



ALLA MAGNIFICA RETTRICE  
DELL'UNIVERSITA' DEGLI STUDI DI MILANO

COD. ID: 7062

Il sottoscritto chiede di essere ammesso a partecipare alla selezione pubblica, per titoli ed esami, per il conferimento di un assegno di ricerca presso il Dipartimento di Bioscienze Responsabile scientifico: Prof. Paolo Landini

[Valerio Baldelli]

## CURRICULUM VITAE

### INFORMAZIONI PERSONALI

Cognome	Baldelli
Nome	Valerio

### OCCUPAZIONE ATTUALE

Incarico	Struttura
Assegnista di Tipo B	Dipartimento di Bioscienze, Università degli studi di Milano

### ISTRUZIONE E FORMAZIONE

Titolo	Corso di studi	Università	anno conseguimento titolo
Laurea Magistrale o equivalente	Biologia per la ricerca Molecolare, Cellulare e Fisiopatologica	Dipartimento di Scienze, Università degli studi Roma Tre	2015/2016
Specializzazione			
Dottorato Di Ricerca	Scienze e Tecnologie Biomediche, curriculum: microbiologia	Dipartimento di Scienze, Università degli studi Roma Tre	2018/2019
Master			
Diploma Di Specializzazione Medica			
Diploma Di Specializzazione Europea			
Altro			



## ISCRIZIONE AD ORDINI PROFESSIONALI

Data iscrizione	Ordine	Città
12/02/2021	Ordine Nazionale dei Biologi, ONB; Member_ID: AA_088388	Roma
01/01/2016	Membro della Società Italiana di Microbiologia e Biotecnologie Microbiche (SIMGBM)	Roma
01/01/2017	Member of the Microbiology Society	UK



## LINGUE STRANIERE CONOSCIUTE

lingue	livello di conoscenza
Inglese	B2

## PREMI, RICONOSCIMENTI E BORSE DI STUDIO

anno	Descrizione premio
2019	Congress Attendance Grant at the 10 <sup>th</sup> Congress of European Microbiologist (FEMS 2023), July 9 <sup>th</sup> -12 <sup>th</sup> 2023, Hamburg, DE.
2019	Congress Attendance Grant at the 8 <sup>th</sup> Congress of European Microbiologist (FEMS 2019), July 7 <sup>th</sup> -11 <sup>th</sup> 2019, Glasgow, UK.
2019	Miglior presentazione del terzo anno di Dottorato all'Annual Meeting per il programma di dottorato in Scienze e Tecnologie Biomediche. Università Roma Tre, Roma, Italia.
2018	Miglior presentazione del secondo anno di Dottorato all'Annual Meeting per il programma di dottorato in Scienze e Tecnologie Biomediche. Università Roma Tre, Roma, Italia.
2017	Miglior presentazione del primo anno di Dottorato all'Annual Meeting per il programma di dottorato in Scienze e Tecnologie Biomediche. Università Roma Tre, Roma, Italia.
2016	Vincitore della borsa di Dottorato in Scienze e Tecnologie Biomediche, Università Roma Tre, Roma, Italia.

## ATTIVITÀ DI FORMAZIONE O DI RICERCA

<p><b>July 2023 - To date</b> <b>Post-doctoral fellow at the Department of Bioscience, University of Milan - Project:</b> "Vector host pathogen interaction and new biotechnological methods for their control-Spoke 2-INF-ACT- PNRR-PE13". In this project I am focusing on the ectopic expression of newly identified antigens and secondary metabolites of the <i>Leishmania</i> genera, which might have their importance for the vector-host-pathogen interactions. Particularly, I genetically engineered some of these proteins, in the attempt to overexpress and purify them through the usage of a bacterial heterologous system. After their purification, the usage of <i>in vivo</i> models (<i>i.e.</i> <i>Galleria mellonella</i> larvae) might be useful to characterize their biological role during the host-pathogen interactions and their possible importance for the biocontrol of the vectors. Supervisor for the laboratory internship of BSc, MSc and PhD students.</p>
<p><b>Sept 2021 - June 2023</b> <b>Post-doctoral fellow at the Department of Bioscience, University of Milan - Project:</b> "BacVir-CF: Identification of novel bacterial virulence factors and inflammation determinants associated with persistent lung infections in cystic fibrosis". In this project I was focused on <i>i)</i> the characterization of novel <i>Pseudomonas aeruginosa</i> genetic determinants associated with persistent cystic fibrosis lung infections, by generating both knockout and overexpression mutants through several cloning techniques; <i>ii)</i> the assessment of the role of the identified-genes on phenotypes known to be important for the persistence of <i>P. aeruginosa</i> strain in the host <i>e.g.</i> biofilm formation, resistance to antibiotics, response to oxidative stress, virulence in the <i>Galleria melonella</i> model; and finally <i>iii)</i> decipher the <i>stimuli</i> and the pathways involved in the function of the <i>P. aeruginosa</i> identified-genes by performing <i>in silico</i> analysis, combined with genetics and biochemical approaches based on reporter strains, RT-qPCR and bacterial two-hybrid screening in different media and conditions. Supervisor for the laboratory internship of BSc, MSc and PhD students.</p>
<p><b>2021- To date</b> Laboratory Assistant for the courses: <i>General Microbiology, Microbial Biotechnology</i>. Dept of Bioscience, University of Milan, Milan, Italy.</p>



## July 2020 - June 2021

### Post-doctoral researcher at the Bambino Gesù Pediatric Hospital in the Human Microbiome Unit.

I was involved in several projects focused on the characterization of *i*) the gut microbiota *ii*) the gut fungal microbiota and *iii*) the gut metabolome, in patients suffering of chronic inflammatory bowel diseases (IBDs). During this period, I have acquired knowledge in the next generation sequencing (NGS) and gas chromatography-mass spectrometry (GC-MS) techniques. Particularly, I have focused my attention on 16S and ITS-targeted metagenomic approaches based on Illumina sequencing workflow, ranging from bacterial and fungal DNA extraction from stool samples to DNA library preparation, quantification and sequencing. By managing metagenomic and metabolomic data I have increased my expertise on several bioinformatics and statistical analyses, such as principal coordinates analysis (PCA), Kruskal Wallis and Wilcoxon rank-sum test, and on alpha and beta diversity, acquiring knowledge in the microbial ecology area.

## 2016 - 2019

### PhD student in Biomedical Science and Technologies in the laboratory of Microbial Biotechnology at the Department of Science, Roma Tre University.

I completed my PhD defending my PhD thesis: "Antivirulence strategies against *Pseudomonas aeruginosa*", in February 2020 under the supervision of Prof. Giordano Rampioni. My PhD project was focused on the identification of antivirulence drugs to combat the infection caused by the multi-drug-resistant human pathogen *P. aeruginosa*. Therefore, I have focused my attention on different aspects of this bacterium, ranging from *i*) gene regulation, with a special focus on gene expression controlled by the intercellular communication systems known as quorum sensing (QS), *ii*) efflux pumps inhibition as antivirulence strategy and *iii*) identification of antivirulence compounds targeting QS by drug-repurposing and *in silico* screening approaches. I have acquired extensive knowledge in *i*) high-throughput screening system by using *ad hoc* engineered bacterial biosensors strains based on light emission, or by using docking simulations, *ii*) quantification of virulence factors, quorum sensing signal molecules production, as well as studies of biofilm formation and disruption, both in *P. aeruginosa* laboratory strain and in cystic fibrosis (CF) isolates, *iii*) use of animal and plant (*Galleria mellonella* and lettuce) infection models, *iv*) use of heterologous system (*Escherichia coli* BL21) for protein over-expression *v*) DNA and RNA manipulation, extraction and quantification *vi*) cultivation and isolation of *P. aeruginosa* CF clinical isolates. Along with my research background I have developed teaching, mentoring and tutoring experiences enhancing my ability in a laboratory working area.

## 2016 - 2019

Coordination of laboratory activities for the MSc course of Microbial Biotechnology, Roma Tre University, under the supervision of Prof. Livia Leoni.

## 2016 - 2019

Bench supervisor for the laboratory internship of BSc, MSc and PhD students. Dept of Science, Roma Tre University, Rome.

## 2016

150 training hours in the Biochemistry lab of Prof. Fabio Polticelli at the Department of Science, Roma Tre University.

During this period, I have acquired knowledge of different bioinformatic tools such as, Chimera, RasMol and DockingApp, to perform docking simulation analyses predicting protein-protein interactions.

## ATTIVITÀ PROGETTUALE

Anno	Progetto
2023 - To date	Participant to the project: PNRR-PE13-G43C22002620007 "Vector host pathogen interaction and new biotechnological methods for their control-Spoke 2-Arthropod vectors and vector-borne pathogens-INF-ACT-One Health Basic and Translational Research Actions addressing Unmet Needs on Emerging Infectious Diseases" at the Department of Bioscience, University of Milan under the supervision of Prof. Claudio Bandi.



2021 - 2023	Participant to the project: 2020-3581 "BacVir-CF: Identification of novel bacterial virulence factors and inflammation determinants associated with persistent lung infections in cystic fibrosis" at the Department of Bioscience, University of Milan under the supervision of Dr. Elio Rossi.
2020 - 2021	Participant to the project: GR-2016-02364891 "Toward a personalized approach in ulcerative colitis: integrating genetics with microbiota analysis to select therapy and predict individual response", at the Bambino Gesù Hospital, under the supervision of Dr. Federica Del Chierico and Dr. Lorenza Putignani.
2018 - 2019	Participant to the pilot project FFC#17/2018 "Drug repurposing for antivirulence therapy against <i>Pseudomonas aeruginosa</i> ", at the Department of Science, University Roma Tre, under the supervision of Prof. Giordano Rampioni and Prof. Livia Leoni.

## CONGRESSI, CONVEGNI E SEMINARI

Data	Titolo	Sede
1-5/06/2024	Lack of <i>sirB2</i> gene stimulates virulence, invasion, and small colony variants emergence in <i>Pseudomonas aeruginosa</i> . Poster presentation.	19 <sup>th</sup> International biennial <i>Pseudomonas</i> Conference, Copenhagen, DK.
27-29/06/2024	Lack of <i>sirB2</i> gene stimulates virulence, invasion, and small colony variants emergence in <i>Pseudomonas aeruginosa</i> . Oral communication	Cortona Procarioti, Cortona, Italy.
21-24/09/2023	Functional characterization of the RS04555 gene and its association with persistent cystic fibrosis lung infections by <i>Pseudomonas aeruginosa</i> . Oral communication	34 <sup>th</sup> Conference of the Italian Society of General Microbiology and Microbial Biotechnologies (SIMGBM), Cagliari, Italy.
9-13/07/2022	Characterization of novel <i>Pseudomonas aeruginosa</i> genetic determinates associated with persistent cystic fibrosis lung infections. Poster presentation	10 <sup>th</sup> Congress of European Microbiologist (FEMS 2023), July 9 <sup>th</sup> -13 <sup>th</sup> 2023, Hamburg, DE.
23-25/06/2022	Characterization of novel <i>Pseudomonas aeruginosa</i> genetic determinants associated with persistent cystic fibrosis lung infections. Oral communication	Cortona Procarioti, Cortona, Italy.
10/09/2020	Antivirulence strategies against <i>Pseudomonas aeruginosa</i> . Oral communication	Virtual SIMGBM PhD Day organized by SIMGBM, 2020.
7-11/07/2019	Identification of FDA-approved anti-virulence drugs targeting PqsE. Poster Presentation	8 <sup>th</sup> Congress of European Microbiologist (FEMS 2019), Glasgow, UK.
19-22/06/2019	Identification of FDA-approved anti-virulence drugs targeting PqsE. Poster presentation	33 <sup>rd</sup> Conference of the Italian Society of General Microbiology and Microbial Biotechnologies (SIMGBM), Florence, Italy.
17-20/05/2018	Identification of anti-virulence FDA-approved compounds targeting the pqs quorum sensing system of <i>Pseudomonas aeruginosa</i> . Oral communication	Cortona Procarioti, Cortona, Italy.



17-20/09/2017	Identification of FDA-approved anti-virulence drugs targeting PqsE. Poster presentation	32 <sup>nd</sup> Conference of the Italian Society of General Microbiology and Microbial Biotechnologies (SIMGBM), Palermo, Italy.
5-9/09/2017	Identification of FDA-approved anti-virulence drugs targeting PqsE. Poster presentation	16 <sup>th</sup> International Conference on <i>Pseudomonas</i> , Liverpool, UK.
5-9/09/2017	Effect of efflux pumps inhibition on <i>Pseudomonas aeruginosa</i> transcriptome and virulence. Poster presentation	16 <sup>th</sup> International Conference on <i>Pseudomonas</i> , Liverpool, UK.
5-9/09/2017	Identification of FDA-approved compounds targeting the pqs quorum sensing system of <i>Pseudomonas aeruginosa</i> . Poster presentation	16 <sup>th</sup> International Conference on <i>Pseudomonas</i> , Liverpool, UK.
20-23/09/2016	Identification of FDA-approved compounds targeting the pqs quorum sensing system of <i>Pseudomonas aeruginosa</i> . Poster presentation	Conference of the Italian Federation of Life Sciences (FISV), Rome, Italy.
23-26/09/2015	Identification of FDA-approved compounds targeting the pqs quorum sensing system of <i>Pseudomonas aeruginosa</i> . Poster presentation	31 <sup>st</sup> Conference of the Italian Society of General Microbiology and Microbial Biotechnologies (SIMGBM), Ravenna, Italy.

## PUBBLICAZIONI

<b>Articoli su riviste</b>
Rampioni G, Pillai CR, Longo F, Bondi R, Baldelli V, Messina M, Imperi F, Visca P, Leoni L (2017) Effect of efflux pumps inhibition on <i>Pseudomonas aeruginosa</i> transcriptome and virulence. <i>Sci Rep</i> 7:11392; DOI: 10.1038/s41598-017-11892-9.
D'Angelo F, Baldelli V, Halliday N, Pantalone P, Polticelli F, Fiscarelli E, Williams P, Visca P, Leoni L, Rampioni G (2018) Identification of FDA-approved drugs as antivirulence agents targeting the pqs quorum sensing system of <i>Pseudomonas aeruginosa</i> . <i>Antimicrob Agents Chemother</i> 62:e01296-18; DOI: 10.1128/AAC.01296-18.
Mellini M, Di Muzio E, D'Angelo F, Baldelli V, Ferrillo S, Visca P, Leoni L, Polticelli F, Rampioni G (2019) <i>In silico</i> selection and experimental validation of FDA-approved drugs as anti-quorum sensing agents. <i>Front Microbiol</i> 10:2355; DOI: 10.3389/fmicb.2019.02355.
Baldelli V, D'Angelo F, Pavoncello V, Fiscarelli EV, Visca P, Rampioni G, Leoni L (2020) Identification of FDA-approved drugs targeting the <i>Pseudomonas aeruginosa</i> quorum sensing effector protein PqsE. <i>Virulence</i> 11:652-668; DOI: 10.1080/21505594.2020.1770508.
Baldelli V, Scadaferri F, Putignani L, Del Chierico F (2021) The role of Enterobacteriaceae in gut microbiota dysbiosis in inflammatory bowel diseases. <i>Microorganisms</i> 9:697; DOI: 10.3390/microorganisms9040697.
Rossi E, Leccese G, Baldelli V, Bibi A, Scalone E, Camilloni C, Paroni M, Landini P (2022) Inactivation of the pyrimidine biosynthesis <i>pyrD</i> gene negatively affects biofilm formation and virulence determinants in the Crohn's disease-associated adherent invasive <i>Escherichia coli</i> LF82 strain. <i>Microorganisms</i> 10:537; DOI: 10.3390/microorganisms10030537.





Del Chierico F, Cardile S, Baldelli V, Alterio T, Reddel S, Bramuzzo M, Knafelz D, Lega S, Bracci F, Torre G, Maggiore G, Putignani L (2023) Characterization of the gut microbiota and mycobiota in italian pediatric patients with primary sclerosing cholangitis and ulcerative colitis. <i>Inflamm Bowel Dis</i> 30:529-537; DOI: 10.1093/ibd/izad203.
Ravishankar S, Baldelli V, Angeletti C, Raffaelli N, Landini P, Rossi E. (2024) Fluoropyrimidines affect de novo pyrimidine synthesis impairing biofilm formation in <i>Escherichia coli</i> . <i>Biofilm</i> 7:100180; DOI: 10.1016/j.biofilm.2024.100180.
Scanu M, Toto F, Petito V, Masi L, Fidaleo M, Puca P, Baldelli V, Reddel S, Vernocchi P, Pani G, Putignani L, Scaldaferri F, Del Chierico F. (2024) An integrative multi-omic analysis defines gut microbiota, mycobiota, and metabolic fingerprints in ulcerative colitis patients. <i>Front Cell Infect Microbiol</i> 14:1366192; DOI: 10.3389/fcimb.2024.1366192.
Del Chierico F, Masi L, Petito V, Baldelli V, Puca P, Benvenuto R, Fidaleo M, Palucci I, Lopetuso LR, Caristo ME, Carrozza C, Giustiniani MC, Nakamichi N, Kato Y, Putignani L, Gasbarrini A, Pani G, Scaldaferri F. (2024) Solute Transporter OCTN1/Slc22a4 Affects disease severity and response to infliximab in experimental colitis: Role of gut microbiota and immune modulation. <i>Inflamm Bowel Dis</i> 30:135; DOI: 10.1093/ibd/izae135.
Ravishankar S, Conte A L, Carrasco Aliaga S J, Baldelli V, Nielsen K L, Conte M P, Landini P, Rossi E. (2024). The antimycotic 5-fluorocytosine is a virulence inhibitor of uropathogenic <i>Escherichia coli</i> and eradicates biofilm-embedded bacteria synergizing with B-lactams. Submitted to <i>Antimicrobial Agents and Chemotherapy</i> ; bioRxiv 2024.11.20.624304; DOI: <a href="https://doi.org/10.1101/2024.11.20.624304">https://doi.org/10.1101/2024.11.20.624304</a> .

## ALTRE INFORMAZIONI

<b>2022-to date</b> <i>Ad hoc</i> reviewer for the journals: <i>Microbiology Spectrum</i> ; <i>Microorganism</i> .
<b>2024-to date</b> Co-editor for the journal “ <i>Frontiers in Cellular and Infection Microbiology</i> ” in the research topic “Deciphering Antimicrobial Resistance: Genetic Insights and Perspectives”.
<b>Experimental techniques:</b> <u>Fundamental laboratory activities, genetic manipulation and phenotypic characterization of both Gram positive and Gram-negative bacteria (i.e. <i>Bacillus</i> spp, <i>Staphylococcus</i> spp., <i>Acinetobacter</i> spp., <i>Escherichia</i> spp. and <i>Pseudomonas</i> spp.):</u> preparation and sterilization of solutions and culture media, bacteria isolation and growth, preparation of glycerol stock for bacterial conservation, generation of recombinant bacterial strains as well as generation of new molecular tools, plasmids conjugation and transformation, generation of mutant strains and genetic fusions, use of microbial biosensors based on light emission and fluorescent proteins. High-throughput screening assays for the identification of novel antimicrobial compounds. Extensive experience in quantification of virulence factors and quorum sensing signal molecules production, study of biofilm formation and disruption (MBEC). Extensive knowledge in studying the antimicrobial, antivirulence and antibiofilm properties of chemical compounds (derived from natural products or from <i>de novo</i> synthesis) on several bacterial species. Extensive knowledge in the drug repurposing approaches and in the study of protein overexpression and purification in different bacterial heterologous systems.
<b>Molecular biology and Biochemistry techniques:</b> PCR, Real Time PCR, DNA/RNA extraction and quantification, standard cloning techniques, cloning techniques based on USER cloning methodology, TA cloning and Gibson assembly. Construction of DNA libraries for two-hybrid screening assays. SDS-PAGE and Western-blot analyses. 16S- and ITS-targeted metagenomics approaches based on Illumina NGS workflow, including bacterial and fungal DNA extraction from stool sample and DNA library preparation.
<b>Extensive knowledge of instrumentations:</b> fluent automated workstation (Tecan Fluent 480 Base Unit), confocal and fluorescence microscopy, automated luminometer-spectrophotometer plate reader (Tecan Spark, VICTOR 3V), Thermo Scientific NanoDrop 2000c, Chemidoc Bio-Rad, fluorimeter and spectrophotometer, MiSeq illumina, TapeStation Agilent 4150.



# UNIVERSITÀ DEGLI STUDI DI MILANO

Le dichiarazioni rese nel presente curriculum sono da ritenersi rilasciate ai sensi degli artt. 46 e 47 del DPR n. 445/2000.

Il presente curriculum, non contiene dati sensibili e dati giudiziari di cui all'art. 4, comma 1, lettere d) ed e) del D.Lgs. 30.6.2003 n. 196.

**RICORDIAMO** che i curricula **SARANNO RESI PUBBLICI sul sito di Ateneo** e pertanto si prega di non inserire dati sensibili e personali. Il presente modello è già precostruito per soddisfare la necessità di pubblicazione senza dati sensibili.

Si prega pertanto di **NON FIRMARE** il presente modello.

Luogo e data: Milano, 03.12.2024