Francesco Pio Paci

ABOUT ME

Graduated in Molecular Biology, Genomics and Bioversity. Currently a research fellow at the University of Ferrara, in the subject of analytical chemistry: I deal with mass spectrometry (LC-MS-MS; GC-MS). Enterprising, multifaceted person, attentive to feedback and adequate planning, suitable for working in a group and in a hierarchy. I like to work with punctuality, honesty and frankness, seeking conciliation. Able to learn new notions and skills quickly. I am also interested in activities carried out to help students, in fact I was part of the Student Council of the University of Ferrara in the role of vice-secretary.

WORK EXPERIENCE

UNIVERSITY OF FERRARA – FERRARA, ITALY

Department Department of Environmental Sciences and Prevention

RESEARCH FELLOW IN ANALYTICAL CHEMISTRY ("ASSEGNO DI RICERCA") – 01/10/2024 – CURRENT

During my research fellowship, I focused on evaluating processes for the extensive removal of antibiotics and emerging contaminants belonging to the broad class of pharmaceuticals. I worked on developing techniques for the removal and degradation of emerging contaminants from aqueous matrices. Specifically, I studied separation techniques based on the adsorption process of perfluorinated substances (PFAS) on polymer-based resins by analyzing adsorption isotherms and the kinetics associated with this process. In line with this research, I developed an analytical method to determine these compounds in real water samples (groundwater), assessing qualitatively the presence of PFAS in the form of perfluorosulfonic acids (PFSA) and perfluorocarboxylic acids with ether linkages in the chain (PFECA). To determine the presence of various contaminants qualitatively and quantitatively, I enhanced my expertise in advanced separation techniques by employing liquid chromatography coupled with triple quadrupole mass spectrometry (LC-TQ). Finally, I improved my skills in the processing of analytical data.To this end, additionally I expanded my expertise in sample pretreatment processes by performing solid-phase extractions (SPE), which allowed for the concentration and purification of various samples in both synthetic matrices and real water samples.

For the work on PFAS, I had already submitted an abstract, which was later published as a poster and presented from September 7 to 11, 2025, in Pisa at an analytical chemistry conference (SCI)..

UNIVERSITY OF FERRARA

Department DEPARTMENT OF TRANSLATIONAL MEDICINE AND FOR ROMAGNA

UNIVERSITY TEACHING TUTOR – 04/2023 – 06/2024

I served as a laboratory and teaching tutor for the Medical Biotechnology Course during my studies. I undertook this role twice, each time focusing on different aspects of the subject:

- The first experience was under Professor Paola Rizzo for the General Biology course, with a focus on cardiovascular studies. During this period, I performed molecular analyses such as PCR, ELISA, and Western blotting in collaboration with the professor and her team of tutors.
- The second experience, with Professor Mascia Benedusi in the field of physiology, was more laboratory-intensive. Here, I conducted molecular analyses on epithelial tumor cells, exploring the potential of microalgae as a chemotherapeutic tool.

Beyond these specialized tutoring roles, I have also been involved in various student support activities:

- I assisted students in the Economics and Management course with registration procedures and clearing course debts.
- I supported students in writing bibliographies for their theses and in reading and analyzing scientific articles.
- Additionally, I acted as a classroom commissioner for the TOLC support and CISIA online tests, facilitating admission tests for the Faculty of Engineering at the University of Ferrara.

UNIVERSITY OF FERRARA

Department Department of Life Sciences and Biotechnology

MASTER'S DEGREE INTERNSHIP – 17/10/2023 – 19/07/2024

I conducted a research project under the supervision of Professor Lucon-Xiccato at the Behavioral Biology Laboratory at UniFE. The purpose of the internship was to study the behavioral preferences of a teleost fish (*Poecilia reticulata*) and to evaluate the effects of different environmental conditions on the subjects. I learned how to set up behavioral experiments and construct apparatus, design and carry out experiments according to standard procedures, manage the laboratory and animals, analyze data, and perform literature searches and analyses.

I also had an internship experience in Professor Frigato's molecular biology laboratory, where I analyzed brain tissue from wild guppies at the end of a treatment experiment with different types of plants. I used PCR to detect the expression of hormones such as cortisol, assessing the difference in stress levels between plant-reared and non-plant reared animals: brains were extracted post-euthanasia, processed with TRIzol for high-quality RNA extraction, and stored at -20°C for stress-related gene expression studies. The rest of the bodies were homogenized in PBS for protein analysis, including cortisol quantification via ELISA. The tissue samples were thawed, refrozen, and thawed again to aid cell lysis, then centrifuged to separate the supernatant for cortisol measurement. Brain gene expression will be analyzed using qPCR to evaluate the impact of different environmental conditions on stress responses.

This project, included in my master's thesis, has already been published in part in a scientific journal. The subsequent parts, which include experimental and ongoing molecular analyses, will also be published.

UNIVERSITY OF FERRARA

Department Department of Life Sciences and Biotechnology

BACHELOR INTERNSHIP – 10/2021 – 01/2022

Experiments at the University of Ferrara carried out using the “swimming tunnel”:
study of the swimming of the model organism *Danio rerio* (zebrafish), graphs for comparing the performance of various types of fish partly wild type and partly knock-out mutants for the Collagen VI gene (COL6).

EDUCATION AND TRAINING

01/10/2022 – 22/07/2024

MASTER'S DEGREE IN MOLECULAR BIOLOGY, GENOMICS AND BIODIVERSITY | LM - 6 University of Ferrara

Course objectives:
• Scientific and operational preparation in the biological-molecular, genetic and bioinformatics fields;
• In-depth knowledge of laboratory methodologies, analytical tools, data acquisition and analysis techniques;
• Knowledge of the mathematical and IT support tools;
• In-depth knowledge of the structure and evolution of animal and plant diversity, humans, ecosystems, genomes, immunology, and populations. Knowledge of laboratory techniques of molecular and cellular biology.

Thesis: Effects of Biodiversity on Well-being: An Experimental Study on an Animal Model, *Poecilia reticulata*

Final grade 101/110 | **Level in EQF** EQF level 7 | **Number of credits** 120

09/2019 – 22/09/2022

BACHELOR’S DEGREE IN BIOLOGY | L-13 University of Ferrara

Course objectives:
• Multidisciplinary methodological and technological knowledge for biological investigation, with particular reference to a wide spectrum of biological and instrumental analysis technical procedures;
• Knowledge in morphological-functional, molecular and ecological- evolutionary areas.

From March 2022 to August 2022 I carried out an Erasmus mobility at Universität Regensburg, Germany: I took and passed the exams, in English, similar to the course of my degree course, and followed multiple German language courses.

Thesis: Using the Swim Tunnel to Study Swimming Performance: A Study on the Model Organism *Danio rerio*

Final grade 100/110 | **Level in EQF** EQF level 6 | **Number of credits** 180

2019 Agrigento

SCIENTIFIC HIGHT SCHOOL DIPLOMA Liceo Scientifico "Leonardo" di Agrigento

Main subjects: Italian and Latin expression, Mathematics, Sciences, foreign language: English.
I also completed a school-work course at the archaeological park of the Valley of the Temples in Agrigento and at the Il Cerchio cultural association, at Luigi Pirandello's birthplace.

Final grade 100/100 | **Level in EQF** EQF level 4

LANGUAGE SKILLS

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	B2	B2	B2	B2	B2
GERMAN	B1	A2	A2	A2	A2

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

PUBLICATIONS

2025

6:2 Fluorotelomer alcohol adsorption on functionalized MCM-41

The following work was an abstract that had already been accepted by the XXXI Congress of the Division of Analytical Chemistry of the Italian Chemical Society (SCI), which was held in Pisa from Sunday, 7th to Thursday, 11th September 2025 at the Polo della Memoria San Rossore 1938, for the preparation of a poster at the same conference.

Authors F. P. Paci (1), C. Stevanin (1), T. Chenet (1), C. D'Anna (1), L. Pasti (1) Affiliation (1) Department of Environmental and Prevention Sciences, University of Ferrara, Via L. Borsari 46, 44121 Ferrara, Italy

Journal Name: Abstract for poster | **Publisher**: Conferenza Chimica Anlitica Settembre 2025 SOCIETA' CHIMICA ITALIANA (SCI)

2025

Habituation with apparatus and group testing improves assessment of fish preferences

Abstract
Preference tests are commonly used to assess fish behavior and cognition in several research fields. This study aimed to investigate how fish perform in a preference test involving extended habituation to the apparatus, which was expected to reduce stress. We contrasted the choice between a sector of the apparatus with natural vegetation, expected to be the preferred stimulus, and a barren sector. Initially, we demonstrated that guppies' preference for the sector with vegetation increased after a 5-day habituation period (Experiment 1). Subsequent experiments systematically modified the testing paradigm to observe effects on the preference. Experiment 2 introduced a physical separation between sectors to facilitate discrete choices, Experiment 3 tested groups of fish, and Experiment 4 used wild guppies. Only the modification in Experiment 3 impacted preference scores: guppies tested in groups showed a higher preference for the vegetation stimulus and spent less time in the central, no-choice sector of the testing apparatus. Overall, this study supports the importance of methodological details in preference tests and highlights the benefits of extended habituation and group testing. Researchers should consider these factors when designing experiments to evaluate cognitive abilities or behavioral preferences in fish. Tailoring testing paradigms to specific research goals can improve the reliability and comparability of results, contributing to a deeper understanding of fish behavior and welfare.
Keywords: animal-based indicators; choice test; fish cognition; welfare assessment.

J Fish Biol. 2025 Jan 4. doi: 10.1111/jfb.16053. Epub ahead of print. PMID: 39754488.

Varracchio C, Paci FP, Bertolucci C, Bertorelle G, Lucon-Xiccato T.

Journal Name: Journal of Fish Biology

SOCIAL AND POLITICAL ACTIVITIES

11/04/2025 Ferrara

FAME-LAB- FERRARA

I participated in the Fame Lab Talking Science competition: I presented two research projects in 3 minutes in front of an audience at the theater, after being admitted to the final **I won the ECOSISTER award**, for environmental sustainability.

12/2022 – 22/07/2024 University of Ferrara

Deputy secretary of the student council

I am very interested in activities aimed at helping all students. As Deputy Secretary of the student council, I was responsible for drafting the minutes of the meetings. I also served as the student representative for the Biology

master's program, for the evaluation unit of tutoring activities, and on the sports commission. Additionally, I represented the students in a European research and development project called COLOURS.

SKILLS

Analytical Chemistry

•HPLC-DAD
•LC-TQ
•GC-MS
•GC-FID
•ICP-OES or MS

Computer

• Microsoft Office (Word, Excel, PowerPoint etc.);
• Windows Office and Mac OS;
• Skype, Microsoft Teams, Zoom.

Data analysis software:

• Basic Linux Skills;
• ImageJ and GraphPad;
• BORIS software (behavioral analysis tool);
• Daniovision (behavioral tracking tool) and Ciclic Timer;
• Behavioural tests softwares (Ethovision XT and The Observer).

Rstudio (*versione 2022.02.3, http://www.rstudio.com*)

Mathlab

Molecular biology:

• Estraction of nucleic acids;
• Design of PCR primers;
• RT- transcription (iScript cDNA SYnthesis Kit);
• q-PCR and PCR;
• Agarose gel electrophoresis.

Comunication and interpersonal skills

Team-Working Aptitude for listening and collaboration with the research group, developed during the drafting of the experimental theses.
Straight talking Aptitude for direct confrontation with the tutor in order to reduce the risk of misunderstandings and errors, mainly acquired during the internship.
Stress management Good resilience in managing contingencies and deadlines.
Empathic listening and Non-verbal language Innate relational skills with animals and people, guided by a strong sensitivity and emotionality aimed mainly at situations of disparity.

SEMINARS AND CONFERENCES

07/09/2025 – 11/09/2025
XXXI Congresso della Divisione di Chimica Analitica della Società Chimica Italiana (SCI)_PISA,Italy

POSTER: 6:2 Fluorotelomer alcohol adsorption on functionalized MCM-41

Link https://analitica2025.dcci.unipi.it/

26/06/2025
Strong Hold on Weakly Retained: Optimizing Polar Analyte Separation with Waters Column Chemistry

Waters TM

19/06/2026

Emerging Strategies in PFAS Identification: Advanced Analytical Approaches for Environmental Samples

Separation Science

19/06/2025

On Demand: Navigating the LC-MS/MS Analysis of Δ8-THC, Δ9-THC, and Metabolites in Whole Blood and Urine

Separation Science

04/06/2025

Expanding the Sample Extraction Toolkit for food Anlaysis by GC-MS- Separation Science

Separation Science

15/04/2025

2nd IMaSS Enviro Day 2025 - Italian Mass Spectrometry Society - Bologna CNR

04/2022 – 07/2022

Seminar attended during my period abroad at the University of Regensburg.

German language course at University of Regensburg, Germany (all semester)

- Sex communication in insects (2 ECTS, grade 2.7);
- Literature seminar: design of proteins /functional elucidation of proteins (2 ECTS);
- Gene regulation and plant development (2 ECTS).

04/2022 – 04/2022

German Language Course A.1.2 (ECTS 9, Grade 1.7)

04/2022 – 04/2022

Writing German Language (A.1.2) (ECTS 3, Grade 1.3)

04/2022 – 04/2022

Speaking (A.1.2) (ECTS 3, Grade 1.3)

03/2022 – 03/2022

Intensivsprachhkurs (ILC) sprechen, schreiben, A1.1 (12 ECTS, grade 2.3)

Il sottoscritto autorizza il trattamento dei propri dati personali ai sensi del GDPR 679/16 "Regolamento europeo sulla protezione dei dati personali". Il sottoscritto acconsente alla pubblicazione del presente curriculum vitae sul sito dell'Università degli Studi di Ferrara.

FERRARA , 16/09/2025