Newsletter

CIIL
Center for Infection & Immunity of Lille

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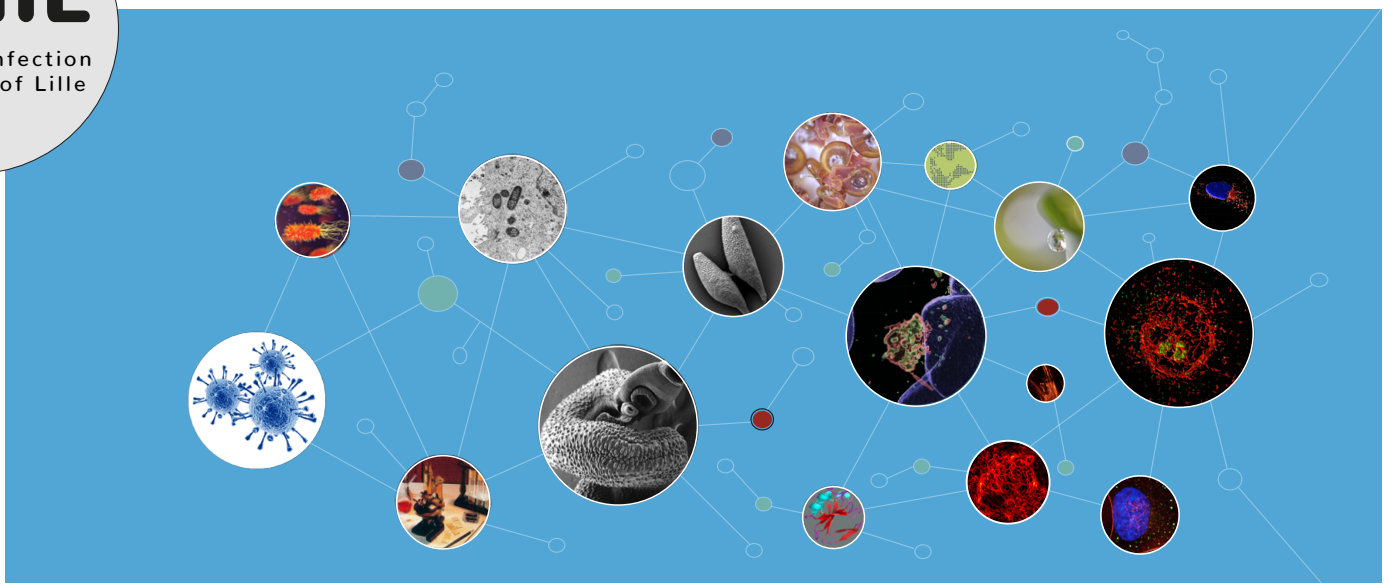

In this issue of the CIIL Newsletter, we begin with a tribute to our fellow parasitologist Magali Chabé, who carried out her research activities within Eric Viscogliosi's team. We continue with the presentation of Agustin Rolandelli, who joined the *Plague and Yersinia pestis* team led by Florent Sebbane in April 2024 and who received financial support from CPER RESISTOMICS to create a new emerging group. Inserm researcher Laurye Van Maele is honored for the WILL chair at the University of Lille, which she recently obtained in tandem with Stanislas Goriely of the Université Libre de Bruxelles. We are also proud to announce the phase 1 clinical trial, NEUBUFLAG, led by Jean-Claude Sirard. In this issue, we continue to present the researchers actively involved in the CIIL project. This time, it is Sylviane Pied, CNRS researcher working on cerebral malaria and Oleg Melnyk, CNRS researcher working on the chemical synthesis of proteins and leading a research team specializing in the study of flatworms. Also featured in this Newsletter are Caroline De Witte and Delphine Cayet, IPL engineers. You will also find the portraits of Hala Mansour, post-doctoral fellow, 2 PhD students (Dacine Osmani and Orane Huchez) as well as that of Jules Deschatrette, ULille account manager recently arrived at CIIL. I take this opportunity to wish you all a very good summer.

Jean DUBUISSON

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Tribute to our colleague Magali Chabé

Our colleague Magali Chabé, aged 47, passed away on Monday June 9 after a long illness. Magali was a teacher-researcher in Eric Viscogliosi's team, and had forged many links with her parasitology colleagues at our center.

After obtaining her State Diploma in Pharmacy in 2004 and her PhD in Life and Health Sciences (specializing in Parasitology) in 2005, Magali Chabé began her academic career as a temporary teaching and research associate (ATER) at the University of Lille 2. In 2006, she was appointed Senior Lecturer in Parasitology and Medical Mycology at the Faculty of Pharmacy. Her strong involvement in research and the quality of her scientific work enabled her to obtain her habilitation to direct research (HDR) in 2018.

In the field of research, Magali Chabé has worked on the campus of the Institut Pasteur in Lille, in two successive teams headed by Drs Eduardo Dei-Cas and Eric Viscogliosi. She began her research on the microfungi Pneumocystis spp, opportunistic agents causing severe pneumopathy in immunocompromised patients. In particular, she studied the airborne transmission of these microfungi, primary infection and their circulation in ecosystems. Since 2013, she has been studying the intestinal protozoa Cryptosporidium spp and Blastocystis spp, to clarify the pathophysiology of these two parasites using metagenomic and transcriptomic approaches. Her work has resulted in the publication of 65 scientific articles in international journals, and numerous international collaborations with the Universities of Cincinnati and Santiago de Chile, the Virgen del Rocio University Hospital in Seville and the National Autonomous University of Mexico (UNAM). One of the highlights of her work was the exclusive license signed between Gènes Diffusion and SATT Nord for the development of a screening kit for a biomarker predictive of health and longevity in cattle. Throughout her teaching career, Magali Chabé has passed on her knowledge with enthusiasm, kindness and passion to numerous students at all levels of study in Pharmacy, to learners in the Hospital Pharmacy Preparator training program, to students in the DEUST and Health & Environment professional degree programs, in the Master 1 Water Science program and in the Master 2 Drug Science program. Within the Pharmacy Department of UFR3S, she has been one of the pioneers in implementing new, innovative approaches to teaching at local and national level. In particular, in collaboration with 18 other faculties, she took part in the creation of a shared bank of clinical cases and MCQs to help students prepare for and pass the pharmacy internship examination.

Appreciated by all her colleagues for her scientific rigor and her commitment to students, Magali Chabé was an example of courage and resilience. She was full of humour and infectious joie de vivre, a humanist with a passion for life and a thirst for understanding its complexity. Her death leaves an immense void in the hearts of all those who knew her. Her human and professional qualities will remain forever engraved in our minds, and will continue to inspire us in our teaching and research missions..

El-Moukhtar Aliouat, Cécile-Marie Aliouat, Eric Viscogliosi, Nausicaa Gantois, Christine Demanche and Annie Standaert

Researcher portraits

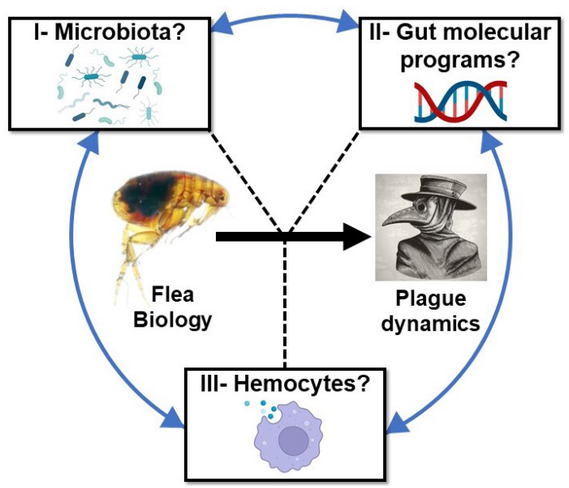
Agustin Rolandelli
New Researcher at CIIL

My research focuses on host-pathogen interactions, with an emphasis on how host genetic components and immune responses determine microbial infection outcomes. I earned my degree in Genetics from the National University of the Northwest of the Province of Buenos Aires (UNNOBA, Argentina), where I investigated developmental genes in the Chagas disease vector *Rhodnius prolixus* for my undergraduate research project.

From 2013 to 2018, I was awarded a five-year PhD fellowship to study the association between human genetic polymorphisms and susceptibility to tuberculosis in Prof. Garcia's lab at the University of Buenos Aires (UBA). Specifically, I linked three human genetic polymorphisms located in cytokine genes to tuberculosis susceptibility and clinical manifestation, uncovering their role in modulating immune responses against *Mycobacterium tuberculosis*.

Afterwards, I obtained a two-year postdoctoral fellowship (2018–2020) at UNNOBA under Prof. Rivera-Pomar's supervision to initiate a new research line on the interactions between *R. prolixus* and the parasite *Trypanosoma rangeli*. In particular, I explored how immune responses and infection sites shape the parasite's success within the vector. This project included an international collaboration with Prof. Guarnieri (Fiocruz, Minas Gerais, Brazil).

From 2020 to 2024, I worked as a postdoctoral researcher in Prof. Pedra's lab at the University of Maryland (USA), where I expanded my expertise in vector biology by studying the immune system of the blacklegged tick *Ixodes scapularis* when infected with either the Lyme disease spirochete *Borrelia burgdorferi* or the rickettsial agent *Anaplasma phagocytophilum*. I focused on characterizing tick immune cells during feeding and infection, identifying distinct cell clusters and the molecular mechanisms underlying their canonical and non-canonical roles in tick physiology.



In April 2024, I joined the CIIL as part of the *Plague and Yersinia pestis* (PYP) team, led by Dr. Sebbane. This group is one of only three laboratories worldwide—and the only one in Europe—with the infrastructure and expertise to study the complete rodent-flea infectious cycle of *Y. pestis*, the causative agent of plague. My project investigates how flea biology contributes to the dynamics of plague transmission. Specifically, I am exploring the roles of gut-expressed genes, flea-associated microbiota, and immune cells in flea physiology and their capacity to transmit *Y. pestis*.

This project is supported by the Marie Skłodowska-Curie Actions programme (MSCA) and the French State-Region Plan Contract (CPER), enabling the launch of my independent research line. In synergy with the PYP team's expertise in bacterial pathogenesis and the CIIL's cutting-edge infrastructure, my research aims to uncover biological mechanisms that could be sustainably targeted to control the spread of flea-borne pathogens.

My long-term ambition is to lead a research team that conducts innovative, multidisciplinary, and internationally collaborative studies on the interaction between arthropod vectors and the microbes they transmit. I am also committed to mentoring the next generation of scientists. To reach these goals, I have applied for the INSERM CRCN competition and I have been selected for this position. This will allow me to firmly establish my research program at the CIIL. I am eager to contribute to this vibrant scientific community and to strengthen the CIIL's ledership in the global fight against infectious diseases.

Sylviane Pied
CNRS research director

An immunologist committed at the crossroads of parasitic infections and neuroinflammation :

«In cerebral malaria, the immune response plays a critical role. *Plasmodium* parasites are sequestered in the brain's microvessels and trigger inflammation.»

As a CNRS research director originally from French Guiana, I have dedicated my career since 1993 to studying the interactions between parasites, the immune system, the microbiota, and the brain. My early interest in immunology and tropical diseases led me to pursue a PhD in immunoparasitology at the Pitié-Salpêtrière Hospital in Paris, focusing on immune responses to the liver stage of malaria, where I identified a protective role of CD1d-restricted NKT αβ CD4-CD8- double negative cells.

My postdoctoral fellowship at the ICGEB in New Delhi allowed me to combine fieldwork and laboratory research on malaria in clinical settings. I continued my research in leading the malaria immunopathophysiology team at the Institut Pasteur in Paris, and as a principal investigator at the Instituto Gulbenkian de Ciência (Portugal), as part of a CNRS-IGC International Associated Laboratory, Later I join the CIIL at Institut Pasteur de Lille .

Thanks to my expertise at the interface of immunology, infectious diseases, and neuroscience, my team and I have contributed to uncovering the molecular mechanisms driving severe malaria, particularly cerebral malaria. We demonstrated the pathogenic role of brain-infiltrating CD8+ Vβ8+ T cells during *Plasmodium berghei* ANKA infection. These cells are promoted by the detrimental regulation exerted by CD4+Foxp3+ regulatory T cells (nTregs) producing IL-10, which suppress protective effector CD4+ T cell responses.

At CIIL, we identified several key mediators of neuroinflammation, including the chemokine CXCL10, produced by glial cells (M1 microglia and astrocytes) activated following internalization of parasitic microvesicles. This process relies on non-canonical autophagy regulated by Rubicon and ATG5, inducing inflammatory astrocyte senescence via p21 and compromising the integrity of the blood-brain barrier. This mechanism was validated in human post-mortem samples. We also developed a mouse model resistant to cerebral malaria (B6.WLA-berr2), revealing a protective role of the glial-expressed receptor CD300f.

Our research also showed that the gut microbiota modulates neuroinflammation: a dysbiosis characterized by increased *Alistipes* and *Ligilactobacillus* and decreased *Akkermansia* is associated with cerebral malaria development. Conversely, antibiotic-induced bacterial reshaping promotes *Enterococcus* faecalis emergence, raises plasma acetic acid levels, and reduces brain inflammation—highlighting the therapeutic potential of the gut-brain axis in disease pathogenesis.

«I have a holistic and global perspective. I study how parasites interact with the immune system, but also how environmental factors can influence host responses.»

Our approaches, combining multicenter clinical studies (India, Africa, French Guiana), cytometry, antibody/cytokine profiling, and genetics, have led to key findings, such as the identification of a cytokine and autoantibody cluster associated with the severe neurological form of malaria. This discovery enables early identification of high-risk patients and supports the development of targeted diagnostic and therapeutic strategies. These studies also led to the identification of severity biomarkers, including free heme, erythropoietin, and specific cytokine or autoantibody signatures, which are influenced by genetic polymorphisms such as HMOX1.

Since 2020, I co-led the "Tropical Biomes and Immuno-Physiopathology" (TBIP) team, based between the CIIL in Lille and the University of French Guiana in Cayenne. Our location in the Amazon allows us to study protozoan co-infections in their natural context. In French Guiana, low-grade inflammation due to chronic stimulation may enhance a form of immune tolerance or resilience — a hypothesis we are currently exploring in co-infection settings.

Throughout my career, I have supervised or co-supervised 14 PhD students and 9 postdoctoral fellows from France, Africa (Côte d'Ivoire, Gabon, Congo), India, and French Guiana, contributing to their training in collaborative international projects. I have taught at Sorbonne University, the University of Lille, the University of French Guiana, and participated in WHO training programs in Vietnam and India. My commitment is also reflected in my involvement in the LabEx ParaFrap doctoral program and the organization of international schools.

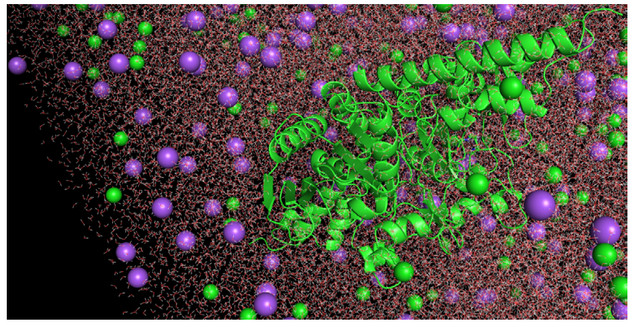
My participation in national committees (Inserm CSS5, ANR), organization of international symposia, and science outreach activities (podcasts, public events) reflects my dedication to bridging science, education, diplomacy, and society.

Starting September 1st, 2025, I will take up the role of Science and Higher Education Attachée at the French Embassy in New Delhi, to strengthen French-Indian scientific and technological partnerships in health, sustainable energy, and innovation. This diplomatic mission builds upon my past international engagements, including coordination of the CNRS-DBT International Associated Laboratory in India, collaborations with ICGEB New Delhi, TIFR Mumbai, and the Institute of Life Sciences in Bhubaneswar.

Oleg Melnyk
CNRS research director

I am an organic chemist driven by a strong interest in understanding the fundamental molecular and physicochemical mechanisms underlying the phenomena observed in the laboratory. These mechanisms include, of course, chemical and biochemical reactions leading to the formation or cleavage of bonds, but also those that govern the biological activity of the peptides and proteins we study. My interest in chemical reactions has always been central to my scientific journey. More recently, I have also incorporated biochemical processes into our research programs, attracted by their potential in protein synthesis and modification. For less than a year, I have been actively involved in molecular dynamics studies, which offer valuable insights into the conformation of peptides and proteins in solution—and thus into their reactivity and biological activity.

These complementary approaches all serve a common purpose: to unravel molecular complexity in order to better understand and control the chemical and biological functions of the systems we investigate.



For molecular dynamics studies, molecules are placed in a box filled with explicit water molecules, and ions according to ionic strength (purple sodium ions, green chloride ions), then subjected to Brownian motion. Here, a /Canditatus Methanomethylophilus alvus/pyrrolysyl-tRNA synthetase in dimeric form in complex with a non-canonical amino acid, LysoxoSEA, 73940 water molecules, 232 sodium ions, 214 chloride ions for an ionic strength /I/ = 0.15 M. The aim of the calculation is to understand the effect of a mutation in the enzyme's catalytic site on complex formation and hence the metab lic incorporation of LysoxoSEA into proteins. Computation carried out using the CNRS Jean Zay supercomputer (AD010816084) as part of an international ANR project coordinated by Vangelis Agouridas and in collaboration with Birgit Wiltschi (Austria).

Portraits of our engineers

Caroline De Witte
IPL engineer

My name is Caroline De Witte. I am an IPL engineer and prevention assistant in the API-B (Integrative Biology of Apicomplexan Parasites) team led by Dr Mathieu Gissot at the CIIL.

My fascination with science and biology has been a lifelong interest, and from an early stage I was certain that I wanted to work with and experiment with things. I chose to pursue my professional studies in Lille, where I successfully completed a DUT in Biological Engineering, followed by a bachelor's degree and a master's degree in IUP Genomics and Proteomics. I then went on to obtain a professional Master's degree in Cellular and Molecular Engineering in 2006.

During my master's internship at IBL in Dr. Jean Coll's team, I had the opportunity to study apoptosis induced by the LMP1 protein of the Epstein-Barr virus in the MDCK cell model. This experience introduced me to the world of academic research and solidified my decision to pursue a career in this field.

Following the completion of my studies, I was employed as an engineer on a fixed-term contract at the Université Pierre et Marie Curie in Paris. I was part of an INSERM team led by Professor Luc Douay, working on stem cell proliferation and differentiation. My research focused on the proliferation and differentiation of haematopoietic stem cells in myelodysplasias, a subject I explored in depth as part of a medical doctor's thesis.

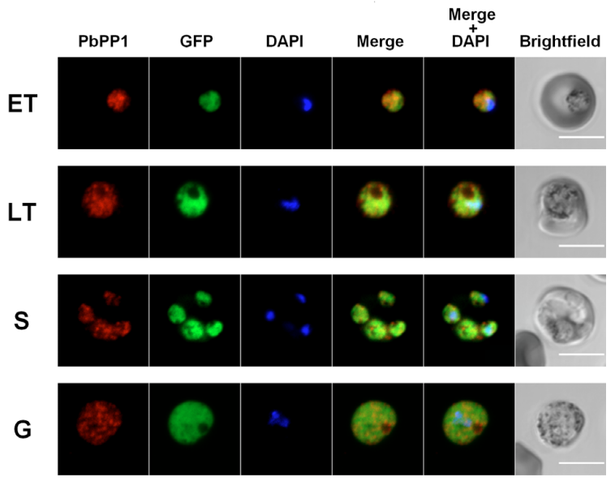
In 2009, I came back to Lille to work as an engineer under a CNRS contract, joining Dr. Oleg Melnyk's Cancer Biology and Chemistry team. There, I collaborated with Dr. Véronique Fafeur and Dr. Jérôme Vicogne on the development of novel anti-cancer strategies targeting the Met receptor tyrosine kinase. This was a valuable experience insight into the design and implementation of innovative cell-based assays and allowed me to obtain Level 1 certification in animal experimentation.

In 2011, I was recruited to the Molecular and Cellular Biology of Host-Parasite Interactions team led by Dr. Jamal Khalife at the CIIL. I joined as an engineer at the Institut Pasteur de Lille, working on the European FP7-The Schistovac project. The objective of this project was to develop a new generation of vaccine for schistosomiasis. During this time, I refined my skills in animal experimentation to study the immune responses induced by the candidate vaccines and evaluate the protection in an experimental rat model.

Following the conclusion of this contract, I was offered and accepted an appointment to the same team at the Institut

Pasteur in Lille in 2014. After many years of specialising in cell biology, I completed a training programme in molecular biology. One of the team's key research objectives was to enhance our understanding of the molecular mechanisms that underpin the life cycle of the apicomplexan parasite *Plasmodium*, the causative agent of malaria. Our research concentrated on phosphorylation processes, with a particular focus on phosphatases and their regulation. These studies primarily focused on investigating the function and regulation of type 1 Protein Phosphatase (PP1) in *Plasmodium*, a ser/thr phosphatase that is critical for the (super)life of all eukaryotic cells. My main project was to study the PP1 interactome in *Plasmodium berghei* (a rodent species). I successfully characterised the molecular and functional properties of new conserved or parasite-specific PP1 partners. In order to accomplish this objective, I established new reverse genetics tools in the parasite. In combination with biochemical approaches, these tools facilitated the study of numerous PP1 regulators, including the proteins GEXP15, RPT3, I2, I3, and LRR1, among others. This project provided an opportunity to supervise and train a number of students.

Following a restructuring of the team, I have now been assigned to Dr Mathieu Gissot's API-B team, which specialises in the integrative biology of apicomplexan parasites. Within the team, we are seeking to understand, in both *Plasmodium* and *Toxoplasma gondii*, the molecular determinants that control the ability of these parasites to proliferate and persist in the host. In practice, I am continuing to contribute my expertise on the *Plasmodium berghei* model, with which I have extensive experience, and I am undergoing training in the culture and numerous genetic tools of the *T. gondii* parasite to create mutants and study the function of genes essential to the survival of these parasites. Our research focuses on a novel family of transcription factors that are conserved in apicomplexan parasites.



Delphine Cayet
IPL engineer

I am Delphine Cayet, a biology engineer at the Institut Pasteur of Lille, working in Dr. Jean-Claude Sirard's team "Bacteria, Antibiotics and Immunity". From an early age, I was drawn to laboratory work, which led me to pursue a baccalauréat technologique F7, followed by a BTS in biological analysis and biotechnology.

During my internships, I soon found that the agri-food industry and medical analysis laboratories did not match my aspirations. I therefore decided to gain further specialization by obtaining a University Diploma in Tissue and Cell Culture and Molecular Biology at the University of Dijon. During this time, I had the opportunity to follow an internship at the UMR 134 CNRS laboratory at the University of Nice-Sophia Antipolis, where I gained expertise in adipose cell culture and molecular biology, particularly in messenger RNA extraction.

In 1994, when Dr. Johan Auwerx and Dr Bart Staels joined the Institut Pasteur of Lille, I was recruited as a laboratory technician. My work focused on the nuclear receptors PPAR (Peroxisome Proliferator-Activated Receptors), which play a crucial role in stimulating vascular function, glucose tolerance, lipid metabolism, endothelial function and arterial inflammation.

In 1999, after the departure of Johan Auwerx, I joined Professor Roméo Cecchelli's laboratory at the Université d'Artois in Lens. There, I worked on an in vitro model of the blood-brain barrier and had the opportunity to work in collaboration with Dr. Franco Menozzi on the study of the effect of the HBHA (Heparin-Binding Haemagglutinin Adhesin) protein from *Mycobacterium tuberculosis* on the integrity of blood-brain barrier tight junctions.

Driven by a constant desire to learn and improve, I resumed my studies in 2003. I followed a postgraduate program (DESS) in cellular and molecular engineering at the University of Lille, which I successfully completed. This diploma enabled me to advance to the status of Research Engineer at the Pasteur Institute of Lille.

In 2004, I returned to the Institut Pasteur of Lille campus, where I was employed by Dr. Jean-Claude Sirard, a young emerging Inserm researcher at the time, who was launching the first ATIP-AVENIR program in the Hauts-de-France region. The aim of the research project was to analyse the integration pathways of signals generated by flagellin (an immunomodulatory molecule acting via Toll-Like Receptor 5) in the digestive and respiratory mucosa, and to study the role of these pathways in protection against infection. In Dr. Jean-Claude Sirard's laboratory, I have since been involved in a number of projects that have led to the publication of 24 original articles. I also manage the cell culture and molecular biology activities and work as a prevention assistant in the "Bacteria, Antibiotics and Immunity" team.

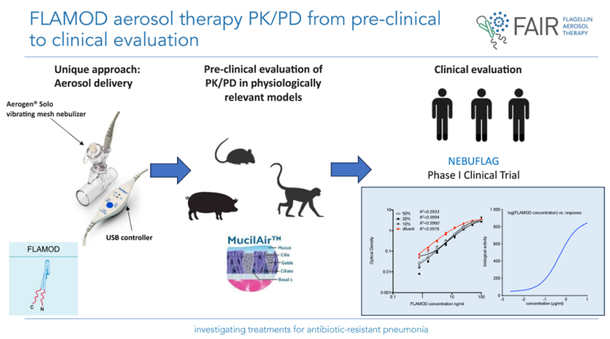
Since 2020, my research activity has been mainly dedicated to the European Horizon 2020 project 'FAIR'. In this context, I am responsible for the development of the following key tasks:

(1) the analysis and qualification of the biological activity of batches of flagellin (FLAMOD) in light of its development as a drug candidate for the treatment of bacterial pneumonia,

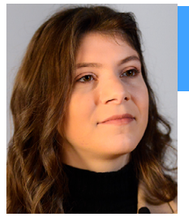
(2) the preparation of biological samples from pre-clinical models for transcriptomic analyses,

(3) tests to measure the pharmacokinetics of FLAMOD,

(4) the immunological analysis of samples from the phase I clinical study.



Portrait of a Post-Doc



Hala Mansour
Post-Doc

I come from a country full of life, history, and resilience, Lebanon. Despite the many challenges it faces, it remains a place of deep beauty and strength, and it has shaped who I am.

Driven by a passion for science and a desire to grow beyond borders, I left Lebanon to pursue my studies in France. I was accepted into the International PhD Program at Université de Lille and I carried out my doctoral research at the Institut Pasteur de Lille on *Plasmodium falciparum* under the supervision of Dr. Jamal Khalife. It was an intense and enriching chapter that fueled my curiosity and sharpened my research mindset.

Eager to explore new scientific horizons, I decided to transition into microbiology, joining the fight against *Mycobacterium tuberculosis* and becoming part of the ERA4TB project. Today, I'm part of a dynamic and inspiring team at CIIL, working under the guidance of Dr. Cyril Gaudin, Dr. Eik Hoffmann, and Dr. Alain Baulard.

This past year has been a true learning experience. Working in a biosafety level 3 environment comes with its share of challenges: strict protocols, new tools, and constantly evolving questions. But it also taught me a lot about collaboration, adaptability, and independence. I'm proud to contribute to work that matters, with people who care deeply about what they do.

Beyond the lab, I try to give back to the scientific community that welcomed me. I've had the honor of serving as a representative on the lab council and as a board member of the Young Researchers' Organization (YPL). I hope, through these roles, I've been not just a colleague, but also a human of use to others, someone who listens, supports, and contributes.

I'm deeply grateful for everything I've learned, and continue to learn, at CIIL and Institut Pasteur de Lille. Science is not only about experiments and data; it's about people, purpose, and perseverance.

Student profiles

Dacine Osmani
PhD student

As a curious child, I used to take apart all my toys to understand how they worked, often without ever really playing with them. So naturally, scientific research quickly became the obvious path for me. After earning my high school diploma in Algeria, I completed a bachelor's degree in applied Biochemistry, then moved to France where I obtained a second degree in Biochemistry and Molecular Biology in Nancy. This led me from chemistry-based biochemistry to a more refined molecular biology, essentially, from the macroscopic to the microscopic. During my first year of the master in microbiology, I completed an internship at the Institut Pasteur de Paris, at the interface of immunology, where I studied the functionality of antibodies induced by the Hib vaccine. I then joined the selective Master 2 "Research and Innovation in Microbiology" program, conducted entirely as a full-time laboratory immersion. It was in that setting, close to the bench, that I knew I wanted to pursue a PhD. I am now continuing that path in the «*Mycobacteria* and *Bordetella* Research» (RMB) team, as part of the European NOSEVAC consortium. My project, which is a direct continuation of the work I began during my M2 internship, focuses on identifying novel antigens

specific to nasal colonization by *Bordetella pertussis*, the causative agent of whooping cough, to contribute to the development of a next-generation intranasal mRNA vaccine, capable ofeliminating bacterial carriage and transmission, including other *Bordetella* species.To achieve this, I use transcriptomic, proteomic and molecular biology approaches, under culture conditions that closely mimic the nasal environment. Understanding how virulence is regulated in this specific niche lays the foundation for a new generation of vaccines, better suited to today's public health challenges.

Orane Huchez
PhD student

I'm Orane Huchez, a first-year PhD student under the supervision of Dr. Sandrine Belouzard in the "MCV" team headed by Dr. Jean Dubuisson (a team I've always wanted to join).

From an early age, I had a passion for biology. By high school, I already knew that I wanted to go into virology, with the naive aim of finding a cure for HIV. With this in mind, I took a Licence in Life Sciences at the University of Lens, before going on to do a Master in Biology-Health at the University of Lille.

During my Licence 3, I was lucky enough to do my very first internship at the Center for Infection and Immunity of Lille in the "OpInfIELD" team headed by Dr. Philippe Gosset. Under the supervision of Teddy Grandjean and Dr. Muriel Pichavant, I was able to study new therapeutic approaches to fight against opportunistic infections in cystic fibrosis.

Having first become interested in bacteriology, I immediately wanted to immerse myself in the world of virology, and so, to my great delight, I joined the "MCV" team. This enabled me to complete my Master 1 and 2 internships under the supervision of Dr. Lowiese Desmarets and Dr. Sandrine Belouzard, before taking root for good in my PhD. Since then, I've been interested in the assembly mechanisms of SARS-CoV-2, the coronavirus infamously known for its COVID-19 pandemic. More specifically, I'm trying to better characterize the role of the M membrane protein in the viral assembly process, by studying its C-terminus. My thesis project aims to identify the motifs or residues contained in this end for their involvement:

(i) in the intracellular localization of the protein,

(ii) in interactions with other viral structural proteins (E, S and N) and

(iii) in assembly.

Portrait of an account manager

Jules Deschatrette
Manager - University of Lille

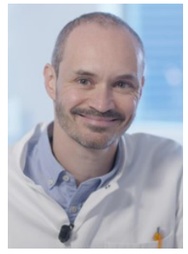
My name is Jules Deschatrette, I'm 22 years old and I'm originally from Charente-Maritime. After obtaining an Accounting and Management Diploma (Diplôme de Comptabilité et de Gestion (DCG)) in La Rochelle, I joined the Center for Infection & Immunity of Lille (CIIL) in February 2025 as a financial manager.

During my final year of studies, I completed an apprenticeship at the Charente-Maritime Prefecture, in the Local Finance Office. I was in charge of subsidies for communes, which helped support projects such as the construction of schools and bicycle paths.

At CIIL, my main task is to support the research teams in managing their orders and assignments.

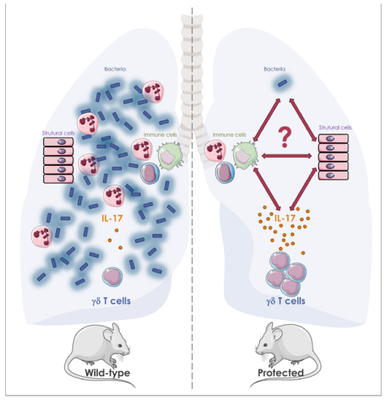
Life at CIIL

WILL International Chair PROTECT
Stanislas Goriely et Laurye Van Maele



Within the framework of France 2030, the Initiative of Excellence of the University of Lille launched in 2023 the «Welcoming Internationals to Lille» (WILL) program to enhance the international attractiveness of the University of Lille and its partners (CNRS, Inserm, Inria, Centrale Lille). The WILL international chairs aim at the implementation of a project between an internationally recognized senior researcher and a junior scientist in Lille, in order to create outstanding conditions for boosting the career of the latter. The project PROTECT (2025-2029) supported by Stanislas Goriely (ULB) and Laurye Van Maele (CIIL - BAI team), has been recently awarded a 500 000€ funding. The project aims to explore the mechanisms behind innate protection or resistance to infection for optimizing pneumonia treatment.

Yearly mortality rates from pneumonia remain alarming worldwide, even in the developed world. This necessitates a greater understanding of the mechanisms involved in pneumonia susceptibility and pathogenesis, which could be leveraged to identify novel treatments. Mucosal tissues are major sites for the entry of pathogens. They are an immunologically active barrier surface that senses changes in the environment and interacts with resident and recruited immune cells. They contain vast collections of tissue-specific innate leukocytes which, together with structural cells and tissues, play a collaborative role to provide protection from the pathogens. As an example, the lung in a naïve host is readily equipped with macrophages, dendritic cells, innate lymphoid cells, and γδ T cells. The γδ T cells are a subset of unconventional T cells characterized by a T-cell receptor made up of γ and δ chains. They are predominantly found in mucosal and epithelial tissues, with a strong tendency to home to the lungs, where they produce Interleukin-17A (IL-17). IL-17 is known to protect mucosa against extracellular bacteria. It enhances mucosal defense by promoting microbial clearance through the recruitment of phagocytes and the production of antimicrobial molecules. Dr. Goriely's laboratory has generated a mouse model in which, under naive conditions, γδ T cells produce higher amounts of IL-17 in the lungs compared to wild-type mice. Interestingly, these mice are protected against pulmonary bacterial infections. These observations suggest that their lung architecture exhibits a distinctive signature of pneumonia protection. Using this unique mouse model, PROTECT aims to explore the mechanisms underlying innate protection against bacterial pneumonia, with the goal of identifying new therapeutic approaches to combat this disease. This project will provide a comprehensive mapping of lung cells and immune mediators involved in the protection of the lung mucosa against infections. The study's findings are expected to identify protection-associated biomarkers, which can be targeted to modulate mucosal immune responses. The knowledges provided by the chair project will allow the long-term development of a therapy providing non-specific protection, independent of prior pathogen exposure and with broad-spectrum efficacy.



NEBUFLAG clinical trial
Jean-Claude Sirard

A phase I clinical trial for a groundbreaking therapeutic innovation against respiratory infections has begun at the Clinical Investigation Centre of the Academic Hospital of Tours, France.

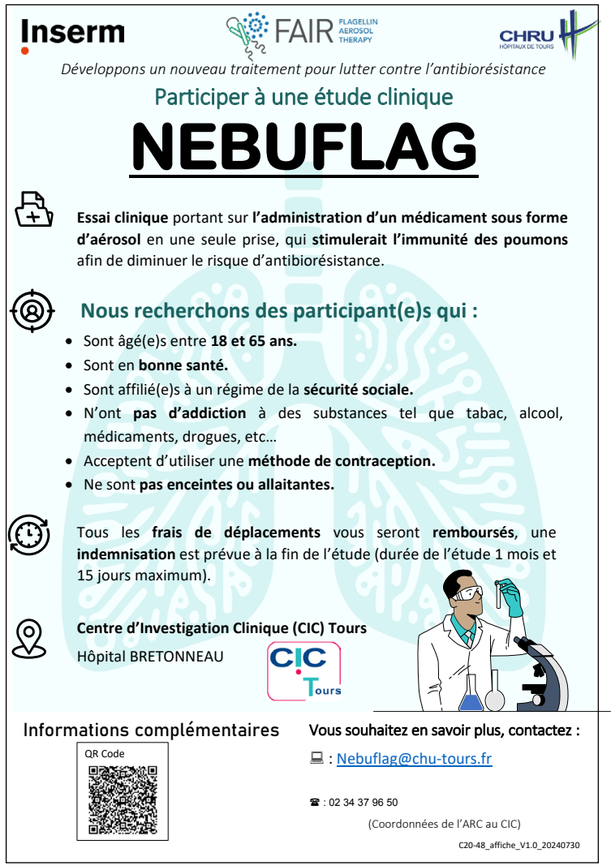
The drug 'FLAMOD' is a treatment which aims to stimulate the body's own defences rather than directly target the bacteria. FLAMOD is to be used as an adjunct to antibiotics to enhance the effectiveness of first-line antibiotic treatment.

As part of this trial, FLAMOD, which is derived from a natural bacterial component known as flagellin, will be administered via aerosol using an Aerogen mesh-nebulizer to specifically stimulate the airway immune response. The advantage of this administration route is that it allows for a direct and rapid activation of lung anti-infective defences without triggering a systemic immune response.

The principal investigator of the project, Prof. Antoine Guillon from the Critical Care Unit of Tours Hospital, notes "FLAMOD is a unique approach to the treatment of respiratory infections and one that attends to the ever-increasing concern of antibiotic resistance, as seen in patients with drug-resistant bacterial pneumonia.»

It is not just the innovative strategy of this treatment that makes it unique. The drug development typically occurs within the pharmaceutical industry. In this case, a network of researchers and medical doctors collaborated from the idea to its development for humans, remaining largely within the academic sphere. This was only possible due to funding from the European Union.

This Phase I clinical trial, named NEBUFLAG (clinicaltrials.gov : NCT06681402), marks a significant milestone for the EU-funded FAIR project (https://www.fair-flagellin.eu/), which has been underway for the past five years. The project has laid the foundation for this groundbreaking clinical trial. FAIR Project Coordinator, Dr. Jean-Claude Sirard determined that the FAIR project has made remarkable progress in paving the way for the first phase I clinical trial in humans with nebulized flagellin. The dedication demonstrated by the FAIR partners in conducting impressive preclinical studies, modeling toxicological doses, and developing unique tests tailored to the clinical trial is impressive. The ongoing stratification of pneumonia patients in the Netherlands will be crucial in advancing personalized medicine for the most vulnerable individuals.



Promising results from the FAIR experimental and preclinical studies further support the potential of FLAMOD in treating respiratory infections. The NEBUFLAG phase I clinical trial is expected to end in 2026.

The FAIR project coordinating partner and NEBUFLAG sponsor is the Institut National de la Santé Et de la Recherche Médicale (Inserm). Other FAIR project partners include: Amsterdam University Medical Centre; Inserm Transfert; Freie Universitaet Berlin; Statens Serum Institute; University of Lille; University of Southampton; Epithelix; Tours University Hospital; European Respiratory Society; and Aerogen. Third parties include: European Lung Foundation; Institut Pasteur of Lille; and University of Tours.

Insulation work on the roof of the IBL building cedilla

Alexis Denhez

At the start of 2025, the regional delegation of the CNRS had the roof of the IBL cedilla, which dated from 1996 and was in a very poor state of repair, renovated at a cost of 41,000 €.

Before

After

We reinforced the insulation of the slab and installed a light grey coating to allow the sun's rays to be reflected, which should reduce interior temperatures in hot weather compared with the old coating. The central gutter of the parking lot R-1, the floor of the boiler room and the drains of the water softener room will soon be repaired at a cost of 20,000 €, which will have an impact on users during the work, notably on vehicle flows. By the end of the year, we expect to start work on the fire escapes (Dent 1 and Dent 2 on floors 5/4/3/2 and ground floor).

In brief ...

Participation to «My thesis in 180 secondes»

Joan Fine, a doctoral student at CIIL, has been selected for the regional final (Hauts-de-France) of the "My Thesis in 180 secondes" competition.

Bonus H

As it does every year, the CHU awards our unit a grant, known as Bonus H, to support one or more of the unit's projects, whose promoters are university hospitalists. In 2025, the following projects have been selected: (1) "Pre-exposure to diesel exhaust particles and acute respiratory distress syndrome: impact on late-phase pulmonary Immune response in a murine model" (leader: Alexandre Gaudet, MCU-PH) and (2) "Ranking antibiotics by their effect on colonization resistance" (leader: Rémi Le Guern, MCU-PH).

CVI team relocation

As part of a future rapprochement with François Trottein's team under the next five-year contract, the CVI team, headed by Fernando Real, has just moved into the Emile Roux building. Fernando has set up his office and laboratory on the 3rd floor, while his team members occupy an office on the 2nd floor.

Women's Day at the CIIL

During the week of March 8, the women of the CIIL joined forces with for Operation Poppies, an initiative of the "Femmes et Mathématiques" association, which aims to give visibility to women scientists.

Science day at IPL

The Institut Pasteur de Lille held its tenth Science Day on Tuesday June 17. On this occasion, two CIIL thesis students received awards. Cécilia Sobieski from the Hartkoorn team was awarded the prize for best oral presentation, and Lou Deval from the Trottein team won the prize for best poster.

From Left to right: Cécilia Sobieski, Lou Deval

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