UNIVERSITÀ DEGLI STUDI DI MILANO

TO MAGNIFICO RETTORE OF UNIVERSITA' DEGLI STUDI DI MILANO   ID CODE _____5734_____

I the undersigned asks to participate in the public selection, for qualifications and examinations, for the awarding of a type B fellowship at **Dipartimento di ___Bioscienze____**

Scientist- in – charge: **___Prof. Bandi Claudio_____**

Valerio Baldelli

CURRICULUM VITAE

PERSONAL INFORMATION

Surname	Baldelli
Name	Valerio
Date of birth	21/04/1989

PRESENT OCCUPATION

Appointment	Structure
Post-doctoral researcher	Department of Bioscience, University of Milan

EDUCATION AND TRAINING

Degree	Course of studies	University	year of achievement of the degree
Bachelor's Degree	Biological Science (grade: 110 *cum laudae*)	Roma Tre University	2013
Master's Degree	Biology for the molecular, cellular and pathophysiological research (grade: 110 *cum laudae*)	Roma Tre University	2016
PhD	Biomedical Science and Technologies	Roma Tre University	2019
Other	40 hours theoretical practical course according to Italian ministry of health decree 15/11/2011.	Clinical Research Educational Service (CRES)	2020

REGISTRATION IN PROFESSIONAL ASSOCIATIONS

Date of registration	Association	City
12/02/2021	Italian Biologist Association (Ordine Nazionale dei Biologi, ONB); Member_ID: AA_088388	Rome
2016	Italian Society of General Microbiology and Microbial Biotechnology (SIMGBM)	Rome

FOREIGN LANGUAGES

Languages	level of knowledge
English	B2

AWARDS, ACKNOWLEDGEMENTS, SCHOLARSHIPS

Year	Description of award
2022	Congress Attendance Grant at the 10th Congress of European Microbiologist (FEMS 2023), July 9th-13th 2023, Hamburg, DE.
2019	Congress Attendance Grant at the 8th Congress of European Microbiologist (FEMS 2019), July 7th-11th 2019, Glasgow, UK.
2019	Third Year PhD Best Presentation Award" at the Annual Meeting of the PhD programme "Biomedical Sciences and Technologies" (STB). Roma Tre University, Rome, Italy.
2018	Second Year PhD Best Presentation Award" at the Annual Meeting of the PhD programme "Biomedical Sciences and Technologies" (STB). Roma Tre University, Rome, Italy.
2017	First Year PhD Best Presentation Award" at the Annual Meeting of the PhD programme "Biomedical Sciences and Technologies" (STB). Roma Tre University, Rome, Italy.
2016	Winner of the PhD position in Biomedical Science and Technologies at the Department of Science, Roma Tre University, Rome, Italy.

TRAINING OR RESEARCH ACTIVITY

Sept 2021 – Today

Post-doctoral fellow at the Department of Bioscience, University of Milan in the context of the project "BacVir-CF: Identification of novel bacterial virulence factors and inflammation determinants associated with persistent lung infections in cystic fibrosis" under the supervision of Dr. Elio Rossi. During this period, I am focusing on several aspects of molecular microbiology, synthetic biology, and biotechnology using *Pseudomonas aeruginosa* and *Escherichia coli* as model organisms. Particularly I am focusing my attention on *i*) the characterization of novel *P. aeruginosa* genetic determinants associated with persistent cystic fibrosis lung infections, by generating both knockout and overexpression mutants; *ii*) testing the role of the identified-genes on phenotypes known to be important for the persistence of *P. aeruginosa* strain in the host *e.g.* biofilm formation, resistance to antibiotics, response to oxidative stress, virulence in the *Galleria melonella* model; and finally *iii*) deciphering the *stimuli* and the pathways involved in the function of the *P. aeruginosa* identified-genes by performing *in silico* analysis, combined with genetics and biochemical

approaches based on reporter strains, RT-qPCR and bacterial two-hybrid screening in different media and conditions.

July 2020 – June 2021
Post-doctoral researcher at the Bambino Gesù Pediatric Hospital in the Human Microbioma Unit.
I was involved in several projects focused on the characterization of the *i*) gut microbiota *ii*) gut fungal microbiota and *iii*) 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 statical analyses, such as principal coordinates analysis (PCA), kruskal wallis and Wilcoxon runk-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*", on February 2020 under the supervision of Dr. 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
150 training hours in the laboratory of Biochemistry at the Department of Science, Roma Tre University, under the supervision of Prof. Fabio Polticelli.
I have acquired knowledge with the usage of different bioinformatic tools such as, Chimera, RasMol and DockingApp, in order to perform docking simulation analyses predicting protein-protein interactions.

2016-2019
Coordination of laboratory activities for the Master's Degree course of Microbial Biotechnology, Roma Tre University, under the supervision of Prof. Livia Leoni.

2016-2019
Bench supervisor for the laboratory internship of BSc and MSc students in the Laboratory of Microbial Biotechnology, Roma Tre University.

PROJECT ACTIVITY

Year	Project
2020-Today	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 *Pseudomonas aeruginosa*", at the Department of Science, University Roma Tre, under the supervision of Dr. Giordano Rampioni and Prof. Livia Leoni.

CONGRESSES AND SEMINARS

Date	Title	Place
June 23rd-25th 2022	Characterization of novel *Pseudomonas aeruginosa* genetic determinants associated with persistent cystic fibrosis lung infections.	Cortona Procarioti, Cortona, Italy.
September 10th 2020.	Antivirulence strategies against *Pseudomonas aeruginosa*. Oral communication	Virtual SIMGBM PhD Day organized by SIMGBM, September 10th 2020.
July 7th-11th 2019	Identification of FDA-approved anti-virulence drugs targeting PqsE. Poster Presentation	8th Congress of European Microbiologist (FEMS 2019), Glasgow, UK.
June 19th-22nd 2019	Identification of FDA-approved anti-virulence drugs targeting PqsE. Poster presentation	33rd Conference of the Italian Society of General Microbiology and Microbial Biotechnologies (SIMGBM), Florence, Italy.
May 17th-20th 2018	Identification of anti-virulence FDA-approved compounds targeting the *pqs* quorum sensing system of *Pseudomonas aeruginosa*. Oral communication	Cortona Procarioti, Cortona, Italy.
September 17th-20th 2017	Identification of FDA-approved anti-virulence drugs targeting PqsE. Poster presentation	32nd Conference of the Italian Society of General Microbiology and Microbial Biotechnologies (SIMGBM), Palermo, Italy.
September 5th-9th 2017	Identification of FDA-approved anti-virulence drugs targeting PqsE. Poster presentation	16th International Conference on *Pseudomonas*, Liverpool, UK.
September 5th-9th 2017	Effect of efflux pumps inhibition on *Pseudomonas aeruginosa* transcriptome and virulence. Poster presentation	16th International Conference on *Pseudomonas*, Liverpool, UK.
September 5th-9th 2017	Identification of FDA-approved compounds targeting the *pqs* quorum sensing system of *Pseudomonas aeruginosa*. Poster presentation	16th International Conference on *Pseudomonas*, Liverpool, UK.
September 20th-23rd 2016	Identification of FDA-approved compounds targeting the *pqs* quorum sensing system of *Pseudomonas aeruginosa*. Poster presentation	Conference of the Italian Federation of Life Sciences (FISV), Rome, Italy.

September 23rd-26th 2015	Identification of FDA-approved compounds targeting the *pqs* quorum sensing system of *Pseudomonas aeruginosa*. Poster presentation	31st Conference of the Italian Society of General Microbiology and Microbial Biotechnologies (SIMGBM), Ravenna, Italy.

PUBLICATIONS

Articles in reviews
Rossi E, Leccese G, **Baldelli V**, Bibi A, Scalone E, Camilloni C, Paroni M, Landini P (2022) Inactivation of the pyrimidine biosynthesis *pyrD* gene negatively affects biofilm formation and virulence determinants in the Crohn's disease-associated adherent invasive *Escherichia coli* LF82 strain. *Microorganisms* 10:537. doi: 10.3390/microorganisms10030537.
Baldelli V, Scaldaferri F, Putignani L, Del Chierico F (2021) The role of enterobacteriaceae in gut microbiota dysbiosis in inflammatory bowel diseases. *Microorganisms* 9:697. doi:10.3390/microorganisms9040697.
Baldelli V, D'Angelo F, Pavoncello V, Fiscarelli EV, Visca P, Rampioni G, Leoni L (2020) Identification of FDA-approved drugs targeting the *Pseudomonas aeruginosa* quorum sensing effector protein PqsE. *Virulence* doi: 10.1080/21505594.2020.1770508.
Mellini M, Di Muzio E, D'Angelo F, **Baldelli V**, Ferrillo S, Visca P, Leoni L, Polticelli F, Rampioni G (2019) *In silico* selection and experimental validation of FDA-approved drugs as anti-quorum sensing agents. *Front Microbiol* 10:2355. doi: 10.3389/fmicb.2019.02355.
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 *Pseudomonas aeruginosa*. *Antimicrob Agents Chemother* doi: 10.1128/AAC.01296-18.
Rampioni G, Pillai CR, Longo F, Bondì R, **Baldelli V**, Messina M, Imperi F, Visca P, Leoni L (2017) Effect of efflux pumps inhibition on *Pseudomonas aeruginosa* transcriptome and virulence. *Sci Rep* 7:11392.

OTHER INFORMATION

Membership:
2016-today: Member of the Italian Society of General Microbiology and Microbial Biotechnology (SIMGBM). 2017-2018: Member of the Microbiology Society (UK).
Experimental techniques:
<u>Fundamental laboratory activities, genetic manipulation and phenotypic characterization of bacteria</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, quantification of virulence factors and quorum sensing signal molecules production, study of biofilm formation and disruption. <u>Molecular biology and Biochemistry techniques</u>: PCR, Real Time PCR, DNA and RNA extraction and quantification, cloning techniques, 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. <u>Extensive knowledge of instrumentations</u>: 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.

Research interests:

Identification and study of novel genetic determinants associated with the persistence of *Pseudomonas aeruginosa* in the host.

Bacterial gene regulation, with a special focus on gene expression controlled by intercellular communication systems.

Identification of antivirulence compounds targeting intercellular communication systems in the human pathogen *Pseudomonas aeruginosa*.

Efflux pumps inhibition as antivirulence strategy against the human pathogen *Pseudomonas aeruginosa*.

Characterization of the gut microbioma in stool samples of patients suffering of inflammatory bowel diseases (IBDs) by 16S- and ITS-targeted metagenomics approaches based on Illumina sequencing workflow

Personal skills:

Excellent interpersonal relationships, team working.

Adaptability in a multicultural environment (during my lab experience some of my co-workers came from different countries).

Communication skills.

Sense of initiative and responsibility.

Goal oriented, with excellent ability in tracking priority setting and adherence to deadlines.

Problem solving.

Ability to work on different projects, also under stressful conditions.

Declarations given in the present curriculum must be considered released according to art. 46 and 47 of DPR n. 445/2000.

The present curriculum does not contain confidential and legal information according to art. 4, paragraph 1, points d) and e) of D.Lgs. 30.06.2003 n. 196.

Place and date: ___Rome__, __03/04/2023__

SIGNATURE

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