BIOGRAPHICAL SKETCH

NAME: Silvia Buroni

POSITION TITLE: Associate Professor

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
University of Pavia, Italy	MSc	07/2003	Biological Sciences
University of Pavia, Italy		11/2003	Qualification to Biologist Profession
IUSS, University of Pavia		11/2006	Degree of the "Scuola Avanzata di Formazione Integrata (SAFI)"
University of Pavia, Italy	PhD	01/2007	Genetics and Biomolecular Sciences
University of Pavia, Italy	Postdoctoral training	11/2018	Microbiology
University of Western Ontario (Canada)	Postdoctoral training	09/2007	Microbiology

A. Personal Statement

I am a dedicated microbiologist with over 18 years of expertise in drug resistance. I began my career co-identifying the cellular target of benzothiazinones, a discovery published in *Science* and currently in Phase II clinical trials. My research focuses on developing novel therapeutics against multidrug-resistant (MDR) pathogens, specifically those affecting Cystic Fibrosis (CF) patients. I have authored 66 peer-reviewed articles (H-index=27; over 3,000 citations) and currently lead projects funded by the Italian Ministry of University and the Italian CF Research Foundation. I serve on the Scientific Committee of the European Cystic Fibrosis Society and the International *Burkholderia cepacia* Working Group. Additionally, I am an Editorial Board member for *Frontiers in Microbiology* and have extensive experience as a referee for international funding bodies. My work is driven by a commitment to improving life quality for CF patients and patients suffering from MDR infections through precision medicine and innovative antibacterial pipelines.

B. Positions and Honors

Positions and Employment

Since March 2024	*Coordinator of the Master Degree in Experimental and Advanced Biology, University of Pavia*
Since 1st December 2021	*Associate Professor BIO/19 – Microbiology, University of Pavia*
1st December 2018-30th November 2021	*Assistant Professor BIO/19 – Microbiology, University of Pavia*
2011-2018	*Post-Doc researcher at the Department of Biology and Biotechnology "L. Spallanzani" of the University of Pavia*
2006-2011	*Post-Doc researcher at the Department of Genetics and Microbiology of the University of Pavia on the project "New medicines for tuberculosis"*
June-August 2007	*Research stage at the Laboratory of Microbiology and Immunology of the University*

	of Western Ontario in London Ontario (Canada)
2003-2007	*PhD student in Genetics and Biomolecular Sciences, University of Pavia*

Honors

(Complete the following table, Add/delete rows if necessary.)

2011	*Travel Grant to attend the 4th Congress of European Microbiologists FEMS 2011, Geneva, Switzerland*
2010	*Selected and granted by Cariplo Foundation to be one of the 10 Italians out of 600 people attending the 60th Meeting of Nobel Laureates in Lindau, Germany*
2010	*Best presentation award: Cortona Procarioti meeting, Cortona, Italy*
2010	*Award for the results achieved in the "New Medicines for Tuberculosis" project*
2010	*Best poster award: XXXIX Congresso Nazionale AMCLI, Italy*
2008	*Travel Grant to attend the International B. cepacia Working Group meeting, Italy*

Reviewer Experience

Critical Reviews in Microbiology; Journal of Antimicrobial Chemotherapy; Frontiers in Microbiology; BMC Microbiology; Future Microbiology; Journal of Medical Microbiology; Microbial Drug Resistance; Current Microbiology; PLoS ONE; International Journal of Medicine and Medicinal Sciences.

C. Contributions to Science

My research is dedicated to combating antibiotic resistance through the identification and preclinical evaluation of novel therapeutic strategies against ESKAPE pathogens. A primary focus is the development of innovative molecules targeting cell envelope homeostasis and cell division in Gram-negative bacteria. I lead investigations into bacterial persistence, specifically exploring the novel relationship between cellular ploidy and the formation of persister subpopulations. By integrating flow cytometry with mathematical modeling, my work aims to quantify persistence levels to enable personalized antibiotic treatments tailored to the metabolic state of the pathogen.

In the field of Cystic Fibrosis, my laboratory has made significant strides in targeting *Burkholderia cenocepacia*. We have identified potent pyridine and benzothiadiazole (C109) derivatives, characterizing their mechanism of action as the inhibition of the cell division protein FtsZ. This research has progressed from molecular synthesis to the development of an inhalable formulation for clinical relevance. Beyond direct bactericidal agents, I am pioneering antivirulence strategies by targeting quorum sensing enzymes like CepI and DfsA. By solving crystallographic structures and utilizing *in vivo* models such as *Galleria mellonella*, we are developing inhibitors that reduce virulence without promoting resistance. Furthermore, I applied Reverse Vaccinology to identify immunogenic antigens, aiming to develop a protective vaccine against *B. cenocepacia* to improve the quality of life for CF patients.

Sciò P, Scoffone VC, Parisi A, Bufano M, Caneva M, Trespidi G, Irudal S, Barbieri G, Cariani L, Orena BS, Daccò V, Imperi F, **Buroni S**, Coluccia A. Identification of a New FtsZ Inhibitor by Virtual Screening, Mechanistic Insights, and Structure-Activity Relationship Analyses. ACS Infect Dis. 2025 Apr 11;11(4):998-1007.

Bonacorsi A, Trespidi G, Scoffone VC, Irudal S, Barbieri G, Riabova O, Monakhova N, Makarov V, **Buroni S§**. Characterization of the dispirotripiperazine derivative PDSTP as antibiotic adjuvant and antivirulence compound against *Pseudomonas aeruginosa*. Front Microbiol. 2024 Feb 16;15:1357708.

Irudal S, Scoffone VC, Trespidi G, Barbieri G, D'Amato M, Viglio S, Pizza M, Scarselli M, Riccardi G, **Buroni S§**.

Identification by Reverse Vaccinology of Three Virulence Factors in *Burkholderia cenocepacia* That May Represent Ideal Vaccine Antigens. Vaccines (Basel). 2023 May 30;11(6):1039.

Scoffone VC, Irudal S, AbuAlshaar A, Piazza A, Trespidi G, Barbieri G, Makarov V, Migliavacca R, De Rossi E, **Buroni S§**. (2022) Bactericidal and Anti-Biofilm Activity of the FtsZ Inhibitor C109 against *Acinetobacter baumannii*. Antibiotics (Basel). 11: 1571.

Trespidi G, Scoffone VC, Barbieri G, Marchesini F, Abualsha'ar A, Coenye T, Ungaro F, Makarov V, Migliavacca R, De Rossi E, **Buroni S§**. (2021) Anti-staphylococcal activity of the FtsZ inhibitor C109. Pathogens. 10: 886.

Trespidi G, Scoffone VC, Barbieri G, Riccardi G, De Rossi E, **Buroni S§**. (2020) Molecular Characterization of the *Burkholderia cenocepacia dcw* Operon and FtsZ Interactors as New Targets for Novel Antimicrobial Design. Antibiotics (Basel) 9: 841.

Chiarelli LR, Scoffone VC, Trespidi G, Barbieri G, Riabova O, Monakhova N, Porta A, Manina G, Riccardi G, Makarov V, **Buroni S§**. (2020) Chemical, Metabolic, and Cellular Characterization of a FtsZ Inhibitor Effective Against *Burkholderia cenocepacia*. Frontiers in Microbiology 11: 562.

Scoffone VC, Barbieri G, **Buroni S**, Scarselli M, Pizza M, Rappuoli R, Riccardi G. (2020) Vaccines to Overcome Antibiotic Resistance: The Challenge of *Burkholderia cenocepacia*. Trends in Microbiology 28: 315-326.

Costabile G, Provenzano R, Azzalin A, Scoffone VC, Chiarelli LR, Rondelli V, Grillo I, Zinn T, Lepioshkin A, Savina S, Miro A, Quaglia F, Makarov V, Coenye T, Brocca P, Riccardi G, **Buroni S§**, Ungaro F§. (2020) PEGylated mucus-penetrating nanocrystals for lung delivery of a new FtsZ inhibitor against *Burkholderia cenocepacia* infection. Nanomedicine 23: 102113.

Hogan AM, Scoffone VC, Makarov V, Gislason AS, Tesfu H, Stietz MS, Brassinga AKC, Domaratzki M, Li X, Azzalin A, Biggiogera M, Riabova O, Monakhova N, Chiarelli LR, Riccardi G, **Buroni S§**, Cardona ST. (2018) Competitive fitness of essential gene knockdowns reveals a broad-spectrum antibacterial inhibitor of the cell division protein FtsZ. Antimicrobial Agents and Chemotherapy 62. pii: e01231-18.

D. Past and Ongoing Research Support

From …. To ….	Project Title	Funding Agency	Role in the project
September 2023-August 2026	Targeting cell division by a Virtual Screening approach to find new drugs against *Pseudomonas aeruginosa* and *Staphylococcus aureus*	Italian Foundation for Research on Cystic Fibrosis	PI
30 November 2023-28 February 2026	EXPLORE - EXploiting pathogens PLOidy to fight drug REsistance: towards a precision medicine approach	PRIN 2022-PNRR: Ministry of University and Research	PI of the Research Unit of Pavia
April 2022-March 2025	Escaping the ESKAPEs: integrated pipelines for new antibacterial drugs	PRIN 2020 Ministry of University and Research	PI of the Research Unit of Pavia
March 2021	Effect of pH variation on the activity of fusidic acid against *Burkholderia cenocepacia*	Arrevus Inc.	PI
January 2021 – December 2025	FWO Biofilm community project	Research Foundation - Flanders	Participant
October 2019 – April	Identification of small	Atomwise	PI

2024	molecule inhibitors of FtsZ		
November 2017 – December 2020	*Burkholderia cenocepacia* divisome as a new target to hit a rare cystic fibrosis pathogen	Blue Sky Research Grant Project of the University of Pavia	PI

E. Experience as a research supervisor

3 postdocs

3 PhD students

More than 20 undergraduates