PERSONAL INFORMATION

Sara Stefani

Sex | Date of birth /1996 | Nationality

Sara Stefani, a biotechnologist with a degree in Molecular and Industrial Biotechnologies, earned at the University of Perugia (Italy). Specializing in vibrational spectroscopy, particularly Raman and FTIR, my expertise lies in biomedical applications. My current focus involves a comprehensive exploration of cardiorenal pathologies, where vibrational spectroscopy emerges as a powerful diagnostic and investigative tool. By utilizing established biochemical and histological methodologies, I enhance the robustness of my research, establishing a holistic approach that combines state-of-the-art spectroscopy with traditional analytical tools.

WORK EXPERIENCE

Nov 2024 – Dec 2024

Contratto di lavoro autonomo di natura occasionale – Perugia - Italy

- Title: "Integrated method for the diagnostics of cardiorenal diseases: from spectroscopy to machine learning" Supervisor: Prof. Paola Sassi

Jul 2014 – Sep 2014

Internship "Laboratorio analisi città di Chiaravalle" – Ancona - Italy

- The internship in the laboratory allowed me to carry out specialized microbiological and immunological examinations as well as a wide range of clinical analyses such as: clinical analyses coagulation, biochemical, microbiological, metabolic, immunological, genetic, fertility, bacteriological, and food analyses.

EDUCATION AND TRAINING

Nov 2021 – Oct 2024

PhD. Student in Biotechnology

Department of Chemistry, Biology and Biotechnology – University of Perugia (Italy)

- My research project focuses on the application of vibrational spectroscopy techniques, including Raman scattering and infrared (IR) absorption, for the diagnosis and treatment of cardiorenal diseases. Specifically, my PhD work involves the study and analysis of biological samples such as biofluids (urine, serum) and tissues from both animal and human models. I also engage in advanced data processing and analysis using the R programming language to extract spectroscopic markers that can improve diagnostic accuracy and therapeutic approaches.
- Supervisors: Prof. Paola Sassi and Prof. Daniele Fioretto

Aug 2023 – February 2024

Erasmus + traineeship

Oslo University Hospital - Institute for Experimental Medical Research (IEMR) – Oslo (Norway)

- I gained expertise in in vitro cell culture techniques and explored the development of nanoparticle carriers for drug delivery, with a focus on cardiorenal pathologies. I became skilled in cell thawing, culture management, and fixation techniques, essential for preserving cellular integrity. Additionally, I conducted stimulating experiments to mimic disease conditions and mastered protocols for protein and metabolite analysis. In nanoparticle development, I synthesized, characterized, and evaluated nanoparticles as drug carriers targeting cardiorenal diseases. This experience provided me with a strong foundation in both traditional and innovative methodologies, enabling me to contribute to cutting-edge research in this field. Furthermore, I improved my collaboration and communication skills, essential for effective teamwork and knowledge dissemination.

Sep 2018 – Jul 2021

Master's degree in Molecular and Industrial Biotechnology

University of Perugia (PG) - Italy

- Thesis: Vibrational spectroscopic techniques for the characterization and diagnostics of tendon tissue. - Supervisors: Prof. Assunta Morresi and Prof. Paola Sassi
- Title of qualification awarded: Molecular and industrial biotechnologist (110/110 cum laude)

Nov 2015 – Dec 2018

Degree in biotechnology

University of Urbino (PU) - Italy

- Thesis: Nuovi approcci diagnostici per la Malattia di Parkinson. – Supervisor: Marco Fanelli
- Title of qualification awarded: Biotechnologist (110/110)

Sep 2011 – Jul 2016

High School graduation in Health Biotechnology

Istituto tecnico IIS "Galileo Galilei" Jesi (AN) - Italy

- Thesis: Schizophrenia
- Graduated with 100/100

PUBLICATIONS

-Alunni Cardinali M, Govoni M, Stefani S, et al. Combining Multiple Spectroscopic Techniques to Reveal the Effects of Staphylococcus aureus Infection on Human Bone Tissues. Applied Spectroscopy. 2024;0(0). doi:10.1177/00037028241278903

-Stefani S, Govoni M, Tombolesi N, et al. Extracorporeal membrane oxygenation and effects on tendon tissue: A vibrational spectroscopy study. J Biophotonics. 2023;16(11):e202300163. doi:10.1002/jbio.202300163.

CONFERENCE PROCEEDING

-Sara Stefani, Martina A. Cardinali, Gustavo J. J. Silva,et al. Exploring cardiorenal syndrome in rats: insights from vibrational spectroscopy techniques. Proc. SPIE 13006, Biomedical Spectroscopy, Microscopy, and Imaging III, 1300608 (20 June 2024); https://doi.org/10.1117/12.3022088

-Martina Alunni Cardinali, Marco Govoni, Sara Stefani, et al. A multi-spectroscopic approach based on Raman microspectroscopy and ATR-FTIR spectroscopy to investigate Staphylococcus aureus-induced osteomyelitis and periprosthetic joint infections, Proc. SPIE 13006, Biomedical Spectroscopy, Microscopy, and Imaging III, 130060B (20 June 2024); https://doi.org/10.1117/12.3022328

-Sara Stefani, Martina Alunni Cardinali, Alessandro Cataliotti, et al. Vibrational spectroscopy techniques for the study of cardiorenal syndrome in rat models, Proc. SPIE 12627, Translational Biophotonics: Diagnostics and Therapeutics III. 2023; 126272D; https://doi.org/10.1117/12.2686820.

CONFERENCE COMMUNICATION

-Sara Stefani, Marco Govoni, Martina Alunni Cardinali, Marco Paolantoni, Alessandro Cataliotti, Paola Sassi
Exploring spectroscopic techniques for early detection of Staphylococcus aureus infection in bone tissue
10th Edition of Spring School of Biotechnologies (Perugia, 27th May 2024)

-Sara Stefani, Martina Alunni Cardinali, Gustavo J. J. Silva, Reza Parvan, Marco Paolantoni, Alessandro Cataliotti, Paola Sassi
Exploring Cardiorenal Syndrome in Rats: Insights from Vibrational Spectroscopy Techniques
SPIE Photonics Europe (Strasburg, 8th April 2024)

-Sara Stefani, Martina Alunni Cardinali, Alessandro Cataliotti, Gustavo J. J. Silva, Reza Parvan, Marco Paolantoni, Paola Sassi
Vibrational spectroscopy techniques for the study of cardiorenal syndrome in rat models
European Conferences on Biomedical Optics – SPIE conference (Munich, 29th June 2023)

-Sara Stefani, Martina Alunni Cardinali, Alessandro Cataliotti, Gustavo J. J. Silva, Reza Parvan, Marco Paolantoni, Paola Sassi
Vibrational spectroscopy techniques for the study of cardiorenal syndrome in rat models
VISPEC 2023 conference (Perugia, 16th June 2023)

-Sara Stefani, Gustavo J. J. Silva, Reza Parvan, Alessandro Cataliotti, Paola Sassi, Assunta Morresi
Vibrational spectroscopic techniques for the study of cardiorenal syndrome
9th Edition of Winter School of Biotechnologies (Perugia, 24th January 2023)

-Sara Stefani, Niki Tombolesi, Dante Dallari, Marco Govoni, Paola Sassi, Assunta Morresi
Vibrational spectroscopic techniques for pre-transplant tendon analysis
Interregional Meeting of the Italian Chemical Society Section Toscana, Umbria, Marche and Abruzzo, TUMA (Perugia, 1st September 2022)

-Sara Stefani, Niki Tombolesi, Dante Dallari, Marco Govoni, Paola Sassi, Assunta Morresi
Vibrational spectroscopic techniques for the characterization and diagnostics of tendon tissue
8th Edition of Winter School of Biotechnologies (Perugia, 20th January 2022)

ACADEMIC ACTIVITIES

-Member of the Organizing Committee for the VISPEC Conference (Perugia, 16th June 2023)
-Member of the Organizing Committee for the Spring School of Biotechnologies (Perugia, 27th May 2024)

PERSONAL SKILLS

Mother tongue(s): Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	B2	B2	B2	B2

Digital competence

Information processing	Communication	Content creation	Safety	Problem solving
Proficient user	Proficient user	Independent user	Independent user	Proficient user

- OFFICE AUTOMATION
  Office Suite: (Advanced) Web Browser: (Highly Specialised) Word Processors: (Advanced)
- -APPLICATION SOFTWARE
  Numerical and Statistical analysis: Origin (Advanced) GraphPad (Advanced) Opus (Advanced)
- -DATA MANAGEMENT
  Data modelling tools: Studio R (Advanced)
- -GRAPHICS AND MULTIMEDIA
  3D graphics: Chimera (Advanced)

Driving licence: B

I declare that what is reported in this curriculum corresponds to the truth pursuant to D.P.R. 445/2000