

CURRICULUM VITAE

Bianca COLONNA
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Positions

Since 2010: Full Professor of Microbiology (SSD/ BIO19), Faculty of Sciences, Sapienza University of Rome
2013-2016, 2016-2019 President of the Bachelor Degree in Biological Sciences, Sapienza University
1998-2010: Associate Professor of Microbiology, Faculty of Sciences, Sapienza University of Rome
1984-1998: Researcher at the Dept. of Cell and Developmental Biology, Sapienza University of Rome
1981-1984: Research fellow of the Italian National Research Council (CNR) at the Dept. of Cell and Developmental Biology, Sapienza University of Rome,
1980-1981: Research assistant at the Institut Pasteur (Paris, France) in the laboratory of Dr. Maurice Hofnung
Project: “*Transcriptional activation of the maltose system in E. coli*”
1978-1980: Research fellow of the “Istituto Pasteur-Fondazione Cenci Bolognetti” the Institut Pasteur (Paris, FR), supervisor Dr. Maurice Hofnung. Project: *Regulation of genes involved in maltose uptake in E. coli*”
1977: "Laurea" in Biological Sciences, Università degli Studi di Roma (maximum degrees and honors).
(supervisor: Prof. F. Graziosi)

Other appointments

Teaching

Since 2004: Professor of *Functional Genomics of Prokaryotes* for students in Biotechnology at Sapienza University of Rome
Since 1998: Professor of *Molecular Microbiology* for students of the Advanced School in “Microbiology and Virology” at the Faculty of Medicine, Sapienza University of Rome
Since 1990: Member of the Doctorate School in “*Cell and Developmental Biology*” Sapienza Univ. of Rome
1994-2000: Professor of *Microbial Genetics* for students of the “Advanced School in Biotechnology” at the Sapienza University of Rome
Since 1992: Professor of *General Microbiology*, Faculty of Sciences, Sapienza University of Rome
November 2000, 2001, 2002, and 2003: Invited teacher at the Advance Course in “General Microbiology” at the Institut Pasteur (Paris, France)

Within scientific societies

2013-2015 President: of the “*Italian Society of General Microbiology and Microbial Biotechnology*” (SIMGBM)
2010-2018: Member of the Council of the “*Italian Federation of Life Sciences*” (FISV)

As projects and fellowships evaluator

January 2012: Member of the expert panel of the Agence d'évaluation de la recherche et de l'enseignement supérieur (AERES, FR), Microbiology, Strasbourg (FR)
July 2011: Member of expert panel of the Ireland Science Foundation (SFI, EI), Microbiology, Trinity College, Dublin (EI)
Since 2003: Expert evaluator/ Vice Chair for research projects of the European Community (Marie Curie People Initiatives FP6, FP7, Horizon 2020, Life and Environmental Panel)

As project coordinator and commission head

2016. Coordinator of the PTR project 24-16 (Institut Pasteur, FR)
2011: Head of the Commission for the Qualifying examinations for Biologist, Sapienza University of Rome
2005-2006 and 2007-2008: Coordinator of a multicenters National Project on “Impact of multidrug resistant *Stenotrophomonas maltophilia* in patient affected by Cystic Fibrosis, Italian Foundation of Cystic Fibrosis
Sep.-Dec.1984: Scientific supervisor of a survey program on diarrheal diseases in Mogadishu (Somalia), sponsored by the Italian Ministry for Foreign Affairs.

Visiting stages

Sept.1995: Visiting scientist in the laboratory of Prof. Jorge Crosa (Oregon Health Sciences University, Portland USA). Research project: Thermoregulation of gene expression in *Vibrio*.

Jul.-Aug.1995: Visiting scientist in the laboratory of Prof. Frank Stahl (Univ.of Oregon, Eugene USA). Research project: Interaction between general recombination systems of enterobacteria.

Invited seminars at National and International Institution

University of Exeter, (UK), Università di Pavia (IT) - Università di Padova (IT) - Università di Napoli (IT) - Università di Sassari (IT) – Università di Salerno (IT), Università di Milano (IT), Università Cattolica di Roma (IT), ospedale Bambino Gesù , Roma (IT), Novartis Vaccines, Siena (IT) - Institut Pasteur, Paris (FR) - Ecole Polytechnique, Paris (FR) - Université de Clermond Ferrand (FR) - Université de la Méditerranée, Marseille (FR) - University of Umea (S), University of Exeter (UK) - University of Wurzburg (D) - University of Barcelona (ES) - Harvard Medical School (USA) - Oregon Health Sciences University (USA).

Editorial activity

2005-2007: Member of the advisory editorial board of “Molecular Microbiology”

2003 and 2007: Editor of the second and third Italian edition of the textbook “Brock: Biology of Microorganisms” Prentice Hall

Grant reviewing activity

ANR (French National Research Agency) (FR) - Ireland Science Foundation (EI) - Italian Ministry of University and Research (IT) - Spanish Ministry of Health (ES) - Wellcome Trust (UK), Spanish Ministry of Economy and Competitiveness (MINECO, Consolider Projects), European Commission (Marie Skłodowska Curie Actions ITN, IF),

Manuscript reviewing/referee activity

Antimicrobial Agents and Chemotherapy - Applied and Environmental Microbiology - BMC Microbiology - FEMS Microbiological Letters - Infection and Immunity - International Journal of Medical Microbiology - Journal of Bacteriology - Microbiology - Molecular Microbiology - Nature Reviews in Microbiology - PLoS One - Research in Microbiology - Trends in Microbiology

Synopsis of current scientific activity and relevant results

The research activity centres around the comprehension of mechanisms regulating gene expression in bacteria. Following the initial training in molecular genetics of the maltose system in *E.coli* at the Pasteur Institut, in M. Hofnung's laboratory, the focus has been directed towards the understanding of genetic systems involved in iron uptake and in the organization of antibiotic resistance genes in *Salmonella*. Then research interest has moved to the expression of virulence gene in *Shigella* and enteroinvasive *E.coli*. The results obtained have contributed to clarify 1) the mechanisms inducing silencing of virulence genes as a function of temperature; 2) the role of the nucleoid associated proteins in the control of the invasive phenotype; 3) the role of intrinsically curved DNA as a sensor of environmental signals relevant to gene expression ; 4) the role of small RNA molecules in the modulation of virulence gene expression.5) the molecular mechanisms underlying the evolution of *Shigella* from commensal *E.coli*; 6) the involvement of polyamine in the intracellular life of *Shigella*. Current projects focus on the understanding of the genome organization of *Shigella* (in collaboration with D.Mazel, IP , Paris); the structural analysis of the main regulator of *Shigella* virulence gene VirF ; the response of *Shigella* to stress conditions (oxidative stress, iron stress).

Publications: 48 including 5 reviews

H index : 22 (Scopus)

Citations : 1360

PUBBLICAZIONI (14-19)

Pasqua M., Grossi M., Scinicariello S., Aussel L, Barras F., **Colonna B.**, Prosseda G. The MFS efflux pump EmrKY contributes to the survival of *Shigella* within macrophages (2019), Scientific Reports, 9:2906
DOI: 10.1038/s41598-019-39749-3

IF₂₀₁₇: 4.122

Pasqua, M., Michelacci, V., Di Martino, M.L., Tozzoli, R., Grossi, M., **Colonna, B.**, Morabito, S., Prosseda, G. The intriguing evolutionary journey of enteroinvasive *E. coli* (EIEC) toward pathogenicity (2017), Front. Microbiol., 8, 2390.

DOI: 10.3389/fmicb.2017.02390

IF₂₀₁₇: 4.019

Leuzzi, A., Grossi, M., Di Martino, M.L., Pasqua, M., Micheli, G., **Colonna, B.**, Prosseda, G. Role of the SRRz/Rz1 lambdoid lysis cassette in the pathoadaptive evolution of *Shigella*. (2017) Int. J. Med. Microbiol., 307 (4-5), 268-275.

DOI: 10.1016/j.ijmm.2017.03.002

IF₂₀₁₇: 3.298

Di Martino, M.L., Falconi, M., Micheli, G., **Colonna, B.**, Prosseda, G. The multifaceted activity of the VirF regulatory protein in the *Shigella* Lifestyle (2016) Front. Mol. Biosci., 3, 61.

DOI: 10.3389/fmolb.2016.00061

IF₂₀₁₈: 3.565

Njamkepo E,....., **Colonna B.**, Egorova S, Pazhani GP, Ezernitchi AV, Guigon G, Harris SR,J., Weill FX. Global phylogeography and evolutionary history of *Shigella dysenteriae* type 1. Nat Microbiol. 2016 Mar21;1:16027.

DOI: 10.1038/nmicrobiol.2016.27.

IF₂₀₁₆: 14.174

Di Martino, M.L., Romilly, C., Wagner, E.G.H., **Colonna, B.**, Prosseda, G. One gene and two proteins: A leaderless mRNA supports the translation of a shorter form of the *Shigella* VirF regulator (2016) mBio, 7, e01860-16.

DOI: 10.1128/mBio.01860-16

IF₂₀₁₆: 6.956

Leuzzi, A., Di Martino, M.L., Campilongo, R., Falconi, M., Barbagallo, M., Marcocci, L., Pietrangeli, P., Casalino, M., Grossi, M., Micheli, G., **Colonna, B.**, Prosseda, G. Multifactor regulation of the MdtJI polyamine transporter in *Shigella* (2015) PLoS ONE, 10, 0136744.

DOI: 10.1371/journal.pone.0136744

IF₂₀₁₅: 3.057

Campilongo, R., Di Martino, M.L., Marcocci, L., Pietrangeli, P., Leuzzi, A., Grossi, M., Casalino, M., Nicoletti, M., Micheli, G., **Colonna, B.**, Prosseda, G. Molecular and functional profiling of the polyamine content in enteroinvasive *E. coli*: Looking into the gap between commensal *E. coli* and harmful *Shigella* (2014) PLoS ONE, 9 , e106589.

DOI: 10.1371/journal.pone.0106589

IF₂₀₁₄: 3.234