M. Pierre Cattenoz

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Born the 08/06/1983 in Mulhouse.

Researcher in developmental and molecular biology

Education:

2023: Habilitation to direct researches from the University of Strasbourg: “Characterisation of the molecular pathways regulating the differentiations and functions of glia and immune cells in Drosophila”. Evaluated by Pr. Jean-Luc Imler (IBMC, Strasbourg, reviewer), Pr. Volker Hartenstein (UCLA, Los Angeles, reviewer), Dr. Bassem Hassan (ICM, Paris, reviewer), Dr. Ali Hamiche (IGBMC, Strasbourg), Pr. Maneesha Inamdar (InStem, Bangalore).

2008 - 2012: PhD in Molecular Biology and Bioinformatics with a co-tutelle agreement between the University of Queensland and the University of Strasbourg, three years were spent in Brisbane (Australia) and one year in Strasbourg.

2005 - 2007: Master in Cellular and Molecular Biology at the University of Lille1.

2003 - 2005: License (bachelor) in Genomics and Proteomics at the University of Lille1.

2001 - 2003: DUT in Agronomy at the University of Haute-Alsace (Colmar).

Work experience:

October 2017 – present: Researcher (CR-CN, CNRS) in developmental and molecular biology, Institute for Genetic, Molecular and Cellular Biology (**Illkirch, France**). Deciphering the differentiation programs of glia and hemocyte in *Drosophila*.

November 2012 – September 2017: Post-doctorant in developmental and molecular biology, Institute for Genetic, Molecular and Cellular Biology (**Illkirch, France**). Characterization of the regulatory network of the transcription factor Glide/Gcm in *Drosophila*.

June – October 2012: Engineer in biological data analysis, CNRS-UPR9002 (**University of Strasbourg, France**). Analysis of publicly available deep-sequencing datasets and genomes to describe the expression, the activity and the conservation of the retrotransposable elements composed of one LINE1 element containing an Alu element insertion in human.

April 2008 – June 2012: PhD candidate, Institute for Molecular Bioscience (**University of Queensland, Australia**) and CNRS-UPR9002 (**University of Strasbourg, France**). Development of a new method to characterize the targets of the RNA editing enzymes ADARs in a high-throughput fashion and characterization of the expression of Alu elements in somatic tissues using deep-sequencing technology. Supervisors: Pr. John Mattick j.mattick@garvan.org.au and Pr. Eric Westhof e.westhof@ibmc-cnrs.unistra.fr.

February - December 2007: Internship in Molecular Biology, Novartis (**Basel, Switzerland**). Installation, evaluation and maintenance of a micro-array platform (Geniom One, Febit), design and production of the chips, labeling of the samples, analysis of micro-array data and evaluation of the best labeling strategy for the detection of miRNA (micro-array/qPCR).

March - August 2006: Internship in Plant Biology, Royal Botanic Garden of Edinburgh (**Scotland**). Characterization of the role of BARP in the peltate phenotype in Begonia section Gireoudia using population genetic and scanning electron microscopy. Supervisor: Dr. Catherine Kidner catherine.kidner@ed.ac.uk

September - October 2004: Internship in Population Genetics at the "Laboratoire de Génétique et Evolution des Populations Végétales" (**University of Lille1, France**). Genome mapping of three genes in Arabidopsis halleri. Supervisor: Dr. Vincent Castric vincent.castric@univ-lille1.fr

May - July 2003: Internship in Agronomy, RITTMO (**Aspach-le-Bas, France**). Development of a new method to gauge the soil quality by measuring the rhizospheric activities of Barley. Supervisor: Dr. Najat Nassr najat.nassr@rittmo.com

Scientific communication and award

November 2022: oral presentation at the 3rd Franco-Japanese Developmental Biology meeting (Strasbourg).

October 2022: poster presentation at the Upper Rhine Immunology Meeting (Karlsruhe).

September 2022: oral presentation at Neurofly (Saint-Malo, France).

June 2022: oral presentation at the IGBMC symposium.

September 2019: oral and poster presentation at the European Drosophila Research Conference (EDRC, Lausanne).

November 2018: poster presentation at the Joint Meeting of the Portuguese, Spanish and French Societies for Developmental Biology (Porto).

October 2018: oral presentation at the Upper Rhine Immunology Meeting (Freibourg).

October 2018: oral presentation at the "32nd French Drosophila Meeting (Presqu'ile de Giens).

June 2017: oral presentation at the "Colloque Interdisciplinaire Image" (Strasbourg).

August 2016: poster presentation at the IGBMC.

November 2015: oral presentation at the journée de la Ligue (Strasbourg).

September 2015: oral presentation at the European Drosophila Research Conference (EDRC, Heidelberg).

May 2015: internal seminar at the IGBMC.

March 2015: poster presentation at the German Society of Developmental Biologists (GfE) and the Société Française de Biologie du Développement (SFBD) joint meeting in Nuremberg.

October 2014: oral presentation at the 28th annual French Drosophila Meeting in Sète.

February 2014: oral presentation at the SFBD and the Réseau d'Etudes Fonctionnelles chez les ORganismes modèles (EFOR) joint meeting in Paris.

November 2013: oral presentation at the 27th annual French Drosophila Meeting in Obernai.

June 2011: Individual prize of the best talk for the Venture Capital pitch at the biobusiness retreat (Gold-coast, Australia) organized by IMBcom.

January 2011: Poster at the Gordon Research Seminar and the Gordon Research Conference (Galveston, USA).

Fellowship

2022-2023: Research grant "IDEX recherche exploratoire" from the University of Strasbourg. "MACRONMJ - Interaction between the nervous and the immune systems".

2021-2024: Research grant "ANR Young researchers Projects". "Chromatin dynamics during gliogenesis in Drosophila".

2019-2021: Research grant "Projet fondation ARC". "Characterization of macrophages signalling during melanotic tumor development in Drosophila".

2018: Travel grant from the Groupement de Recherche GDR3740.

2016: Postdoctoral fellowship from the fondation pour l'Aide à la Recherche sur la Sclérose En Plaque (ARSEP)

2015: Postdoctoral fellowship from the Neuroscience upper Rhine network (Neurex).

Outreach

2022: Organisation of scientific workshops on developmental biology in primary school.

2022: Organisation of the symposium "Advances and Challenges in Innate Immunity: Lessons from Drosophila" held in Strasbourg.

2019: Organisation of the retreat of the IGBMC's department Functional Genomics and Cancer at La Petite Pierre.

2016, 2018, 2021: Organisation of the "journée ARSEP" at the IGBMC: description of the research project and visit of the laboratory for patients and donators.

2016: Short documentary for France 3 at the IGBMC.

2014-2018: Supervision of high school student during internship at the IGBMC.

Publication:

Wael Bazzi, Sara Monticelli, Claude Delaporte, Céline Riet, Angela Giangrande and **Pierre B. Cattenoz**, "Gcm alleviates the inflammatory phenotype induced by Toll activation", submitted for publication, 2023.

Sara Monticelli, Alina Sommer, Zeinab Al Haj Hassan, Kémy Adé, **Pierre B. Cattenoz**, Elisa Gomez Perdiguero and Angela Giangrande, "Early-wave macrophages: novel string-puller of late hematopoiesis", submitted for publication, 2023.

Rosy Sakr, **Pierre B. Cattenoz**, Alexia Pavlidaki, Laura Ciapponi, Marta Marzullo, Nivedita Hariharan, Tina Mukherjee, Angela Giangrande, "Novel cell- and stage-specific transcriptional signatures defining Drosophila neurons, glia and hemocytes", Submitted for publication, BioRxiv, 2023, doi: https://doi.org/10.1101/2022.06.30.498263.

Alexia Pavlidaki, Radmila Panic, Sara Monticelli, Céline Riet, Yoshihiro Yuasa, **Pierre B. Cattenoz**, Brahim Nait-Oumesmar, Angela Giangrande, "An anti-inflammatory transcriptional cascade conserved from flies to humans", Cell Rep. 2022 Oct 18;41(3):111506. doi: 10.1016/j.celrep.2022.111506.

Pierre B. Cattenoz (co-corresponding author), Sara Monticelli, Alexia Pavlidaki, Angela Giangrande (co-corresponding author), "Toward a Consensus in the Repertoire of Hemocytes

Identified in Drosophila", Front Cell Dev Biol. 2021 Mar 4;9:643712. doi: 10.3389/fcell.2021.643712. eCollection 2021.

Pierre B. Cattenoz, Angela Giangrande, "[The surprising heterogeneity of the Drosophila immune system: Multis e gentibus vires]", Med Sci (Paris). 2021 Jan;37(1):18-22. doi: 10.1051/medsci/2020251. Epub 2021 Jan 25.

Pierre B. Cattenoz, Angela Giangrande, "Tailoring the immune response to the availability of nutrients", FEBS J. 2020 Aug;287(16):3396-3398. doi: 10.1111/febs.15304. Epub 2020 Apr 13.

Pierre B. Cattenoz (co-corresponding author), Rosy Sakr, Alexia Pavlidaki, Claude Delaporte, Andrea Riba, Nacho Molina, Nivedita Hariharan, Tina Mukherjee and Angela Giangrande (co-corresponding author), "Temporal specificity and heterogeneity of the fly immune cells' transcriptional landscape", EMBO J, DOI 10.15252/embj.2020104486

Guillaume Trébuchet (co-1st author), **Pierre B Cattenoz** (co-1st author), Janos Zsámboki, David Mazaud, Darya E. Siekhaus, Manolis Fanto, Angela Giangrande, "The Repo homeodomain transcription factor suppresses hematopoiesis in Drosophila and preserves the glial fate", **Journal of Neurosciences**, 2019 Jan 9;39(2) 238-255.

Wael Bazzi (co-1st author), **Pierre B Cattenoz** (co-1st author), Claude Delaporte, Vasanthi Dasari, Rosy Sakr, Yoshihiro Yuasa, Angela Giangrande, "Embryonic hematopoiesis modulates the inflammatory response and larval hematopoiesis in Drosophila", **eLife**, 2018; 7: e34890.

Redmond P. Smyth, M.R. Smith, A.C.Jousset, L. Despons, G. Laumond, T. Decoville, **Pierre B. Cattenoz**, C. Moog, F. Jossinet, M. Mougel, J.C. Paillart, M. Von Kleist, R. Marquet, "In cell mutational interference mapping experiment (in cell MIME) identifies the 5' polyadenylation signal as a dual regulator of HIV-1 genomic RNA production and packaging", **Nucleic Acid Res.**, 2018 May 18;46(9):e57.

Pierre B. Cattenoz, Claude Delaporte, Wael Bazzi, Angela Giangrande, "An evolutionary conserved interaction between the Gcm transcription factor and the SF1 nuclear receptor in the female reproductive system", **Scientific Reports**. 2016 Nov 25: doi:10.1038/srep37792

Tripti Gupta, Arun Kumar, **Pierre B. Cattenoz**, Krishnaswamy VijayRaghavan, Angela Giangrande, "The Glide/Gcm fate determinant controls initiation of collective cell migration by regulating Frazzled", **eLife**. 2016 Oct 14;5. pii: e15983.

Pierre B. Cattenoz, Angela Giangrande, "Revisiting the role of the Gcm transcription factor, from master regulator to Swiss army knife", **Fly (Austin)**. 2016 Oct;10(4):210-8.

Pierre B. Cattenoz, Anna Popkova, Tony Southall, Giuseppe Aiello, Andrea Brand, Angela Giangrande, "Functional Conservation of the Glide/Gcm Regulatory Network Controlling Glia, Hemocyte, and Tendon Cell Differentiation in Drosophila", **Genetics**, 2016 Jan;202(1):191-219.

Benjamin Altenhein, **Pierre B. Cattenoz**, Angela Giangrande, "The early life of a fly glial cell", **Wiley Interdiscip Rev Dev Biol.**, 2015 Jul 30: doi: 10.1002/wdev.200.

Maria Pia Bozzetti, Valeria Specchia, **Pierre B. Cattenoz**, Pietro Laneve, Annamaria Geusa, Bahar Sahin, Silvia Di Tommaso, Antonella Friscini, Serafina Massari, Celine Diebold, Angela Giangrande, "The Drosophila Fragile X Mental Retardation Protein participates in the piRNA pathway", **Journal of Cell Science**, 2015 Jun 1;128(11):2070-84.

Pierre B. Cattenoz, Angela Giangrande, "New insights in the clockwork mechanism regulating lineage specification: Lessons from the Drosophila nervous system", **Developmental Dynamics**, 2015 Mar;244(3):332-41.

Hakima Flici (co-1st author), **Pierre B. Cattenoz** (co-1st author), Orban Komonyi, Pietro Laneve, Berra Erkosar, Olmer F. Karatas, Heinrich Reichert, Sara Berzsenyi, Angela Giangrande,

"Interlocked loops trigger lineage specification and stable fates in the Drosophila nervous system", **Nature Communication**, 2014 Jul 28(5):4484.

Pierre B. Cattenoz, Angela Giangrande, "Lineage specification in the fly nervous system and evolutionary implications", **Cell Cycle**, 2013 Sep 1;12(17):2753-9.

Pierre B. Cattenoz, Ryan J. Taft, Eric Westhof, John S. Mattick, "Transcriptome-wide identification of A-to-I RNA editing sites by inosine specific cleavage", **RNA**, 2013 Feb;19(2):257-70.

Dennis K. Gascoigne, Seth W. Cheetham, **Pierre B. Cattenoz**, Michael B. Clark, Paulo P. Amaral, Ryan J. Taft, Dagmar Wilhelm, Marcel E. Dinger, John S. Mattick, "Pinstripe: a suite of programs for integrating transcriptomic and proteomic datasets identifies novel proteins and improves differentiation of protein-coding and non-coding genes", **Bioinformatics**, 2012 Dec 1;28(23):3042-50.

On going collaboration:

Fabien Alpy (IGBMC, Strasbourg): characterisation of the endosome formation in the enterocytes of *Drosophila*.

Elisa Perdiguero (Institut Pasteur, Paris) : interaction between the two hematopoietic waves in *Drosophila* and mouse (ANR).

Dominique Ferrandon (IBMC, Strasbourg): regeneration of the *Drosophila* intestine (ANR grant).

Brahim Nait-Oumesmar (ICM, Paris): role of Gcm in the development of multiple sclerosis in mouse (ARSEP grant).

Genomeast platform (IGBMC), beta tester for spatial and single cell transcriptomic technologies.

Bertrand Verney, Elvire Guiot, Erwan Grangirard (IGBMC, imaging facility): beta tester for the development of lightsheet imaging.

Tutoring:

PhD students:

Gege Zhang (December 2022-present)
Lara Berjawi (January 2022-present)
Thomas Boutet (August 2019-present)
Chrysanthi Voutiraki (July-August 2019)
Shaswati Sarbagna (November 2018-June 2019)
Rosy Sakr (September 2017-December 2021)
Wael Bazzi (September 2013-2017)
PeiYi Chen (April-September 2014)
Gabriela Hollmann (April-August 2013)

Master students:

Luca Sartori (May-July 2023)
Eva Naegelen (January-March 2022 and January 2023-present)
Billal Bourkia (March-May 2022)
Manon Heinis (June-July 2021)
Ashita Bhan (January-July 2021)
Ayse Kucan (January-June 2021)
Maxime Moog (June-August 2020 and March-August 2021)

Gamze Sagin (July-August 2018)
Maria Kolonia (May-June 2018)
Komal Gupta (June-August 2017)
Soraya Epp (June-July 2017)
Ekin Sonmez (September 2016-August 2017)
Rosy Sakr (September 2016-August 2017 and January-March 2016)
Nicola Di Iacovo (March-September 2016)
Ana Gonzalez Garcia (May-July 2016)
Camille Albrecht (January-March 2016)
Giuseppe Aiello (March-December 2015)
Emily Green (January-february 2015)
Audrey Jacob (January-June 2015)
Yazeed Zamzami (January-August 2014)
Seth Cheetham (January-June 2011).

Others:

Sarah Mantash, visiting post-doc (May-August 2023)
Orianne Kuhn, 2nd year DUT (April-June 2022)
Florie Stenger, 2nd year of Licence (July-August 2021).

Referee

Revision of manuscript for eLife, journal of neuroscience, development, cell reports, G3, Fly, JoVE and PNAS.

Jury member for the evaluation of the master students of the University of Strasbourg.

Evaluation of the candidates of the IMCbio PhD Fellowship call (2017-present).

Skills:

Language: fluent in English and French, some notions of Spanish, German and Alsatian.

Molecular biology: deep-sequencing library synthesis and data analysis, micro-array design, RNA labeling, hybridization and analysis, Northern-blot, quantitative PCR, RNA and DNA extraction, chromatin immunoprecipitation, basic proteomic methods (protein extraction and purification, immunoprecipitation, western blot…), cell culture and transfection, cell sorting.

Developmental genetics: proficient in vegetal and animal genetics (*Arabidopsis halleri*, the genus *Begonia* and *Drosophila melanogaster*), handling and dissection of small animals (*Drosophila* and mouse).

Microscopy: immunohistofluorescence, cryostat, live imaging, confocal microscope (Leica sp8, Zeiss spinning disc, lightsheet), notion in scanning electron microscope.

Computational biology: genomic alignment tools (Blat, Blast, Zoom, Bowtie, RNA Star), notions of bash and awk scripting, statistical analysis with the software R, single cell RNA sequencing analysis (Seurat).