

# Curriculum vitae

## PERSONAL INFORMATION

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

|                              |   |
|------------------------------|---|
| <b>Synthetic biology</b>     | Design, construction, characterization, modeling, identification and debugging of synthetic circuits in bacterial cells, predictability of biological systems, CRISPR interference, implementation of control circuits <i>in vivo</i> . |
| <b>Metabolic engineering</b> | Genome-scale metabolic models, sustainable bioconversion and valorization of industrial waste, production of biofuels and biopolymers.  |
| <b>Mathematical modeling</b> | Nonlinear mixed effect models, standardization of model description languages and software for the execution of estimation and simulation tasks.  |
| <b>Bioinformatics</b>        | miRNA cross-kingdom regulation, bacterial promoter analysis and design  |

## CURRENT POSITION

|              |   |
|--------------|---|
| 2015-now     | Assistant Professor (Ricercatore a tempo determinato ai sensi dell'art. 24, comma 3, lettera a) della Legge 240/2010), Dipartimento di Ingegneria Industriale e dell'Informazione, University of Pavia, Italy |
| Jan 2020-now | Visiting Researcher, Experimental and Computational Methods for Modeling Cellular Processes (InBio) Group, Department of Computational Biology, Institut Pasteur, Paris, France                               |

## PAST POSITIONS

|              |  |
|--------------|--|
| 2012-2015    | Post-doc researcher at the Interdepartmental Research Centre for Tissue Engineering, University of Pavia, Italy.   |
| Feb-Set 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 | Author of 23 scientific papers on international <i>peer-review</i> journals, 4 book chapters and more than 60 contributions to conference proceedings.<br>The full list of Scopus indexed publications is available at:<br><a href="https://www.scopus.com/authid/detail.uri?origin=resultslist&amp;authorId=41862325300">https://www.scopus.com/authid/detail.uri?origin=resultslist&amp;authorId=41862325300</a> |
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## 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       | <b>National Scientific Qualification for Associate Professor in Bioengineering<br/>(Abilitazione Scientifica Nazionale per il settore concorsuale 09/G2 – Seconda Fascia)</b> |

|             |   |
|-------------|---|
| DATES       | Nov 2008 – Feb 2012   |
| INSTITUTION | University of Pavia, Italy  |
| TITLE       | <b>PhD in Bioengineering and Bioinformatics</b>   |
| THESIS      | “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       | <b>Professional Engineering Licence (Esame di Stato per l’abilitazione alla professione di ingegnere)</b> |

|             |  |
|-------------|--|
| DATES       | Oct 2006 – Oct 2008  |
| INSTITUTION | University of Pavia, Italy   |
| TITLE       | <b>Biomedical Engineering Master’s Degree</b>  |
| THESIS      | “Progetto e implementazione di circuiti genetici standardizzati per la realizzazione di funzioni logiche nel batterio <i>E. coli</i> ” |

|             |  |
|-------------|--|
| DATES       | Sep 2003 – Sep 2006  |
| INSTITUTION | University of Pavia, Italy   |
| TITLE       | <b>Biomedical Engineering Bachelor’s Degree</b>  |
| THESIS      | “Un approccio per la modellizzazione e l’analisi di dati provenienti da sensori cinestetici indossabili” |

|             |  |
|-------------|--|
| DATES       | Sep 1998 – Jul 2003  |
| INSTITUTION | Liceo Scientifico-Tecnologico “A. Maserati”, Voghera (PV), Italy |
| TITLE       | <b>High School Diploma in scientific studies</b>                 |

## MEMBER OF SCIENTIFIC SOCIETIES

|          |  |
|----------|--|
| 2009-now | IEEE/EMBS  |
| 2008-now | Italian National Group of Bioengineering (Gruppo Nazionale di Bioingegneria - GNB) |

### TEACHING (AS RESPONSIBLE OR CO-RESPONSIBLE OF COURSES)

|             |   |
|-------------|---|
| DATES       | 2019 – now  |
| COURSE      | <b>Bioinformatics and Synthetic Biology (Bioinformatica e Biologia Sintetica)</b>                   |
| SSD         | ING-INF/06  |
| DEGREE      | Bioengineering Master's Degree  |
| DESCRIPTION | Lessons on Synthetic Biology (10h) and practical lessons on microarray analysis and data banks (6h) |

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

|             |  |
|-------------|--|
| DATES       | 2017 – now   |
| COURSE      | Informatics – Clinical Database Management ( <b>Abilità Informatiche</b> ) |
| SSD         | ING-INF/06   |
| SCHOOL      | Physical Medicine and Rehabilitation Medical School                        |
| DESCRIPTION | Full course (8h)   |

### ADDITIONAL TEACHING ACTIVITIES

|        |   |
|--------|---|
| DATES  | 2011 – 2018   |
| COURSE | <b>Bioinformatics and Synthetic Biology (Bioinformatica e Biologia Sintetica)</b>                   |
| SSD    | ING-INF/06  |
| DEGREE | Bioengineering Master's Degree  |
| MODULI | Lessons on Synthetic Biology (10h) and practical lessons on microarray analysis and data banks (6h) |

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

|             |   |
|-------------|---|
| DATES       | 2009 – 2016   |
| COURSE      | <b>Models of Biological Systems (Modelli di Sistemi Biologici)</b>                            |
| 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   | 14 theses |
| BIOLOGY BACHELOR'S DEGREE                               | 2 theses  |
| MOLECULAR BIOLOGY & GENETICS MASTER'S DEGREE            | 2 theses  |
| MEDICAL BIOTECHNOLOGY MASTER'S DEGREE                   | 2 theses  |
| ADVANCED BIOTECHNOLOGY MASTER'S DEGREE                  | 3 theses  |

## PhD STUDENT SUPERVISION

|                         |   |
|-------------------------|---|
| 01-11-2014 - 26-01-2018 | <b>Dr. Ilaria Massaiu:</b> "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 | <b>Dr. Massimo Bellato:</b> "Overcoming metabolic burden in synthetic biology: a CRISPR interference approach", thesis defence: 30/1/2019.  |
| 01-10-2017 - now        | <b>Davide De Marchi,</b> thesis defence expected in Jan 2021.   |
| 01-10-2018 - now        | <b>Angelica Frusteri Chiacchiera,</b> thesis defence expected in Jan 2022.  |

## AWARDS

|           |   |
|-----------|---|
| 19/9/2012 | Winner of the <b>Premio "Gruppo Nazionale di Bioingegneria (GNB) - Alberto Mazzoldi"</b> (7th edition) for the PhD thesis.  |
| 8/11/2010 | Winner of a <b>Gold medal</b> (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 <b>Gold medal</b> (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 <b>Best Food or Energy Project special prize</b> (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 <b>Premio "Gruppo Nazionale di Bioingegneria (GNB)"</b> for the Master thesis.  |
| 3/4/2009  | <b>Best poster</b> award at the European Conference of Synthetic Biology II (European Science Foundation - ESF), Sant Feliu de Guixols, Spain.  |
| 9/11/2008 | Winner of a <b>Silver medal</b> (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      | 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: Plasmid (Elsevier), Life (MDPI), 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

|              |   |
|--------------|---|
| 22-26/7/2019 | Member of the scientific committee of the <b>6th International Systems and Synthetic Biology Summer School</b> , Scuola Normale Superiore, Pisa, Italy.   |
| 4-8/7/2015   | Organization of sessions at the <b>3rd DDMoRe International School: Model-informed Drug Development in Oncology – Advanced</b> , Pavia, Italy. Organization of the following hands-on sessions: 1) model encoding with the Model Description Language; 2) ddmore R package; 3) Simulx tool; 4) preclinical experiments for drug combination. The event was organized by the Drug Disease Model Resources (DDMoRe, <a href="http://www.ddmore.eu/">http://www.ddmore.eu/</a> ) consortium, which works on the definition of methods to improve quality, efficiency and cost-effectiveness of the model-based drug development. |

## SPEAKER AT CONFERENCES/SCHOOLS AND SEMINARS IN OTHER INSTITUTES

|               |   |
|---------------|---|
| 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      | Invited 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 | Invited 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.   |

## PARTICIPATION TO RESEARCH PROJECTS

|           |   |
|-----------|---|
| 2019-now  | 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: <b>participant</b> .  |
| 2018-2019 | Fondo di Finanziamento per le Attività Base di Ricerca – FFABR, Italian Ministry of Education (MIUR) grant (Legge 232/2016). Role: <b>responsible</b> .   |
| 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: <b>Work Package leader</b> . |
| 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: <b>Work Package leader</b> .                                  |
| 2013-2016 | DDMoRe: Drug Disease Model Resources (EU/IMI grant): definition and standardization of mathematical models of biological systems and drug action. Role: <b>participant</b> .  |
| 2011-2012 | Bioinformatics for Tissue Engineering (Cariplo Foundation grant): development of methodologies for the study of natural and synthetic biological systems. Role: <b>participant</b> .  |
| 2008-2011 | Rete Italiana di Bioinformatica - ITALBIONET (FIRB MIUR grant): activities in the field of bioinformatics and synthetic biology. Role: <b>participant</b> .   |

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