



Francesca Brunetti

✉ Email: f.brunetti98@gmail.com 💬 Github: <https://github.com/Franci-B>
🌐 LinkedIn: www.linkedin.com/in/francesca-brunetti-ab8b13206
👤 ORCID: www.orcid.org/0000-0001-9067-6343
👤 Personal website: <https://franci-b.github.io/>
👤 Google Scholar: <https://scholar.google.com/citations?user=yDVYjaoAAAAJ&hl=en>
Nationality: Italian

EDUCATION AND TRAINING

- [Nov 2022 – Jan 2026] **Ph.D. of Infectious Diseases, Microbiology, Legal Medicine and Public Health Sciences**
Sapienza University of Rome
Country: Italy | Final grade: Summa cum laude
38th Ph.D. cycle
Thesis Title: "Assessment of genetic determinants in *Escherichia coli* uropathogenic lifestyle and intracellular persistence via optimized k-mer matching of million-genome collections on laptops"
Supervisor: Prof. [Maria Pia Conte](#), Dr. [Karel Břinda](#)
Venue: Computational Microbiology Lab, [Department of Public Health and Infectious Diseases, Sapienza University of Rome](#)
- [Sep 2020 – Jul 2022] **MSc of Bioinformatics**
Tor Vergata University of Rome
Country: Italy | Final grade: 110 with honours / 110
Thesis project: "Genotypic characterization of *Staphylococcus aureus* strains from patients affected by atopic dermatitis"
Thesis Advisors: prof. Maria Pia Conte, Dr. Massimiliano Marazzato
Thesis Internship duration: 9 months (October 2021 - July 2022)
Venue: Computational Microbiology Lab, Department of Public Health and Infectious Diseases, Sapienza University of Rome
Area: Genomics, Microbiology
- [Sep 2016 – Oct 2019] **BSc of Bioinformatics**
Sapienza University of Rome
Country: Italy | Final grade: 110 with honors / 110
Thesis project: "Characterization of the Nasal Microbiota in children with chronic nasal inflammation: role of adenoid hypertrophy and allergic rhinitis"
Thesis Advisors: prof. Maria Pia Conte, Dr. Massimiliano Marazzato
Thesis Internship duration: 6 months (May - October 2019)
Venue: Computational Microbiology Lab, Department of Public Health and Infectious Diseases, Sapienza University of Rome
Area: Metagenomics, Microbiology
--
BSc entirely held in English.

PUBLICATIONS

- [2025] [Optimized k-mer search across millions of bacterial genomes on laptops](#)
[F. Brunetti](#), K. Břinda [*bioRxiv* (preprint)]
- [2025] [Genitourinary Microbiome and Volatilome: A Pilot Study in Patients with Prostatic Adenocarcinoma Submitted to Radical Prostatectomy](#)

L. Musleh, S. Passerini, **F. Brunetti**, L. Maurizi, G. Bevilacqua, L. Santodirocco, B. Sciarra, M. Moriconi, C. Frascchetti, A. Filippi, M.P. Conte, V. Pietropaolo, M. Di Pietro, S. Filardo, A. Sciarra, C. Longhi. [*Cancers*]

[2025] [Antibiotic-resistance and virulence-related genes in commercially bottled natural mineral waters](#)

G. Radocchia, **F. Brunetti**, M. Marazzato, D. Scribano, L. Nencioni, A.T. Palamara, S. Schippa, F. Pantanella [*BMC microbiology*]

[2025] [Uropathogenic Escherichia coli \(UPEC\) that hides its identity: features of LC2 and EC73 strains from recurrent urinary tract infections](#)

L. Maurizi, L. Musleh, **F. Brunetti**, A.L. Conte, A. Riccioli, S. Sideri, M.G. Ammendolia, D. Uccelletti, E. Schifano, M. De Angelis, G. Ianaro, A. Niro, A. Cutone, M.P. Conte, C. Longhi [*BMC microbiology*]

[2024] [Women Skin Microbiota Modifications during Pregnancy](#)

G. Radocchia[†], **F. Brunetti**[†], M. Marazzato, V. Totino, B. Neroni, G. Bonfiglio, A.L. Conte, F. Pantanella, P. Ciolli, S. Schippa [*Microorganisms*]

[†]These authors share first authorship

[2023] [XIV Seminar - PhD Day. Eppure si muovono: does people mobility enhance global health? Organized by the Italian National Institute of Health and Sapienza University of Rome. November 6, 2023 Abstract book](#)

Roma: Istituto Superiore di Sanità, 2023 ([ISTISAN Congressi 23/C5](#))

Abstract book - Edited by S. Bocci, **F. Brunetti**, C. Chiovoloni and L. Maddaloni

[2023] [Atopic dermatitis-derived Staphylococcus aureus strains: what makes them special in the interplay with the host](#)

A.L. Conte[†], **F. Brunetti**[†], M. Marazzato, C. Longhi, L. Maurizi, G. Raponi, A.T. Palamara, S. Grassi, M.P. Conte [*Frontiers in Cellular and Infection Microbiology*]

[†]These authors share first authorship

[2023] [Genotypic and Phenotypic Characterization of Escherichia coli Isolates Recovered from the Uterus of Mares with Fertility Problems](#)

F.P. Nocera, L. Maurizi, A. Masullo, M. Nicoletti, A.L. Conte, **F. Brunetti**, L. De Martino, C. Zagaglia, C. Longhi [*Animals (Basel)*]

[2022] [Allergic rhinitis, microbiota and passive smoke in children: A pilot study](#)

G. Brindisi, M. Marazzato, **F. Brunetti**, G. De Castro, L. Loffredo, R. Carnevale, B. Cinicola, A.T. Palamara, M.P. Conte, A.M. Zicari [*Pediatric Allergy and Immunology*]

[2022] [Genetic Diversity of Antimicrobial Resistance and Key Virulence Features in Two Extensively Drug-Resistant Acinetobacter baumannii Isolates](#)

M. Marazzato, D. Scribano, M. Sarshar, **F. Brunetti**, S. Fillo, A. Fortunato, F. Lista, A.T. Palamara, C. Zagaglia, C. Ambrosi [*International Journal of Environmental Research and Public Health*]

PHD RESEARCH EXPERIENCE

[Nov 2023 – Nov 2024] **Visiting PhD student at INRIA centre at Rennes University**

Supervisor: Dr. [Karel Brinda](#) ([Genscale](#) team)

Institute: [INRIA centre](#) at Rennes University, Rennes (France)

Activities:

- Tackling the challenge of comprehensive and rapid searchability across publicly available sequencing data, scaling such searches to portable devices for biological applications
- Definition of a methodology for k-mer search across million-genome bacterial collections on portable devices using phylogenetic compression, to address specific biological questions.

UNDERGRADUATE RE- SEARCH EXPERIENCE

[Jan 2020 – Apr 2021]

Training Experience in Computational Microbiology

Venue: Computational Microbiology Lab (Microbiology section), Department of Public Health and Infectious Disease, Sapienza University of Rome

Tutor: Dr. Massimiliano Marazzato

Activities: NGS analyses starting from raw data; Genome assembly; Characterization of single microorganisms (WGS analysis) or/and microbial communities (16S Metagenomics analysis); Comparative genomics; Pangenomics analysis.

SUPPLEMENTARY TEACH- ING ACTIVITIES

[Nov 2022 – Jan 2026]

Laboratory sessions for the "General microbiology, microbial biotechnology and elements of medical microbiology I" course (MED/07)

BSc in *Biotechnology*, Sapienza University of Rome

Course teacher: Prof. [Catia Longhi](#), Associate professor

[Nov 2022 – Jan 2026]

Laboratory sessions for the "Microbiology and Hygiene" course (MED/07)

MSc in Dentistry and Dental Prosthodontics, Sapienza University of Rome

Course teacher: Prof. Maria Pia Conte, Associate professor

[Nov 2022 – Jan 2026]

Bioinformatics lab sessions for the "Food Safety Laboratory" course (MED/07)

BSc in *Gastronomic and wellness sciences, cultures and politics*, Sapienza University of Rome

Course teacher: Prof. Catia Longhi, Associate professor

PROJECTS

[Jan 2021 – Jun 2021]

MSc Bioinformatics website development

Aim: Development of the new [official website](#) for the MSc in Bioinformatics, [Tor Vergata](#) University of Rome.

Supervisor: prof. Andrea Cabibbo, Tor Vergata University of Rome

CONFERENCES AND SEM- INARS

[20 Sep 2025]

Oral presentation at SIM 2025 Catania, Italy

Event: [53rd Congress of the Italian Society for Microbiology \(SIM 2025\)](#)

Title: "Rapid searches across million-genome bacterial collections on laptops: a practical methodology for point-of-care applications using k-mers"

Language: Italian

[19 Sep 2025 – 22 Sep 2025]

Poster presentation at SIM 2025 Catania, Italy

Event: [53rd Congress of the Italian Society for Microbiology \(SIM 2025\)](#)

Title: "Accurate differentiation of *Burkholderia cepacia* complex species: a pangenome-based approach for their rapid identification"

Language: English

[6 Mar 2025]

Oral presentation at DSB 2025 Pisa, Italy

Event: [DSB 2025](#)

Title: "Optimized K-mer Matching For Million-Genome Collections On Laptops"

Language: English

[29 Nov 2024] **Oral presentation at SeqBIM 2024** Rennes, France

Event: [SeqBIM 2024](#)

Title: "Optimized K-mer Matching For Million-Genome Collections On Laptops"

Language: English

Link to the abstract: <https://inria.hal.science/hal-04842871/document>

[22 Feb 2024] **Poster presentation at DKM Department Days** Rennes, France

Event: Annual meeting of the department of [DKM](#), [IRISA](#)

Title: "High-throughput bacterial epidemiology with global phylogenetically compressed genomic indexes"

Language: English

[6 Nov 2023] **Scientific staff and Chair at PhD Day 2023** Rome, Italy

Event: [PhD Day 2023 \(XIV edition\)](#) - "Eppur si muovono: does people mobility enhance global health?"

Organizers: Italian National Institute of Health and Sapienza University of Rome

[22 Sep 2023 – 24 Sep 2023] **Oral presentation at ICBRA 2023** Barcellona, Spain

Event: [ICBRA](#) 2023

Title: "Accurate differentiation of *Burkholderia cepacia* complex species: an updated pangenomic study"

Language: English

[13 Jul 2023] **Oral presentation at Inria Centre at Rennes University** Rennes, France

Event: Symbiose seminar held at INRIA Centre at Rennes University (GenScale)

Title: "Atopic dermatitis-derived *Staphylococcus aureus* strains: what makes them special in the interplay with the host"

Language: English

[10 Nov 2019] **Invited Talk - Bioethics Course (BSc in Bioinformatics)** Rome, Italy

Event: Seminar series held for the Bioethics course in the BSc Bioinformatics program (a.y. 2019-2020), Sapienza University of Rome

Title: "Mitochondrial donation, why not?"

Theme: Ethical evaluation of mitochondrial donation techniques

Language: English

Organizer: Elisabetta Sirgiovanni, Assistant Professor

GRANTS

[Nov 2023 – Jan 2024] **PhD students mobility grant - D.R. 1505/2023**

Funding institution: Sapienza University of Rome

Duration: 3 months

Host institution: [INRIA centre](#) at Rennes University, Rennes (France)

[Nov 2023 – Nov 2024] **"Avvio alla ricerca" research grant - D.R. 1074/2023**

Funding institution: Sapienza University of Rome

Duration: 1 years

Brief description: Definition of pangenome-based workflow for identifying potential discriminatory markers for the individual species belonging to the BCC, leveraging all available genomes in public databases.

[May 2021 – Oct 2021]

Undergraduate research grant

Funding institution: Sapienza University of Rome

Duration: 6 months

Supervisor: prof. Anna Teresa Palamara

Venue: Computational Microbiology Lab (Microbiology section), Department of Public Health and Infectious Disease, Sapienza University of Rome

Activities: NGS analyses starting from raw data; Genome assembly; Characterization of single microorganisms (WGS analysis) or/and microbial communities (16S Metagenomics analysis); Comparative genomics; Pangenomics analysis.

LANGUAGE SKILLS

Mother tongue(s): Italian

Other language(s):

English

LISTENING C1 READING C1 WRITING C1

SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1

French

LISTENING B1 READING B1 WRITING B1

SPOKEN PRODUCTION B1 SPOKEN INTERACTION B1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

SKILLS

Expertise

Bioinformatics | Data analysis | Statistical Analyses | k-mer based methods | Data structures | Microbiology

Omics expertise

Genomics | Metagenomics | Pangenomics | Transcriptmics

Programming and Markup languages

R | Python | Bash programming | C | C++ | LaTeX | Ruby | HTML, CSS & PHP | SQL

Operating systems

Linux | Microsoft Windows | MacOS

Technical skills

Workflow, Queue and Package Management (Snakemake, Conda, Slurm) | Terminal multiplexer (screen/tmux) | Version Control (Git) | Cluster Computing | Data Collection, Data Cleaning, Data Analysis, Data Visualisations | Microsoft Office | Libre Office | Machine Learning

Soft skills

Emotional intelligence | Teamwork and collaboration | Problem-Solving and Critical Thinking | Active Listening and Communication | Presentation Skills | Leadership and management | Adaptability and Resilience

PEER REVIEW ACTIVITIES

[May 2023 – Current]

Peer reviewer for Ecotoxicology and Environmental Safety

[Dec 2023 – Current]

Peer reviewer for PLOS Computational Biology