UMR 3347/U1021 – Normal & Pathological Signaling: from the embryo to the innovative therapy of cancers

Biology & Chemistry of Radiations, Cell Signaling and Cancer

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Melanoma is a very aggressive tumor originating from neural-crest derived melanocytes. The transformation of normal melanocytes into melanoma cells is a multistep process. It is crucial to elucidate the molecular and cellular mechanisms of melanocyte development (specially the molecular network that controls the induction of neural crest) and transformation, to improve the prevention, early diagnosis, prognosis and therapy.

Our research combines molecular approaches based on an understanding of the signaling associated with extracellular factors, a cellular approach based on an understanding of the establishment/maintenance and alteration of the melanocyte lineage and an approach based on animal models that will be used to test specific innovative treatments. *In fine*, we expect that we can ultimately propose new prognostic markers for melanoma and improved therapeutic treatments.

Key publications

Year of publication 2019

Giorgio Seano, Hadi T Nia, Kyrre E Emblem, Meenal Datta, Jun Ren, Shanmugarajan Krishnan, Jonas Kloepper, Marco C Pinho, William W Ho, Mitrajit Ghosh, Vasileios Askoxylakis, Gino B Ferraro, Lars Riedemann, Elizabeth R Gerstner, Tracy T Batchelor, Patrick Y Wen, Nancy U Lin, Alan J Grodzinsky, Dai Fukumura, Peigen Huang, James W Baish, Timothy P Padera, Lance L Munn, Rakesh K Jain (2019 Apr 6)
Solid stress in brain tumours causes neuronal loss and neurological dysfunction and can be reversed by lithium.
Nature biomedical engineering : 230-245 : DOI : 10.1038/s41551-018-0334-7

John D Martin, Giorgio Seano, Rakesh K Jain (2019 Feb 12)
Normalizing Function of Tumor Vessels: Progress, Opportunities, and Challenges.
Annual review of physiology : 505-534 : DOI : 10.1146/annurev-physiol-020518-114700

Chia-Hsiang Chang, Marco Zanini, Hamasseh Shirvani, Jia-Shing Cheng, Hua Yu, Chih-Hsin Feng, Audrey L Mercier, Shiue-Yu Hung, Antoine Forget, Chun-Hung Wang, Sara Maria Cigna, I-Ling Lu, Wei-Yi Chen, Sophie Leboucher, Won-Jing Wang, Martial Ruat, Nathalie Spassky, Jin-Wu Tsai, Olivier Ayrault (2019 Jan 30)
Atoh1 Controls Primary Cilia Formation to Allow for SHH-Triggered Granule Neuron Progenitor Proliferation.
Developmental cell : 184-199.e5 : DOI : S1534-5807(18)31085-2

Year of publication 2018

Annalisa Patriarca, Charles Fouillade, Michel Auger, Frédéric Martin, Frédéric Pouzoulet, Catherine Nauraye, Sophie Heinrich, Vincent Favaudon, Samuel Meyroneinc, Rémi Dendale, Alejandro Mazal, Philip Poortmans, Pierre Verrelle, Ludovic De Marzi (2018 Nov 1)
Experimental set-up for FLASH proton irradiation of small animals using a clinical system
International Journal of Radiation Oncology • Biology • Physics : 102 : 619-626 : DOI : 10.1016/j.ijrobp.2018.06.403

Michaël Cerezo, Ramdane Guemiri, Sabine Druillennec, Isabelle Girault, Hélène Malka-Mahieu, Shensi Shen, Delphine Allard, Sylvain Martineau, Caroline Welsch, Sandrine Agoussi, Charlène Estrada, Julien Adam, Cristina Libenciuc, Emilie Routier, Séverine Roy, Laurent Désaubry, Alexander M Eggermont, Nahum Sonenberg, Jean Yves Scoazec, Alain Eychène, Stéphan Vagner, Caroline Robert (2018 Oct 29)

Translational control of tumor immune escape via the eIF4F-STAT1-PD-L1 axis in melanoma.
Nature medicine : DOI : 10.1038/s41591-018-0217-1

Forget Antoine, Martignetti Loredana, Puget Stéphanie, Calzone Laurence, Brabetz Sebastian, Picard Daniel, Montagud Arnau, Liva Stéphane, Sta Alexandre, Dingli Florent, Arras Guillaume, Rivera Jaime, Loew Damarys, Besnard Aurore, Lacombe Joëlle, Pagès Mélanie, Varlet Pascale, Dufour Christelle, Yu Hua, L. Mercier Audrey, Indersie Emilie, Chivet Anaïs, Leboucher Sophie, Sieber Laura, Beccaria Kevin, Gombert Michael, D. Meyer Frauke, Qin Nan, Bartl Jasmin, Chavez Lukas, Okonechnikov Konstantin, Sharma Tanvi, Thatikonda Venu, Bourdeaut Franck, Pouponnot Celio, Ramaswamy Vijay, Korshunov Andrey, Borkhardt Arndt, Reifenberger Guido, Poullet Patrick, D. Taylor Michael, Kool Marcel, M. Pfister Stefan, Kawauchi Daisuke, Barillot Emmanuel, Remke Marc, Ayrault Olivier (2018 Sep 10)
Aberrant ERBB4-SRC Signaling as a Hallmark of Group 4 Medulloblastoma Revealed by Integrative Phosphoproteomic Profiling
Cancer Cell : 34 : 379-395 : DOI : 10.1016/j.ccell.2018.08.002