

Accelerating
Understanding
Summit 2016

Welcome from Institut Gustave Roussy

Professor Eggermont, The Director General - Institut Gustave Roussy
Gilles Bloch, President - Université Paris-Saclay
Professor Vassal, Professor of Oncology - University Paris-Sud



**The Clinical-Translational-Basic Research Continuum
from Comprehensive Cancer Center to Cancer Campus
THE GUSTAVE ROUSSY MODEL
2016**



Alexander EGGERMONT. MD, PhD
Gustave Roussy Comprehensive Cancer Center
Cancer Campus Grand Paris, France

Premier CCC in Europe

Volume of Activity

- \pm 12-13000 new patients /yr
- \pm 50.000 patients treated/yr
- > 20.000 surgical interventions/yr
- > 200.000 chemotherapies/yr
- \geq 250.000 outpatient visits

- 560 beds (includes 110 outpatient beds/chairs)
- 220 specialists FT + 200 PT

- Employees \pm 3300

- Budget: 330 millions Euros
- Research: 70 millions Euros

Key Clinical Missions

- Tertiary / Highly Complex Medicine
- Rare Tumors (> 25%)
- Care integrated with Clinical Research
(~3800 pts/yr in Clinical Trials)
- Early Drug Development
 - (900 pts included in 2015 : ~25% of CR program)

KEY MISSION: INNOVATE and create ACCESS TO INNOVATION

**INTEGRATION of RESEARCH and CARE to create
TOMORROWS MEDICINE**

Principles

- **Improve Research Continuum:**
 - Molecular Medicine Building for TR
- **Improve High Tech Infrastructures**
 - Robot, XRT top-end, Imaging, Research Platforms
- **Innovation and Valorisation**
 - Cancer Campus Initiative
 - International programs
 - Satellite Hospitals Kuwait, Astana
 - International Training Programs
- **BIG is BEAUTIFUL**
 - Expand, expand, expand
 - Beds 330 – 450 (35%)
 - Outpatient beds/chairs Chemo: 90 – 115 (30%)
 - Research buildings
 - Mol Medicine TR Building (15M)
 - PRECAN (50M)

- **~ 3800 patients in clinical trials in 2014**
 - 2010: 2166 pts
- **28% of new patients in clinical trials**
 - 1/3 Pharma fully sponsored
 - 1/3 Gustave Roussy - led multicenter academic trials
 - 1/3 Gustave Roussy - single institution academic studies
- **Premier Activity in Europe in Early Clinical Trials/Drug Development**
 - **2013 Creation of Department of Drug Development**
 - **Head: Jean Charles Soria**
 - **In 2010: 216 pts**
 - **In 2015: 905 pts**

- 30 Research Groups (Inserm, CNRS, Gustave Roussy)
- 400 Researchers, 240 Technicians
- Basic Research/Translational Research
 - Research Building 1 and 2 (each 5000 M2)
 - 2013 Molecular Medicine Translational Research Building 3 (6000M2)
- Translational Research
 - Additional Laboratories in Hospital Building
 - Tumor Immunology/immunomonitoring platform / Biomarkers / Genetics / Mol diagnostics etc..

IMPROVE RESEARCH INFRASTRUCTURE

Decision December 2011 – Inauguration June 2013 (15M)

New Research Building 6000 M2 : 20 new labs

- 1 floor for TR / Molecular Medicine: 10 labs (linked to clinical trials , clinical timelines), NGS, RNAseq etc, CTC, cfDNA, Immunomonitoring (floor 12 in hospital)
- 1 floor for 10 new Research Groups (recruited from MSK, Harvard, CNIO, Stanford, DKFZ, etc)
- 1 floor for Biostat/Bioinformatics and Education



Ecole Doctorale des Sciences de Cancer

- **5000 student hours**
- **MD/PhD programs**
- **New Medical/Paramedical Professions**
- **Onco-Nursing**

International programs

- **Gulf States**
- **Kazakhstan (150 specialists, 120 surgeons)**
 - @ Gustave Roussy and @ Kazakhstan
- **Latin America**
- **International MD/PhD program**

CHOOSE Amongst KEY AREAS in Cancer Research

- **Immunology/Immunotherapy**
 - Program Directors clinical/scientific/monitoring
 - Microbiota Program
- **Omics and Precision Cancer Medicine**
 - Department for Drug Development, ECT
 - NGS-WES-WGS, cfDNA development, Biomarkers
- Epigenetics
- Haemato/MDS/IPS-Stem cells
- Cell Death Mechanisms
- EMT – MET / Plasticity
- Functional Imaging
- Bioinformatics and BIG DATA
- Nanotechnology
- Radiobiology – New Drugs+RT
- Prevention

Choose Research Lead Programs

- **Clinical Research Machine**
 - ~ 3800 pts/yr = ~30% all pts
 - Precision medicine trials +++
 - Immunotherapy Trials +++
 - Early Drug Development +++
- **Basic Research**
 - Cell Death Mechanisms (Guido Kroemer)
 - Tumor Immunology (Laurence Zitvogel)
 - Haemato-Oncology (William Vainschenker)
 - DNA repair (Rosselli)
- **Translational Research**
 - Immunotherapy (transversal)
 - Precision Cancer Medicine (transversal)

 - Jean Charles Soria / Fabrice Andre (Lung/Breast)
 - Robert/Vagner/Eggermont (Melanoma)
 - Solary / Bernard (Haemato)

Personalized Cancer Medicine

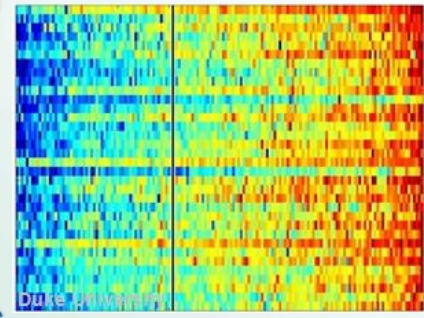
#1 Program in Europe



Tumor Specimen



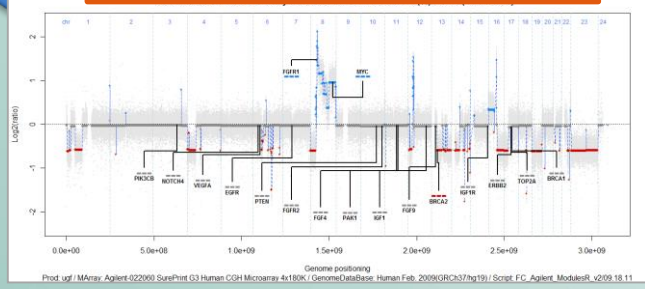
Molecular profiling



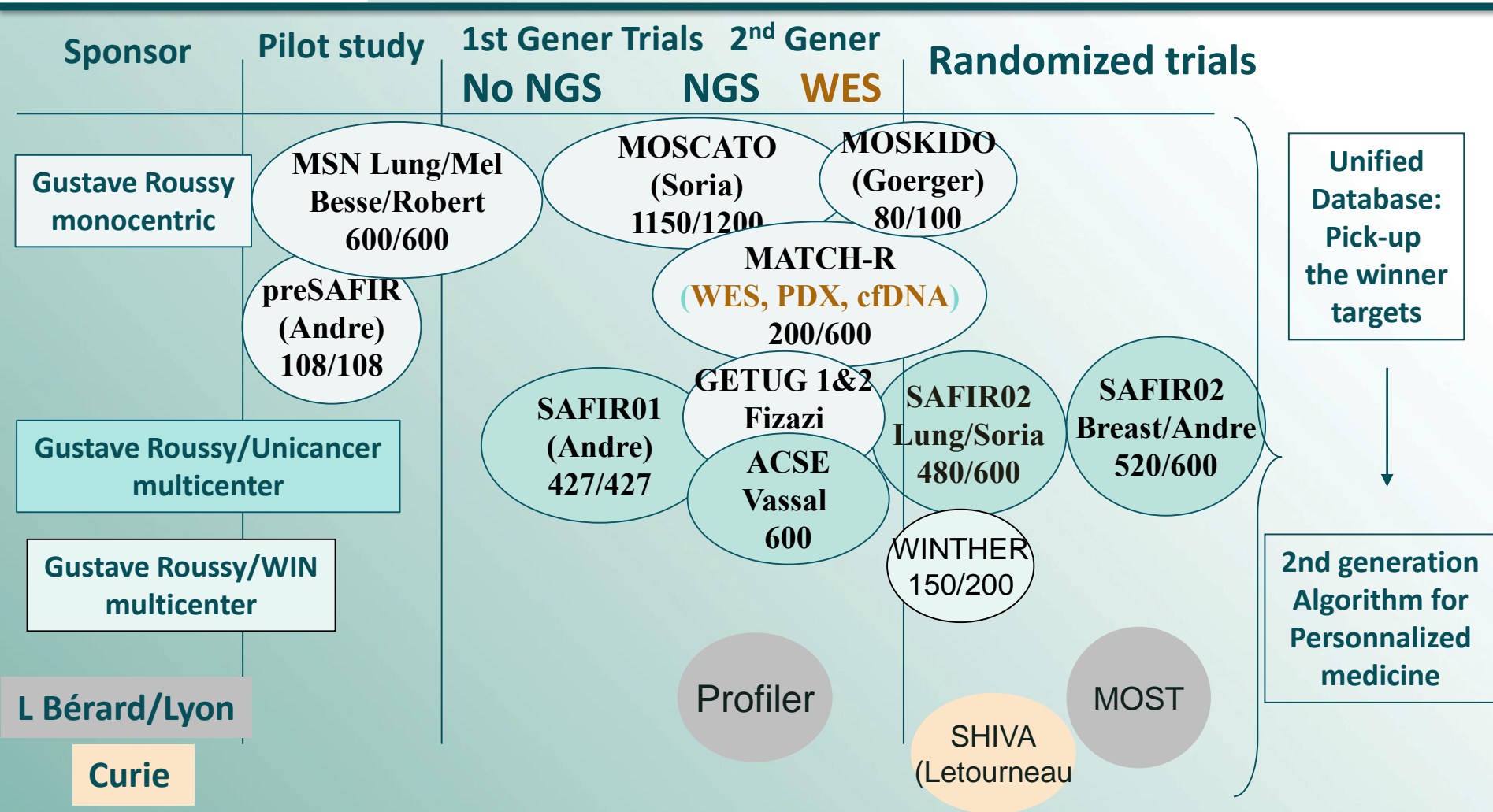
Targeted therapy according to the molecular profile



Identification of the molecular alteration



Since 2010: Ongoing precision medicine programs 15 GR-initiated trials (high throughput genomics)



FUNDING TOTAL ~50 Million: Fondation GR (12), MCM Building (15), IHU (6), INCA (6), ARC (4), Philanthropia (3), EU-FP7 (3)

Immunotherapy

#1 Program in Europe

BREAKING TOLERANCE

Immune-Checkpoint-Blockers

CTLA-4

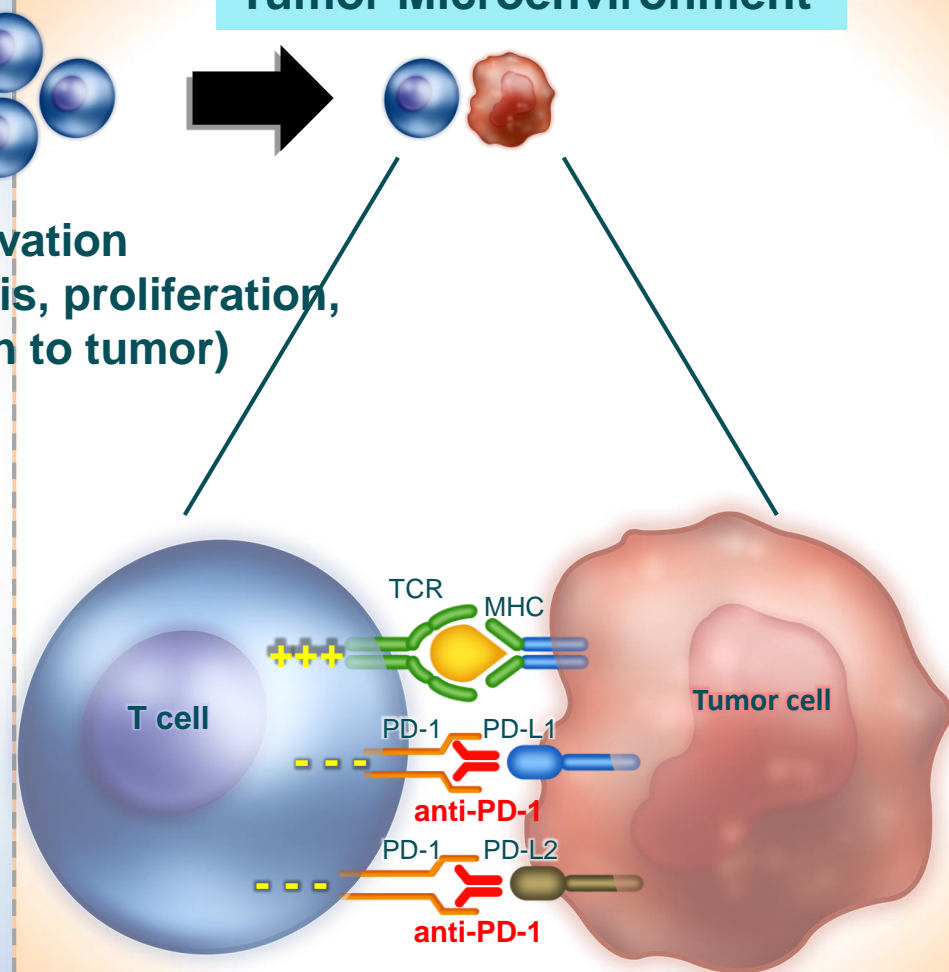
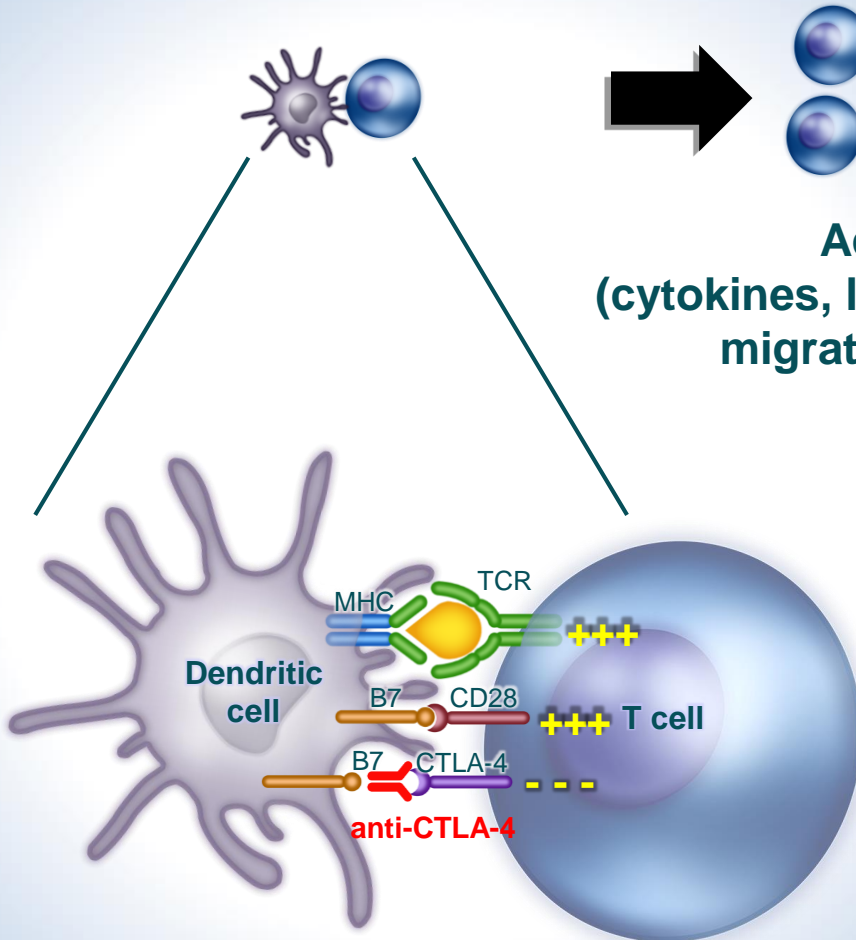
and

PD-1/PDL1

Mostly CENTRAL in LNN

Mostly PERIPHERAL
Tumor Microenvironment

Activation
(cytokines, lysis, proliferation,
migration to tumor)



CTLA-4 Blockade (ipilimumab tremelimumab)

PD-1 Blockade (nivolumab, lambrolizumab)

BRAFInh in BRAFmutant compared to anti-PD1 in Wildtype Advanced Melanoma

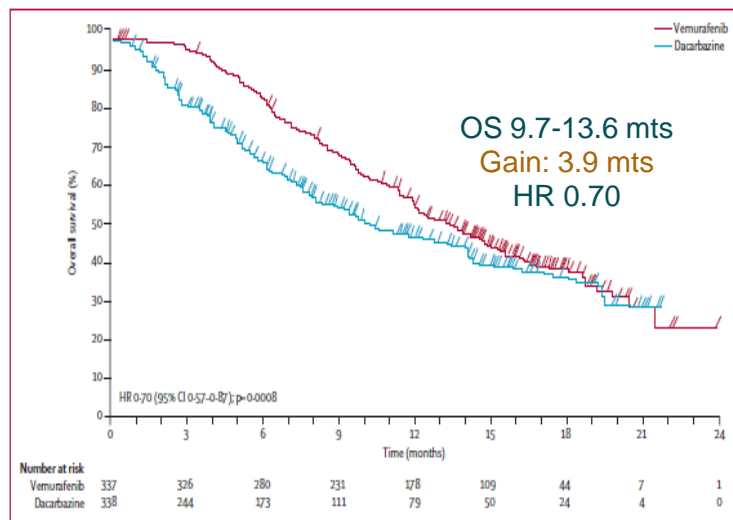


Figure 2: Overall survival (randomised population; censored at crossover) for patients randomly assigned to vemurafenib or to dacarbazine (cutoff Feb 1, 2012)

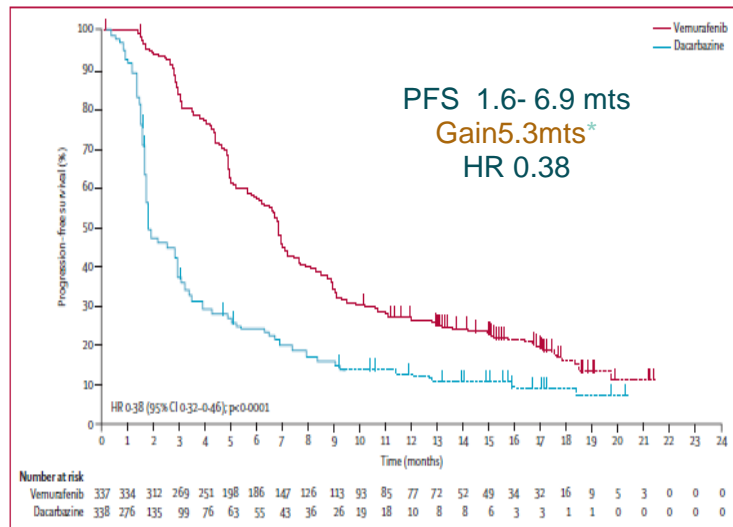
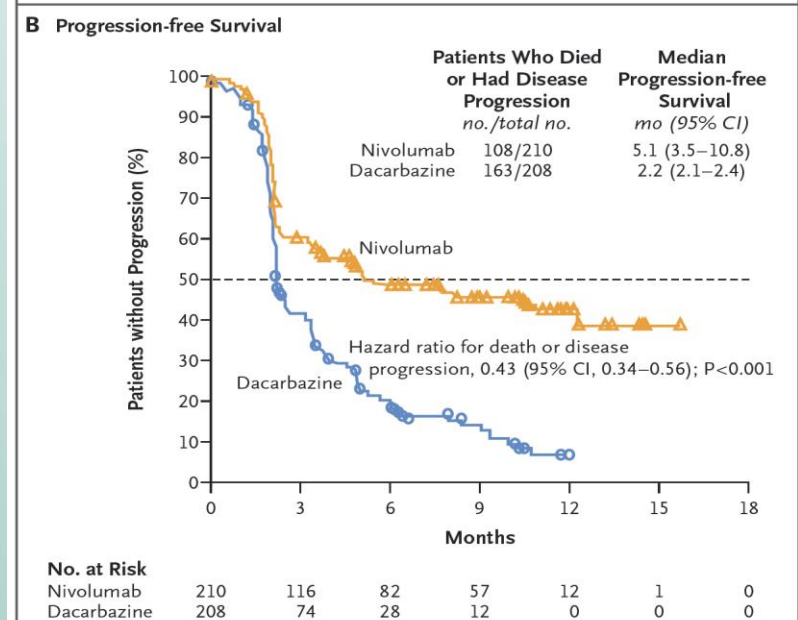
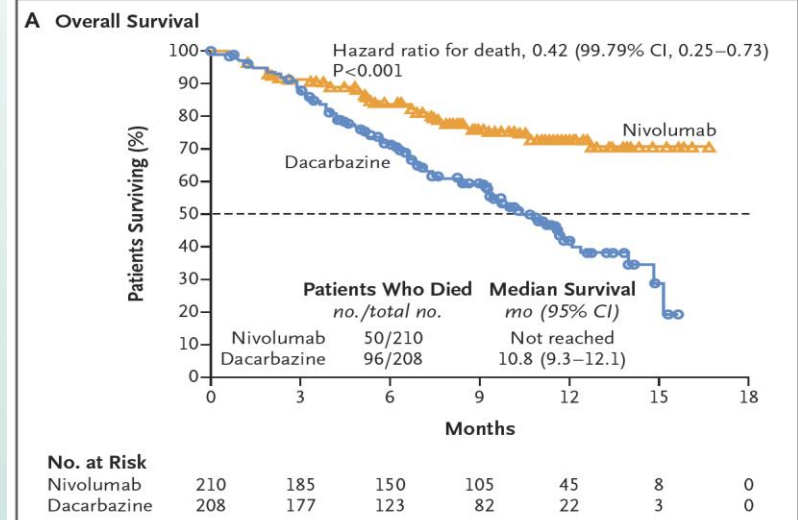


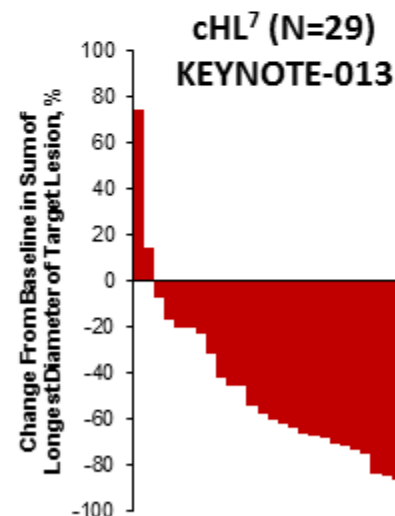
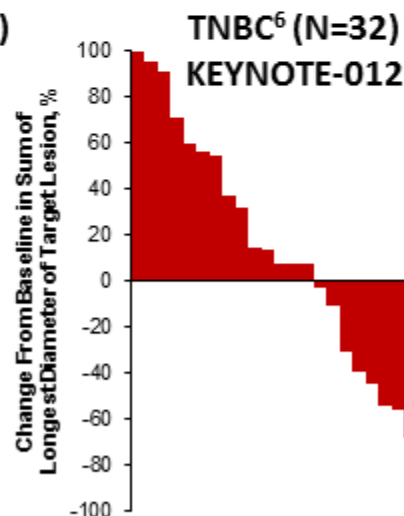
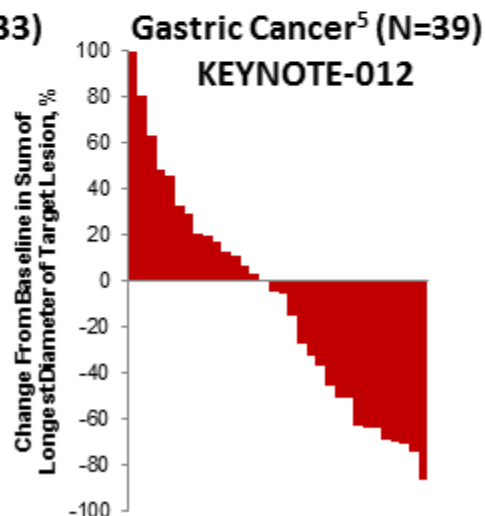
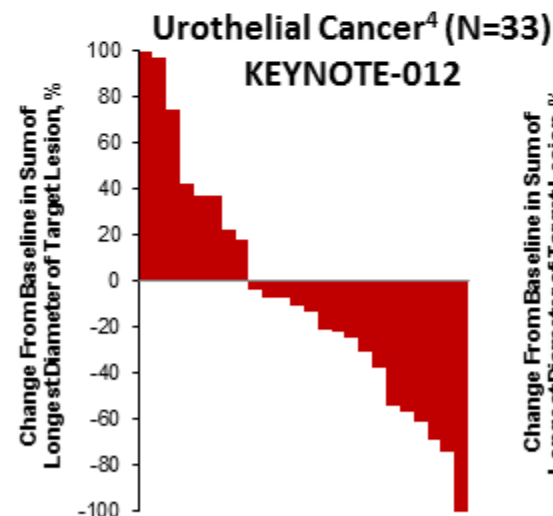
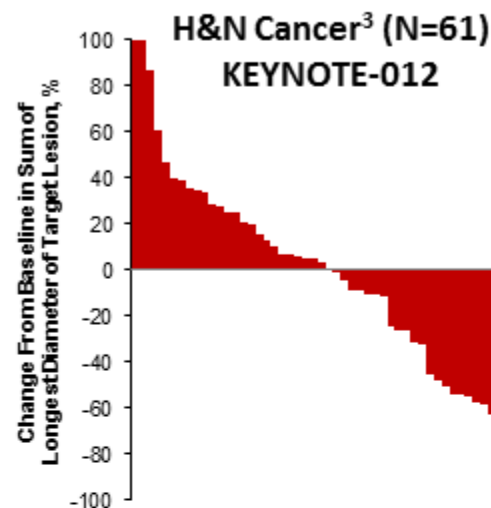
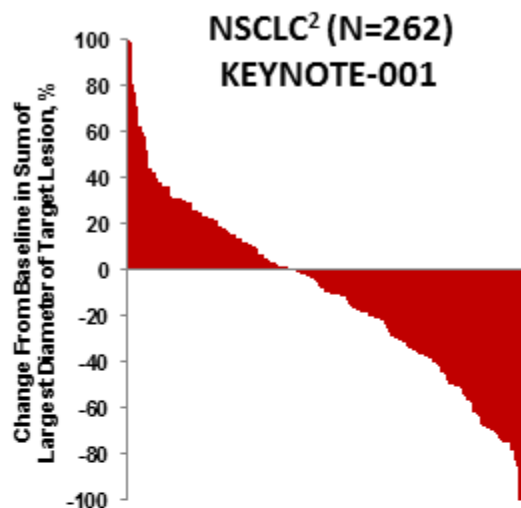
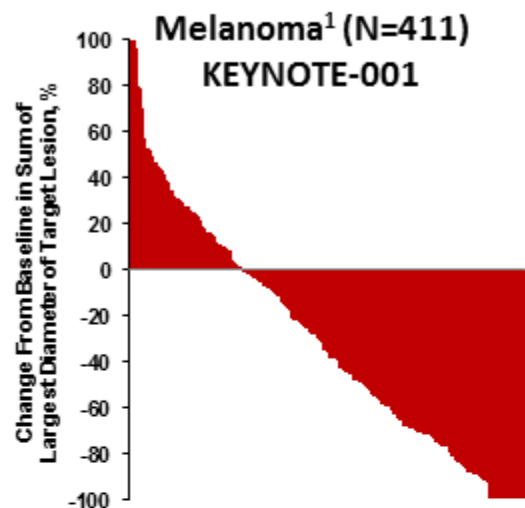
Figure 3: Progression-free survival (randomised population; censored at crossover) for patients randomly assigned to vemurafenib or to dacarbazine (cutoff Feb 1, 2012)



**Anti-PD1
(nivolumab)
(pembrolizumab)**

**TRANSVERSAL
IMPACT**

Pembrolizumab Antitumor Activity

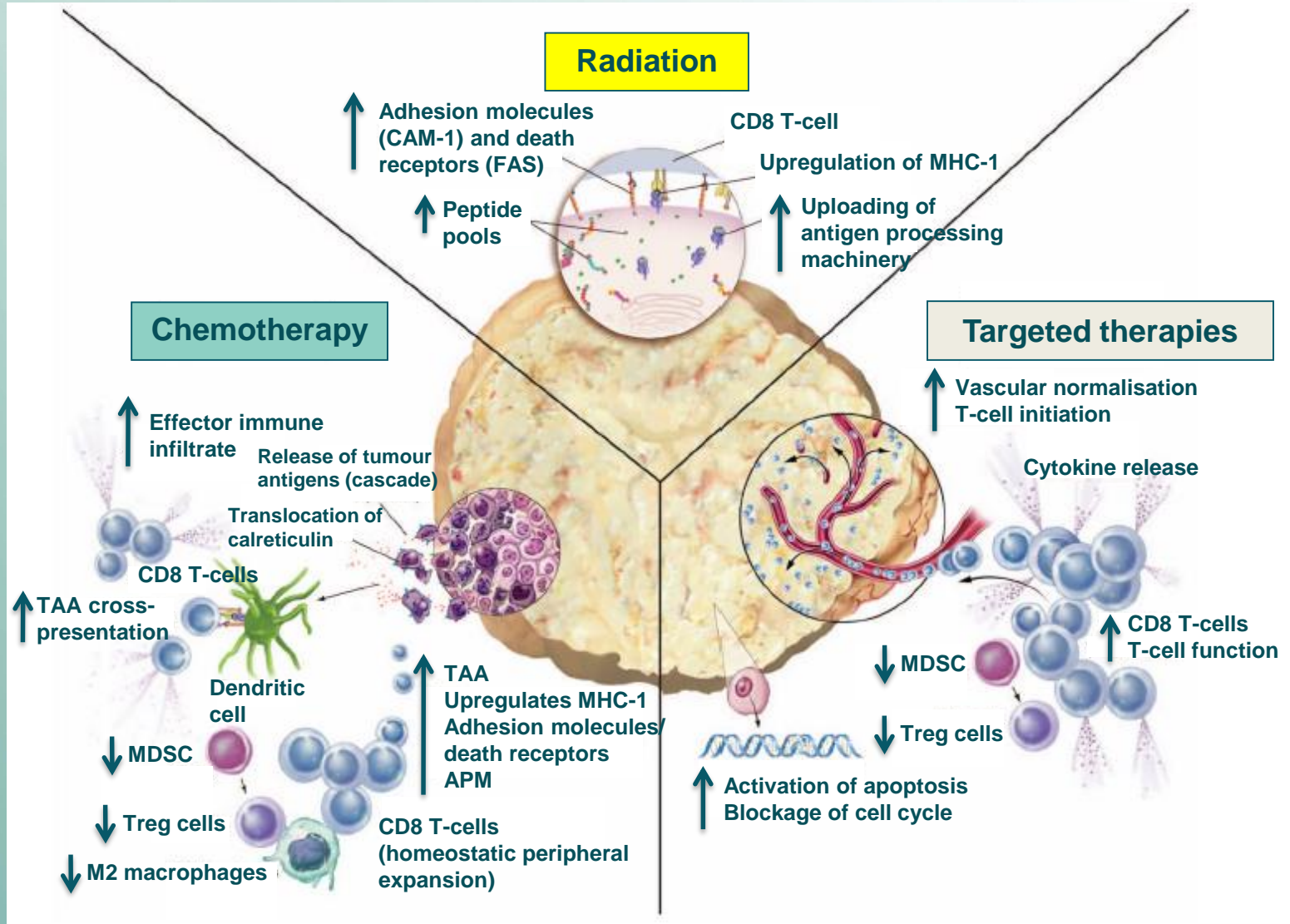


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Immunotherapy + Other Modalities

Guidance by Immunogenic Cell Death

Zitvogel & Kroemer



- **Find the money to develop and transform into Top 7 worldwide**
- **International Patients Program**
- **International Training Programs**
 - Kazakhstan
 - Gulf Countries
 - Latin America
- **International Development Projects**
 - Kazakhstan
 - Gulf Countries
 - Satellite Hospitals in Kuwait and Astana

- **FIND THE MONEY**
- **IMMUNOTHERAPY PROGRAM**
 - Immunotherapist-Scientists (25-75)
 - Immunomonitoring platform + immunosignature programs
 - Combo academic trials / immunogenic cell death guided
 - > 30 PHASE I TRIALS @ GUSTAVE ROUSSY
- **PRECISION CANCER MEDICINE PROGRAM**
 - As shown
 - Tumor priority programs: Lung-Breast-Melanoma-Hemato
 - >30 Trials with targeted agents (large cohorts)
- **CONSORTIA**
 - CANCER CORE EUROPE
- **TRANSFORM CCC into CANCER CAMPUS**

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Position Paper

Cancer Core Europe: A consortium to address the cancer care – Cancer research continuum challenge

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Received 31 July 2014; accepted 31 July 2014

KEYWORDS

Cancer care
Research
Continuum
Consortium
Europe

Abstract European cancer research for a transformative initiative by creating a consortium of six leading excellent comprehensive cancer centres that will work together to address the cancer care-cancer research continuum.

Prerequisites for joint translational and clinical research programs are very demanding. These require the creation of a virtual single 'e-hospital' and a powerful translational platform, inter-compatible clinical molecular profiling laboratories with a robust underlying computational biology pipeline, standardised functional and molecular imaging, commonly agreed Standard Operating Procedures (SOPs) for liquid and tissue biopsy procurement, storage and processing, for molecular diagnostics, 'omics', functional genetics, immune-monitoring and other assessments. Importantly also it requires a culture of data collection and data storage that provides complete longitudinal data sets to allow for: effective data sharing and common database building, and to achieve a level of completeness of data that is required for conducting outcome research, taking into account our current understanding of cancers as communities of evolving clones. Cutting edge basic research and technology development serve as an important driving force for innovative translational and clinical studies. Given the excellent track records of the six participants in these areas, Cancer Core Europe will be able to support the full spectrum of research required to address the cancer research-cancer care continuum. Cancer Core Europe also constitutes a unique environment to train the next generation of talents in innovative translational and clinical oncology. © 2014 Published by Elsevier Ltd.

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VIRTUAL E-HOSPITAL/CANCER INSTITUTE

60.000 New pts/yr, 300.000 pts treated, > 1.3 Million consultations

- COMMON SOPs
 - (tissue procurement, biobank, functional imaging, molecular screening methods (common 400 gene panel), bioinformatic pipelines, etc)
- SHARE DATA (common data bases)
 - SAP HANNA ONCOLOGY MODULE
- DEVELOP PRECISION MEDICINE
 - ONE PORTAL
 - Innovative Trials, attractive partner for pharma/biotech etc
- OUTCOME RESEARCH

Comprehensive Cancer Center Towards a Cancer Campus

1st Step PRECAN



1st Step PRECAN (largest preclinical infrastructure for cancer research in France (25000 cages, imaging etc etc))

Alexander EGGERMONT. MD, PhD

*Gustave Roussy Comprehensive Cancer Center
Cancer Campus Grand Paris, France*

3rd STEP: BIOTECHS etc 2018-2023



THANK YOU



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Cancer Campus Grand Paris**