up) and nearly 100 non-trial studies. This considerable activity can be seen in the number of the unit's publications (55 international with an Impact Factor of 385).

Person in charge Dr. Ellen Benhamou

SPP

Promotion and Partnerships

Structure and aims

Now dedicated to IGR-promoted clinical trials, the SPP is composed of the following three entities:

- **Regulatory** with a regulatory and quality officer, a regulatory agent and an administrative assistant (0.5 FTE).
- **Monitoring** with a CRA (Clinical Research Assistant)-promoter/manager, three CRA promoters and an intern.
- **Finances,** with a unit head and management agent (0.5 FTE).

The SPP's aims and ambitions are the following: submit IGR-promoted clinical trials to national regulatory agencies; ensure regulatory co-ordination of international trials; set up network logistics; assess forecasted trial budgets; negotiate contracts with partners and service providers; ensure financial follow-up of trials; quality control of data gathered as well as the traceability of the therapeutic units and set up all necessary quality activities.

It is also part of the SPP remit to establish preferred partnerships with industrialists (framework agreements) outside of clinical trials on more general themes such as the new professions in clinical research.

Activities in 2010

2010 was an especially rich year with a four-fold increase in the number of cases submitted to the regulatory authorities and the preparation of new projects of international scope. It also saw the arrival of a new regulatory and quality officer, a project leader and a new CRA promoter.

2011's goal is to better define the Institute's trial-promotion strategy, continue its audit programmes set up at the start of the year, consolidate the promotional process through additional validation phases, establish a partnership with a Clinical Research Organisation for international trials and to implement training and communication activities.

IGR Promotion: Balance sheet as of December 31st, 2010	
Active IGR-promoted trials	49
New submissions to regulatory authorities	18
Amendments/closures	35/3
New trials set up	9
Number of trials monitored	23
Number of monitoring visits done	222
Contracts with private funders / budget	9 contracts / €1.98m + product supply
Total Call for Tenders public budget (PHRC, STIC)	**€3.95m**

Person in charge Carole Lafontaine

SAEI

International and European Affairs Unit

The SAEI was set up to structure, orient, support and promote IGR research activities and education in Europe and internationally.

The unit supports the participation in calls for tender of the research and development programmes funded by the European Commission (FPRD and IMI): help in preparing work packages; the legal and financial follow-up of accepted programmes; participation in the meetings organised by the Ministry, the authorities or the EC.

Within the framework of the European Organisation of Cancer Institutes (OECI) the unit ensures the steering of the accreditation/certification programmes of the centres.

Starting in 2002, a partnership strategy was engaged to create a European excellence centre with the main European integrated oncology centres. This led to the founding of the EurocanPlatform excellence network dedicated to translational research. This project carries a section for developing translational research indicators under the guidance of the SAEI. Lastly the SAEI helps to mount submissions for the mobility of physicians and researchers (the Marie Curie programme).

Activities in 2010

2010 saw another increase in our participation in European programmes. IGR occupies a central place in the only two excellence networks of the seventh Framework Programme accepted by the EC (the EurocanPlatform network and the ENCCA paediatrics network).

EC activity indicators: 18 FP6 projects including 6 current, 3 2007 FP7 projects including 2 current, 1 2008 FP7 current, 7 2010 FP7 projects accepted including 2 NOE, 2 2011 FP7 projects (Health) accepted, 2 2011 FP7 projects (NMP) under assessment, 1 Marie Curie FP7 project under preparation with Fudan (China).

IGR budget coming from the EC: FP7: €4,396,371 already disbursed + €1,403,444 expected.

OECI accreditation indicators: 12 European centres currently under accreditation + obtaining a FTE bilingual SAEI assistant funded by the OECI. SAEI-co-ordinated certification programme in the EurocanPlatform project.

Perspectives

For 2011–2012 the SAEI is participating in the preparation of the eighth FP and is continuing its watchdog and information work on the calls for tender. A particular effort will be made to set up Marie Curie exchange programmes. IGR will be a candidate for OECI accreditation and will steer the implementation of the certification programme for all European centres.

Person in charge Dr. Mahasti Saghatchian
Team Arnaud Forest, Cécile Tableau

URSHS

Human and Social Sciences (HSS) Research Unit

Objectives

IGR's URSHS is the first system of its kind in a French hospital. The URSHS develops multidisciplinary research on social, policy, economic, psychological and ethical issues posed by cancer. The following are its ambitions through research:

- Improving the organisation of and oncological health policies to reduce inequalities in fighting cancer
- Improving the quality of life of people affected by the disease (patients, family and former patients)
- Facilitating patient access to clinical research

Activities in 2010

In 2010 the unit's programmes funded projects (by INCa, *Ligue contre le cancer*, L'Oréal and the French Social Security Scheme for Self-employed Workers) focused on the sociology of oncological associations, the disease's social consequences and the ways to include patients in biomedical trials. As part of its tasks, the unit runs the "HSS platform" of the Canceropôle Ile-de-France and participates in the Cancer Campus programmes (seminars and symposia). It has established many academic partnerships. As a contact and guidance point for HSS cancer researchers, the unit welcomes doctoral candidates to whom the unit offers specific supervision, as a complement to their academic doctoral supervision.

Perspectives

In 2011 the new research projects are giving pride of place to the personalisation of patient and "survivor" care. In particular the unit is implementing the "social, economic and psychological" impact component of the CANTO cohort (the study of breast cancer treatment-related toxicity, funded by the French national programme *Investissement d'avenir*).

Director Philippe Amiel, Ph. D.

SIPAM Pharmacology and Drug Analysis

Structure and tasks

The pharmacology and drug analysis unit (SIPAM), created in 2009, unites teams participating in pharmacology by pooling skills and technical and human means in three structures: the Biochemistry Unit of the Medical Biology and Pathology Departments, the AQPPR Functional Unit of the Clinical Pharmacy Department and the UMR 8203 pharmacological and vectorisation team.

SIPAM's ambitions are the following:

- optimising human and financial resources and their organisation so as to ensure the on-going **quality control** of the products intended for hospitalised and day-hospital patients
- developing a transdepartmental and translational platform enabling a response to physicians expectations concerning the **therapeutic follow-up** (targeted molecular therapies, psychotropics, antibiotic therapy, etc.) and assessing new drugs in clinical trials, particularly **early trials during pharmacokinetic and pharmacodynamic studies**

Activities in 2010

Several projects were successfully carried out in 2010 in each of the SIPAM's fields of activity:

Pharmaceutical quality control: each year the SIPAM conducts over 30,000 analyses (33,227 in 2010) with 46 molecules routinely analysed. 2010 was significant due to the transfer of all methods onto an IRTF-UV analyser, making it possible to later consider a discharge check. Several stability studies were also conducted making it possible to optimise chemotherapy production.

Therapeutic follow-up: the SIPAM carried out 950 analyses for therapeutic follow-up and posology adaptation. The key event in 2010 was the increased therapeutic follow-up of neuroleptics for the Paul Guiraud hospital.

Participation in clinical studies: the SIPAM carried out the pharmacokinetics of several Phase I and Phase II studies.

All these various care-giving and clinical research activities were written up in three articles and presented in four posters at international congresses. Throughout 2010 the SIPAM also began a certification/accreditation process by implementing a quality-management system.

Covariate data

Biochemical

Demographics

Person in charge Dr. Angelo Paci

Convinced of the importance and potential offered by the academic world, IGR continues its active policy towards the major Parisian universities, in particular Paris-Sud 11. Its oncology school, one of a kind, is continuing to develop with its success proven by the big increase in student enrolment, including –and this is worth noting– a portion of paramedical staff.

IGR Partners

> Université Paris-Sud 11 > Faculté de médecine Paris-Sud
> INSERM > CNRS

TEACHING AT IGR IN 2010

IGR's Third Cornerstone

5,000
course hours
in 2010

661
international
scientific
publications

26
academics

A Unique Oncology School in France

Instruction is one of the three guiding principles of the Institut de Cancérologie Gustave Roussy. Sharing knowledge and training in the oncology professions are deeply grounded in IGR's culture, which plays a full role in the Bicêtre UFR Médicale at the Université Paris-Sud 11.

80 years of research work and clinical practice confer a unique experience on IGR in oncology. It is the Institute's priority to transmit knowledge to physicians and researchers, to students and so many professionals who treat cancer patients. A large number of French and international oncologists and researchers have been trained at the Institut de Cancérologie Gustave Roussy.

The Oncology School

Founded by Institut Gustave Roussy, the École de Cancérologie (Oncology School) is dedicated to training players in caring for malignant tumour victims and researchers who push out the boundaries of knowledge towards better treatments. It provides scientific training of the highest level in close connection with the daily practice of clinical research. This teaching leads to spreading the expertise of IGR's medical teams, which is proof-based, multidisciplinary and cross-sectional and which is in constant contact with clinical, translational and basic research.

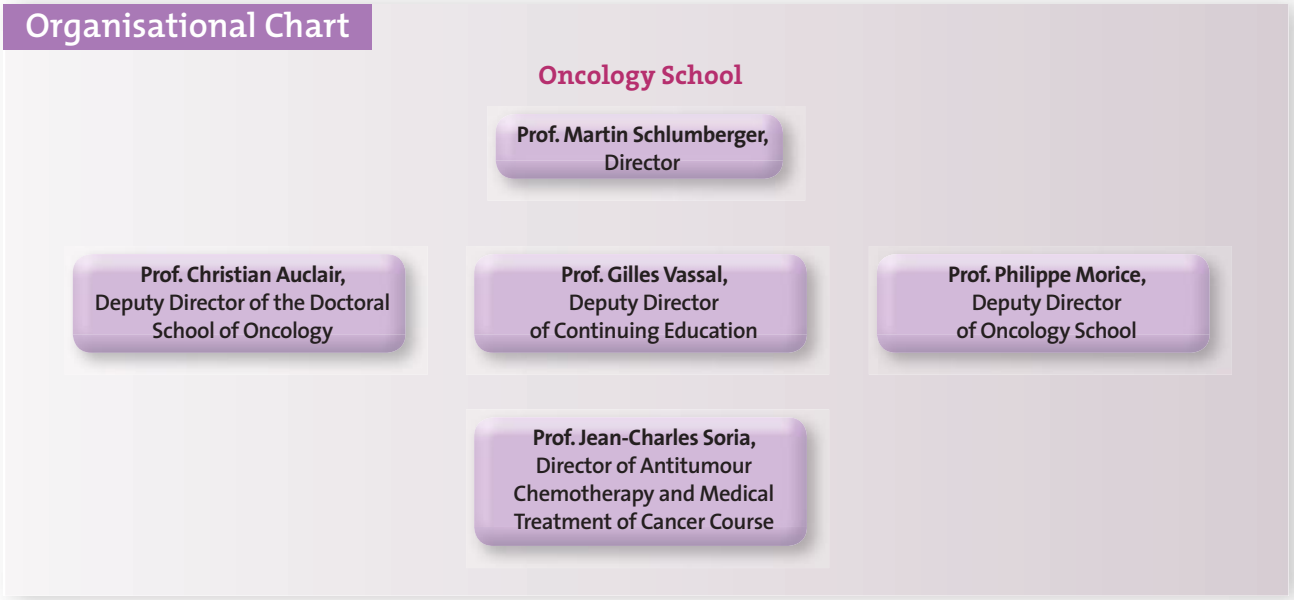
It is against this background that physicians, surgeons, biologists, radiologists, radiotherapists, epidemiologists, statisticians and researchers transmit their practices and knowledge to students in all disciplines: medical, scientific or paramedical, and at all levels.

In partnership with Université Paris-Sud 11, IGR staff participate in medical and pharmaceutical studies as well as nursing and electroradiology technician schools.

One important aspect concerns post-graduate training, either as part of university programmes or training days held by IGR. This teaching is aimed at all players involved in cancer control. One growing area is the training of new professions and the acquisition of new skills such as training physicians in human relations and management principles, in medical economics assessment, training radiotherapy teams in safety, training nurses in clinical research and training clinical research agents. Each year new courses are offered to respond quickly either to an internal or external demand.

The École de Cancérologie combines the teaching and seminars held by the Institute in collaboration with the Université Paris-Sud 11 and our scientific and medical partners (Inserm, CNRS, etc.)

Organisational Chart



Key Data

16 professors

1 senior lecturer

8 Specialist Registrars at the Bicêtre Teaching Hospital work at IGR

5,000 teaching hours per year. IGR is a training ground for both students and experienced professionals alike

Over **700** scientific publications from work carried out at IGR with a majority in international journals.

Over **500** physicians and researchers from 50 countries have been trained at IGR.

Every year physicians, researchers, surgeons, biologists, pharmacists, radiologists, radiotherapists, epidemiologists and statisticians impart their practices and knowledge to students from all disciplines and at all levels: medical, scientific or paramedical

Antitumour chemotherapy and the medical treatment of cancer Course

The course in chemotherapy and the medical treatment of cancer at the Institut Gustave Roussy has a goal of offering a panorama of modern oncology by dealing with essential and significant themes in this fully expanding field. They are not intended to be exhaustive, rather to enable the overall teaching of oncology in French. The course is taught by international French-speaking experts and by young oncologists who all want to pursue excellent training. It was begun in 1985 by Professor Jean Lemerle and Dr. Jean-Pierre Armand.
Twenty five years later, the educational objectives are the following:

- To use in daily practice the science acquired concerning the action of conventional and new-generation anticancer agents
- To clarify standard and innovative therapeutic strategies in the main cancers
- To manage the complications of chemotherapy and targeted molecular therapies.

From year to year, the course's contents are adapted to the new advances in oncological drug treatments. The development of targeted molecular therapies with new modes of action or else new strategies for administering personalised chemotherapy according to the tumour's and patient's biological criteria is included in this teaching. Supportive care, which is inseparable from specific patient treatments for cancers, are also fully integrated into the course.

New courses on offer in 2010 – 2011
The three new courses offered demonstrate the School's determination to constantly offer teaching adapted to health staff and researcher needs in the newest fields.

- University degree in radiotherapy for H&N cancers
- Gynaecology/oncology day: treating invasive cancers of the cervix
- Electroradiology technicians: H&N cancer, from diagnosis to treatment

The Doctoral School (DS) of Oncology (ED 418)

The Doctoral School of Oncology (CBMS) is an interdisciplinary theme DS offering training through research in the various fields of oncology. The DS works within the Université Paris-Sud 11 (The Paris-Sud Medicine Education & Research Unit, in close partnership with the two cancer research centres: the Institut Gustave Roussy and Institut Curie) and the CEA (French Atomic Energy and Alternative Energies Commission). The DS relies on a broad network of research laboratories including the labs of the founding partner establishments mentioned above, laboratories located in teaching hospital establishments (in particular regional public hospitals) in the Greater Paris region and several UMR CNRS (CNRS mixed research unit) located in various higher learning establishments (e.g. Université Paris 12, the Ecole Normale Supérieure [ENS] in Cachan). At the national level the DS is the only theme DS dedicated to oncology.

Teaching at the Oncology School includes the following:
- first and second cycle courses in medical studies from the Faculté de Médecine and the Faculté des Sciences Pharmaceutiques from Université Paris-Sud 11 and various university degrees
- a Masters in Biology-Health (M1 and M2) and the École doctorale de Cancérologie (Doctoral School of Oncology)
- participation in various university degrees (DES, DESC, etc.)
- organised training courses (non-diploma, days, seminars, professional training sessions)

Objectives

The purpose of the Doctoral School of Oncology is to provide qualifying professional training in oncology to doctoral candidates as part of research activities linked to preparing theses and as part of complementary education. It is intended for students from the medical and pharmacy UFRs (education and research units), biologists from biological and chemical science UFRs and students from France's major universities with a biological orientation and the *Écoles Normales Supérieures*.

The Doctoral School's training through research relies on the scientific activities of the host teams and focuses on the following main pathways:
- Genetic and molecular bases of malignant transformation and tumour progression
- Molecular, cellular and clinical pharmacology
- Therapeutic innovations in oncology (cell therapy, genetics, immunotherapy)
- Technological innovations in oncology (diagnostics, treatment)
- Genomics, functional genomics, proteomics

> IGR'S MEDICAL AND SCIENTIFIC LIBRARY

IGR contains a medical and research library for the sole use of Institute staff and authorised persons. It enjoys considerable resources, i.e. over 1,500 on-line journals, 5,500 hard-copy or on-line books, access to bibliographic databases: PubMed, Medline, SCOPUS, ISI Web of Knowledge, Impact Factor, etc.

The library has the following:
- **A reading room**
- **A room containing 10 computer stations enabling consultation of on-line journals and bibliographical research**
- **An audiovisual screening room enabling the consultation of videos for surgery, radiotherapy and oncology**

Teaching and training

In parallel with their laboratory work and while writing their theses, doctoral candidates must undertake courses whose total duration is at least 80 hours.

These courses are 20-hour modules. Students may follow the teaching of the modules of their choice until they reach the required 80-hour minimum. A distinction is made on the one hand between the oncology modules and, on the other hand, the extracurricular courses allowing students to acquire, should they wish, knowledge in fields they consider useful to their professional projects.

Students may take courses either of three scientific modules of their choice and a module outside of their field, or two scientific modules and two modules of their choice outside their field.

A Masters in biology and health: with an oncology specialisation

The masters in oncological research is organised and run in partnership with the Université Paris-Sud 11, the Ecole Normale Supérieure of Cachan, the Institut de cancérologie Gustave Roussy, and Institut Curie and the CEA. The M2 specialisation includes a common core of two courses and three pathways:

- cancer cell biology and genetics
- pharmacology and therapeutics of cancers
- radiobiology

Specialisation is open to students from scientific and medical fields having earned an M1 or the equivalent. The specialisation is elaborated with the DS (ED418) with the goal of providing students from scientific and medical backgrounds with integrated knowledge of the different aspects of oncology from the most basic to medical applications.

The diversification of teaching and the possible choices enable students to organise an "à la carte" pathway that corresponds to their needs. The combination of "theoretical teaching and research courses" gives students all the elements needed for them to do a doctoral thesis in the best possible conditions or to find a scientific job. One of the characteristics of oncological specialisation is to combine the following:

- science teachers and clinicians
- fundamental research laboratories and laboratories in proximity to clinics
- science-trained students with medical-trained students

Sharing knowledge and transmitting savoir-faire...

As a university professor–hospital practitioner (PU-PH), teaching has a more specific dimension, for being doubly attached, Dr. Morice splits his time between the Medical School of Paris-Sud and IGR. Teaching interns who choose the Department for their semester choice is a very important dimension and focuses on the following three areas:

• thoroughly explaining the surgical indication and its timing concerning possible neoadjuvant treatments. It is an important moment that precedes the technical procedure itself

• helping in teaching the technical gesture in the operating room, for surgery is essentially a supervisory intervention

• participating in scientific research work to transmit that what is "done" at a technical level must be constantly assessed, thus questioned. This teaching is therefore one's personal duty to be exacting, honest, rigorous and constantly questioning, but this is what makes it possible to learn the rules of analysis and good medical practices in the broadest possible sense that will serve students throughout their careers in whatever field they work in.

Prof. Philippe Morice
University Professor – Hospital Practitioner (PU-PH), Director Gynaecological Surgery Department

1996
Joins IGR
2000
Authorised to lead research
2006
Appointed Department Head of Gynaecological Surgery
2008
Appointed PU-PH at the Paris-Sud Medical School

Perspectives

IGR wants to found an international school for the cancer sciences in order to face the rapid changes in the way of treating cancer patients. Its purpose will be to teach students the new skills required to develop personalised medicine in oncology. This School will strengthen and finalise the training and teaching system already established by IGR over the past several years by uniting most of the

academic and clinical research on cancer conducted at the Université Paris-Sud 11 on the Villejuif venue. Teachers (physicians, researchers and IGR care-givers, teachers from partner institutions such as Cachan's École Supérieure or Supelec, guest teachers, etc.) will work in the two complementary departments to give their courses, which will, in many cases, lead to degrees.

The School's ambitions will be the following:

- To train in research and care in close collaboration with medical and scientific programmes, including personalised medicine, prevention, the surveillance of people most exposed to risk, early detection, studying the long-term effects of the disease and its treatment, epidemiology and taking into account the effects on public health.
- To mentor developments in the professions by participating in the emergence of new jobs in oncological research and clinical care (including translational research).
- To establish partnerships with the major engineering schools but also specialised healthcare companies to meet their alternative training needs versus traditional professional teaching.
- To build an international network with partner institutions and specialised healthcare companies to offer exchange possibilities to students and attract new teachers and students to the School.

Sabine Andrieux
Teaching Department Assistant

A growing demand by participants to perfect their skills...

Part of my activities are to welcome medical students coming for a 3-month training course. I give them all the information they need for the courses I am in charge of. I also manage their enrolment applications. The various courses I manage show a growing demand by participants to perfect their skills. There are more and more enrolments every year, especially for the Antitumour Chemotherapy and Medical Cancer Treatment Course. This kind of vanguard teaching has existed at IGR for 25 years and confirms the central place given by IGR to teaching oncology.

1988
Joins IGR as an Employee - Director's Office
2010
Oncology School Assistant

DUARCO: An entirely renovated programme in 2010

The university "clinical-research associate" degree in oncology (DUARCO) trains multi-skilled clinical research associates in biomedical research with specialisation in the management of oncology clinical trials

The DUARCO is a course offered by the Oncology School under the auspices of Prof. Jean-Charles Soria and Mrs Sophie Pellegrino, Studies Director.
The lectures are given at the Institut de Cancérologie Gustave Roussy and are composed of two months of theoretical learning in the form of thematic modules. The knowledge acquired is validated by MCQs and case studies. Training is then finalised by 6 months of mandatory practical training, followed by a written thesis. Defence of the thesis then ends the training session.

Eligible candidates

This training is intended for candidates holding a baccalaureate plus a minimum of 3 to 4 years' work in the sciences, medicine, pharmaceuticals and candidates able to show significant professional experience in health.
The programme accomodates a maximum of 20 students. The School carries out pre-selection based on a letter of motivation along with a curriculum vitae. The Selection Committee then holds individual interviews.

The syllabus

The syllabus includes the following wide range of skills:

- tumour pathology
- the principles of developing drugs for human consumption
- a clinical research setting in oncology
- players in clinical research: the definition and nature of interaction
- French and international legislative and regulatory frameworks
- clinical trial methodology in oncology
- Clinical Research Associate in Oncology: know-how and social & communication skills
- keys to success, professional insertion

Organisation Committee

Éric Angevin (IGR)
Chrystel Coulomb (IGR)
Muriel Cottard (Novartis)
Rosa Da Silva (IGR)
Éric Deutsch (IGR)
Bernard Escudier (IGR)
Karim Fizazi (IGR)
Sophie Pellegrino (ex-IGR)
Pascal Roffet (Pfizer)
Jean-Charles Soria (IGR)
Martin Schlumberger (IGR)
Nadia Amellal (IGR)

ANNEXES 2010

International publications

112
International publications
Impact Factor >10

661
International publications

IGR's International publications ISI Impact Factor over 10 in 2010

1. **Ades,L., Guerci,A., Raffoux,E., Sanz,Mr, Chevallier,P., Lapusan,S., Recher,C., Thomas,X., Rayon,C., Castaigne,S., Tournilhac,O., De Botton,S., Ifrah,N., Cahn,J.Y., Solary,E., Gardin,C., Fegeux,N., Bordessoule,D., Ferrant,A., Meyer-Monard,S., Vey,N., Dombret,H., Degos,L., Chevret,S., & Fenaux,P.** Very long-term outcome of acute promyelocytic leukemia after treatment with all-trans retinoic acid and chemotherapy: the European APL Group experience. *Blood (2010) 115, [9], 1690-1696.* PUBMED: 20018913 – Impact Factor: 10.555

2. **Andre,F. & Delaloge,S.** First-generation genomic tests for breast cancer treatment. *Lancet Oncology (2010) 11, [1], 6-7.* PUBMED: 20005177 – Impact Factor: 14.470

3. **Andre,F., Campone,Mr, O'Regan,R., Manlius,C., Massacesi,C., Sahmoud,T., Mukhopadhyay,P., Soria,J.C., Naughton,Mr, & Hurvitz,S.A.** Phase I study of everolimus plus weekly paclitaxel and trastuzumab in patients with metastatic breast cancer pretreated with trastuzumab. *Journal of Clinical Oncology (2010) 28, [34], 5110-5115.* PUBMED: 20975068 – Impact Factor: 17.793

4. **Antoniou,A.C., Wang,X., Fredericksen,Z.S., McGuffog,L., Tarrell,R., Sinilnikova,O.Mr, Healey,S., Morrison,J., Kartsonaki,C., Lesnick,T., Ghoussaini,Mr, Barrowdale,D., Peock,S., Cook,Mr, Oliver,C., Frost,D., Eccles,D., Evans,D.G., Eeles,R., Izatt,L., Chu,C., Douglas,F., Paterson,J., Stoppa-Lyonnet,D., Houdayer,C., Mazoyer,S., Giraud,S., Lasset,C., Remenieras,A., Caron,O., Hardouin,A., Berthet,P., Hogervorst,F.B., Rookus,M.A., Jager,A., van den,O.A., Hoogerbrugge,N., van der Luijt,R.B., Meijers-Heijboer,H., Gomez Garcia,E.B., Devilee,P., Vreeswijk,M.P., Lubinski,J., Jakubowska,A., Gronwald,J., Huzarski,T., Byrski,T., Gorski,B., Cybulski,C., Spurdle,A.B., Holland,H., Goldgar,D.E., John,E.Mr, Hopper,J.L., Southey,Mr, Buys,S.S., Daly,M.B., Terry,M.B., Schmutzler,R.K., Wappenschmidt,B., Engel,C., Meindl,A., Preisler-Adams,S., Arnold,N., Niederacher,D., Sutter,C., Domchek,S. Mr, Nathanson,K.L., Rebbeck,T., Blum,J.L., Piedmonte,Mr, Rodriguez,G.C., Wakeley,K., Boggess,J.F., Basil,J., Blank,S.V., Friedman,E., Kaufman,B., Laitman,Y., Milgrom,R., Andrulis,I.L., Glendon,G., Ozcelik,H., Kirchhoff,T., Vijai,J., Gaudet,M.Mr, Altshuler,D., Guiducci,C., Loman,N., Harbst,K., Rantala,J., Ehrencrona,H., Gerdes,A.Mr, Thomassen,Mr, Sunde,L., Peterlongo,P., Manoukian,S., Bonanni,B., Viel,A., Radice,P., Caldes,T., de la Hoya,Mr, Singer,C.F., Fink-Retter,A., Greene,M.H., Mai,P.L., Loud,J.T., Guidugli,L., Lindor,N.Mr, Hansen,T.V., Nielsen,F.C., Blanco,I., Lazaro,C., Garber,J., Ramus,S.J., Gayther,S.A., Phelan,C., Narod,S., Szabo,C.I., Benitez,J., Osorio,A., Nevanlinna,H., Heikkinen,T., Caligo,M.A., Beattie,M.S., Hamann,U., Godwin,A.K., Montagna,Mr, Casella,C., Neuhausen,S.L., Karlan,B.Y., Tung,N., Toland,A.E., Weitzel,J., Olopade,O., Simard,J., Soucy,P., Rubinstein,W.S., Arason,A., Rennert,G., Martin,N.G., Montgomery,G.W., Chang-Claude,J., Flesch-Janys,D., Brauch,H., Severi,G., Baglietto,L., Cox,A., Cross,S.S., Miron,P., Gerty,S.Mr, Tapper,W., Yannoukakos,D., Fountzilas,G., Fasching,P.A., Beckmann,M.W., Dos Santos Silva,I., Peto,J., Lambrechts,D., Paridaens,R., Rudiger,T., Forsti,A., Winqvist,R., Pylkas,K., Diasio,R.B., Lee,A.Mr, Eckel-Passow,J., Vachon,C., Blows,F., Driver,K., Dunning,A., Pharoah,P.P., Offit,K., Pankratz,V.S., Hakonarson,H., Chenevix-Trench,G., Easton,D.F., & Couch,F.J.** A locus on 19p13 modifies risk of breast cancer in BRCA1 mutation carriers and is associated with hormone receptor-negative breast cancer in the general population. *Nature Genetics (2010) 42, [10], 885-892.* PUBMED: 20852631– Impact Factor: 34.284

5. **Antoun,S., Birdsell,L., Sawyer,M.B., Venner,P., Escudier,B., & Baracos,V.E.** Association of skeletal muscle wasting with treatment with sorafenib in patients with advanced renal cell carcinoma: results from a placebo-controlled study. *Journal of Clinical Oncology (2010) 28, [6], 1054-1060.* PUBMED: 20085939 – Impact Factor: 17.793

6. **Arriagada,R., Dunant,A., Pignon,J.P., Bergman,B., Chabowski,Mr, Grunenwald,D., Kozlowski,Mr, Le,P.C., Pirker,R., Pinel,M.I., Tarayre,Mr, & Le Chevalier,T.** Long-term results of the international adjuvant lung cancer trial evaluating adjuvant Cisplatin-based chemotherapy in resected lung cancer. *Journal of Clinical Oncology (2010) 28, [1], 35-42.* PUBMED: 19933916 – Impact Factor: 17.793

7. **Arriagada,R., Auperin,A., Burdett,S., Higgins,J.P., Johnson,D.H., Le Chevalier,T., Le Pechoux,C., Parmar,M.K., Pignon,J.P., Souhami,R.L., Stephens,R.J., Stewart,L.A., Tierney,J.F., Tribodet,H., & van Meerbeeck,J.** Adjuvant chemotherapy, with or without postoperative radiotherapy, in operable non-small-cell lung cancer: two meta-analyses of individual patient data. *Lancet (2010) 375, [9722], 1267-1277.* PUBMED: 20338627 – Impact Factor: 30.758

8. **Auperin,A., Le Pechoux,C., Rolland,E., Curran,W.J., Furuse,K., Fournel,P., Belderbos,J., Clamon,G., Ulutin,H.C., Paulus,R., Yamanaka,T., Bozonnat,M.C., Uitterhoeve,A., Wang,X., Stewart,L., Arriagada,R., Burdett,S., & Pignon,J.P.** Meta-analysis of concomitant versus sequential radiochemotherapy in locally advanced non-small-cell lung cancer. *Journal of Clinical Oncology (2010) 28, [13], 2181-2190.* PUBMED: 20351327 – Impact Factor: 17.793

9. **Azoulay,E., Mokart,D., Lambert,J., Lemiale,V., Rabbat,A., Kouatchet,A., Vincent,F., Gruson,D., Bruneel,F., Epinette-Branch, Lafabrie,A., Hamidfar-Roy,R., Cracco,C., Renard,B., Tonnelier,J.Mr, Blot,F., Chevret,S., & Schlemmer,B.** Diagnostic strategy for hematology and oncology patients with acute respiratory failure: randomized controlled trial. *American Journal of Respiratory and Critical Care Medicine (2010) 182, [8], 1038-1046.* PUBMED: 20581167 – Impact Factor: 10.689

10. Azria,D. & Bourgier,C. Partial breast irradiation: new standard for selected patients. *Lancet (2010) 376, [9735], 71-72.* PUBMED: 20570344 – Impact Factor: 30.758

11. Beer,P.A., Delhommeau,F., LeCouedic,J.P., Dawson,M.A., Chen,E., Bareford,D., Kusec,R., McMullin,M.F., Harrison,C.N., Vannucchi,A.Mr, Vainchenker,W., & Green,A.R. Two routes to leukemic transformation after a JAK2 mutation-positive myeloproliferative neoplasm. *Blood (2010) 115, [14], 2891-2900.* PUBMED: 20008300 – Impact Factor: 10.555

12. Berruti,A., Fassnacht,Mr, Baudin,E., Hammer,G., Haak,H., Leboulleux,S., Skogseid,B., Allolio,B., & Terzolo,Mr Adjuvant therapy in patients with adrenocortical carcinoma: a position of an international panel. *Journal of Clinical Oncology (2010) 28, [23], e401-e402.* PUBMED: 20567001 – Impact Factor: 17.793

13. Besancenot,R., Chaligne,R., Tonetti,C., Pasquier,F., Marty,C., Lecluse,Y., Vainchenker,W., Constantinescu,S.N., & Giraudier,S. A senescence-like cell-cycle arrest occurs during megakaryocytic maturation: implications for physiological and pathological megakaryocytic proliferation. *Plos Biology (2010) 8, [9].* PUBMED: 20838657 – Impact Factor: 12.916

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15. Boffetta,P., Couto,E., Wichmann,J., Ferrari,P., Trichopoulos,D., Bueno-De-Mesquita,H.B., van Duijnhoven,F.J., Buchner,F.L., Key,T., Boeing,H., Nothlings,U., Linseisen,J., Gonzalez,C.A., Overvad,K., Nielsen,M.R., Tjonneland,A., Olsen,A., Clavel-Chapelon,F., Boutron-Ruault,M.C., Morois,S., Lagiou,P., Naska,A., Benetou,V., Kaaks,R., Rohrmann,S., Panico,S., Sieri,S., Vineis,P., Palli,D., van Gils,C.H., Peeters,P.H., Lund,E., Brustad,Mr, Engeset,D., Huerta,J.Mr, Rodriguez,L., Sanchez,M.J., Dorronsoro,Mr, Barricarte,A., Hallmans,G., Johansson,I., Manjer,J., Sonestedt,E., Allen,N.E., Bingham,S., Khaw,K.T., Slimani,N., Jenab,Mr, Mouw,T., Norat,T., Riboli,E., & Trichopoulou,A. Fruit and vegetable intake and overall cancer risk in the European Prospective Investigation into Cancer and Nutrition (EPIC). *Journal of the National Cancer Institute (2010) 102, [8], 529-537.* PUBMED: 20371762 – Impact Factor: 14.069

16. Boige,V., Mendiboure,J., Pignon,J.P., Loriot,M.A., Castaing,Mr, Barrois,Mr, Malka,D., Tregouet,D.A., Bouche,O., Le Corre,D., Miran,I., Mulot,C., Ducreux,Mr, Beaune,P., & Laurent-Puig,P. Pharmacogenetic assessment of toxicity and outcome in patients with metastatic colorectal cancer treated with LV5FU2, FOLFOX, and FOLFIRI: FFCD 2000-05. *Journal of Clinical Oncology (2010) 28, [15], 2556-2564.* PUBMED: 20385995 – Impact Factor: 17.793

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18. Bouzas-Rodriguez,J., Cabrera,J.R., Ioye-Bourgeois,C., Ichim,G., Delcros,J.G., Raquin,M.A., Rousseau,R., Combaret,V., Benard,J., Tauszig-Delamasure,S., & Mehlen,P. Neurotrophin-3 production promotes human neuroblastoma cell survival by inhibiting TrkC-induced apoptosis. *Journal of Clinical Investigation (2010) 120, [3], 850-858.* PUBMED: 20160348 – Impact Factor: 15.387

19. Braun,R.J., Buttner,S., Ring,J., Kroemer,G., & Madeo,F. Nervous yeast: modeling neurotoxic cell death. *Trends in Biochemical Sciences (2010) 35, [3], 135-144.* PUBMED: 19926288 – Impact Factor: 11.572

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23. **Chalmin,F., Ladoire,S., Mignot,G., Vincent,J., Bruchard,Mr, Remy-Martin,J.P., Boireau,W., Rouleau,A., Simon,B., Lanneau,D., De Thonel,A., Multhoff,G., Hamman,A., Martin,F., Chauffert,B., Solary,E., Zitvogel,L., Garrido,C., Ryffel,B., Borg,C., Apetoh,L., Rebe,C., & Ghiringhelli,F.** Membrane-associated Hsp72 from tumor-derived exosomes mediates STAT3-dependent immunosuppressive function of mouse and human myeloid-derived suppressor cells. *Journal of Clinical Investigation (2010) 120, [2], 457-471.* PUBMED: 20093776 – Impact Factor: 15.387

24. **Cherfils-Vicini,J., Platonova,S., Gillard,Mr, Laurans,L., Validire,P., Caliandro,R., Magdeleinat,P., Mami-Chouaib,F., Dieu-Nosjean,M.C., Fridman,W.H., Damotte,D., Sautes-Fridman,C., & Cremer,I.** Triggering of TLR7 and TLR8 expressed by human lung cancer cells induces cell survival and chemoresistance. *Journal of Clinical Investigation (2010) 120, [4], 1285-1297.* PUBMED: 20237413 – Impact Factor: 15.387

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26. **Coiffier,B., Thieblemont,C., Van Den,N.E., Lepeu,G., Plantier,I., Castaigne,S., Lefort,S., Marit,G., Macro,Mr, Sebban,C., Belhadj,K., Bordessoule,D., Ferme,C., & Tilly,H.** Long-term outcome of patients in the LNH-98.5 trial, the first randomized study comparing rituximab-CHOP to standard CHOP chemotherapy in DLBCL patients: a study by the Groupe d'Études des Lymphomes de l'Adulte. *Blood (2010) 116, [12], 2040-2045.* PUBMED: 20548096 – Impact Factor: 10.555

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28. **De Thonel,A., Vandekerckhove,J., Lanneau,D., Selvakumar,S., Courtois,G., Hazoume,A., Brunet,Mr, Maurel,S., Hammann,A., Ribeil,J.A., Zermati,Y., Gabet,A.S., Boyes,J., Solary,E., Hermine,O., & Garrido,C.** HSP27 controls GATA-1 protein level during erythroid cell differentiation. *Blood (2010) 116, [1], 85-96.* PUBMED: 20410505 – Impact Factor: 10.555

29. **Demenais,F., Mohamdi,H., Chaudru,V., Goldstein,A.Mr, Newton Bishop,J.A., Bishop,D.T., Kanetsky,P.A., Hayward,N.K., Gillanders,E., Elder,D.E., Avril,M.F., Azizi,E., van Belle,P., Bergman,W., Bianchi-Scarra,G., Bressac de Paillerets,B., Calista,D., Carrera,C., Hansson,J., Harland,Mr, Hogg,D., Hoiom,V., Holland,E.A., Ingvar,C., Landi,M.T., Lang,J.Mr, Mackie,R.Mr, Mann,G.J., Ming,M.E., Njauw,C.J., Olsson,H., Palmer,J., Pastorino,L., Puig,S., Randerson-Moor,J., Stark,Mr, Tsao,H., Tucker,M.A., van der Velden,P., Yang,X.R., & Gruis,N.** Association of MC1R variants and host phenotypes with melanoma risk in CDKN2A mutation carriers: a GenoMEL study. *Journal of the National Cancer Institute (2010) 102, [20], 1568-1583.* PUBMED: 20876876 – Impact Factor: 14.069

30. **Dhermain,F.G., Hau,P., Lanfermann,H., Jacobs,A.H., & van den Bent,M.J.** Advanced MRI and PET imaging for assessment of treatment response in patients with gliomas. *Lancet Neurology (2010) 9, [9], 906-920.* PUBMED: 20705518 – Impact Factor: 18.126

31. **Diallo,I., Chavaudra,J., Tukenova,Mr, & de Vathaire,F.** Long-Term Overall and Cardiovascular Mortality After Childhood Cancer: The Problem of Retrospective Estimated Radiation Doses Reply. *Journal of Clinical Oncology (2010) 28, [25], E437-E438.* ISI: 000281502500025 – Impact Factor: 17.793

32. **Droin,N., Jacquel,A., Hendra,J.B., Racoeur,C., Truntzer,C., Pecqueur,D., Benikhlef,N., Ciudad,Mr, Guery,L., Jooste,V., Dufour,E., Fenaux,P., Quesnel,B., Kosmider,O., Fontenay,Mr, Ducoroy,P., & Solary,E.** Alpha-defensins secreted by dysplastic granulocytes inhibit the differentiation of monocytes in chronic myelomonocytic leukemia. *Blood (2010) 115, [1], 78-88.* PUBMED: 19864642 – Impact Factor: 10.555

33. **Duche,Mr, Ducot,B., Tournay,E., Fabre,Mr, Cohen,J., Jacquemin,E., & Bernard,O.** Prognostic value of endoscopy in children with biliary atresia at risk for early development of varices and bleeding. *Gastroenterology (2010) 139, [6], 1952-1960.* PUBMED: 20637201 – Impact Factor: 12.899

34. **Duffy,D.L., Iles,M.Mr, Glass,D., Zhu,G., Barrett,J.H., Hoiom,V., Zhao,Z.Z., Sturm,R.A., Soranzo,N., Hammond,C., Kvaskoff,Mr, Whiteman,D.C., Mangino,Mr, Hansson,J., Newton-Bishop,J.A., Bataille,V., Hayward,N.K., Martin,N.G., Bishop,D.T., Spector,T.D., & Montgomery,G.W.** IRF4 variants have age-specific effects on nevus count and predispose to melanoma. *American Journal of Human Genetics (2010) 87, [1], 6-16.* PUBMED: 20602913 – Impact Factor: 12.303

35. **Elias,D., Gilly,F., Boutitie,F., Quenet,F., Bereder,J.Mr, Mansvelt,B., Lorimier,G., Dube,P., & Glehen,O.** Peritoneal colorectal carcinomatosis treated with surgery and perioperative intraperitoneal chemotherapy: retrospective analysis of 523 patients from a multicentric French study. *Journal of Clinical Oncology (2010) 28, [1], 63-68.* PUBMED: 19917863 – Impact Factor: 17.793

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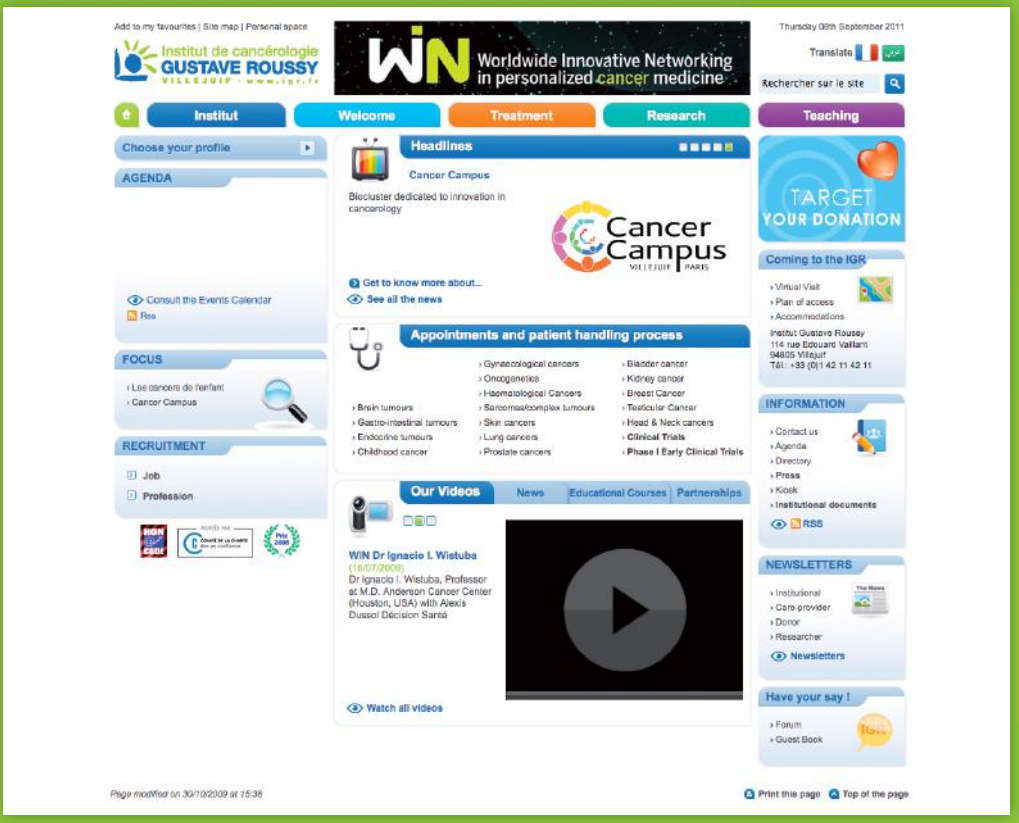

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