

## *Curriculum vitae*

### *Dr. Luca Roscini*

Name	Luca Roscini
Birth date	17 Marzo 1984
Birth place	Assisi
Address	Via San Girolamo, 143 06135, Perugia Tel. : 075 5724872 347 1525189 E - mail : <a href="mailto:luca.roscini@unipg.it">luca.roscini@unipg.it</a> <a href="mailto:roscini.lu@gmail.com">roscini.lu@gmail.com</a>

#### **GENERAL INFORMATION**

Born in Assisi, March 17, 1984.

July 2003 - High-School "G. Galilei "Perugia - Scientific Maturity (100/100).

15.07.2008 - University of Perugia - Degree in Chemical Industrial Biotechnology (110/110 cum laude).

09/12/11 - University of Perugia - PhD in "Plant Biology and Agro-environmental Biotechnology" XXIV cycle.

January 2012 - University of Perugia - Post - Doc Activities at the Department. Applied Biology, sect. Microbiology.

April 2014 - University of Perugia - Post - Doc Fellowship at CEMIN.

June 2015 to date - University of Perugia – Researcher of the Dept. of Pharmaceutical Sciences.

#### **SCIENTIFIC ACTIVITY**

The scientific activity of Dr. Luca Roscini was carried out since 2008 in three locations: the Department of Applied Biology, CEMIN and the Department. of Pharmaceutical Sciences at the University of Perugia.

His research was mainly focused on the analysis of the biodiversity of yeast derived from various food, agricultural, industrial and even nosocomial environments through physiological, molecular and metabolomics characterizations.

As early activity, he started carrying out a search of innovative spectroscopic methods, based on FTIR spectroscopy, to be applied to taxonomy, determination of microbial biodiversity and protocols of stress response.

On the same research field there was the study of computer methodologies able to evaluate as objectively as possible the collection of microbial and metabolomic data produced at increasing levels by the new incoming technologies. A side application of the study of biodiversity has been the search for microbial and metabolomics markers alongside the molecular ones to estimate the level of stress induced by external agents on microbial cells.

From this type of study derived the idea to establish a system model to assess, using bioinformatic analysis of FTIR spectra, the effect of various agents on microbial cells (yeasts and or bacteria) and on human cells, to establish a system to analyze the stressing effects on yeasts cells to be used to predict those detectable on human cells.

#### **RESEARCH ACTIVITY**

The research activity of Dr. Luca Roscini has developed along the research fields briefly described below.

Study of microbial biodiversity at various taxonomic levels, description of new yeast species, selection of strains of agrifood or industrial interest or useful for environmental biotechnology.

Use of FTIR Metabolomics for the characterization of yeast cultures and of the level of stress induced by on them chemical agents, development of a model of metabolomic analysis of stress to correlate the responses of the yeast with those of human cells, microbiological analysis of the of biostatic and biocidal of new chemicals using several techniques, spectroscopic characterization of environmental matrices.

Bioinformatic analysis in R mode (descriptors evaluation) for the optimization of the interpretation of biological data, through the development of algorithms and of specific software.

### **TEACHING ACTIVITY**

A.Y. 2008/09 – Practice for **Microbiology** course (Biotechnology Degree), **General Microbiology** course (Agricultural Sciences Degree and Sustainable Management of Agro-ecosystems Degree).

A.Y. 2009/10 – Practice for **Microbiology** course (Biotechnology Degree), **General Microbiology** course (Agricultural Sciences Degree and Food Science and Human Nutrition Degree).

A.Y. 2010/11 – Practice for **Genetics and Microbial Biotechnology** course (Biotechnology Degree), **General Microbiology** course (Agricultural Sciences Degree e Food Science Technologies Degree), **Biotechnology of animal origin food production** (Hygiene and Quality of Animal Production Degree), **Microbial Biodiversity Preservation and Management** (Sustainable Agriculture Degree).

2011 - University of Perugia - “Teaching Assistant”, SSD AGR/16.

A.A 2011/12 – Practice for **Genetics and Microbial Biotechnology** course (Biotechnology Degree), **General Microbiology** course (Agricultural Sciences Degree e Food Science Technologies Degree).

A.A. 2012/13

- Practice for **Genetics and Microbial Biotechnology** course (Biotechnology Degree), **General Microbiology** course (Agricultural Sciences Degree e Food Science Technologies Degree).-
- Member of the board of examiners of **General Microbiology** course (Agricultural Sciences Degree e Food Science Technologies Degree).
- Member of the board of examiners of **Genetics and Microbial Biotechnology** course (Biotechnology Degree)

A.A. 2013/14

- Practice for **Genetics and Microbial Biotechnology** course (Biotechnology Degree), **General Microbiology** course (Agricultural Sciences Degree e Food Science Technologies Degree).-
- Member of the board of examiners of **General Microbiology** course (Agricultural Sciences Degree e Food Science Technologies Degree).
- Member of the board of examiners of **Genetics and Microbial Biotechnology** course (Biotechnology Degree)

A.A. 2014/15

- Practice for **Genetics and Microbial Biotechnology** course (Biotechnology Degree), **General Microbiology** course (Agricultural Sciences Degree e Food Science Technologies Degree).-
- Member of the board of examiners of **General Microbiology** course (Agricultural Sciences Degree e Food Science Technologies Degree).
- Member of the board of examiners of **Genetics and Microbial Biotechnology** course (Biotechnology Degree)

A.A. 2015/16

- Lectures for **General Microbiology** course (Food Science Technologies Degree).
- Practice for **General Microbiology** course (Agricultural Sciences Degree e Food Science Technologies Degree).

### **EXTERNAL COURSES**

8<sup>th</sup>-11<sup>th</sup> June 2009 – 8<sup>th</sup> Training Course on Plant Genetics: “Regulation of gene expression: from DNA to phenotype”, Assisi

26<sup>th</sup>-27<sup>th</sup> May 2011 – Biodiversity and Bioindication School of SISS (Italian Society of Soil Science), Rome

3<sup>rd</sup> May 2012 – Ion Torrent Seminar, Perugia

9<sup>th</sup> November 2012 – Convegno “Microbial Bioelectricity project (BEM): results presentation”, Rome

22<sup>nd</sup>-26<sup>th</sup> April 2013 – *BioloMICS* Course, Utrecht, The Netherlands

**Member of the Organizing Committee of the Third International Congress on Microbial Diversity: MD2015 - The Challenge of Complexity (Perugia 27<sup>th</sup>-29<sup>th</sup> October 2015)**

### **PUBLICATIONS**

1. Rellini, P., **L. Roscini**, F. Fatichenti, P. Morini and G. Cardinali (2009). "Direct spectroscopic (FTIR) detection of intraspecific binary contaminations in yeast cultures." *FEMS Yeast Res* **9**(3): 460-467.
2. **L. Roscini**, L. Corte, L. Antonielli, P. Rellini, F. Fatichenti and G. Cardinali (2010). "Influence of cell geometry and number of replicas in the reproducibility of whole cell FTIR analysis." *Analyst* **135**(8): 2099-2105.
3. Corte, L., P. Rellini, **L. Roscini**, F. Fatichenti and G. Cardinali (2010). "Development of a novel, FTIR (Fourier transform infrared spectroscopy) based, yeast bioassay for toxicity testing and stress response study." *Anal Chim Acta* **659**(1-2): 258-265.
4. Corte, L., L. Antonielli, **L. Roscini**, F. Fatichenti and G. Cardinali (2011). "Influence of cell parameters in Fourier transform infrared spectroscopy analysis of whole yeast cells." *Analyst* **136**(11): 2339-2349.
5. Cardinali, G., L. Antonielli, L. Corte, **L. Roscini**, A. Bagnetti, C. Pelliccia and G. Puddu (2012). "*Kazachstania ichnusensis* a diploid homothallic ascomycetous yeast from Sardinian lentisk rhizosphere." *Int J Syst Evol Microbiol.* **62** (Pt 3): 722-727
6. Cardinali, G., L. Antonielli, L. Corte, **L. Roscini** and P. F. Ganter (2012). "*Candida coquimbonensis* sp. nov., a link between Australian and Neartic/Neotropical Phaffomyces." *Int J Syst Evol Microbiol.* **62** (Pt 12): 3067-3071
7. Ciafardini, G., B. A. Zullo, L. Antonielli, L. Corte, **L. Roscini** and G. Cardinali (2012). "*Yamadazyma terventina* sp. nov. a new yeast species of the *Yamadazyma* clade from Italian olive oils." *Int J Syst Evol Microbiol.* **63** (Pt 1): 372-376
8. Corte, L., **L. Roscini**, C. Zadra, L. Antonielli, B. Tancini, A. Magini, C. Emiliani and G. Cardinali (2012). "Effect of pH on potassium metabisulphite biocidal activity against yeast and human cell cultures." *Food Chemistry* **134** (3), 1327-1336
9. Bellezza, I., A. Mierla, S. Grottelli, M. C. Marcotullio, F. Messina, **L. Roscini**, G. Cardinali, M. Curini and A. Minelli (2013). "Furanodien-6-one from *Commiphora erythraea* inhibits the NF-kappaB signalling and attenuates LPS-induced neuroinflammation." *Mol Immunol* **54**(3-4): 347-354.
10. Tiecco, M., G. Cardinali, **L. Roscini**, R. Germani and L. Corte (2013). "Biocidal and

- inhibitory activity screening of de novo synthesized surfactants against two eukaryotic and two prokaryotic microbial species." Colloids Surf B Biointerfaces **111C**: 407-417.
11. Vigentini I., D. Antoniani, **L. Roscini**, A. Comasio, S. Galafassi, C. Picozzi, L. Corte, C. Compagno, F. Dal Bello and G. Cardinali (2014) "Candida milleri species reveals intraspecific genetic and metabolic polymorphisms". Food Microbiology **42**: 72-81.
  12. Tiecco M., L. Corte, **L. Roscini**, C. Colabella, R. Germani et al. (2014) "A novel, rapid and automated conductometric method to evaluate surfactant-cells interactions by means of critical micellar concentration analysis." Chem Biol Interact. **218**: 20-27.
  13. Corte L., M. Tiecco, **L. Roscini**, R. Germani and G. Cardinali (2014) "FTIR analysis of the metabolomic stress response induced by N-alkyltropinium bromide surfactants in the yeasts *Saccharomyces cerevisiae* and *Candida albicans*." Colloids Surf B Biointerfaces **116C**: 761-771.
  14. Corte L., M.T. Dell'Abate, A. Magini M. Migliore, B. Felici, **L. Roscini** et al. (2014) "Assessment of safety and efficiency of nitrogen organic fertilizers from animal-based Protein Hydrolysates - a laboratory multidisciplinary approach." J Sci Food Agric. **94** (2): 235-245.
  15. Cardellini F., M. Tiecco, R. Germani, G. Cardinali, L. Corte, **L. Roscini** and N. Spreti. (2014) "Novel zwitterionic deep eutectic solvents from trimethylglycine and carboxylic acids: characterization of their properties and their toxicity." RSC Advances. **4** (99): 55990-56002.
  16. Bellezza I., S. Grottelli , A.L. Mierla, I. Cacciatore, E. Fornasari, **L. Roscini**, G. Cardinali and A. Minelli (2014) "Neuroinflammation and endoplasmic reticulum stress are coregulated by cyclo(His-Pro) to prevent LPS neurotoxicity." Int J Biochem Cell Biol **51C**: 159-169.
  17. Corte, L., M. Tiecco, **L. Roscini**, S. De Vincenzi, C. Colabella, R. Germani, C. Tascini and G. Cardinali (2015) "FTIR metabolomic fingerprint reveals different modes of action exerted by structural variants of N-alkyltropinium bromide surfactants on *Escherichia coli* and *Listeria innocua* cells." PLoS ONE **10**(1): e0115275.
  18. Corte, L., R. di Cagno, M. Groenewald, **L. Roscini**, C. Colabella, M. Gobbetti and G. Cardinali (2015) "Phenotypic and molecular diversity of *Meyerozyma guilliermondii* strains isolated from food and other environmental niches, hints for an incipient speciation." Food Microbiology **48**: 206-215
  19. Cardellini, F., R. Germani, G. Cardinali, L. Corte, **L. Roscini**, N. Spreti and M. Tiecco (2015) "Room temperature deep eutectic solvents of s-(+)-camphorsulfonic acid and sulfobetaines: hydrogen bond-based mixtures with low ionicity and structure-dependent toxicity." RSC Advances **5** (40): 31772-31786
  20. Stielow JB, CA Lévesque, KA Seifert, W Meyer, L Irinyi, D Smits, R Renfurm, GJM Verkley, M Groenewald, D Chaduli, A Lomascolo, S Welti, L Lesage-Meessen, A Favel, AMS Al-Hatmi, U Damm, N Yilmaz, J Houbraken, L Lombard, W Quaedvlieg, M Binder, LAI Vaas, D Vu, A Yurkov, D Begerow, O Roehl, M Guerreiro, A Fonseca, K Samerpitak, AD van Diepeningen, S Dolatabadi, LF Moreno, S Casaregola, S Mallet, N Jacques, **L Roscini**, E Egidi, C Bizet, D Garcia-Hermoso, MP Martín, S Deng, JZ Groenewald, T Boekhout, ZW de Beer, I Barnes, TA Duong, MJ Wingfield, GS de Hoog, PW Crous, CT Lewis, S Hambleton, TAA Moussa, HS Al-Zahrani, OA Almaghrabi, G Louis-Seize, R Assabgui, W McCormick, G Omer, K Dukik, G Cardinali, U Eberhardt, M de Vries, V Robert (2015) "One fungus, which genes? Development and assessment of universal primers for potential secondary fungal DNA barcodes." Persoonia-Molecular Phylogeny and Evolution of Fungi
  21. Tascini, C., G. Cardinali, V. Barletta, A. Di Paolo, A. Leonildi, G. Zucchelli, L. Corte, C. Colabella, **L. Roscini**, A. Consorte, M. B. Pasticci, F. Menichetti, M. G. Bongiorno "First case of *Trichoderma longibrachiatum* CIED (Cardiac Implantable Electronic Device) associated endocarditis in a non-immunocompromised host: biofilm removal and diagnostic

- problems in the light of the current literature” *Accepted at Mycopathologia*
22. Antonielli, L., V. Robert, L. Corte, **L. Roscini**, A. Bagnetti, F. Fatichenti and G. Cardinali (2010). "Searching for Related Descriptors Among Different Datasets: A New Strategy Implemented by the R Package “Dadi”." *The Open Applied Informatics Journal* **3**: 15-27.
  23. Antonielli, L., L. Corte, **L. Roscini**, V. Robert, A. Bagnetti, F. Fatichenti and G. Cardinali (2011). "A Multidisciplinary Approach to the Microbial Species Concept: The Role of Bioinformatics in the Search of Detectable Discontinuities " *The Open Applied Informatics Journal* **5**( (Suppl 1-M2)): 3-10.
  24. Antonielli, L., V. Robert, L. Corte, **L. Roscini**, R. Ceppitelli and G. Cardinali (2011). "Centrality of Objects in a Multidimensional Space and its Effects on Distance-Based Biological Classifications " *The Open Applied Informatics Journal* **5**( (Suppl 1-M3)): 11-19.
  25. Pezzolla, D., S. Gizzi, C. Zadra, A. Agnelli, **L. Roscini** and G. Gigliotti (2013). Changes in the Composition of Soil Dissolved Organic Matter After Application of Poultry Manure. *Functions of Natural Organic Matter in Changing Environment*. S. Netherlands: 451-454

## ABSTRACTS

- i. ***Potassium Metabisulfite treatment alters human fibroblast protein expression pattern***  
*X Congresso Nazionale di Biotecnologie, 17-19 Settembre 2008, Perugia, Italia;*  
 C. Bietolini, G. Cardinali, L. Corte, L. Roscini, A. Magini, B. Tancini, V. Ciccarone ,  
 R. Franceschini, C. Emiliani
- ii. ***Effect of potassium metabisulfite in human fibroblasts***  
*53<sup>rd</sup> National Meeting of the Italian Society of Biochemistry and Molecular Biology (SIB), 23-26 Settembre 2008, Riccione, Italia ;*  
 C. Bietolini, G. Cardinali, L. Corte, **L. Roscini**, A. Magini, V. Ciccarone, B. Tancini,  
 F. Trivelli, C. Emiliani, Cardinali G.
- iii. ***System biology of stress response addressed by FT-IR analysis of whole yeast cells***  
*X Congresso Nazionale di Biotecnologie, 17-19 Settembre 2008, Perugia, Italia ;*  
 L. Corte , P. Rellini , L. Antonielli, **L. Roscini** , C. Pelliccia , C. Bietolini , A. Magini ,  
 C. Emiliani , G. Cardinali
- iv. ***Metabolomic fingerprinting of Saccharomyces cerevisiae cells subject to different stressing conditions***  
*II Convegno nazionale SIMTREA, Sassari, 10 – 12 Giugno 2009*  
**L. Roscini**, P. Rellini, L. Corte, F. Fatichenti, G. Cardinali
- v. ***Metabolomic characterization of the growth curve in the yeast Saccharomyces cerevisiae***  
*II Convegno nazionale SIMTREA, Sassari, 10 – 12 Giugno 2009*  
 L. Corte, P. Rellini, **L. Roscini**, F. Fatichenti, G. Cardinali
- vi. ***Metabolomic fingerprinting of Saccharomyces cerevisiae cells subject to different stressing conditions***  
*XXVIII Convegno Nazionale SIMGBM, Spoleto (PG), 11- 13 Giugno 2009*  
**L. Roscini**, P. Rellini, L. Corte, F. Fatichenti, G. Cardinali
- vii. ***Biomolecular characterization of human adipocytes and undifferentiated precursor cells by Fourier Transform Infrared Spectroscopy (FTIR): a novel metabolomic approach.***

- V Congresso Nazionale SIO, Roma 15/17 Aprile 2010  
G. Murdolo, **L. Roscini**, C. Tortoioli, M. Donati, L. Antonielli, L. Corte, F. Fatichenti,  
F. Santeusano, A. Falorni, G. Cardinali
- viii. ***Multiple stressing bioassays of environmental-related mixtures: the case of hydrolyzed proteins.***  
*I Convegno Internazionale SIMTREA : Microbial Diversity 2011 - Environmental Stress and Adaptation, Milano 26/28 Ottobre*  
L. Antonielli, L. Corte, **L. Roscini**, F. Fatichenti, G. Cardinali
- ix. ***Effect of pH on potassium metabisulfite biocidal activity against yeast cell cultures.***  
*I Convegno Internazionale SIMTREA : Microbial Diversity 2011 - Environmental Stress and Adaptation, Milano 26/28 Ottobre*  
L. Antonielli, **L. Roscini**, L. Corte, F. Fatichenti, G. Cardinali
- x. ***Development of a novel, FTIR (Fourier transform infrared spectroscopy) based, yeast bioassay for toxicity testing and stress response study.***  
*I Convegno Internazionale SIMTREA : Microbial Diversity 2011 - Environmental Stress and Adaptation, Milano 26/28 Ottobre*  
L. Corte, L. Antonielli, **L. Roscini**, F. Fatichenti, G. Cardinali
- xi. ***On the influence of cell parameters in environmental stress detection by Fourier Transform Infrared Spectroscopy analysis of whole yeast cells.***  
*I Convegno Internazionale SIMTREA : Microbial Diversity 2011 - Environmental Stress and Adaptation, Milano 26/28 Ottobre 2011*  
L. Corte, L. Antonielli, **L. Roscini**, F. Fatichenti, G. Cardinali
- xii. ***Novel algorithms to study the yeast species structure and discontinuity.***  
*ICY 2012 – Yeast For a sustainable Future – Madison (Wisconsin) 26-30 Agosto 2012*  
G. Cardinali, L. Corte, **L. Roscini**, D. Vu and V. Robert
- xiii. ***Effect of pH on potassium metabisulphite biocidal activity against yeast and human cell cultures.***  
*III CONVEGNO NAZIONALE SIMTREA – Bari 26-28 Giugno, 2012.*  
**L. Roscini**, L. Corte, L. Antonielli, C. Pelliccia, A. Larosa and G. Cardinali.
- xiv. ***Cooperative biofilm formation of Enterococcus faecium and Trichosporon faecale on stainless steel in static and dynamic conditions.***  
*II Convegno Internazionale SIMTREA : Microbial Diversity 2013 - Microbial Interactions in Complex Ecosystems, Torino, 23-25 Ottobre 2013.*  
Corte, L., **L. Roscini**, E. Salvatore, E. Pietta, S. Gazzola, P. S. Cocconcelli and G. Cardinali.
- xv. ***A family of new algorithms for species delimitation in the incoming “meta –omics”/ “Bioinformatics” Era.***  
*BITS Annual Meeting – Roma, 26-28 Febbraio 2014*  
Cardinali, G., L. Corte, **L. Roscini**, D. Vu and V. Robert.
- xvi. ***Survey on yeast biodiversity in georgian vineyards: a pristine environment for the selection of wine strains.***  
*31<sup>st</sup> International Specialised Symposium on Yeast - Nova Gorica/Vipava Slovenia, 9 – 12 Ottobre 2014*

De Lorenzis, G., I. Vigentini, A. Cote, **L. Roscini**, G. Cardinali, O. Failla, D. Maghradze, L. Corte, F. P. Roth and R. Foschino.

- xvii. Delimitation of *Meyerozyma guilliermondii* food isolates for improved safety in food industry*  
*31<sup>st</sup> International Specialised Symposium on Yeast - Nova Gorica/Vipava Slovenia, 9 – 12 Ottobre 2014*  
Colabella, C., **L. Roscini**, R. Di Cagno, L. Corte, M. Gobbetti and G. Cardinali
- xviii. Yeasts for the sustainability in viticulture and oenology: the “YeSVitE” project*  
*31<sup>st</sup> International Specialised Symposium on Yeast - Nova Gorica/Vipava Slovenia, 9 – 12 Ottobre 2014*  
Vigentini, I., C. Compagno, O. Failla, R. Foschino, G. Cardinali, L. Corte, C. Pelliccia, **L. Roscini**, J. Piškur, O. P. Ishchuk, U. Petrovič, J. Kokosar, M. Brložnik, A. A. Caudy, F. P. Roth, F. F. Bauer, B. Divol, M. Du Toit, E. Setati, D. Maghradze, E. Abashidze and R. Chipashvili.
- xix. Yeast metabolomics and taxonomy in wine microbiology research*  
*31<sup>st</sup> International Specialised Symposium on Yeast - Nova Gorica/Vipava Slovenia, 9 – 12 Ottobre 2014*  
Corte, L., **L. Roscini**, C. Colabella and G. Cardinali
- xx. Innocuity and Efficacy of Hydrolyzed Proteins for Use in Agriculture: a Case Study of Biotechnological Check. A paradigm of multidisciplinary analysis*  
*Winter School on Biotechnology – Teaching Center of the School of Medicine, Perugia, 19 – 23 Gennaio 2015*