

Diana Cadena-Castaneda, Ph.D.
Jackson Laboratory for Genomic Medicine
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RESEARCH EXPERIENCE

Postdoctoral Fellow (2019-Present)

The Jackson Laboratory for Genomic Medicine, Farmington, CT, USA

Supervisor: Karolina Palucka, M.D., Ph.D.

- Studying the mechanisms of human immunity and developing cancer immunotherapies.
- Post-Doc project: Studying the mechanisms of cross-presentation in the context of human lung cancer (U19 grant): *in vitro* and *ex vivo* experiments performed on human lung tissue

Ph.D. Fellow (Biological Sciences, SSBCV) (2014-2019)

Université François Rabelais, Tours

Supervisors: Dr V. Gouilleux-Gruart and Dr N. Heuzé-Vourc'h

- Team 1: Antibodies, Fc Receptors and Clinical Responses
- PhD project: Regulation of FcRn expression during tumorigenesis and its impact on the treatment with therapeutic antibodies.
- Establishment of *in vivo* and *in vitro* methods for evaluation of new FcRn functions
- Bibliographic study, writing reports, protocols and oral communication of the experimental results
- Fellowship from: « Labex » « Région Centre » and « La Ligue contre le cancer »

Immunology Technician (2012-2014)

GEMACBIO, Bordeaux

Department Heads: Dr. M. Geffard and Dr. A. Mangas, Antibody Department

- Antibody manufacturing: polyclonal and monoclonal antibodies

Immunology Technician (2011-2011)

Inserm UMR 1138, Hôpital Européen Georges Pompidou, Paris

Supervisor: Dr. V. Fremeaux-Bacchi

- Genetic study: Sequencing of genes encoding complement proteins (PCR technique) in patients with nocturnal paroxysmal hemoglobinuria (PNH) and patients with atypical hemolytic uremic syndrome (aHUS)
- **Main subject:** Study of the effects, *in vivo* and *in vitro*, of the human anti-C5 monoclonal antibody, Eculizumab (Soliris®)
- Development of ELISA assays for free Eculizumab, bound and free C5 detections
- Study of the effect of Eculizumab on patients with PNH and on patients with aHUS by ELISA and the CH50 test

Internship (Master's Degree, 2011)

Inserm UMR 1138, Centre des Cordeliers, Paris

Supervisor: Dr. J-L. Teillaud, Antibodies and Biotechnologies Team

- Main subject: Characterization of affinities of two IgG1s on the FcγRIIIA by flow cytometry: implication for the (pre-) clinical development of a new anti-CD20 antibody
- Introduction to classical laboratory techniques and initiation to the research work

EDUCATION

October 2014 – Present

Ph.D. Training (Ph.D. in Biological Sciences, SSBCV)

Université François Rabelais, Tours

- Immunology and cancer program
- Animal experimentation accreditation, level 1
- Biostatistical courses, management courses,
- Entrepreneurship certificate university of Tours

2010 – 2011

Master's degree in ImmunoTechnologies and Biotherapies – Year 2

Université Pierre et Marie Curie, Paris VI (UPMC)

- Scientific program: Immunotherapies, gene and cellular therapies, Immune-monitoring, monoclonal antibodies applications
- Management program: international marketing, management, patents, project management, enhancement of research and biomedical innovation (DU.GBM)

2009 – 2010

Master's degree in Cell and Molecular Biology (BMC) with a specialization in immunology and cell biology – Year 1

Université Pierre et Marie Curie, Paris VI (UPMC)

- Technological Workshop in Cell and Molecular Biology: immunofluorescence, immunoblot, FACS, functional screening, cell culture, protein purification
- Scientific program: Immunology, Microbiology, Oncology, Genetics

2006 – 2009

Bachelor's Degree in Life Science

Université Pierre et Marie Curie, Paris VI (UPMC)

- Scientific program: Chemistry, physics, immunology, biostatistics, computer studies, animal and plant biology

TECHNICAL SKILLS

- Microscopy: immunofluorescence SP8 leica, polychromatic staining (up to 6 colors)
- In vitro experiments:
 - Cell culture: lung cell line (BEAS-2B) and primary cells (human lung cells, PBMC)
 - Human lung organoids cultures expansion as a source for primary Air lift liquid interface cultures. Air-lift liquid interface cultures on which we perform viral infection (Influenza, SARS-Cov-2) to study the molecular and cellular mechanism involved in the response to virus
 - Primary cell purification and assays: Immune cells isolation (Dendritic cells, Monocytes), design of co-culture models to study ALI, immune cell interactions under viral exposure
- *Ex vivo* experiments human lung biopsy tissue on which we perform viral infection (influenza PR8 and Cal09) to study the molecular and cellular mechanism involved in the response to virus
- Flow Cytometry

PUBLICATIONS

The neonatal Fc Receptor in cancer. Diana Cadena Castaneda; Guillaume Brachet, Caroline Goupille; Lobna Ouldamer; Valérie Gouilleux-Gruart. *Cancer Medicine*. 2020

Interplay between dendritic cells and cancer cells. Martinek J, Wu TC1, Cadena D, Banchereau J, Palucka K. *Int Rev Cell Mol Biol*. 2019

Lack of FcRn impairs natural killer cell development and functions in the tumor microenvironment. Diana Cadena Castaneda, Christine Dhommée, Thomas Baranek, Emilie Dalloneau, Laurie Lajoie, Alexandre Valayer, Christophe Arnoult, Marie-Véronique Demattéi, Delphine Fouquet, Christelle Parent, Nathalie Heuzé-Vourc'h and Valérie Gouilleux-Gruart. *Frontiers Immunology, Frontiers Immunol* 2018

Generation of specific antisera directed against D-amino acids: focus on the neuroanatomical distribution of D-glutamate and other D-amino acids. Rafael Coveñas Arturo Mangas, Manuel Lisardo Sánchez, Diana Cadena, Marianne Husson, Michel Geffard. *Folia Histochem Cytobiol*, 2017.

Crucial role for immune complexes but not FcRn in immunization against anti-TNF α antibodies after a single injection in Mice. Christophe Arnoult, Guillaume Brachet, Diana Cadena Castaneda, Nicolas Azzopardi, Christophe Passot, Celine Desvignes, Gilles Paintaud, Nathalie Heuzé-Vourc'h, Hervé Watier and Valérie Gouilleux-Gruart. *Journal of Immunology*, 2017.

Downregulation of the neonatal Fc receptor expression in non-small cell lung cancer tissue is associated with a poor prognosis. Emilie Dalloneau, Nadine Baroukh, Konstantinos Mavridis, Agnès Maillet, Fabien Gueugnon, Yves Courty, Agnès Petit, Thomas Kryza, Maguy Del Rio, Serge Guyétant, Diana Carolina Cadena Castaneda, Christine Dhommée, Christophe Arnoult, Andreas Scorilas, Valérie Gouilleux-Gruart and Nathalie Heuzé-Vourc'h. *Oncotarget*. 2016.

Assessing complement blockade in patients with paroxysmal nocturnal hemoglobinuria receiving eculizumab. Régis Peffault de Latour, Véronique Fremeaux-Bacchi, Raphaël Porcher, Aliénor Xhaard, Jérémie Rosain, Diana Cadena Castaneda, Paula Vieira-Martins, Stéphane Roncelin, Paula Rodriguez-Otero, Aurélie Plessier, Flore Sicre de Fontbrune, Sarah Abbes, Marie Robin and Gérard Socié. *Blood*. 2015

CONFERENCE PROCEEDINGS

POSTERS/ABSTRACTS

2020

Human-derived ex vivo systems enabling studies on the modulation of human lung innate and adaptive immunity to respiratory viruses. Diana Cadena, Michael Schotsaert, Jan Martinek, Jianan Lin, Angela Choi, Te-Chia Wu, Florentina Marches, Lerato Hlaka, Sonia Jangra, Peter Yu, Stefan Kachala, Andrew Salner, Adam Williams, Adolfo García-Sastre, and Karolina Palucka. Cooperative Centers on Human Immunology (CCHI) Annual Meeting. December 8 – 9, 2020. National Institutes of Allergy and Infectious Diseases (NIAID).

2017

Abnormal FcRn-dependent NK cell maturation in B16F10 experimental lung metastasis model. Diana Cadena Castaneda, Christine Dhommée, Thomas Baranek, Emilie Dalloneau, Laurie Lajoie, Christophe Arnoult, Delphine Fouquet, Christelle Parent, Nathalie Heuzé-Vourc'h and Valérie Gouilleux-Gruart. *Cell Symposia Cancer and Inflammation*; 11-13 June 2017, San Diego CA, USA and *Annual Meeting of the French Society for Immunology (SFI) co-organized with the French Cytometry Association (AFC)*, 7-9 November 2017, Reims, France.

2016

Influence of FcRn expression during tumorigenesis in an animal model of lung tumors. Diana Cadena Castaneda, Christine Dhommée, Emilie Dalloneau, Christophe Arnoult, Delphine Fouquet, Christelle Parent, Laurie Lajoie, Thomas Baranek, Nathalie Heuzé-Vourc'h and Valérie Gouilleux-Gruart. *Biotechnocentre* ; 13-14 October 2016, Domaine de Seillac, France.

ORAL PRESENTATIONS

2020

Human-derived ex vivo systems enabling studies on the modulation of human lung innate and adaptive immunity to respiratory viruses. Diana Cadena, Michael Schotsaert, Jan Martinek, Jianan Lin, Angela Choi, Te-Chia Wu, Florentina Marches, Lerato Hlaka, Sonia Jangra, Peter Yu, Stefan Kachala, Andrew Salner, Adam Williams, Adolfo García-Sastre, and Karolina Palucka. Cooperative Centers on Human Immunology (CCHI) Annual Meeting. December 8 – 9, 2020. National Institutes of Allergy and Infectious Diseases (NIAID).

2015

Pulmonary delivery of monoclonal antibodies in an animal model of lung tumors. Diana Cadena Castaneda, Emilie Dalloneau, Valérie Gouilleux-Gruart and Nathalie Heuzé-Vourc'h. Workshop, “New Advances in animal Models and preclinical Imaging for translational Research in Cancerology” *Cancéropôle Grand Ouest (CGO)*; October 31st to November 3rd 2015, Nantes, France.