



Key Facts

- **Team :**
 Researchers : 2
 Technicians : 1
 PhD students : -
 Postdoc fellows : 8
- **Translational approaches :**
 Patents : 2
 Clinical research grants : -
 Industry partners : 3
- **International research links :**

Keywords

- Immunology
- Immunotherapy
- T cell polarity
- Tumor microenvironment
- Epigenetic modifications
- Molecular biology
- Biochemistry
- Imaging
- Experimental models
- Dendritic cells

Biological resources

- Models of spontaneous tumors in humanized mice
- Cohorts of cancer patients
- Platform for phage displays and target identification in human tumor and immune cells

Sebastian Amigorena

Dendritic cell and T cell biology

/ / Amigorena Sebastian

Inserm

The aim of our research is to understand the molecular mechanisms at stake in the immune responses against tumours.

Research brief

The aim of our research is to understand the immunological responses to tumours, and to learn how to use the immune system to fight cancer. Our research ranges from analysis of the most fundamental aspects of intracellular transport in cells of the immune system to functional aspects of immune responses to tumours in animal models and to clinical immunotherapy in cancer patients. Our approaches include molecular biology, biochemistry and imaging techniques, based on both in vitro and in vivo experimental models.

Our recent work has contributed to understanding several aspects of intracellular traffic and signal transduction in cells of the immune system, to characterising various lymphocyte populations and to analysing cytokine production and the interactions between cells of the immune system in vitro and in vivo. These investigations are contributing to our understanding of the fundamental mechanisms of immune responses both in animal models and in cancer patients. In doing so, we are defining new strategies for immunotherapy and we have initiated several clinical phase I trials for vaccination against cancer.

Methodologies used

- -

Publications

- An epigenetic silencing pathway controlling Th2 cell lineage commitment. Allan R, Zueva E, Cammas E, Schreiber H, Masson V, Belz G, Roche D, Maison C, Quivy J-P, Almouzni G, Amigorena S. *Nature*. 2012. In Press.
- Characterization of resident and migratory dendritic cells in human lymph nodes. Segura E, Valladeau-Guilemond J, Donnadiou MH, Sastre-Garau X, Soumelis V, Amigorena S. *J Exp Med*. 2012 Apr 9;209(4):653-60
- Sec22b regulates phagosomal maturation and antigen crosspresentation by dendritic cells. Cebrian I, Visentin G, Blanchard N, Jouve M, Bobard A, Moita C, Enninga J, Moita LF, Amigorena S, Savina A. *Cell*. 2011 Dec 9;147(6):1355-68
- Foxp3+ T cells induce perforin-dependent dendritic cell death in tumor-draining lymph nodes. Boissonnas A, Scholer-Dahirel A, Simon-Blancal V, Pace L, Valet F, Kissenpfennig A, Sparwasser T, Malissen B, Fetler L, Amigorena S. *Immunity*. 2010 Feb 26;32(2):266-78
- Semen clusterin is a novel DC-SIGN ligand. Sabatte J, Faigle W, Ceballos A, Morelle W, Rodríguez Rodríguez C, Remes Lenicov F, Thépaut M, Fieschi F, Malchiodi E, Fernández M, Arenzana-Seisdedos F, Lortat-Jacob H, Michalski JC, Geffner J, Amigorena S. *J Immunol*. 2011 Nov 15;187(10):5299-309
- The small GTPase Rac2 controls phagosomal alkalization and antigen crosspresentation selectively in CD8(+) dendritic cells. Savina A, Peres A, Cebrian I, Carmo N, Moita C, Hacohen N, Moita LF, Amigorena S. *Immunity*. 2009 Apr 17;30(4):544-55

Patents, pending/registered

Objectives:

T cell plasticity and allergic asthma

Cell biology of antigen cross presentation

Tumor microenvironment

Dendritic cell migration

Tools:

Epigenetic analysis and chromatin dynamics

Models of spontaneous tumors in humanized mice

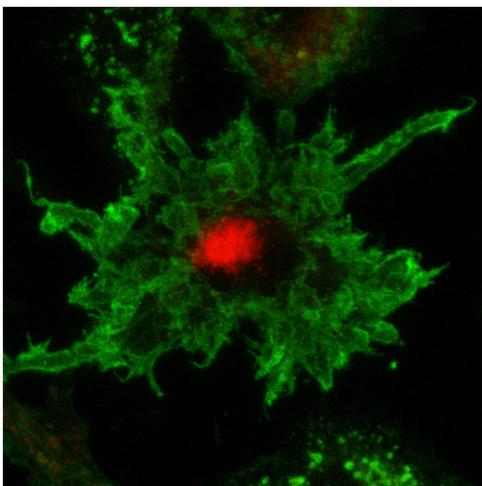
Microchannels and biophysics

Systemic analysis in cancer patients (cohort studies)

Contact :

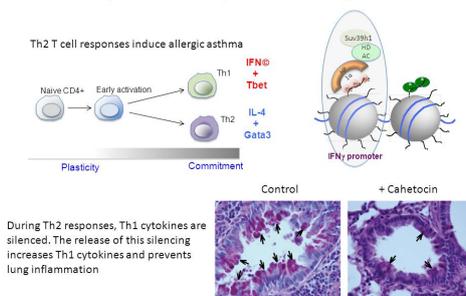
- Sebastian Amigorena - 0156246711 - sebastian.amigorena@curie.fr

Dendritic cell biology and T cell responses



Epigenetic control

Epigenetic control of the differentiation of T helper cells: manipulation of allergic asthma



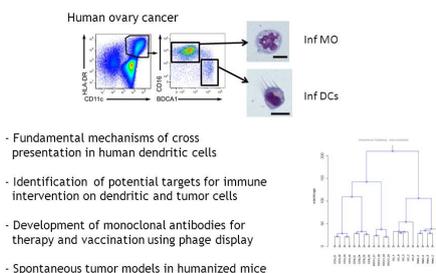
Epigenetic control of the differentiation of T helper cells: manipulation of allergic asthma

1- Th2 T cell responses induce allergic asthma

2- During Th2 responses, Th1 cytokines are silenced. The release of this silencing increases Th1 cytokines and prevents lung inflammation

Human dendritic cell targets

Human dendritic cell targets: cross presentation mechanisms and vaccination



Human dendritic cell targets: cross presentation mechanisms and vaccination

- Fundamental mechanisms of cross presentation in human dendritic cells
- Identification of potential targets for immune intervention on dendritic and tumor cells
- Development of monoclonal antibodies for therapy and vaccination using phage display
- Spontaneous tumor models in humanized mice