

## **ALLEGATO B**

UNIVERSITÀ DEGLI STUDI DI MILANO

selezione pubblica per n.\_1\_ posto/i di Ricercatore a tempo determinato ai sensi dell'art.24, comma 3, lettera a) della Legge 240/2010 per il settore concorsuale \_\_05/I2 - Microbiologia\_\_ , settore scientifico-disciplinare \_\_\_\_\_BIO/19 - Microbiologia\_\_\_\_\_, presso il Dipartimento di \_\_\_\_\_BIOSCIENZE\_\_\_\_\_, (avviso bando pubblicato sulla G.U. n. \_\_53\_\_ del \_\_05/07/2019\_\_\_\_\_) Codice concorso \_\_4173\_\_

## **[Elio Rossi] CURRICULUM VITAE**

INFORMAZIONI PERSONALI (NON INSERIRE INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)

COGNOME	ROSSI
NOME	ELIO
DATA DI NASCITA	03.11.1986

## PERSONAL INFORMATION

Elio Rossi

 København (Denmark) elioros@biosustain.dtu.dk

Sex Male | Date of birth 03/11/1986 | Nationality Italian

## WORK EXPERIENCE

03/2016–Present

## Postdoc

Department of Clinical Microbiology, Rigshospitalet and The Novo Nordisk Foundation Center for Biosustainability, Technical University of Denmark (Denmark)

- Characterization of the *in vivo* bacterial adaptation to human lungs and of the development of the host-pathogen interactions in patients affected by cystic fibrosis. Use of molecular and multi-omic approaches directly on patients' blood and sputum samples.
- Development of advanced *in vitro* infection models to study persistent infections.

Supervisor: Prof. Dr. Med. Helle Krogh Johansen and Prof. Søren Molin

07/2015–02/2016

## Postdoc

Department of Biosciences, Università degli Studi di Milano, Milan (Italy)

- Characterization of different molecular mechanisms connecting bacterial metabolism, cell behavior, biofilm formation and virulence in commensal and pathogenic bacteria.

Supervisor: Prof. Paolo Landini

04/2014–04/2015

## Postdoc

Istituto di Chimica del Riconoscimento Molecolare, National Research Council, Milan (Italy)

- Characterization of different molecular mechanisms connecting bacterial metabolism, cell behavior, biofilm formation and virulence in commensal and pathogenic bacteria.
- Development of *in vitro* models that mimic host conditions

Supervisor: Prof. Giorgio Colombo and Prof. Paolo Landini

09/2011–01/2014

## External collaborator

Institute of Biomedical Technologies, National Research Council, Segrate (MI) (Italy)

- Bioinformatics analysis (genome assembly and RNA-seq analysis) in collaboration with the Massive Sequencing Group of Dr. Gianluca De Bellis

Supervisor: Dr. Clealia Peano and Prof. Paolo Landini

## EDUCATION AND TRAINING

02/2015–03/2015

## Short course in "Europrogettazione" (150 hours) - European Grants writing

Consorzio Italbiotec, Milan (Italy)

- Public Fund Raising, Lobby and Public Affairs
- Grant Writing and Project Design
- Project management of a founded project

- Budget building and reporting for European projects
- Business planning
- Time management
- Intellectual Property and Technological transfer
- Public Speaking

## 2011–2014 PhD in Biological and Molecular Sciences

Università degli Studi di Milano, Milan (Italy)

*Dissertation date:* 24/01/2014

*Thesis title:* "Role of genes belonging to metabolic pathways (sulfate assimilation and pyrimidine biosynthesis) in the production of extracellular structures in *Escherichia coli*"

*Supervisor:* Prof. Paolo Landini

## 2008–2010 Master of Science in Molecular Biology

Università degli Studi di Milano, Milan (Italy)

*Dissertation date:* 08/10/2010

*Grade:* 110/110 cum laude

*Thesis title:* "Regolazione di fattori d'adesione in *Escherichia coli*: connessioni con il metabolismo del solfato"

*Supervisor:* Prof. Paolo Landini

## 2005–2008 Bachelor of Science in Biology

Università degli Studi di Milano, Milan (Italy)

*Dissertation date:* 15/10/2008

*Grade:* 110/110

*Thesis title:* "Identificazione di geni coinvolti nell'adesione cellulare e nella formazione di biofilm in *Escherichia coli*"

*Supervisor:* Prof. Paolo Landini

## PERSONAL SKILLS

Mother tongue(s) Italian

Foreign language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C2	C1	C1	B2
24/09/2014 - International English Language Testing System (IELTS) C1					

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

Common European Framework of Reference for Languages

## Job-related skills

- Common and advanced microbiological techniques
  - Experience with both pathogenic and non-pathogenic bacteria (*E. coli*, *P. aeruginosa*, *B. thailandensis*, *A. baumannii*, *S. aureus*, *S. epidermidis*)
  - Isolation, characterization, and preservation of clinical pathogens from human samples
- Advanced knowledge and development of molecular techniques for genetic manipulation (transposon mutagenesis, homologous recombination/lambda-red, CRISPR/Cas9 antibiotic-free selection) in gram-negative bacteria
- Gene expression analysis (transcription)
  - qRT-PCR

- ☐ vector-based reporter assays ( $\beta$ -galactosidase assay,  $\beta$ -glucuronidase assay, luciferase assay, GFP)
- ☐ reporter assays based on chromosomal fusions
- ☐ northern blot
- Protein purification/analysis
  - ☐ translational fusions with common reporters
  - ☐ SDS-PAGE, western blot, dot-blot
  - ☐ Cloning, expression, and purification of recombinant proteins (various tag and purification systems)
  - ☐ Biochemical assays on purified proteins (thermal shift assay, dynamic light scattering, analytical gel-filtration, diguanylate cyclase activity measurement)
  - ☐ Protein interactions analysis (co-purifications, bacterial two-hybrids)
- HPLC analysis
- Biofilm analysis (quantitation, extracellular structures characterization, Congo-red, Calcofluor)
- Screening of antimicrobial compounds
- Nucleic acids extraction, quantification, processing, and handling (DNA/RNA). Extended experience in handling fragmented nucleic acids deriving from complex human samples (fluids and biopsies)
- Preparation of next-generation sequencing libraries.

#### Digital skills

- Advanced knowledge of Microsoft Office (Word, Excel, Power Point)
- Advanced knowledge of Microsoft Windows and Mac OS X
- Advanced knowledge of common bioinformatics tools
- Advanced knowledge of the Illumina sequencing platform and analysis tools
- Advanced knowledge of R statistic analysis environment and related data analysis and visualization tools
- Advanced knowledge of Python scripting language and related data analysis and visualization tools
- Development of custom analysis pipelines and their deployment and use on high-performance computing clusters.
- Advanced knowledge of Adobe Photoshop and Illustrator
- Basic knowledge of Cinema 4D

#### Driving licence

B

### ADDITIONAL INFORMATION

#### Teaching and tutoring

- Co-advisor of 3 Master of Science and 1 Bachelor of Science students.
- Assistant tutor in the microbiology laboratory of the "Microbiologia Generale" course of Prof. Paolo Landini, Università degli Studi di Milano for the years 2011 - 2016

#### Honours, awards and fellowships

- FEMS' Young Scientists Congress Grant (2015)
- FEMS Congress Award for the best presented papers (2015)
- Postdoctoral fellowship "Fratelli Confalonieri" foundation for the period 07/2015 – 06/2016
- Postdoctoral fellowship awarded by Italian National Research Council for the period 04/2014 - 04/2015
- Ph.D. fellowship awarded by Italian Ministry of Research and Education for the period 01/2011 - 01/2014

#### Research Grants

- The Novo Nordisk Foundation Project Grants in Bioscience and Basic Biomedicine 2018

Grant number: NNF18OC0052776

Amount: 1.800.000 DKK (241.065 EUR)

Period: 03/2019 - 02/2021

Title: "Mapping the evolving host-microbe interactome in persistent infection". Joint application with supervisor Prof. Helle Krogh Johansen, Rigshospitalet

## Memberships

- DMS (Danish Microbiology Society) since 2016
- SIMGBM (Italian Society of General Microbiology and Microbial Biotechnologies) since 2012
- FEMS (Federation of European Microbiological Societies) since 2012

## Publications

### Peer-reviewed publications

Total number: 16 - total first-authorship: 7; total corresponding author: 2

H-index: 7. Total citations: 157 (source: Scopus, 15/07/19. Publications associated with ORCID: 0000-0002-2042-608X)

- Burgener E.B., Sweere J.M., Bach M.S., Secor P.R., Haddock N., Jennings L.K., Marvig R.L., Johansen H.K., **Rossi E.**, Cao X., Tian L., Nedelec L., Molin S., Bollyky P.L. & Milla C.E. (2019) Filamentous bacteriophages are associated with chronic *Pseudomonas* lung infections and antibiotic resistance in cystic fibrosis. *Sci Transl Med*, **11**: eaau9748
- **Rossi E.**, Falcone M., Molin S., and Johansen H.K. (2018) High-resolution in situ transcriptomics of *Pseudomonas aeruginosa* unveils genotype independent patho-phenotypes in cystic fibrosis lungs. *Nat Commun*, **9**: 3459.

Recommended in F1000Prime:

Waters C: F1000Prime Recommendation of [Rossi E et al., Nat Commun 2018 9(1):3459]. In F1000Prime, 06 Sep 2018; [10.3410/f.733879350.793550225](https://doi.org/10.3410/f.733879350.793550225)

- **Rossi E.**, Paroni M., and Landini P. (2018) Biofilm and motility in response to environmental and host-related signals in Gram negative opportunistic pathogens. *J Appl Microbiol*, **125**: 1587-1602.
- Frimodt-Møller J., **Rossi E.**, Haagensen J.A.J., Falcone M., Molin S., and Johansen H.K. (2018) Mutations causing low level antibiotic resistance ensure bacterial survival in antibiotic-treated hosts. *Sci Rep*, **8**: 12512.
- Falcone M., Ferrara S., **Rossi E.**, Johansen H.K., Molin S., Bertoni G. (2018) The small RNA ErsA of *Pseudomonas aeruginosa* contributes to biofilm development and motility through post-transcriptional modulation of AmrZ. *Front Microbiol*, **9**: 1-12
- **Rossi E.**, Cimdins A., Lühje P., Brauner A., Sjöling Å., Landini P. & Römling U. (2018) 'It's a gut feeling' – *Escherichia coli* biofilm formation in the gastrointestinal tract environment. *Crit Rev Microbiol*, **44**: 1-30
- **Rossi E.**, Motta S., Aliverti A., Cossu F., Gourlay L., Mauri P. & Landini P. (2017) Cellulose production is coupled to sensing of the pyrimidine biosynthetic pathway via c-di-GMP production by the DgcQ protein of *Escherichia coli*. *Environ Microbiol*, **19**: 4551–4563
- Longo F., Motta S., Mauri P., Landini P. & **Rossi E.** (2016) Interplay of the modified nucleotide phosphoadenosine 5'-phosphosulfate (PAPS) with global regulatory proteins in *Escherichia coli*: modulation of cyclic AMP (cAMP)-dependent gene expression and interaction with the HupA regulatory protein. *Chem-biol Interact*, **259**: 39–47
- Di Pasquale P., Caterino M., Di Somma A., Squillace M., **Rossi E.**, Landini P., Iebba V., Schippa S., Papa R., Selan L., Artini M., Palamara A. & Duilio A. (2016) Exposure of *E. coli* to DNA-Methylating Agents Impairs Biofilm Formation and Invasion of Eukaryotic Cells via Down Regulation of the N-Acetylneuraminate Lyase NanA. *Front Microbiol*, **7**: 147
- **Rossi E.**, Longo F., Barbagallo M., Peano C., Consolandi C., Pietrelli A., Jaillon S., Garlanda C. & Landini P. (2016) Glucose availability enhances lipopolysaccharide production and immunogenicity in the opportunistic pathogen *Acinetobacter baumannii*. *Future Microbiol*, **11**: 335–349
- Peano C.\*, Wolf J.\*, Demol J., **Rossi E.**, Petiti L., De Bellis G., Geiselmann J., Egli T., Lacour S., and Landini P. (2015). Characterization of the *Escherichia coli*  $\sigma$ S core regulon by Chromatin Immunoprecipitation-sequencing (ChIP-seq) analysis. *Sci Rep*, **5**: 10469

- **Rossi E.**, Motta S., Mauri P. and Landini P. (2014). The sulfate assimilation pathway intermediate phosphoadenosine 5'-phosphosulfate (PAPS) acts as a signal molecule affecting production of curli fibres in *Escherichia coli*. *Microbiology* (Reading, Engl.), **160**: 1832–1844
- Peano C., Chiaramonte F., Motta S., Pietrelli A., Jaillon, S., **Rossi E.**, Consolandi, Clarissa Champion O., Michell S.L., Freddi L., Falciola L., Basilico F., Garlanda C., Mauri P., De Bellis G. and Landini P. (2014). Gene and Protein Expression in Response to Different Growth Temperatures and Oxygen Availability in *Burkholderia thailandensis*. *PLoS ONE*, **9**: e93009.
- Antoniani D, **Rossi E.**, Rinaldo S., Bocci P., Lolicato M., Paiardini A., Raffaelli N., Cutruzzolà, and Landini, P. (2013) The immunosuppressive drug azathioprine inhibits biosynthesis of the bacterial signal molecule cyclic-di-GMP by interfering with intracellular nucleotide pool availability. *Appl Microbiol Biot*, **97**: 7325–7336 .
- Peano C. \*, Pietrelli A. \*, Consolandi C., **Rossi E.**, Petiti, L., Tagliabue, L., Bellis, G., and Landini P. (2013). An efficient rRNA removal method for RNA sequencing in GC-rich bacteria. *Microb Informatics Exp*, **3**: 1–11.
- Garavaglia M. \*, **Rossi E.** \* and Landini P. (2012). The pyrimidine nucleotide biosynthetic pathway modulates production of biofilm determinants in *Escherichia coli*. *PLoS One*, **7**: e31252 .

#### In preparation

- (Invited review) Johansen H.K, Bartell J.A., Haagenen J.A.J., La Rosa R., Marvig R.L., **Rossi E.**, Sommer L.M., Molin S. *Pseudomonas aeruginosa* infections - physiology, adaptation and evolution. *Nature Reviews Microbiology*

\* Equally contributed to the work

# corresponding author

#### Oral presentations

- **Rossi E.**, Molin S., Johansen H.K. (2018) High-resolution in situ transcriptomics of *Pseudomonas aeruginosa* unveils genotype independent patho-phenotypes in cystic fibrosis lungs. Copenhagen Bioscience Conference 15 - Averting the post-antibiotic era. 31 Oct - 3 Nov 2018, Hillerød, DK.
- **Rossi E.**, Molin S., Johansen H.K. (2017) High-resolution analysis of *Pseudomonas aeruginosa* gene expression in cystic fibrosis expectorates documents phenotypic convergence towards a common end-point. 16th International Conference on Pseudomonas. 05 - 09 September 2017. Liverpool, UK
- **Rossi E.** (2016). Sulfate metabolism and gene expression in *Escherichia coli*: interplay of the modified nucleotide phosphoadenosine 5'-phosphosulfate (PAPS) with global regulatory proteins. Cortona Procarioni 2016. 12-14 May 2016. Cortona, Italy
- **Rossi E.** (2015). Intra- and extracellular cues linked to production of adhesion factors in *Escherichia coli*. 31° Meeting of SIMGBM. 23-26 September. Ravenna, Italy
- **Rossi E.** and Landini P. (2015). Response of YedQ diguanylate cyclase to pyrimidine nucleotides by direct interaction with the metabolic enzyme aspartate carbamoyltransferase and its metabolic product N-carbamoyl-L-aspartate. 6th Congress of European Microbiologists (FEMS 2015). 7-11 June 2015. Maastricht, Netherlands
- **Rossi E.** (2015). Intra- and extracellular cues linked to production of adhesion factors in *Escherichia coli*. The Centre of Microbial and Plant Genetics (CMPG), KU Leuven. 5 June 2015. Leuven, Belgium.
- **Rossi E.** (2014). Role of genes belonging to metabolic pathways in the production of extracellular structures in *Escherichia coli*. Institut für Biologie, Humboldt-Universität zu Berlin. 04 April 2014. Berlin, Germany.
- **Rossi E.** and Landini P. (2013). Mutations in genes belonging to the sulphate assimilation pathway affect production of extracellular structures in *E. coli*. Cortona Procarioni 2014. 15-17 May 2014. Cortona, Italy
- **Rossi E.** and Landini P. (2013). Mutations in genes belonging to the sulphate assimilation pathway affect production of extracellular structures in *E. coli*. 2nd PhD Student Workshop. 27-28 June 2013. Milan, Italy
- **Rossi E.**, Garavaglia M. and Landini P. (2012). The pyrimidine nucleotide biosynthetic pathway modulates production of biofilm determinants in *Escherichia coli*. Cortona Procarioni 2012. 3-5 May 2012. Cortona, Italy

## Poster presentations

- **Rossi E.**, Falcone M., Molin S. and Johansen H.K. High-resolution in situ transcriptomics of *Pseudomonas aeruginosa* unveils genotype independent patho-phenotypes in cystic fibrosis lungs. Danish Microbiological Society Meeting. 12 November 2018, Copenhagen, Denmark.
- **Rossi E.**, Molin S. and Johansen H.K. *Pseudomonas aeruginosa* in cystic fibrosis chronic infections: how the airway environment shapes the bacterial transcriptome. 7th Congress of European Microbiologist. 09 - 13 July 2017, Valencia, Spain.
- **Rossi E.**, Molin S. and Johansen H.K. Linking genomic potency to actual gene expression in human lungs: a premier analysis of *Pseudomonas aeruginosa* transcriptome in sputum samples. Danish Microbiological Society Meeting. 14 November 2016, Copenhagen, Denmark.
- **Rossi E.** and Landini P. Response of YedQ diguanylate cyclase to pyrimidine nucleotides by direct interaction with the metabolic enzyme aspartate carbamoyltransferase. International Symposium on c-di-GMP signaling in Bacterial. 22-25 March 2015, Berlin, Germany
- **Rossi E.**, Colombo S., Peano C., Pietrelli A., Consolandi C. and Landini P. Mutations in genes belonging to the sulphate assimilation pathway affect production of extracellular structures in *E. coli*. 5th Congress of European Microbiologist, 21-25 July 2013, Leipzig, Germany
- **Rossi E.** and Landini P. Effects of mutations in genes belonging to the sulphate assimilation pathway on production of extracellular structures in *E. coli*. 4th Congress of European Microbiologist, 26-30 June 2011, Geneva, Switzerland.
- **Rossi E.** and Landini P. Sulphate metabolism and the biofilm: relationship between the *cysH* gene and production of extracellular structures in *Escherichia coli*. 29th National Meeting SIMGBM (Italian Society of General Microbiology and Microbial Biotechnologies). 20-23 September 2010, Pisa, Italy.

Data

15/07/2019

Luogo

Copenaghen, Danimarca