PERSONAL INFORMATION

NAME	Lorenzo Pasotti
DATE OF BIRTH	May 18, 1984
NATIONALITY	Italian
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MAIN RESEARCH INTERESTS

Synthetic biology	Design, construction, characterization, modeling, identification and debugging of synthetic circuits in bacterial cells, predictability of biological systems, CRISPR interference, implementation of control circuits *in vivo*.
Metabolic engineering	Genome-scale metabolic models, sustainable bioconversion and valorization of industrial waste, production of biofuels and biopolymers.
Mathematical modeling	Nonlinear mixed effect models, standardization of model description languages and software for the execution of estimation and simulation tasks.

CURRENT POSITION

Nov 2023-now	Associate Professor (permanent Faculty position), Dipartimento di Ingegneria Industriale e dell'Informazione, University of Pavia, Italy
Jan 2020-now	Visiting Scientist, Experimental and Computational Methods for Modeling Cellular Processes (InBio) Group, Department of Computational Biology, Institut Pasteur, Paris, France

PAST POSITIONS

2015-2023	Assistant professor, Dipartimento di Ingegneria Industriale e dell'Informazione, University of Pavia, Italy
2012-2015	Post-doc researcher at the Interdepartmental Research Centre for Tissue Engineering, University of Pavia, Italy.
Feb-Sep 2011	Visiting Researcher at the Laboratory of Synthetic Biology and Microbial Biotechnology (PI: Prof. Chris French), School of Biological Sciences, University of Edinburgh, UK.
2008-2012	PhD Student in Bioengineering and Bioinformatics, University of Pavia, Italy.

PUBLICATIONS

2008-now	https://www.scopus.com/authid/detail.uri?origin=resultslist&authorId=41862325300

EDUCATION AND TRAINING

DATES	Since Sep 11, 2019 (valid until Sep 11, 2025)
INSTITUTION	Italian Ministry of Education (Ministero dell'Istruzione dell'Università e della Ricerca)
TITLE	**National Scientific Qualification for Associate Professor in Bioengineering (Abilitazione Scientifica Nazionale per il settore concorsuale 09/G2 – Seconda Fascia)**

DATES	Nov 2008 – Feb 2012
INSTITUTION	University of Pavia, Italy
TITLE	**PhD in Bioengineering and Bioinformatics**
TESI	"Quantitative characterization of genetic parts and devices for the bottom-up engineering of living systems in synthetic biology"

DATES	Feb 2010
INSTITUTION	University of Pavia, Italy
TITLE	**Professional Engineering Licence (Esame di Stato per l'abilitazione alla professione di ingegnere)**

DATES	Oct 2006 – Oct 2008
INSTITUTION	University of Pavia, Italy
TITLE	**Biomedical Engineering Master's Degree**
THESIS	"Progetto e implementazione di circuiti genetici standardizzati per la realizzazione di funzioni logiche nel batterio *E. coli*"
GRADE	110/110 cum laude

DATES	Sep 2003 – Sep 2006
INSTITUTION	University of Pavia, Italy
TITLE	**Biomedical Engineering Bachelor's Degree**
THESIS	"Un approccio per la modellizzazione e l'analisi di dati provenienti da sensori cinestetici indossabili"
GRADE	110/110

DATES	Sep 1998 – Jul 2003
INSTITUTION	Liceo Scientifico-Tecnologico "A. Maserati", Voghera (PV), Italy
TITLE	**High School Diploma in scientific studies**
GRADE	93/100

TEACHING (AS RESPONSIBLE OR CO-RESPONSIBLE OF COURSE)

DATES	2019 – now
COURSE	**Bioinformatics and Synthetic Biology (Bioinformatica e Biologia Sintetica)**
SSD	ING-INF/06
DEGREE	Bioengineering Master's Degree
DESCRIPTION	Full course (76h)

DATES	2016 – now
COURSE	**Bioinformatics (Bioinformatica)**
SSD	ING-INF/06
DEGREE	Biotechnology Master's Degree
DESCRIPTION	Full course (24h)

DATES	2017 – now
COURSE	**Informatics – Clinical Database Management (Abilità Informatiche: progettazione e gestione di database per la raccolta di dati clinici)**
SSD	ING-INF/06
SCHOOL	Physical Medicine and Rehabilitation Medical School
DESCRIPTION	Full course (8h)

DATES	2020 – now
COURSE	**Bioengineering & biomedical instruments for sport science (Bioingegneria e strumentazioni per lo sport)**
SSD	ING-INF/06
DEGREE	Sports Science Bachelor's Degree
DESCRIPTION	Full course (80h)

ADDITIONAL TEACHING ACTIVITIES

DATES	2015 – 2016
COURSE	**Biostatistics (Elaborazione di Dati Biomedici)**
SSD	ING-INF/06
DEGREE	Bioengineering Bachelor's Degree
MODULI	Practical lessons on biostatistics (8h)

DATES	2009 – 2016
COURSE	**Models of Biological Systems (Modelli di Sistemi Biologici)**
SSD	ING-INF/06
DEGREE	Bioengineering Bachelor's Degree
DESCRIPTION	Practical lessons on PK models, parameter estimation, enzymatic reactions, deconvolution (8h)

SUPERVISION AND CO-SUPERVISION OF BS/MS THESES

BIOENGINEERING/BIOMEDICAL ENGINEERING BACHELOR'S DEGREE	5 theses
BIOENGINEERING/BIOMEDICAL ENGINEERING MASTER'S DEGREE	25 theses
BIOLOGY BACHELOR'S DEGREE	5 theses
MOLECULAR BIOLOGY & GENETICS MASTER'S DEGREE	2 theses
BIOTECHNOLOGY MASTER'S DEGREE	6 theses
PHYSICS MASTER'S DEGREE	1 thesis

PhD STUDENT SUPERVISION

01-11-2014 - 26-01-2018	**Dr. Ilaria Massaiu**: "Computational and experimental methods for metabolic engineering: applications in *Escherichia coli* and *Bacillus subtilis*", thesis defence: 26/1/2018.
01-11-2015 - 30-01-2019	**Dr. Massimo Bellato**: "Overcoming metabolic burden in synthetic biology: a CRISPR interference approach", thesis defence: 30/1/2019.
01-10-2017 - 23-02-2021	**Dr. Davide De Marchi**: "Optimization of a network design to control the expression of any target gene in bacteria", thesis defence: 23/2/2021.
01-10-2018 - now	**Angelica Frusteri Chiacchiera**: "Design and characterization of CRISPRi-based synthetic circuits to inhibit antibiotic resistances in bacteria", thesis defence: 18/3/2022.
01-10-2020 - now	**Debora Dallera**: "Computational and experimental methods supporting the identification and characterization of bacterial biosensors: applications to bile acids detection" thesis defence: 12/4/2024.
01-10-2020 - now	**Roman Shaposhnikov**: "Design and proof-of-concept of a novel CRISPR activation (CRISPRa) approach in bacteria, based on synthetic circuits with engineered single-guide RNAs.", thesis defence: 12/4/2024.
01-10-2021 - now	**Francesca Usai**, thesis defence expected in 2025.
01-12-2021 - now	**Stefano Quaranta**, thesis defence expected in 2025.
01-10-2022 - now	**Daniele Pastorelli**, thesis defence expected in 2026

AWARDS

19/9/2012	Winner of the **Premio "Gruppo Nazionale di Bioingegneria (GNB) - Alberto Mazzoldi"** (7th edition) for the PhD thesis.
8/11/2010	Winner of a **Gold medal** (as Advisor of the UNIPV-Pavia Team) at the International Genetically Engineered Machine (iGEM 2010) competition, Massachusetts Institute of Technology, Cambridge, MA, USA.
2/11/2009	Winner of a **Gold medal** (as Advisor of the UNIPV-Pavia Team) at the International Genetically Engineered Machine (iGEM 2009) competition, Massachusetts Institute of Technology, Cambridge, MA, USA.
2/11/2009	Winner of the **Best Food or Energy Project special prize** (as Advisor of the UNIPV-Pavia Team) at the International Genetically Engineered Machine (iGEM 2009) competition, Massachusetts Institute of Technology, Cambridge, MA, USA.
9/9/2009	Winner of the **Premio "Gruppo Nazionale di Bioingegneria (GNB)"** for the Master thesis.
3/4/2009	**Best poster** award at the European Conference of Synthetic Biology II (European Science Foundation - ESF), Sant Feliu de Guixols, Spain.
16/12/2008	Award by **Fondazione Costa** for the Master thesis.
9/11/2008	Winner of a **Silver medal** (as Student Member of the UNIPV-Pavia Team) at the International Genetically Engineered Machine (iGEM 2010) competition, Massachusetts Institute of Technology, Cambridge, MA, USA.

ACTIVITIES AS REVIEWER AND SELECTION COMMITTEES

2019 & 2023	Member of the Exam Committee for the admission to the PhD program in Bioengineering, Bioinformatics and Health Technologies, University of Pavia, Italy
2016-now	Reviewer for the assignment of the Gruppo Nazionale di Bioingegneria (GNB) thesis prizes.
2015-now	Reviewer for international scientific journals: IEEE TBIOCAS, Scientific Reports, Biotechnology and Bioengineering, Nature Communications, Nature Chemical Biology, Microbial Cell Factories, PLoS One.
29/4/2017	Participation as expert consultant in Metabolic Engineering to the selection procedure IGM0022017PV to recruit a post-doc researcher in the National Research Council (CNR), Pavia, Italy.
2011	iGEM Judge in the "Food or Energy" and "Manufacturing" tracks at the European iGEM Jamboree, Amsterdam, Netherlands.

ORGANIZATION OF CONGRESSES AND SCHOOLS

29/8-2/9/2022	Organization of the **Intensive School of Clinical Bioinformatics**, Pavia, Italy.
22-26/7/2019	Member of the scientific committee of the **6th International Systems and Synthetic Biology Summer School**, Scuola Normale Superiore, Pisa, Italy.
4-8/7/2015	Organization of sessions at the **3rd DDMoRe International School: Model-informed Drug Development in Oncology – Advanced**, Pavia, Italy.

PARTICIPATION TO RESEARCH PROJECTS

2022-now	NODES-Spoke 6 (MUR PNRR grant ECS00000036): design of engineered living materials with sensing capabilities for the detection of relevant compounds in agri-food applications. Role: **participant**.
2019-2022	CE4WE: Circular Economy for Water and Energy (Regione Lombardia grant): definition of methods for water and energy management, including synthetic biology solution to bioremediation and waste valorization. Role: **participant.**
2018-2019	Fondo di Finanziamento per le Attività Base di Ricerca – FFABR, Italian Ministry of Education (MIUR) grant (Legge 232/2016). Role: **responsible**.
2017-now	Grant 2017-1022 (Cariplo Foundation grant) "Sustainable bioconversion of lactose into ethanol: field testing of a demonstration plant to close the valorization cycle of dairy waste": scale-up and test of a bioreactor for the conversion of dairy waste into ethanol through metabolically engineered microorganisms. Role: **Work Package leader**.
2015-now	Grant 2015-0397 (Cariplo Foundation grant) "Conversion of industrial bio-waste into biofuels and bioproducts through synthetic biology": optimization of microorganisms for the bioconversion of industry waste and production of ethanol fuel and poly-gamma-glutamic acid biopolymer. Role: **Work Package leader**.
2013-2016	DDMoRe: Drug Disease Model Resources (EU/IMI grant): definition and standardization of mathematical models of biological systems and drug action. Role: **participant**.
2011-2012	Bioinformatics for Tissue Engineering (Cariplo Foundation grant): development of methodologies for the study of natural and synthetic biological systems. Role: **participant**.
2008-2011	Rete Italiana di Bioinformatica - ITALBIONET (FIRB MIUR grant): activities in the field of bioinformatics and synthetic biology. Role: **participant**.

SPEAKER AT CONFERENCES/SCHOOLS AND SEMINARS IN OTHER INSTITUTES

14/11/2023	Seminar: "Bacterial living materials for sensing, field-use and multiplexed functions" (1h), University of Maryland, USA.
17/3/2023	Seminar: "Experimental and computational approaches for the (semi-)rational design of engineered bacteria", Dep. Biology and Biotechnology seminar series, Mar 17, University of Pavia.
26/10/2022	Selected presentation: "Model-driven analysis and debugging of synthetic logic circuits with new CRISPRi components", International Workshop on Bio-Design and Automation (IWBDA), Paris, France.
20/4/2022	Seminar: "How to iGEM" (1h), seminar for students and teachers at the University of Padova, Italy.
7/7/2022	Seminar: "Engineering non-stressed bacteria by rational design of synthetic circuits", QBIO seminar series, Institut Pasteur, Paris, France.
11/4/2022	Lecture: "Engineering non-stressed bacteria by rational design of synthetic circuits", Learning Planet Institute, Paris, France.
10/11/2021	Seminar: "Microfluidic platforms for live-cell imaging of microorganisms", Dep. Biology & Biotechnology seminar series, University of Pavia.
15/4/2021	Lecture: "Synthetic Biology: state-of-the-art for non-biologists". Synthetic biology and patentability: a US-EU dialogue, University of Pavia & IUSS, Italy.
7-11/9/2015	Invited speaker at the Chemical Engineering University Group (GRICU) PhD National School: "Synthetic Biology" (2h), Padova, Italy.
26/6/2014	Selected presentation: "Engineering synthetic biological circuits with predictable function: experimental and computational studies", IV GNB National Conference, Pavia, Italy.
27/2/2014	Selected presentation: "Bottom-up design of genetic circuits: characterization and re-use of biological building blocks to engineer predictable systems", Bioinformatics Italian Society (BITS2014) annual meeting, Roma, Italy.
1/5/2013	Seminar: "Bacterial self-destruction devices" (1h), Introduction to Biological Engineering Design (Course 20.20, Instructor: Natalie Kuldell) MIT, Cambridge, USA.
13-17/9/2010	Invited speaker: "BioBrick, Standard Assembly e registro delle parti biologiche standard" (1h), XXIX Bioengineering National School (organized by the Gruppo Nazionale di Bioingegneria - GNB), name of the 2010 school: "Biologia Sintetica", Bressanone, Italy.
2010 and 2011	Seminar "Quantitative characterization of biological parts in synthetic biology" (1h) course of Cellular and Molecular Bioengineering, (Biomedical Engineering Master's Degree, University of Bologna, Italy)
19/3/2009	Selected presentation: "Multiplexing and demultiplexing signals by E. coli", Bioinformatics Italian Society (BITS2009) annual meeting, Genova, Italy.
8/11/2008	Presentation: "Engineering Escherichia coli to multiplex and demultiplex signals" at the iGEM2008 competition, Massachusetts Institute of Technology (MIT), Cambridge, MA, USA.