CURRICULUM VITAE

Alice Romagnolo

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Personal Data

Date and place of birth: January 2nd, 1987, Moncalieri (TO), Italy
Nationality: Italian
Other language: English and French
Present occupation and address: PhD student, University of Turin, Dept. of Life Sciences and Systems Biology, *Mycotheca Universitatis Taurinensis.* Viale P.A. Mattioli 25, 10125 Torino, Italy.

Academic studies

2006	High School Degree in Basic Science
2007-2009	Bachelor degree in Biological Sciences at University of Turin (Italy), March 12th, 2009.Title Thesis: "Role of fungal symbionts in the germination of Orchids seeds". Supervisor: Prof. Silvia Perotto. Final result: 98/110.
2008	Internship at National Council for Research (CNR) (Vegetal Virology Institure, IVV section), Torino, Italy.
2010-2012	Master degree in Vegetal Biotechnology curriculum Vegetal Biology, University of Turin (Italy), April 19th, 2012. Title Thesis: "Screening of fungal strains producing oxidoreductases and their application in environmental and industrial fields" Supervisor: Dott.ssa Giovanna Cristina Varese. Final result: 104/110.
2011	Internship at the National Council for Research (CNR) (Istituto per la Protezione Sostenibile delle Piante, IPSP), Torino, Italy.
2012	Internship at the *Mycotheca Universitatis Taurinensis* (MUT), Torino, Italy.
August 2014	Summer School: Biotransformations 2014, Bad Herrenalb, Germany.
March 2015	Workshop organized by University of Turin, Department of Life Sciences and Systems Biology; National Council for Research (CNR), Istituto per la Protezione Sostenibile delle Piante and Institut Sophia Agrobiotech, University of Nice.

Experiences

2012	Research grant about "Screening of fungal strains for the production of oxidative enzymes for their exploitment in textile industry and their characterization".

Research expertise and interest

My research activity is focused on biocatalysis by using whole cell systems and enzymes. Up to now I have investigated ene-reductase and carboxylic acid reductase activity of some fungi in the conversion of conventional and non-conventional substrate. The final aim was the development of fungal bio-based processes and the characterization of the enzymes of interest to provide new sustainable tools for organic chemistry, to produce pharmaceuticals, flavours, aromas etc.

Regarding ene-reductases, several strains have shown promising results and a fungus was selected to study the expression profile of putative genes by quantitative RT-PCR. The expression levels were analysed during time in presence or in absence of three conventional substrates in order to detect a possible variability in the activation of these genes.

Further analysis are in progress to study the secondary and tertiary structure of these enzymes by means of in silico approaches. In order to purify and catalytically characterize ene-reductases I will clone and produce these enzymes by heterologous expression.

Regarding carboxylic acid reductases, I analysed several strains and three fungus showed this peculiar enzymatic activity in the conversion of a conventional substrate. The most promising fungus was evaluated towards the bioconversion of about 200 compounds, precursors of pharmaceuticals and flavours, in order to define the basic structural scaffold of the substrates that could be accepted by this microorganism.

I also worked on the stimulation of laccase production using agro industrial by products as nutrient source in order to improve the economic and environmental sustainability of the process. The optimization of the process was made by computational modeling techniques, which considered several parameters as pH, sugar consumption, carbon and nitro sources, etc.

List of Pubblications

Anastasi A., Spina F., Romagnolo A., Tigini V., Prigione V., Varese G.C. (2012). Integrated fungal biomass and activated sludge treatment for textile wastewaters bioremediation. *Bioresource Technology* 123, 106–111. ISSN:0960-8524.

Spina F., Romagnolo A., Anastasi A., Tigini V., Prigione V., Varese G.C. (2012). Selection of strains and carriers to combine fungi and activated sludge in wastewater bioremediation. *Environmental Engineering and Management Journal* 11, 1789-1796. ISSN:1582-9596.

Spina F., Anastasi A., Romagnolo A., Tigini V., Prigione V., Varese G.C. (2012). Bioreactor optimization for the treatment of industrial wastewaters by means of a fungal strain. *In: Environmental Microbiology and Biotechnology in the Frame of the Knowledge-Based Bio and Green Economy* (Bologna, April 10-12, 2012): *Conference Abstracts. Environmental Engineering and Management Journal* 11(3, Supplement) S42. ISSN:1582-9596.

Tigini V., Spina F., Romagnolo A., Prigione V., Varese G.C. (2013). Effective biological treatment of landfill leachates by means of selected white rot fungi. *In: Pierucci, S., Klemeš, J.J. (eds.), ICheaP11 - 11th International Conference on Chemical and Process Engineering.* ISBN: 9788895608235.

Romagnolo A., Spina F., Carusetta D., Nerva L., Cramarossa M.R., Parmeggiani F., Forti L., Brenna E., Varese G.C. (2013). Fungal laccases and enoate reductases as biocatalysts of fine chemical transformations. *In: Pierucci, S., Klemeš, J.J. (eds.), ICheaP11 - 11th International Conference on Chemical and Process Engineering.* ISBN: 9788895608235.

Spina F., Romagnolo A., Prigione V., Tigini V., Varese G.C. (2014). A scaling-up issue: the optimal bioreactor configuration for an effective fungal treatment of textile wastewaters. *In: Chemical engineering transaction 38*. ISSN: 19749791. DOI: 10.3303/CET1438007. Rank in Chemical Engineering Transactions (MISCELLANEOUS): 123° up to 333.

Romagnolo A., Spina F., Brenna E., Crotti M., Parmeggiani F., Varese G.C. (2015). Identification of fungal ene-reductase activity by means of a functional screening. *In: Fungal Biology* 119, 487-493. ISSN: 1878-6146.

Brenna E., Cannavale F., Crotti M., Parmeggiani F., Romagnolo A., Spina F., Varese G.C. (2015). Biocatalysed reduction of carboxylic acids to primary alcohols in aqueous medium: a novel synthetic capability of the Zygomycete fungus Syncephalastrum racemosum. *In: Journal of molecular catalysis B: enzymatic 116, 83-88.* ISSN: 1381-1177.

Spina F., Fidaleo M., Nanni A., Romagnolo A., Varese G. C. (submitted). Fungal laccases production using tomato-based medium: a factorial design approach. Environmental Engineering and Management Journal.

Spina F., Junghanns C., Donelli I., Nair R., Demarche P., Romagnolo A., Freddi G., Agathos S. N., Varese G. V. (submitted). Stimulation of laccases from *Trametes pubescens*: use in dye decolorization and cotton bleaching. Plant Biosystem.

Abstract in Peer-reviewed International Journal or Proceeding Books

Spina F., Anastasi A., Romagnolo A., Tigini V., Prigione V., Varese G. C. (2012). Bioreactor optimization for the treatment of industrial wastewaters by means of a fungal strain. Environmental Engineering and Management Journal (ISSN:1582-9596), p. S42.

Spina F., Anastasi A., Romagnolo A., Tigini V., Prigione V., Varese G.C. (2012). Fungal biomass for the treatment of textile wastewaters. *In: Paterson, R. [et al.] (eds.), Biological resource centres: Closing the gap between science and society. 31st European Culture Collections' Organization Meeting (ECCO XXXI Meeting).* 14-15 June, Braga, Portugal. ISBN: 9789729791659.7

Tigini V., Testa L., Prigione V., Spina F., Romagnolo A., Varese G.C. (2012). Autochtonous mycoflora in the treatment of landfill leachates. *In: Paterson, R. [et al.] (eds.), Biological resource centres: Closing the gap between science and society. 31st European Culture Collections' Organization Meeting (ECCO XXXI Meeting).* 14-15 June, Braga, Portugal. ISBN: 9789729791659.10

Spina F., Romagnolo, A., Tigini, V., Prigione, V., Varese, G.C. (2013). Combining fungal and bacterial biotechnological potentials for the functional and eco-friendly bioremediation of polluted industrial wastewaters. *In: Proceedings of the 2nd International conference on microbial diversity 2013. Microbial interactions in complex ecosystems MD2013*. 23-25 October, Torino, Italy. ISSN:9788890863653.

Romagnolo A., Spina F., Carusetta D., Nerva L., Cramarossa M.R., Parmeggiani F., Forti L., Brenna E., Varese G.C. (2013). Fungal laccases and enoate reductases as biocatalysts of fine chemical transformations. *In: Pierucci, S., Klemeš, J.J. (eds.), ICheaP11 - 11th International Conference on Chemical and Process Engineering,* 2-5 June, Milan, Italy. ISBN: 9788895608235.

Tigini V., Spina F., Romagnolo A., Prigione V., Varese G.C. (2013). Effective biological treatment of landfill leachates by means of selected white rot fungi. *In: Pierucci, S., Klemeš, J.J. (eds.), ICheaP11 - 11th International Conference on Chemical and Process Engineering.* 2-5 June, Milan, Italy. ISBN: 9788895608235.

Tigini V., Romagnolo A., Spina F., Varese G. C. (2014). Biodegradation by fungi: an effective tool for the implementation of landfill leachate treatment. EcoSTP2014 – EcoTechnologies for Wastewaters Treatment: Technical, Enviromental and Econmic Challenges p. 100. 2nd IWA Specialized International Conference Ecotechnologies for Wastewater Treatment (EcoSTP2014), 23-25 June, Verona, Italy. ISBN: 9788869250002.

Romagnolo A., Spina F., Crotti M., Parmeggiani F., Brenna E., Varese G.C. (2014). Fungal ene-reductases as sustainable synthetic tools for the reduction of chemical compounds.*In: Biocat2014. 7th international congress on Biocatalysis.* 31 August-4 September, Hamburg, Germany. ISBN: 9783941492769.

Romagnolo A., Spina F., Crotti M., Parmeggiani F., Brenna E., Varese G.C. (2014). Bioreduction of carboxylic acids and esters by using filamentous fungi: novel carboxylic acids reductase activities. *In: Biocat2014. 7th international congress on Biocatalysis.* 31 August-4 September, Hamburg, Germany. ISBN: 9783941492769.

Congresses

Spina F., Anastasi A., Romagnolo A., Tigini V., Prigione V., Varese G. C. (2012). Bioreactor optimization for the treatment of industrial wastewaters by means of a fungal strain. Environmental Microbiology and Biotechnology (EMB2012), 10-12 April, Bologna, Italy (ISSN: 1582-9596).

Bedoui A., Tigini V., Romagnolo A., Ghedira K., Varese G.C., Chekir Ghedira L. (2013). Etude d'une éventuelle écotoxicité induite par les effluents industriels textiles et effet de deux champignons sur la dégradation de ces effluents. *In: Les 4èmes Journées Scientifiques de l'Association Tunisienne de Toxicologie (ATT) et 1ères Journées de la Fédération Maghrébine de Toxicologie (FMT): Processus toxiques d'origine urbaines et environnementales, pathologies induites.* 17-19 Mars 2013, Monastir, Tunisie.

Varese G.C., Tigini V., Spina F., Prigione V., Romagnolo A. (2013). Fungal treatment of wastewaters: pollutants removal vs detoxification. *In: Les 4èmes Journées Scientifiques de l'Association Tunisienne de Toxicologie (ATT) et 1ères Journées de la Fédération Maghrébine de Toxicologie (FMT): Processus toxiques d'origine urbaines et environnementales, pathologies induites.* 17-19 Mars 2013, Monastir, Tunisie.

Varese G. C., Prigione V., Tigini V., Spina F., Romagnolo A., Gnavi G., Reale L., Perugini I. (2013). A collection of microorganisms at the service of academia and industry: The *Mycotheca Universitatis Taurinensis* (MUT) experience. *In: FEMS 2013. 5. Congress of European microbiologists*. 21-25 July, Leipzig, Germany.

Romagnolo A., Spina F., Cramarossa M.R., Parmeggiani F., Forti L., Brenna E., Carusetta D., Nerva L., Varese G.C. (2013). Screening of fungi producing laccases and enoate reductases for the biotransformation of different high-value substrates. *In: FEMS 2013, 5th congress of european microbiologists.* 21-25 July, Leipzig, Germany.

Romagnolo A., Spina F., Parmeggiani F., Carusetta D., Prigione V., Tigini V., Brenna E., Varese G.C. (2013). Exploring fungal biodiversity for potential biocatalysts, for the synthesis of active chiral molecules. *In: Biodiversity: Sustainability vs. Regulations. XXXII Annual Meeting of the European Culture Collections' Organization (ECCO XXXII).* 12-14 June, Athens, Greece.

Tigini V., Spina F., Romagnolo A., Prigione V., Varese G. C. (2013). Effective biological treatment of landfill leachates by means of selected white rot fungi. 11th International Conference on Chemical and Process Engineering (ICheaP-11). 2-5 June, Milano, Italy.

Romagnolo A., Spina F., Carusetta D., Nerva L., Cramarossa M. R., Parmeggiani F., Forti L., Brenna E., Varese G. C. (2013). Fungal laccases and enoate reductases as biocatalysts of fine chemical transformations. 11th International Conference on Chemical and Process Engineering (ICheaP-11). 2-5 June, Milano, Italy.

Spina F., Romagnolo A., Prigione V., Tigini V., Varese G.C. (2014). A Scaling-up Issue: The Optimal Bioreactor Configuration for Effective Fungal Treatment of Textile Wastewaters. 4th International Confrenece on Industrial Biotechnology (IBIC2014), 8-11 June, Roma, Italy.

Spina F., Romagnolo A., Crotti M., Lo Savio L., Zemo G., Parmeggiani F., Favero-Longo S.E., Cramarossa M.R., Forti L., Piervittori R., Brenna E., Varese G.C. (2014). Screening of fungal enzymes for fine chemical transformations: laccases and enoate reductases. *In: Oxizymes 2014*. 1-4 July, Vienna, Austria.

Romagnolo A., Spina F., Crotti M., Parmeggiani F., Brenna E., Varese G.C. (2014). Fungal oxidoreductases as biocatalysts for the reduction of chemicals. *In: Italian forum on industrial biotechnology and bioeconomy IFIB 2014*. 25-26 September, Genova, Italy.

Spina F., Fidaleo M., Nanni A., Romagnolo A., Varese G.C. (2014). Fungal laccases production using agro-food wastes: a factorial design approach. IAMAW 4th Conference, hosted at Ecomondo, 8 November, Rimini, Italy, p. 16.

Romagnolo A., Spina F., Risso S., Crotti M., Belmondo S., Brenna E., Lanfranco L., Varese G.C. (2015). Exploring funga lene-reductases expression diversity searching tools for organic chemistry applications. In: European Culture Collection sas tools in research and biotechnology ECCO XXXIV. 27-29 May, Paris, France.