1. PERSONAL INFORMATION

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Neuchâtel, 6 August 1967
Swiss
Married, 3 children

2. EDUCATION

Certificate, exams and academic titles

April 2015	Director of the Institute of Microbiology of the University of Lausanne
September 2011	Full Professor of Bacteriology, Head of diagnostic microbiology
September 2006	Maître d'enseignement et de recherche (MER) et Privat Docent (PD)
December 2003	Doctor es Sciences (PhD), University of Marseille under supervision of Prof. D Raoult
July 2000	Specialist FMH in infectious diseases
May 2000	Specialist FMH in internal medicine
September 1999	Medical doctor (MD), University of Lausanne
October 1997	Specialist FAMH in medical microbiology
January 1992	Swiss federal medical doctor diploma, University of Geneva

3A. EMPLOYMENT HISTORY

From 01.04.2015	Director of the Institute of Microbiology and "Chef de Service"
From 01.09.2011	Head of the Laboratories of Clinical Diagnostic Microbiology
From 01.01.2004	Microbiology, Lausanne, Switzerland as a group leader
01.01.2001 to 31.12.2003	Microbiology, Marseille, France (postdoctoral fellowship)
01.07.1998 to 31.12.2000	Infectious diseases, Lausanne, Switzerland
01.04.1998 to 30.06.1998	Intensive care unit, Lausanne, Switzerland
01.04.1997 to 31.03.1998	Immunology, Lausanne, Switzerland
01.10.1996 to 31.03.1997	Internal Medicine, Lausanne, Switzerland
01.04.1995 to 30.09.1996	Microbiology, Lausanne, Switzerland
01.12.1994 to 31.03.1995	Internal medicine, Mbouda, Cameroon
27.06.1994 to 04.11.1994	Infectious diseases, Lausanne, Switzerland
23.03.1992 30.09.1994	Internal medicine, Neuchâtel, Switzerland

3B. CURRENT PROFESSIONAL POSITION

Full Professor of Bacteriology
Director of the Institute of Microbiology of the University of Lausanne and
Head of the Service of Medical Microbiology of the University Hospital (CHUV)
Head of a group for research on Intracellular Bacteria (dedicated to *Chlamydia* & *Waddlia* research)
Head of a group of research on giant viruses (Lausannevirus, Cedratvirus lausannensis)
Head of the Laboratories of Clinical Diagnostic Microbiology (RT) at the University Hospital of Lausanne
Head of R&D program at the Institute of Microbiology of the University of Lausanne
Head of the microbial genomics and metagenomics research & diagnostics unit

4. MAIN CURRENT INSTITUTIONAL RESPONSABILITIES

Member of the Antibiotic Commission of the University Hospital of Lausanne
Coordinator of teaching modules at School of Medicine and at School of Biology of the University of Lausanne (UNIL)

5. MAIN CURRENT RESEARCH GRANTS (APPROVED RESEARCH PROJECTS)

Grant from the Swiss National Science Foundation (SNSF) n° 310030-197768, entitled "Dissecting the regulation of chlamydial developmental cycle" (720'000 Sfr for 4 years from 1st January 2021 to 31th December 2024)
Co-recipient of the SPHN-PHRT grant on sepsis, where I am in charge of the gut microbiota subproject (5.2 million for 4 years from 2018 to 2022; 400'000 Sfr for the microbiota subproject)
Co-recipient of the NCCR Grant on microbiota, where I act as chair of the "clinical microbiota" pillar (16 million Swiss francs shared between 16 P.Is, for 4 years from 1st July 2020)
Co-recipient of the Grant from the Swiss National Science Foundation (SNSF) n° FN10531C-170280, entitled: "Evaluating scientific findings in cases where the defence says: it is my twin brother" (630'000 Sfr for 3 years from 2018 to 2021)
Co-recipient of the SNSF - NRP72 project n° 407240-177504, entitled "Development of a Swiss Surveillance Database for molecular epidemiology of multi-drug resistant pathogens" (400'000 Sfr for 3 years from 2018 to 2021)
Grant from SUEZ-ONDEO to investigate by metagenomics the impact of antibiotics on microbial composition and on the presence of antibiotic-resistance genes in various environmental samples (about 300'000 Sfr for 2 years)

6. SUPERVISION OF JUNIOR RESEARCHERS

Supervision of MD & PhD thesis°

1. Nicola Casson, 2005-2008, PhD thesis entitled: «Biology and pathogenicity of *Parachlamydia acanthamoebae*»
2. Geneviève Goy, 2006-2009, PhD thesis entitled: «Biology and pathogenicity of *Waddlia chondrophila*»
3. Claire Bertelli, 2007-2010, PhD thesis entitled: «Genomics and pathogenesis of *Chlamydia*-related bacteria»
4. Julia Lienard, 2009-2012, PhD thesis entitled: «Evaluation of risk associated to amoebae-resisting bacteria in water networks»
5. Brigida Rusconi, 2010-2012, PhD thesis entitled: «Phagocyte response and signaling upon Chlamydiae infection»
6. Line Dormond, 2010-2012, MD thesis entitled: «diagnosis of malaria: parasite load quantification and species identification»
7. Linda Mueller, 2012-2016, PhD thesis entitled: « Evolution and Biology of the Lausannevirus, a giant virus »
8. Ludovic Pilloux 2012-2017, PhD thesis entitled: « Interactions of the T3SS of *Waddlia* & *Parachlamydia* with the inflammasome»
9. Manon Vouga 2015-2017, PhD thesis entitled : "*Simkania* : a new pathogen associated with adverse pregnancy outcomes"
10. Trestan Pillonel 2013-2017, PhD thesis entitled : "Comparative genomics of the *Chlamydiae*"
11. Florian Tagini, 2016-2019, MD-PhD thesis entitled: "Genomics of medical importance: insights in mycobacterial biology"
12. Firuza Bayramova, 2016-2020, PhD thesis entitled: "Cell division mechanisms and transcriptional regulation in the chlamydia-related bacterial pathogen Waddlia chondrophila"
13. Aurélie Scherler, 2016-2020, PhD thesis entitled: "Enlarged reticulate bodies: triggers and medical importance"
14. François-Regis Duss, 2017-2020, MD thesis entitled "Whipple disease: a 15-year retrospective study on 36 patients with positive polymerase chain reaction for Tropheryma whipplei."
15. Valentin Scherz*, 2017-2020, MD-PhD thesis entitled: "Forensic microbiology: metagenomics as a new tool"
16. Laure Jaton*, 2018-2021, MD thesis entitled: "Leucocidine of Staphylococcus aureus: clinical implications"
17. Bastian Marquis*, 2019-2022, MD-PhD thesis entitled "Rhabdochlamydia : a new tick-borne pathogen ?"
17. Christèle Aubry*, 2019-2022, PhD thesis entitled "Nanomotion : lessons in bacteriology"
18. Antonios Kritikos*, 2020-2024, MD PhD thesis entitled "Automated microbiology: from added value for patient care to high-throughput microbiota culturomics"

* ongoing: PhD thesis (n=1), MD thesis (n=1) and MD PhD thesis (n=3);
° only the MD, MD-PhD and Phd Thesis are listed here; in addition, more than 20 master projects have been completed and 3 master thesis are ongoing

7. TEACHING ACTIVITIES

Teaching at the School of Medicine of the University of Lausanne (30 hours)
Teaching at the School of Biology of the University of Lausanne (34 hours)
Teaching at the School of Laboratory Technician (Ecole supérieure de la Santé de Lausanne; 2 hours)

8. MEMBERSHIP IN PANELS, BOARDS, COMMITTEE, …

2009 – ongoing	Chairman of the International Taxonomy subcommitte of Chlamydiae ;
2015 - 2018	Member of the Scientific Affairs Subcommittee of European Society of Clin.Microbiology and Infect. Diseases (ESCMID), being responsible of the "Diagnostics" section
2009 – ongoing	Associate Editor in the Journal « Microbes and Infection »
2008 – 2020	Associate Editor in the Journal "Clinical Microbiology and Infection" (Ass-Editor in Chief since April 2016)
2017-2019	Member of the STAR steering committee (STAR is the Swiss Strategy for Antibiotic Resistance)

9. ACTIVE MEMBERSHIPS IN SCIENTIFIC SOCIETIES

2019 - ongoing	President of the Lay Communication section of the Swiss Society of Microbiology
2019 – ongoing	President of the European Study group in Genomics & Molecular Diagnosis (ESGMD)
2016 – ongoing	President of the Board of the European Chlamydia Society (ECS);
2019 – ongoing	Treasurer of the ESCMID Study Group for Mycoplasma And Chlamydia infections (ESGMAC)
2017- ongoing	President of the European Society for the study of Chlamydiae, Coxiella, Anaplasma and Rickettsia (ESCCAR);
2016 - 2018	President of the Swiss Society of Microbiology
2015 - 2018	Member of the Scientific Affairs Subcommittee of European Society of Clin.Microbiology and Infect. Diseases (ESCMID), being responsible of the "Diagnostics" section

10. ORGANIZATION OF CONFERENCES

Co-organization of the meeting of the Swiss Society of Microbiology 2014 (Fribourg), 2016 (Bern), 2017 (Basel) & 2018 (Lausanne)
Organization of ESCCAR meetings in 2013 (Villars) & in 2015 (Lausanne); Organization of ESGMD Workshop in 2018 (Lausanne)
Co-organization of ESGMD Workshop in 2019 (Lausanne)
Organization of European Chlamydia Meeting and International Rickettsia Meeting in 2021 (Lausanne)

11. HONOURS AND AWARDS

Personal awards

2019	Lausanne Teaching Award 2019 received from students in medicine of the University of Lausanne pour le "meilleur polycopié"
2018	Lausanne Teaching Award 2018 entitled « Professeur le plus dévoué aux étudiants » received from students in medicine of the University of Lausanne for courses given in the 2rd year of medicine
2017	Appointed ESCMID Fellow for outstanding to the profession and the ESCMID society
2016	Prix Fonds Carlo 2016 received from the Fondation Philanthropia for alternative methods for the study of infectious diseases.
2012	Excellence award for teaching in Biology received from UNIL (FBM) for the practical course entitled, sequence a genome

2011 Foundation Leenaards award for a project on the division of Chlamydiae (with Prof Viollier, Genève)
2011 Foundation NAEF award for „amoebal co-culture approach to discover new chlamydiae“
2010 Viollier award received from the Swiss Society for Internal Medicine
2007 Career award entitled “Bourse de relève académique à l’Université de Lausanne” received from the Leenaards foundation
2006 European ESCMID Young Investigator Award received from ESCMID
2001 Wyeth-Lederle award from the Swiss Society for Infectious Diseases for my work on HCV-HIV published in the Lancet

Awards to person for work done under my supervision

2019 Best oral presentation award to Dr Onya Opota, delivered by the Swiss Society of Pneumology
2018 Best oral presentation award to Firuza Bayramova delivered by the scientific committee of the European meeting on animal chlamydial chlamydiosis held from 3rd to 5th October 2018
2018 SSM lay communication award to Florian Tagini, delivered by the Swiss Society of Microbiology
2018 Prix de la Faculté de Biologie et Médecine to Manon Vouga for her PhD thesis on “Simkania, an emerging pathogen? »
2018 ECCMID Travel award to Florian Tagini, delivered by the European Society for Clinical Microbiology & Infectious diseases
2017 Award for best reviewer of “Clinical Microbiology and Infection Journal” (CMI) to Dr Onya Opota
2017 ESCCAR award to Ludovic Pilloux for its work on T3SS and tick-borne Chlamydiae presented at the ASR-ESCCAR meeting
2017 Award of the Swiss Society of Microbiology to Florian Tagini for a poster on “Mycobacterium kansasii virulence”
2015 Award of the Swiss Society of Microbiology to Nicolas Jacquier for his work published in Nature Communication 2014
2015 ESCCAR award to Marie de Barsy (postdoc of Greub’s group) for her oral presentation at the international meeting on Intracellular Bacteria on the transcription factors of *W. chondrophila* (work later published in the ISME J 2016)
2015 Award of the Swiss Society of Gynecology & Obstetrics to Manon Vouga (PhD student)

MAJOR SCIENTIFIC ACHIEVMENTS

To understand the biology of *Chlamydia* and *Chlamydia*-related bacteria

Although research on *Chlamydia* and *Chlamydia*-related bacteria is impaired by the difficulty to grow these strict intracellular bacteria, by the lack of a genetic system and by the difficulty to obtain large amounts of purified bacteria, my group intends to decipher the biology of *Chlamydia*-related bacteria using genomic, transcriptomic, proteomic, chemical genetic and cell biology and use these novel *Chlamydiae* as model organisms to understand *Chlamydia*, by studying some attributes conserved among all members of the *Chlamydiales* order. Below, a few major topics that we covered so far are presented :

1. Genomics of *Chlamydia*-related bacteria and their Type Three Secretion System

Practically, given the recently recognized medical importance of *Parachlamydia acanthamoebae* and *Waddlia chondrophila*, these two strict intracellular bacteria were chosen for full genome sequencing. Analyses of their genomes indicated that *P. acanthamoebae, W. chondrophila, Estrella lausannensis* and *Criblamydia sequanensis* like *Chlamydia* spp., possesses a Type Three Secretion System (T3SS). Interestingly, *Parachlamydia* growth within amoebae and human macrophages is prohibited by specific T3SS inhibitors indicating that this virulence mechanism is a core component of the pathogenic machinery of these bacteria. We recently identified new effector components of the T3SS of *P. acanthamoebae*.

Eukaryotic Cell Permeabilisation to Identify New Putative Chlamydial Type III Secretion System Effectors Secreted within Host Cell Cytoplasm.
Kebbi-Beghdadi C, Pilloux L, Martin V, Greub G.
Microorganisms. 2020 Mar 3;8(3):361.

A predation assay using amoebae to screen for virulence factors unearthed the first W. chondrophila inclusion membrane protein.
Kebbi-Beghdadi C, Pilloux L, Croxatto A, Tosetti N, Pillonel T, Greub G.
Sci Rep. 2019 Dec 20;9(1):19485.

Sequencing the Obligate Intracellular Rhabdochlamydia helvetica within Its Tick Host Ixodes ricinus to Investigate Their Symbiotic Relationship.
Pillonel T, Bertelli C, Aeby S, de Barsy M, Jacquier N, Kebbi-Beghdadi C, Mueller L, Vouga M, Greub G.
Genome Biol Evol. 2019 Apr 1;11(4):1334-1344.

High throughput sequencing and proteomics to identify immunogenic proteins of a new pathogen: the dirty genome approach.
Greub G, Kebbi-Beghdadi C, Bertelli C, Collyn F, Riederer BM, Yersin C, Croxatto A, Raoult D.
PLoS One. 2009 Dec 23;4(12):e8423.

The Waddlia genome: a window into chlamydial biology.
Bertelli C, Collyn F, Croxatto A, Rückert C, Polkinghorne A, Kebbi-Beghdadi C, Goesmann A, Vaughan L, Greub G.
PLoS One. 2010 May 28;5(5):e10890.

Early expression of the type III secretion system of Parachlamydia acanthamoebae during a replicative cycle within its natural host cell Acanthamoeba castellanii.
Croxatto A, Murset V, Chassot B, Greub G.
Pathog Dis. 2013 Dec;69(3):159-75.

Sequencing and characterizing the genome of Estrella lausannensis as an undergraduate project: training students and biological insights.
Bertelli C, Aeby S, Chassot B, Clulow J, Hilfiker O, Rappo S, Ritzmann S, Schumacher P, Terrettaz C, Benaglio P, Falquet L, Farinelli L, Gharib WH, Goesmann A, Harshman K, Linke B, Miyazaki R, Rivolta C, Robinson-Rechavi M, van der Meer JR, Greub G.
Front Microbiol. 2015 Feb 19;6:101

Criblamydia sequanensis Harbors a Megaplasmid Encoding Arsenite Resistance.
Bertelli C, Goesmann A, Greub G.
Genome Announc. 2014 Oct 23;2(5).

2. Intracellular traffic of *Chlamydia*-related bacteria in macrophages and their recognition by macrophages

Waddlia chondrophila, *Parachlamydia acanthamoebae*, *Simkania negevensis*, *Estrella lausannensis* and *Chlamydia pneumoniae* use completely different strategies to survive to macrophages: *Waddlia* recruit mitochondria and escape to endoplasmic reticulum vacuoles, *Parachlamydia* resist to degradation in the endocytic pathway by preventing the acquisition of lysosomal hydrolases, *Simkania* exit the endocytic pathway in vacuoles expressing endoplasmic reticulum markers whereas *Estrella* exit the endocytic pathway by trafficking to Golgi-associated vacuoles.

Trafficking of Estrella lausannensis in human macrophages. Rusconi B, Kebbi-Beghdadi C, Greub G. Pathog Dis. 2015 Jul;73(5).

Discovery of catalases in members of the Chlamydiales order. Rusconi B, Greub G. J Bacteriol. 2013 Aug;195(16):3543-51.

Role of MyD88 and Toll-like receptors 2 and 4 in the sensing of Parachlamydia acanthamoebae. Roger T, Casson N, Croxatto A, Entenza JM, Pusztaszeri M, Akira S, Reymond MK, Le Roy D, Calandra T, Greub G. Infect Immun. 2010 Dec;78(12):5195-201

Waddlia chondrophila enters and multiplies within human macrophages. Goy G, Croxatto A, Greub G. Microbes Infect. 2008 Apr;10(5):556-62.

Lack of microbicidal response in human macrophages infected with Parachlamydia acanthamoebae. Greub G, Desnues B, Raoult D, Mege JL. Microbes Infect. 2005 Apr;7(4):714-9.

Intracellular trafficking of Parachlamydia acanthamoebae. Greub G, Mege JL, Gorvel JP, Raoult D, Méresse S. Cell Microbiol. 2005 Apr;7(4):581-9.

3. Deciphering the mysterious mechanism of division and differentiation of the *Chlamydiales*

The mechanism by which *Chlamydia* divide has puzzled cell biologists since the first chlamydial genome sequence was determined. While eukaryotic cells rely on the actin cytoskeleton for division, prokaryotes generally use the conserved tubulin homologue (FtsZ) to organize the division machine at midcell. Interestingly, an ftsZ gene is not present in *Chlamydia*. Thus, binary fission must occur by a yet unknown FtsZ-independent mechanism in these bacteria. We have thus investigated the molecular mechanism of division of *Chlamydia* and discovered that it use a serie of proteins including MreB and RodZ. We also studied the transcription machinery by chromatin immunoprecipitation-deep sequencing (ChIP-SEQ) experiments as well as the determinants of the persistence of bacteria within eukaryotic cell. The latter mechanism seems to be associated to various stress such as iron & tryptohan starvation, as well as exposure to antibiotics. Finally, we could identify evidence of peptidoglycan in chlamydial cell wall and characterized some enzymes implicated in peptidoglycan remodeling during chlamydial division.

Diverse Stress-Inducing Treatments cause Distinct Aberrant Body Morphologies in the Chlamydia-Related Bacterium, Waddlia chondrophila.
Scherler A, Jacquier N, Kebbi-Beghdadi C, Greub G.
Microorganisms. 2020 Jan 9;8(1):89.

A SpoIID Homolog Cleaves Glycan Strands at the Chlamydial Division Septum.
Jacquier N, Yadav AK, Pillonel T, Viollier PH, Cava F, Greub G.
mBio. 2019 Jul 16;10(4):e01128-19.

Identification of new DNA-associated proteins from Waddlia chondrophila.
de Barsy M, Herrgott L, Martin V, Pillonel T, Viollier PH, Greub G.
Sci Rep. 2019 Mar 20;9(1):4885

Interactions Screenings Unearth Potential New Divisome Components in the Chlamydia-Related Bacterium, Waddlia chondrophila.
Bayramova F, Jacquier N, Greub G.
Microorganisms. 2019 Nov 26;7(12):617.

Regulatory (pan-)genome of an obligate intracellular pathogen in the PVC superphylum.
de Barsy M, Frandi A, Panis G, Théraulaz L, Pillonel T, Greub G, Viollier PH.
ISME Journal. 2016 Sep;10(9):2129-44.

Disassembly of a Medial Transenvelope Structure by Antibiotics during Intracellular Division.
Jacquier N, Frandi A, Viollier PH, Greub G.
Chem Biol. 2015 Sep 17;22(9):1217-27.

The role of peptidoglycan in chlamydial cell division: towards resolving the chlamydial anomaly.
Jacquier N, Viollier PH, Greub G.
FEMS Microbiol Rev. 2015 Mar;39(2):262-75.

FtsZ-independent septal recruitment and function of cell wall remodelling enzymes in chlamydial pathogens.
Frandi A, Jacquier N, Théraulaz L, Greub G, Viollier PH.
Nat Commun. 2014 Jun 23;5:4200.

Cell wall precursors are required to organize the chlamydial division septum.
Jacquier N, Frandi A, Pillonel T, Viollier PH, Greub G.
Nat Commun. 2014 Apr 8;5:3578.

Giant viruses

Please note that we discovered two giant viruses that we named Lausannevirus and Cedratvirus lausannensis, respectively. We sequenced their genomes and we identified histones-like proteins in the genome of Lausannevirus. We also studied the evolution of Lausannevirus, whether humans are exposed to this virus and whether inhibitor of DHFR might be used as antiviral drugs.

Cedratvirus lausannensis - digging into Pithoviridae diversity. Bertelli C, Mueller L, Thomas V, Pillonel T, Jacquier N, Greub G. Environ Microbiol. 2017 Jun 15

One year genome evolution of Lausannevirus in allopatric versus sympatric conditions. Mueller L, Bertelli C, Pillonel T, Salamin N, Greub G. Genome Biol Evol. 2017 May 19.

Lausannevirus Encodes a Functional Dihydrofolate Reductase Susceptible to Proguanil. Mueller L, Hauser PM, Gauye F, Greub G. Antimicrob Agents Chemother. 2017 Mar 24;61(4).

Lausannevirus seroprevalence among asymptomatic young adults. Mueller L, Baud D, Bertelli C, Greub G. Intervirology. 2013;56(6):430-3.

Lausannevirus, a giant amoebal virus encoding histone doublets. Thomas V, Bertelli C, Collyn F, Casson N, Telenti A, Goesmann A, Croxatto A, Greub G. Environ Microbiol. 2011 Jun;13(6):1454-66.

PUBLICATIONS AND BIBLIOMETRY

The list of all publications is available on the following website : http://www.chuv.ch/microbiologie/imu_home/imu-recherche/imu-research-groups/imu-research-greub.htm

h-index = **70** (done on Google Scholar on 27th September 2020)
5-year h-index = **51** (h-index over last 5 years)
i10-index =**260** (number of publications with more than 10 citations)

Total number of publications on Pubmed = **420**
Number of citations = **20'261** (on Google Scholar)
Estimated average of citations per publication = **48.2**
(More than 450 publications, including book chapters & articles not on Pubmed). Total of 174 articles during last 5 years, including 101 original articles from January 2016 to September 2020.

According to Expertscape, based on 5'032 publications (since 2010), G Greub was on 27 September 2020, the top-rated expert on **Chlamydiales** in the World. Chlamydiales is the bacterial order that includes human and animal pathogens such as Chlamydia & Waddlia: https://expertscape.com/ex/chlamydiales
He was also ranked number 5 & 27 on the topic amoeba & bacteremia.