

PERSONAL INFORMATION

Silvia Crognale



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Date of birth | Nationality Italian

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WORK EXPERIENCE

- 01/01/2021-Present Associate Professor Microbiology
University of Tuscia, Viterbo (Italy)
- 01/01/2004–31/12/2020 Assistant professor
University of Tuscia, Viterbo (Italy)
Senior Researcher in General and Applied Microbiology Laboratory
Senior lecturer of the "General and Environmental Microbiology" and "Fermentation Biotechnology" courses
- 2014 Erasmus Lifelong Teaching programme (Visiting professor)
Department of Bioengineering, Hungarian University of Transylvania, Miercurea Ciuc (Romania)
Teaching "Applied Environmental Microbiology" MSc Course within the Master in Sustainable Biotechnologies
- 2018 Erasmus Lifelong Teaching Programme (Visiting Professor)
Polytechnic University of Bucharest, Bucharest (Romania)
Teaching "Bioremediation of hydrocarbon polluted soils"

EDUCATION AND TRAINING

- 2006 Visiting Researcher
Istituto dell'Agua, Granada (Spain)
2 months training on Bacterial and Fungal strains identification through molecular methods. DNA sequences analysis (blast). Phylogenetic tree construction (Clustal W, Mega)
- 2000–2004 PhD in Food Biotechnology
University of Tuscia, Viterbo (Italy)
PhD thesis Title: Beta-glucan production from *Botryosphaeria rhodina* in bench-top Bioreactor. Optimization of fermentation conditions in STR fermentors.
- 2004 Visiting researcher
DTU-Biocentrum, Lyngby (Denmark)
3 months training on Monitoring fungal morphology in fermentation (Supervisors J. Nielsen, G. Hofmann)
- 2002 Advanced Course in Microbial Physiology and Fermentation

Technology

Technical University of Delft, Delft (The Netherland)

03/2000–08/2000 **Leonardo Fellowship (EU programme)**
 Pfizer Ltd. Bioprocess development Group, Sandwich (England)
 6 months grant . Tasks: Analytical techniques: HPLC. Fermentation technology: Batch and Fed-batch fermentation. Culture development: Random mutagenesis

1994–1999 **Master Degree in Biological Science**
 University of Tuscia, Viterbo (Italy)
 Production of esopolysaccharides from filamentous fungi.

PERSONAL SKILLS

Mother tongue(s) Italian

Foreign language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C2	B2	B2	B2
Hungarian	B1	A2	B1	B2	A2

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user
Common European Framework of Reference for Languages

Communication skills Good communication skills gained through teaching and coordinating Bachelor, Master and PhD students, and through conference participation.

Organisational / managerial skills Experience of coordinating laboratories, in conducting research activities, in planning of experiments, interpreting results. Experience in coordinating bachelor, master and PhD students. Ability in establish scientific and international collaborations.

- Job-related skills
- 15 years of experience in general microbiology (isolation, enrichment, screening, immobilization, mutant selection, molecular identification)
 - Expertise in fermentation technology (batch, fed-batch, continuous), stirred tank- and air-lift reactors.
 - Good knowledge and practice of molecular tools applied in microbiology (PCR, q-PCR, , DGGE, cloning, heterologous expression, DNA metabarcoding)
 - DNA Sequences analysis, identification of bacterial and fungal strains by sequencing target genes, blasting, alignment (Clustal W), phylogenetic tree (Mega)
 - Functional and genomic characterization of microbial communities from environmental samples (contaminated sites, extreme environment, wastes)
 - Valorisation of agro-industrial wastes by producing microbial metabolites (enzymes, polisaccharides, bio-active compounds)
 - Good knowlewdge of basic statistical and response surface modelling tools (ANOVA analysis, PCA, linear regression, etc.)
 - Production and purification of microbial enzymes native and recombinant .

Digital skills

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem-solving

Independent user	Proficient user	Proficient user	Basic user	Basic user
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Digital skills - Self-assessment grid

Word, Power Point , Excel, Highly proficient

Modde, OrthoVenn, Sigma Stat, Sigma Plot, Mega, Clustalw , independent user

ADDITIONAL INFORMATION

- Projects**
- 2014: Short and long term effect of In Situ Chemical Oxidation on indigenous microflora in Hydrocarbon contaminated acquifer
 - 2011: Scientific agreement with Research Centre for Agriculture "Air quality in outdoor wood chips storage site". (Coordinator)
 - 2009-2011 Italy-Israel Partnership in the Environmental R&D sector "Bio-Ethanol Production from Mediterranean plants".
 - 2006-2007 Italy-Spain Bilateral cooperation: Biodegradation of phenolic and/or recalcitrant compounds in industrial and agro-food wastes through marine bacteria.
 - 2005 Scientific agreement with Monari Federzoni (Aromatic Vinegar) SpA, Modena, on the production and characterization of lyophilized starter for acetic fermentation.
 - 2005-2008 Italian national project (MIUR) Valorization of de-bittering olive waste by recovering of Phenolic compounds and enzymes production.

- Publications**
- . Armentano, I., Barbanera, M., Carota, E., **Crognale, S.**, Marconi, M., Rossi, S., Rubino, G., Scungio, M., Taborri, J., Calabrò, G. Polymer Materials for Respiratory Protection: Processing, End Use, and Testing Methods(2021) ACS Applied Polymer Materials, 3 (2), pp. 531-548.
 - Scungio, M., **Crognale, S.**, Lelli, D., Carota, E., Calabrò, G.Characterization of the bioaerosol in a natural thermal cave and assessment of the risk of transmission of SARS-CoV-2 virus(2021) Environmental Geochemistry and Health,
 - Carota, E., Petruccioli, M., D'Annibale, A., **Crognale, S.**Mixed glycerol and orange peel based substrate for fed-batch microbial biodiesel production(2020) Heliyon, 6 (9), art. no. e04801. 4
 - Crognale, S.**, Cocarta, D.M., Streche, C., D'Annibale, A. Development of laboratory-scale sequential electrokinetic and biological treatment of chronically hydrocarbon-impacted soils (2020) New Biotechnology, 58, pp. 38-44. IF 4.674 5.
 - Carota, E., Petruccioli, M., D'Annibale, A., Gallo, A.M., **Crognale, S.** Orange peel waste-based liquid medium for biodiesel production by oleaginous yeasts (2020) Applied Microbiology and Biotechnology, 104 (10), pp. 4617-4628.
 - Pelle, G.D., Perà, G., Belardinelli, M.C., Gerdol, M., Felli, M., **Crognale, S.**, Scapigliati, G., Ceccacci, F., Buonocore, F., Porcelli, F.Trematocine, a novel antimicrobial peptide from the antarctic fish trematomus bernacchii: Identification and biological activity (2020) Antibiotics, 9 (2), art. no. 66.
 - Crognale, S.**, Pesciaroli, L., Felli, M., Petruccioli, M., D'Annibale, A., Bresciani, A., & Peterson, S. W. Aspergillus olivimuriae sp. nov., a halotolerant species isolated from olive brine. International journal of systematic and evolutionary microbiology. (2019). DOI 10.1099/ijsem.0.003575
 - Crognale, S.**, Stazi, S. R., Firrincieli, A., Pesciaroli, L., Fedi, S., Petruccioli, M., & D'Annibale, A. (2019). Time-dependent changes in morpho-structural properties and relative abundances of contributors in Pleurotus ostreatus/Pseudomonas alcaliphila mixed biofilms. Frontiers in Microbiology, 10, 1819.
 - Crognale, S.**, Liuzzi, F., D'Annibale, A., de Bari, I., Petruccioli, M.Cynara cardunculus a novel substrate for solid-state production of Aspergillus tubingensis cellulases and sugar hydrolysates(2019) Biomass and Bioenergy, art. no. 105276, DOI: 10.1016/j.biombioe.2019.105276
 - Cocarta, D.M., Dumitru, D.M., Pesciaroli, L., Felli, M., Raduly, B., **Crognale, S.** Cultivable Hydrocarbonoclastic Microbial Community from Historically Polluted Soil: Tests for Consortium Development(2019) Soil and Sediment Contamination, 28 (3), pp. 334-345. DOI: 10.1080/15320383.2019.1578335
 - García-Delgado, C., Eymar, E., Camacho-Arévalo, R., Petruccioli, M., **Crognale, S.**, D'Annibale, A.Degradation of tetracyclines and sulfonamides by stevensite- and biochar-immobilized laccase systems and impact on residual antibiotic activity(2018) Journal of Chemical Technology and

Biotechnology, 93 (12), pp. 3394-3409. DOI: 10.1002/jctb.5697

Carota, E., **Crognale, S.**, D'Annibale, A., Gallo, A.M., Stazi, S.R., Petruccioli, M. A sustainable use of Ricotta Cheese Whey for microbial biodiesel production (2017) *Science of the Total Environment*, 584-585, pp. 554-560.

Stazi, S.R., Moscatelli, M.C., Papp, R., **Crognale, S.**, Grego, S., Martin, M., Marabottini, R. A Multi-biological Assay Approach to Assess Microbial Diversity in Arsenic (As) Contaminated Soils (2017) *Geomicrobiology Journal*, 34 (2), pp. 183-192.

Ráduly, B., Gyenge, L., Szilveszter, Sz., Kedves, A., **Crognale, S.** Treatment of corn ethanol distillery wastewater using two-stage anaerobic digestion (2016) *Water Science and Technology*, 74 (2), pp. 431-437.

Valeriani, F., Biagini, T., Giampaoli, S., **Crognale, S.**, Santoni, D., Romano Spica, V. Draft genome sequence of *tepidimonas taiwanensis* strain VT154-175 (2016) *Genome Announcements*, 4 (5), art. no. e00942, .

Pari, L., Scarfone, A., Santangelo, E., Figorilli, S., **Crognale, S.**, Petruccioli, M., Suardi, A., Gallucci, F., Barontini, M. Alternative storage systems of *Arundo donax* L. and characterization of the stored biomass (2015) *Industrial Crops and Products*, 75, pp. 59-65.

Milanesi, C., Cresti, M., Costantini, L., Gallo, M., Gallo, G., **Crognale, S.**, Faleri, C., Gradi, A., Franco, B. Spoilage of oat bran by sporogenic microorganisms revived from soil buried 4000 years ago in Iranian archaeological site (2015) *International Biodeterioration and Biodegradation*, 104, pp. 83-91.

Santi, G., Jiasiulewic J., **Crognale S.**, D'annibale A., Petruccioli M., Moresi M. High solid loading in dilute acid hydrolysis of orange peel waste improves ethanol production thereof derived. *Bioenergy Research* (submitted)

Garcia-Delgado C., D'Annibale A., Pesciaroli L., Yunta F., **Crognale S.**, Petruccioli M., Eymar E., (2015) Implication of polluted soil biostimulation and bioaugmentation with spent mushroom substrate (*Agaricus bisporus*) on microbial community and polycyclic aromatic biodegradation *Science of Total Environment* 20-28

Gyenge L, Ráduly B., **Crognale S.**, Stazi SR., Lányi Sz., Ábrahám B (2014) Biogas production from corn bioethanol whole stillage: evaluation of two different inocula *Environmental Engineering and Management Journal*, (in press)

Barontini, M., **Crognale, S.**, Scarfone, A., Gallo, P., Gallucci, F., Petruccioli, M., Pesciaroli, L., Pari, L. Airborne fungi in biofuel wood chip storage sites (2014) *International Biodeterioration and Biodegradation*, 90, pp. 17-22.

Santi, G., **Crognale, S.**, D'Annibale, A., Petruccioli, M., Ruzzi, M., Valentini, R., Moresi, M. Orange peel pretreatment in a novel lab-scale direct steam-injection apparatus for ethanol production (2014) *Biomass and Bioenergy*, 61, pp. 146-156.

Santi, G., D'Annibale, A., Eshel, A., Zilberstein, A., **Crognale, S.**, Ruzzi, M., Valentini, R., Moresi, M., Petruccioli, M. Ethanol production from xerophilic and salt-resistant *Tamarix jordanis* biomass (2014) *Biomass and Bioenergy*, 61, pp. 73-81.

Gyenge, L., Ráduly, B., **Crognale, S.**, Lányi, S., Ábrahám, B. Cultivating conditions optimization of the anaerobic digestion of corn ethanol distillery residuals using response surface methodology (2014) *Central European Journal of Chemistry*, 12 (8), pp. 868-876.

Luziatelli, F., **Crognale, S.**, D'Annibale, A., Moresi, M., Petruccioli, M., Ruzzi, M. Screening, isolation, and characterization of glycosyl-hydrolase-producing fungi from desert halophyte plants (2014) *International Microbiology*, 17 (1), pp. 41-48.

Barghini, P., Moscatelli, D., Garzillo, A.M.V., **Crognale, S.**, Fenice, M. High production of cold-tolerant chitinases on shrimp wastes in bench-top bioreactor by the Antarctic fungus *Lecanicillium muscarium* CCFEE 5003: Bioprocess optimization and characterization of two main enzymes (2013) *Enzyme and Microbial Technology*, 53 (5), pp. 331-338

Crognale, S., Máthé, I., Cardone, V., Stazi, S.R., Ráduly, B. Halobacterial Community Analysis of Mierlei Saline Lake in Transylvania (Romania) (2013) *Geomicrobiology Journal*, 30 (9), pp. 801-812

Santi, G., D'Annibale, A., Petruccioli, M., **Crognale, S.**, Ruzzi, M., Valentini, R., Moresi, M. Development and testing of a novel lab-scale direct steam-injection apparatus to hydrolyse model and saline crop slurries. (2012) *Journal of Biotechnology*, 157 (4), pp. 590-597.

Crognale, S., Pesciaroli, L., Petruccioli, M., D'Annibale, A. Phenoloxidase-producing halotolerant fungi from olive brine wastewater (2012) *Process Biochemistry*, 47 (9), pp. 1433-1437

Juárez-Jiménez, B., Manzanera, M., Rodelas, B., Martínez-Toledo, M.V., Gonzalez-López, J., **Crognale, S.**, Pesciaroli, C., Fenice, M. Metabolic characterization of a strain (BM90) of *Delftia tsuruhatensis* showing highly diversified capacity to degrade low molecular weight phenols (2010) *Biodegradation*, 21 (3), pp. 475-489

Brozzoli, V., **Crognale, S.**, Sampedro, I., Federici, F., D'Annibale, A., Petruccioli, M. Assessment of olive-mill wastewater as a growth medium for lipase production by *Candida cylindracea* in bench-top reactor (2009) *Bioresource Technology*, 100 (13), pp. 3395-3402.

Juarez-Jimenez, B., Rodelas, B., Martinez-Toledo, M.V., Gonzalez-Lopez, J., **Crognale, S.**, Gallo, A.M., Pesciaroli, C., Fenice, M. Production of chitinolytic enzymes by a strain (BM17) of *Paenibacillus pabuli* isolated from crab shells samples collected in the east sector of central Tyrrhenian Sea. (2008) International Journal of Biological Macromolecules, 43 (1), pp. 27-31.

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Crognale, S., Bruno, M., Moresi, M., Petruccioli, M. Enhanced production of β -glucan from *Botryosphaeria rhodina* using emulsified media or fan impellers (2007) Enzyme and Microbial Technology, 41 (1-2), pp. 111-120.

Crognale, S., Bruno, M., Fidaleo, M., Moresi, M., Petruccioli, M. Production of β -glucan and related

glucan-hydrolases by *Botryosphaeria rhodina*(2007) Journal of Applied Microbiology, 102 (3), pp. 860-871

Crognale, S., Pulci, V., Brozzoli, V., Petruccioli, M., Federici, F. Expression of *Penicillium variabile* P16 glucose oxidase gene in *Pichia pastoris* and characterization of the recombinant enzyme(2006) Enzyme and Microbial Technology, 39 (6), pp. 1230-1235.

D'Annibale, A., Brozzoli, V., **Crognale, S.**, Gallo, A.M., Federici, F., Petruccioli, M. Optimisation by response surface methodology of fungal lipase production on olive mill wastewater(2006) Journal of Chemical Technology and Biotechnology, 81 (9), pp. 1586-

Crognale, S., D'Annibale, A., Federici, F., Fenice, M., Quarantino, D., Petruccioli, M. Olive oil mill wastewater valorisation by fungi(2006) Journal of Chemical Technology and Biotechnology, 81 (9), pp. 1547-1555.

Selbmann, L., **Crognale, S.**, Petruccioli, M. Beta-glucan production by *Botryosphaeria rhodina* in different bench-top bioreactors(2004) Journal of Applied Microbiology, 96 (5), pp. 1074-1081

Crognale, S., Federici, F., Petruccioli, M. β -Glucan production by *Botryosphaeria rhodina* on undiluted olive-mill wastewaters(2003) Biotechnology Letters, 25 (23), pp. 2013-2015

Crognale, S., Federici, F., Petruccioli, M. Enhanced separation of filamentous fungi by ultrasonic field: Possible usage in repeated batch processes(2002) Journal of Biotechnology, 97 (2), pp. 191-197

Selbmann, L., **Crognale, S.**, Petruccioli, M. Exopolysaccharide production from *Sclerotium glaucicum* NRRL 3006 and *Botryosphaeria rhodina* DABAC-P82 on raw and hydrolysed starchy materials(2002) Letters in Applied Microbiology, 34 (1), pp. 51-55.

Teaching portfolio

TEACHING EXPERIENCE**Courses at Tuscia University**

I have a diverse range of experience in teaching at different levels (Bachelor and Master) in the field of Microbiology. My teaching activities started more 15 years ago at Tuscia University (Viterbo, Italy) with practical Lab, and it has been extended first in General Microbiology and then in Applied Microbiology mainly in the Environmental Science. Here below a list of the courses where I have been docent at Tuscia University.

Period	Course	CFU	Education level
2006-2008	Methodological Laboratory	4	Biological Science Bachelor
2008-2011	General Microbiology	5	Environmental Science Bachelor
2009-2011	Microbial Ecology	6	Nature Conservation Master
2012- now	Fermentation Biotechnology	6	Biotechnology Bachelor
2016-now	Microbial Biotechnology	6	Biotechnology Master

Guest lectures at foreign universities

Recently I consolidated my teaching skills through international experiences, which have given me the opportunity to teach in English.

2014-2016 Environmental Microbiology 3 Master 20 Sapientia Romania

2018 Bioremediation of polluted soils 1 Master 10 Politechnic University of Bucharest Romania

2014- 2016 I taught in Romania, under ERASMUS Lifelong Teaching Program, at Sapientia University and subsequently in the 2018-2019 I was invited again as Invited Professor for teaching in the same institution . In 2018 again with ERASMUS Lifelong Teaching Program I was guest lecturer at University of Bucharest.

Student guidance:

Bachelor students: 20 as main supervisor

Master students: 3 as main supervisor and 5 as co-supervisor

PhD students: 3 as principal supervisor and 2 (Polytechnic of Bucharest, Romania) as co-supervisor

Examinator /censor

I am regularly member of the examination team during Biotechnology BSc and Master Course oral presentation for graduating students, and I have been member of the assessment committee of PhD student at University of Tuscia.

Within the period 2011-2015 I was member of the Teaching Quality Committee (TQC) of the Bsc Biotechnology Course and from the last year I am member of TQC in Industrial Biotechnology master

Course. TCQ has the role of evaluating student's questionnaire and act corrective actions such as reduction on increase of teaching hours, program course adjustments.

TEACHING METHODOLOGY AND REFLECTION

In my 15 years of teaching experience, I learned that each student has a unique educational history, experiences and abilities and the docent should be able to catch and reach all members of the class, achieving their potential to be independent and stimulating their curiosity towards the subject.

In order to be clear as much possible, normally I try to use simple language guarantying terminology within the subject. I like to be not just informative but also impressive, trying to capture as much as possible the attention of the students. Generally I use simple examples to help the student to focusing on the theme and for better understanding biological mechanisms and functionality. Student's facial expression and questions are useful feedback to advise me about the student's understanding level and about what issues to delve into in more depth.

I believe that building competences within a subject requires active use of the tools, thus besides theory I include methodology approach to the theme and also research-based inquiry during which the students practice and explore their skills in this form of reasoning and develop a critical understanding of the scientific process.

Students generally consolidate the theoretic concepts taking active part in the learning trough practical exercises/lab/simulation which generally they find interesting. When this approach (lab training) is difficult to apply for the size of the class or for the typology of the subject, I like to use photos and videos.

I think that teaching is a flexible and adaptive process; courses should be adapted to meet current learning needs, responding to research improvements and student background change or, in some cases, to student desire and curiosity. Generally at the end of course I ask for feedback to modify the future courses.