

Curriculum Vitae Maria del Mar LLEO

Born in Madrid (Spain) November 1955. PhD Biological Sciences, University of Madrid (1978) and University of Genova, Italy (1983).

1980-87: Fellowship at the Institute of Microbiology, University of Genova

1987-2005: Assistant Professor of Microbiology and Clinical Microbiology, School of Medicine, University of Verona, Italy

2005 to date: Associate Professor of Microbiology and Clinical Microbiology, School of Medicine, University of Verona, Italy

Research fields:

1) 25 years experience in bacterial physiology and genetics: mechanisms of bacterial growth and division; molecular biology and genetic control of lytic enzymes involved in peptidoglycan synthesis; mechanisms of resistance to beta-lactams, analysis of penicillin-binding-proteins.

2) Since 1998, studies regarding activation of survival mechanisms by bacteria of medical interest released in natural environments and the human body.

3) 2004-2006, application of satellite technology to the prevention and prediction of environment-borne infectious diseases. On invitation of the European Space Agency, working in an international team to develop and European Program on Telemedicine via satellite.

4) Since 2006, studies on ecology and pathogenicity of marine bacteria

5) Current research lines (since 2011): 1) pathogenicity of *Pseudomonas aeruginosa* in Cystic Fibrosis; 2) in vivo animal models to study lung inflammation in Cystic Fibrosis; 3) antibacterial and antibiofilm action of biogenic nanoparticles; 4) beta-lactamase and carbapenemase-producers among environmental bacteria: characterization by WGS and comparison with genomes of their clinical counterparts.

Participation and Coordination of Research Projects (a selection)

Since 1990 to 2003: participation to projects from the Consiglio Nazionale della ricerca, CNR (FATMA, 5 years and Biotecnologie, 3 years), Ministero dell'Università e la Ricerca, MURST (COFIN 1998, 2000, 2003, biannual); Consorzio per gli Studi Universitari di Verona (biannual).

Coordinator of Research Unit (after international peer-review process):

- Fondi MURST (Italian Research Ministry), ex-60% a.a. 2003-2004, 2004-2005, 2005-2006
- ESA- Telemedicine via satellite Program (2004) and "SAFE-Satellites for Epidemiology" (2006-2007) funded by the European Space Agency
- MIUR dedicated projects (2009-2010): Epidemiology of *V. parahaemolyticus* in Italian coastal areas
- "Environmental and human reservoirs of *Pseudomonas aeruginosa* and other bacterial species colonizing the lower airways of cystic fibrosis patients" Fondazione Italiana Fibrosi Cistica (2016-18)

Scientific Coordinator of the following research project (after international peer-review process):

- MIUR PRIN 2006-07: Survival strategies of pathogenic bacteria in response to stress conditions found in the human body: biological, pathogenic and diagnostic aspects”
- CNES (Centre National d'Etudes Spatiales): VibrioSea project (2006-2009). A satellite-based early warning system to predict vibrios-related diseases in the Mediterranean area”
- MIUR PRIN 2010-12: Role of the marine environment in the evolution, persistence and diffusion of virulence and antibiotic resistance genes in bacteria that might represent a risk for human health.
- Development of a CF, IL-8/NF-KB transgenic mouse model for the *in vivo* long-term monitoring of the inflammatory response induced by bacteria treated or not with azithromycin. Fondazione Italiana Fibrosi Cistica (2013-15)
- A CF, IL-8 transgenic mouse model for the *in vivo*, long-term monitoring of the anti-inflammatory role of metallo-protease inhibitors and antibiotics with mechanisms of action similar to that of azithromycin. Fondazione Italiana Fibrosi Cistica (2015-16)

Teaching activity

Since 1998, Prof. Lleo conducts teaching activity of Microbiology and Clinical and Diagnostic Microbiology in the official courses of the School of Medicine. Since 2013, conducts teaching activity of Microbiology and Oral Microbiology for the Degree of Odontoiatric Medicine. She also perform teaching activity in the PhD courses and Schools of Specialization in Microbiology.

Diagnostic Activity

Since 1992 M.M. Lleo is a Senior Biologist Coordinator of the Diagnostic Microbiology Service at the University Hospital of Verona. Since 2005 she is also the coordinator of the High Specialization Service “Diagnosis of bacterial infections in blood and central nervous system”.

Since 2012, she is the responsible person of the Genito-urinary infection diagnostic sector at the University Hospital of Verona. In this framework she has activated and applied a molecular diagnosis protocol to detect bacterial pathogens using the Seegene kit Anyplex II to the diagnosis of bacterial STIs.

Prof. Lleo is author of more than 60 publications in peer-reviewed journals and more than 60 abstracts for national and international meeting, many of these on invitation.

A selection of more recent publications

Biogenic selenium nanoparticles: characterization, antimicrobial activity and effects on human dendritic cells and fibroblasts.

Cremonini E, Zonaro E, Donini M, Lampis S, Boaretti M, Dusi S, Melotti P, Lleo MM, Vallini G. *Microb Biotechnol.* 2016 Nov;9(6):758-771. doi: 10.1111/1751-7915.12374.

In vivo monitoring of lung inflammation in CFTR-deficient mice.

Stellari F, Bergamini G, Ruscitti F, Sandri A, Ravanetti F, Donofrio G, Boschi F, Villetti G, Sorio C, Assael BM, Melotti P, Lleo MM.

J Transl Med. 2016 Jul 28;14(1):226. doi: 10.1186/s12967-016-0976-8.

Presence of multiple bacterial markers in clinical samples might be useful for presumptive diagnosis of infection in cirrhotic patients with culture-negative reports.

Boaretti M, Castellani F, Merli M, Lucidi C, Lleo MM.

Eur J Clin Microbiol Infect Dis. 2016 Mar;35(3):433-41. doi: 10.1007/s10096-015-2556-x.

In vivo imaging of the lung inflammatory response to *Pseudomonas aeruginosa* and its modulation by azithromycin.

Stellari F, Bergamini G, Sandri A, Donofrio G, Sorio C, Ruscitti F, Villetti G, Assael BM, Melotti P, Lleo MM.

J Transl Med. 2015 Aug 4;13:251. doi: 10.1186/s12967-015-0615-9.

Detecting the presence of bacterial DNA by PCR can be useful in diagnosing culture-negative cases of infection, especially in patients with suspected infection and antibiotic therapy.

Lleo MM, Ghidini V, Tafi MC, Castellani F, Trento I, Boaretti M.

FEMS Microbiol Lett. 2014 May;354(2):153-60. doi: 10.1111/1574-6968.12422.

The high incidence of carbapenem-resistant *Klebsiella pneumoniae* in urine from elderly hospital patients may facilitate the spread of resistant strains to the community.

Cascio GL, Soldani F, Mazzariol A, Lleo MM.

Microb Drug Resist. 2014 Feb;20(1):67-72. doi: 10.1089/mdr.2013.0036.

Fate of pathogenic bacteria in microcosms mimicking human body sites.

Castellani F, Ghidini V, Tafi MC, Boaretti M, Lleo MM.

Microb Ecol. 2013 Jul;66(1):224-31. doi: 10.1007/s00248-013-0239-7.

High incidence of antibiotic multi-resistant bacteria in coastal areas dedicated to fish farming.

Labella A, Gennari M, Ghidini V, Trento I, Manfrin A, Borrego JJ, Lleo MM.

Mar Pollut Bull. 2013 May 15;70(1-2):197-203. doi: 10.1016/j.marpolbul.2013.02.037.

An extensive investigation into the prevalence and the genetic and serological diversity of toxigenic *Vibrio parahaemolyticus* in Italian marine coastal waters.

Ottaviani D, Leoni F, Rocchegiani E, Mioni R, Costa A, Virgilio S, Serracca L, Bove D, Canonico C, Di Cesare A, Masini L, Potenziani S, Caburlotto G, Ghidini V, Lleo MM.

Environ Microbiol. 2013 May;15(5):1377-86. doi: 10.1111/j.1462-2920.2012.02839.x.

Virulence genes and pathogenicity islands in environmental *Vibrio* strains nonpathogenic to humans.

Gennari M, Ghidini V, Caburlotto G, Lleo MM.

FEMS Microbiol Ecol. 2012 Dec;82(3):563-73. doi: 10.1111/j.1574-6941.2012.01427.x.

Environmental *Vibrio parahaemolyticus* DNA signatures validation.

Caburlotto G, Knight IT, Lleo MM, Taviani E, Huq A, Colwell RR.

Syst Appl Microbiol. 2011 Dec;34(8):617-20. doi: 10.1016/j.syapm.2011.08.004.

Integrated evaluation of environmental parameters influencing *Vibrio* occurrence in the coastal Northern Adriatic Sea (Italy) facing the Venetian lagoon.

Caburlotto G, Bianchi F, Gennari M, Ghidini V, Socal G, Aubry FB, Bastianini M, Tafi M, Lleo MM.

Microb Ecol. 2012 Jan;63(1):20-31. doi: 10.1007/s00248-011-9920-x.

The use of multiple typing methods allows a more accurate molecular characterization of *Vibrio parahaemolyticus* strains isolated from the Italian Adriatic Sea.

Caburlotto G, Lleo MM, Gennari M, Balboa S, Romalde JL.

FEMS Microbiol Ecol. 2011 Sep;77(3):611-22. doi: 10.1111/j.1574-6941.2011.01142.x.

Effect on human cells of environmental *Vibrio parahaemolyticus* strains carrying type III secretion system 2.

Caburlotto G, Lleò MM, Hilton T, Huq A, Colwell RR, Kaper JB.

Infect Immun. 2010 Jul;78(7):3280-7. doi: 10.1128/IAI.00050-10.

Serological and molecular characterization of *Vibrio parahaemolyticus* marine strains carrying pandemic genetic markers.

Caburlotto G, Gennari M, Ghidini V, Tafi M, Lleo MM.

ISME J. 2010 Aug;4(8):1071-4. doi: 10.1038/ismej.2010.34.

Serodiversity and ecological distribution of *Vibrio parahaemolyticus* in the Venetian Lagoon, Northeast Italy.

Caburlotto G, Haley BJ, Lleò MM, Huq A, Colwell RR.

Environ Microbiol Rep. 2010 Feb;2(1):151-7. doi: 10.1111/j.1758-2229.2009.00123.x.