Attilio Converti

Full professor

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Education and training

2009

PhD in Chemical Engineering

APROVECHAMIENTO DE RESIDUOS AGROINDUSTRIALES PARA LA GENERACIÓN DE ADITIVOS ALIMENTARIOS TRATAMIENTO DE LAS MATERIAS PRIMAS Y ESTUDIOS METABÓLICOS - Cum laude

University of Vigo - Vigo - ES

2007

Diploma of Advances Studies

Optimización del proceso de hidrólisis de residuos agrícolas para la generación de medios fermentativos - Excellent

University of Vigo - Vigo - ES

1982

Laurea in Chemistry

L-Triptofano-23-diossigenasi equilibrio con etilisocianuro - 110/110

University of Camerino - Camerino - IT

Academic experience

2017 - ONGOING

Full Professor

University of Genoa - Genoa - IT

Scientist-in-Chief of the Environmental Biotechnology Research-Group of DICCA (UNIGE) Coordinator of the Curriculum of Chemical Materials and Process Engineering of the PhD in Civil Chemical and Environmental Engineering (UNIGE) Teacher Responsible for 2 Academic Agreements between UNIGE and Sao Paulo University

1998 - 2017

Associate Professor

University of Genoa - Genoa - IT

Scientist-in-Chief of the Environmental Biotechnology Research-Group of DICCA (UNIGE) Coordinator of the Curriculum of Chemical Materials and Process Engineering of the PhD in Civil Chemical and Environmental Engineering (UNIGE) Teacher Responsible for 2 Academic Agreements between UNIGE and Sao Paulo University

1991 - 1998

Technician

University of Genoa - Genoa - IT

Laboratory activities Research in the field of Environmental Biotechnology

1982 - 1991

Fellow

University of Genoa - Genoa - IT

26 contracts by UNIGE for research activity in different fields

Work experience

2009 - ONGOING

Reviewer of projects

MIUR - Rome - IT

Reviewer of several projects sent to MIUR including the Chairmanship of testing commission of FISR/MIUR Project n. 34 (2016)

2007

Reviewer

European Union - Bruxelles - BE

Member of Reviewers of Research Projects submitted to the European Commission Programme FP7-KBBE-2007-1

2012 - ONGOING

Reviewer

National Agency for the Evaluation of the University System and Research (ANVUR) - Rome - IT

Member of the Reviewers Board

Language skills

English
Independent

Portuguese
Proficient

Spanish
Independent

Teaching activity

Teaching at UNIGE

- 1998-2012: **Professor** of the discipline **"Environmental Biotechnological Processes"**, University Diploma in Chemical Engineering, Campus of Savona, MSc in Chemical Engineering, MSc in Engineering for the Environment and Territory, Bachelor in Chemical Engineering, MSc in Engineering for Water and Soil Protection and MSc in Civil and Environmental Engineering, Faculty of Engineering, UNIGE
- 2003-2005: **Professor** of the discipline **"Biotechnological Plants"**, MSc in Environmental Engineering, Campus of Savona, Faculty of Engineering, UNIGE

- 2004-2010: **Professor** of the discipline of **"Industrial Biotechnology"**, MSc in Chemical Engineering, Faculty of Engineering, UNIGE
- 2006-2009: **Professor** of the discipline of **"Chemistry and Biotechnology of Fermentations"**, Inter-Faculty Bachelor in Biotechnology, Faculties of Medicine, Pharmacy and Mathematical, Physical and Natural Sciences, UNIGE
- 2006-2014: **Professor** of the discipline **"Industrial and Environmental Biotechnology Processes"**, PhD in Chemical, Materials and Process Engineering, UNIGE
- 2009-present: **Professor** of the discipline **"Industrial Microbiology and Biotechnology of Fermentations + Laboratory"**, Inter-Faculty Bachelor in Biotechnology, Schools of Medical and Pharmaceutical Sciences and of Mathematical, Physical and Natural Sciences, UNIGE
- 2010-present: **Professor** of the discipline **"Industrial and Environmental Biotechnology"**, MSc in Chemical and Process Engineering (previously Chemical Engineering), Polytechnic School, UNIGE
- 2014: Discipline of **"Microbial Biotechnology for Food Production"**, University Master of 1st Level "Expert in Biotechnology of Food Products", Department of Earth Sciences, Environment and Life (DISTAV), UNIGE (10 h)

Teaching as Invited Lecturer at Foreign Universities

- 2012: **Environmental Biotechnology** within the discipline "Environmental Quality", **Bachelor in Pharmacy and Biochemistry**, USP
- 2015: **Industrial Biotechnology** within the discipline "Purification of Biotechnological Products", **Bachelor in Pharmacy and Biochemistry**, USP

Theses Supervision

Co-Supervisor

- 1991-1994: **4 Theses** of the **School Directed to Special Aims "Technologies for Environmental Protection and Safety"**, UNIGE, Campus of Savona
- 1995-1997: **3 Theses** of the **University Diploma in Chemical Engineering**, UNIGE, Campus of Savona
- 1996: **2 Theses** of the **University Diploma in Environmental and Resource Engineering**, UNIGE, Campus of Savona
- 2006: **1 Thesis** of the **Bachelor in Agricultural Technical Engineering**, University of Vigo, Spain
- 1992-2002: **30 Theses** of the **MSc in Chemical Engineering**, UNIGE
- 2003: **1 Thesis** of the **MSc in Food Science and Technology**, Catholic University of Piacenza

Supervisor

- 1999: **1 Scholarship** funded by the European COMET Programme for research activity abroad (Ruggero Bersi, INETI, Lisbon)
- 1999-present: **17 Theses** of the **MSc in Chemical Engineering**, UNIGE
- 2001: **1 Thesis** of the **MSc in Chemistry**, UNIGE
- 2002-2006: **3 Theses** of the **MSc in Engineering for the Environment and Territory**, UNIGE
- 2003: **1 Thesis** of the **University Diploma in Chemical Engineering**, Savona, UNIGE
- 2004-present: **11 Theses** of the **Bachelor in Chemical Engineering**, UNIGE
- 2008-present: **7 Theses** of the **Bachelor in Biotechnology**, UNIGE
- 2011-2016: **3 Theses** of the **MSc in Medical and Pharmaceutical Biotechnology**, UNIGE
- 2011: **1 Thesis** of the **International MSc in Surface, Electro, Radiation, and Photochemistry** (SERP-CHEM) (Patricia Sgarbi), University of Paris-Sud (France), University Adama Mickiewicza (Poland), University of Oporto (Portugal), UNIGE
- 2008: **1 Bank of Italy's Scholarship "Discovering Italy"** (Erika Yuliana Ortiz Montoya), UNIGE

Postgraduate research and teaching activity

Supervision of PhD students, residents and post-doctoral fellows

1. Co-Supervision of 5 Sandwich PhD students
1.1. Co-Supervision of 5 Sandwich PhD students
2004-2005: Fabio Coelho Sampaio, PhD in Agricultural Microbiology Federal University of Viçosa, Brazil
2006-2007: Tatiana Souza Porto, PhD in Biochemical and Pharmaceutical Technology, USP
2016-2017: Tais Gabbay Alves, PhD in Pharmaceutical Innovation, Belém, Brazil
2016-2017: Russany Silva da Costa, PhD in Pharmaceutical Innovation, Belém, Brazil
2008–2010: Aïcha Menyar Ben Hamissa, PhD in Agronomic Sciences, Higher Institute of Agronomic Sciences of Chott Meriem, Sousse, Tunisia

1.2. Supervision of 6 PhD students of UNIGE PhD in Chemical Engineering (or older denominations)
2000-2003: Paolo Torre
2003-2006: Carmela Guarino
2004-2007: Davide Soletto
2005-2008: Saleh Al Arni
2008-2011: Erika Yuliana Ortiz Montoya (Double PhD at USP)
2012-2015: Davide Frumento

1.3. Supervision of 1 PhD students of PhD in Biology Applied to the Health, Federal University of Pernambuco, Brazil
2014-2018: Thiago Pajeú Nascimento

1.4. Co-Supervision of 9 PhD students of PhD in Biochemical and Pharmaceutical Technology, University of Sao Paulo, Brazil, within the Double-Title Agreement with UNIGE
2007-2010: Ricardo Pinheiro de Souza Oliveira
2007-2010: Daniela Viana Marques
2008-2011: Raquel Pedrosa Bezerra
2009-2012: Livia Seno Ferreira
2009-2012: Mayla Santos Rodrigues
2009-2012: Ana Paula do Espirito Santo
2010-2013: Bruno Ubertino Rosso
2010-2013: Gisele Pigatto
2012-2015: Marcos Camargo Knirsch

1.5. Supervision of 4 Post-Doc Fellows funded by the Brazilian Coordination for the Improvement of Higher Education Personnel (CAPES), Brasilia
2000-2001: Luciane Sene
2009: Ana Lucia Figueiredo Porto
2010: Ricardo Pinheiro de Souza Oliveira
2015-2016: Fabio Coelho Sampaio

1.6. Supervision of 3 UNIGE Research Fellows
2001-present: Paola Rovatti, Laura Maria Binaghi and Bahar Aliakbarian

2. Membership to PhD Boards of Teachers
2005-present: **Member of the Board of Teachers of the** PhD in Civil, Chemical and Environmental Engineering (XXIX cycle-present), previously PhD in Chemical, Material and Process Engineering (XXI-XXVIII cycles), and PhD in Chemical Science, Technology and Processes, Branch of Chemical and Process Engineering (XIX-XX cycles), UNIGE, and presently **Coordinator of the Curriculum in Chemical, Materials and Process Engineering**
2006-2008: **Member of the Board of Teachers of the PhD School** of Innovating Science and Technologies for the Industrial Engineering (XXI-XXIII cycles), UNIGE
2010-present: **Member of the Board of Teachers of the Post-Graduate Program in Biology Applied to the Health**, Federal University of Pernambuco, Recife-PE, Brazil (UFPE)
2016-present: **Member of the Board of Teachers of the Post-Graduate Program** in Biochemical and Pharmaceutical Technology, previously Collaborating Professor (2006-2016), University of São Paulo (USP), São Paulo-SP, Brazil

3. PhD Teaching at UNIGE
3.1. Teaching at UNIGE
2014-present: **Professor** of the discipline **Processes for Liquid and Gaseous**

Biofuels Production, PhD in Civil, Chemical and Environmental Engineering, UNIGE

3.2. Teaching at Foreign Universities
2000-2007: **Environmental Biotechnological Processes**, USP
2004: **Microbial Biotechnology**, Federal University of Goiás, Goiânia, Brazil
2005: **Industrial and Environmental Biotechnology**, USP
2008-present: **Industrial and Environmental Biotechnology**, USP
2009: **Industrial and Environmental Biotechnology**, University of Vigo (UVIGO), Campus of Ourense, Spain
2011, 2018: **Industrial and Environmental Biotechnology**, UFPE and Catholic University of Pernambuco
2012, 2014, 2016, 2017: **Industrial Biotechnology**, USP

Research interests

From the beginning of my scientific activity at UNIGE, I have been mainly engaged in Biotechnology applied to Agro-Food and Environmental sectors, paying attention to the study of bioprocesses and conventional or special bioreactors.
I cooperated in the development of new types of reactors with cells entrapped within porous materials with Tennessee Valley Authority, Solar Energy Research Institute and School of Engineering of Lorena of São Paulo University (USP).
First, I focused mostly on kinetic equations able to reflect the nature of substrate, selecting the most suitable microbial strain under different experimental conditions, and then on selection of the most suitable reactor configuration, which greatly influences the microorganism concentration in its inside. Finally, I developed a new approach that allowed enhancing the study of metabolic pathways and implementing reliable mass and energy cell balances of bioprocesses. In this field, I established almost two decades ago fruitful cooperation with USP and the Department of Chemical Engineering of Vigo University (UVIGO) on the fermentation of the hemicellulosic fraction of lignocellulosics previously submitted to acid hydrolysis, subsequent countercurrent concentration and final detoxification, and held research contracts, funded either by UNIGE, CNR or different public Brazilian institutions to carry out research activity abroad. Attention was paid to xylitol recovery at the end of fermentation mainly through crystallization, which was the subject of a patent in collaboration with UVIGO.
Afterwards, I developed research-activity on the use either of suspended-biomass or immobilized-cell reactors, for continuous ethanol production from different agrowastes, coming to the formulation of unstructured models describing the different phenomenological situations. In this context, I checked the ability of Monod-type integrated models to describe batch bioprocesses, bringing contributions able to consider inhibition phenomena.
Meanwhile, I investigated the diffusivity of metabolites through biofilms with variable thickness, at different temperatures and culture broth

viscosities, using an apparatus handcrafted in our laboratory. It was then possible to determine glucose diffusivity through *Saccharomyces cerevisiae* biofilms, which were subsequently used to carry out comparative macrokinetic studies on glucose mass velocities of convection, diffusion and biological reaction within fixed-bed columns. Diffusion was often shown to be the limiting phenomenon. These insights allowed improving alcohol fermentation efficiency. The large amount of viscosity data also enabled the proposal of a new model for estimating the viscosity of non-electrolyte solute mixtures in non-Newtonian fermentation broths.
Another research-field dealt with the influence of some operating parameters on bioprocesses, particularly fermentations. Studies were performed on different bioprocesses varying temperature, impeller rotational speed and viscosity, and the individual effects were quantified in terms of variations of volumetric and specific productivities. Studies combining the so-called inactivation equilibrium approach with the Arrhenius activated state theory allowed estimating the thermodynamic parameters of different bioprocesses (bioproductions of xylitol, ethanol, 2,3-butanediol, geranyl and ethyl acetate, microalgal biomass, several active compounds, enzyme systems, etc.). Another topic of cooperation with USP is the growth of microalgae and the cyanobacterium *Arthrospira (Spirulina) platensis* in photobioreactors with different configurations under either autotrophic, heterotrophic or mixotrophic conditions, with the aim of recovering valuable cell components as food and pharmaceutical ingredients.
About processes employing enzymes as catalysts, my research-activity has focused on the preparation of biocatalytic pellets and their use to synthesize high added value products for biotechnology, pharmaceutical and food industries. Kinetic and thermodynamic studies were also applied to esterifications in organic solvents. More recently, efforts have been made on the development of micellar or two-aqueous phase liquid-liquid extraction systems to recover pharmaceuticals such as clavulanic acid, acidic proteases, fibrinolytic proteases, among others.
With specific reference to food sector, I was also engaged in vanillin bioproduction by means of recombinant strains of *Escherichia coli* and the production of new nutraceuticals and functional foods.
In the Environmental Biotechnology field, the anaerobic digestion has been applied, using different reactor configurations, to convert into biogas several residues such as the organic fraction of municipal solid waste, cellulosic and hemicellulosic fractions of pre-hydrolyzed agrowastes, sewage sludge and so on.
Biofiltration, consisting in the microbial aerobic oxidation of pollutants contained in air streams, was instead used to purify gaseous effluents polluted by phenol, benzene, toluene and styrene, among others.
A further application of bioprocesses in the environmental field was that concerning the recovery of phosphorus contained in wastewater through the so-called phenomenon of “overplus accumulation” in the aerobic phase and subsequent anaerobic release.
One of the most rewarding processes in this field has been the capture of CO_2 to reduce its emission into the environment using it as a carbon source

for photoautotrophic microalgae (*Chlorella vulgaris*) and cyanobacteria (*Arthrospira platensis*) growth. The obtained biomass has been used as biosorbent for the removal of heavy or alkaline earth metals (Mg, Cd, Cr-III and VI, zinc, etc.) from water, and different removal mechanisms were identified using sorption kinetic and isotherm models. The same biomass was also used under either autotrophic or mixotrophic conditions to remove nitrate, phosphate, ammonium urea and dyes from wastewaters.

Grants

2017 - 2018

FINANZIAMENTO ANNUALE INDIVIDUALE DELLE ATTIVITA BASE DI RICERCA

MIUR - IT

3000 EURO - Pricipal investigator

2016 - 2017

Funding of the International Cooperation Activities with USP within the International Academic Agreement of Dual-Degree PhD

UNIGE - IT

Pricipal investigator

2014 - 2016

Utilization of Microalgal Biomass as a Source for Production of Biodiesel

Ministry of Higher Education of Saudi Arabia - SA

300.000 rial - Pricipal investigator

Microalgae are unicellular photosynthetic organisms that utilize light energy and carbon dioxide to grow, with higher photosynthetic efficiency and biomass production than terrestrial plants. Their biomass may be destined to several applications; in particular, the lipid fraction to be extracted from microalgae biomass could be alternatively used in different processes for energy exploitation such as the combustion in a diesel engine.

The aim of this project is to investigate the feasibility of production of biodiesel from microalgae. The idea is to cultivate microalgae in a photobioreactor and to study the cultivation systems to do this.

2013

Crescita mixotrofica di Chlorella vulgaris rimozione di CO2 da biogas e impiego di digestato come fonte di carbonio e di sali inorganici

University of Genoa - IT

4600 euros - Pricipal investigator

This research activity dealt with the use of the microalga *Chorella vulgaris* to remove pollutants coming from lab-scale fed-batch runs of anaerobic

digestion of urban residues (removal of CO2 from biogas and digestate purification).

2010 - 2011

Funding of the International Cooperation Activities with USP within the International Academic Agreement of Dual-Degree PhD

UNIGE - IT

Pricipal investigator

2008 - 2010

Capture in Microalgal Photobioreactor of CO2 Contained in Anaerobic Digestion Biogas from Complex Organic Matrices and Combustion Flue Gases

MIUR - PRIN 2007 prot. 200744HMBN - IT

40.750 EURO - Pricipal investigator

The task of the Genoa OU was to find an innovating system to depurate the biogas from the anaerobic digestion of complex organic matrixes, making use of photosynthetic microalgae. The aim of the proposed treatment of biogas was to allow its energetic valorization through the almost complete removal of CO2, which notoriously constitutes about 30-40% of biogas and is responsible for a reduction of its calorific value by the same extent. A further expected result was the substitution of a portion of CO2 by the oxygen released by the photosynthetic metabolism, hence reducing the oxygen needs for its subsequent combustion.

2008 - 2009

Fellowship for research and organizational didactic activities. Recipient Prof. Seffen Mongi of the Higher Institute of Agronomic Sciences Chott Meriem Tunisia

EU - Averroes - Erasmus Mundus External Cooperation Program

Pricipal investigator

This stage contains two parts:

The first part is a pedagogical one: Possibility of establishing a master's degree on coodiplomation in the field of Sustainable Chemistry or Green Chemistry between the Genoa University and Sousse University.
It should be noted that the concept of Sustainable Chemistry represents an area of innovation, which not only preserves resources, but also stands for a development process in the chemical industry. Sustainable Chemistry aspirates to raise the stake of less dangerous chemicals as well as production of environmentally high-quality products from renewable resources.
But after a detailed discussion, it resulted that the Chemical Engineering Bachelor preceding the Master given at the Engineering Faculty of Genoa University is too different from those in the Higher Institute of Agronomy Chott Meriem to ensure the success of this coodiplomation. On the other hand, the creation of a new master in Genova University is currently very

difficult due to the restricted number of students able to ensure the survival of such a master.
But we agreed to try to launch an agreement on joint supervision of thesis in the field of green chemistry and biotechnology. Such cooperation would be much easier than a Masters in coodiplomation.
Professor Converti, who is responsible for an Agreement of PhD with thesis in cooperation with the Sao Paulo University (Brazil), proposed to wait for the finalization of the new Agreement proposed by Sao Paulo University and submitted to Genoa University before launching the one between our two universities.
Also in this educational issue, we have discussed the courses given by Professor Converti and his colleagues: Prof. Patrizia Perego and Dr. Mario Zilli. I proposed schedule of mobility under the program Averroes for Professor Converti and his team to deliver courses and lectures in our institute in Chott Meriem.
The second part of this training dealt with the scientific research activities which are presently developed in cooperation between our research-groups. It should be noted that Miss Aîcha Menyar Ben Hamissa, who is a PhD student under my leadership, is conducting a18 month-stage (Imageen-Erasmus Mundus) in the laboratory of Prof. Converti to develop the research-work needed for her PhD thesis. Her thesis concerns the valorization of *Agave americana* in different fields. We discussed the results obtained on the characterization and the fermentation of this raw material. Just as we establis

2008

UNIGE Funding of Socrates/Erasmus Programme 2007/2008 with UVIGO Campus di Ourense for Professors Mobility

UNIGE - IT

1200 euros - Pricipal investigator

2007 - 2009

Optimal Design of Biorefinery

Italian Conference of Rectors and subsequently Italian-German University - IT

2300 euro - Pricipal investigator

Biogas is considered a valuable renewable primary energy source and its quality is crucial in view of its final utilization. The scope of this research work was to investigate the biogas production and purification by a two-step biological system, consisting of the anaerobic digestion of mixed sludges followed by methane enrichment of biogas, using the cyanobacterium *Arthrospira platensis*. The composition of biogas produced through fed-batch pulse feeding runs performed under different feeding conditions and retention times in a 1.25 L-bench-scale thermostatted, mixed digester kept nearly constant, with methane and carbon dioxide percentages ranging between 72-87% and 2.6-17.8%, respectively, while a gradual decrease of biogas specific productivity was observed with

decreasing the retention time. A maximal biogas specific productivity of 88 mL Lreactor-1 d-1 was attained at a retention time of 50 d, whereas at the shortest retention time (12 d) the productivity decreased remarkably, suggesting the occurrence of conditions close to washout. The data of carbon dioxide removal from biogas by photosynthetic *A. platensis* growth revealed the existence of a sound linear relationship between the amount of CO2 fed into the photobioreactor and that incorporated into biomass, thereby highlighting the potential of such a sequestering system.

2007 - 2008

Funding of Socrates/Erasmus Programme 2007/2008 with UVIGO Campus di Ourense for Professors Mobility

UNIGE - IT

1200 euros - Pricipal investigator

2007 - 2008

'Produzione di biodiesel da biomasse microalgali cresciute su emissioni di anidride carbonica'

Banca D'Italia - IT

18000 euros - Pricipal investigator

Research fellowship. Recipient: Erika Yuliana Ortiz Montoya.
In this research project we: a) selected the most suitable microalga for biodiesel production; b) identified the optimal operating conditions for the production of biomass rich in lipids; c) built up open pond photobioreactors for autotrophic growth of the selected microalga; d) chosed the best source of nitrogen and the type of process to be used for the growth of the selected microalga in order to maximize the lipid content; e) selected the best photobioreactor configuration for autotrophic production of the chosen microalga.

2007

Study of Fermentation Processes for Bioethanol Production from Different Cereals with the Aim of Determining Some Fundamental Parameters

Cobarr Srl - IT

8000 euro - Pricipal investigator

Study of Fermentation Processes for Bioethanol Production from Different Cereals with the Aim of Determining Some Fundamental Parameters

2007

Viscosity Evaluation of Mash Thin Stillage e Syrup Streams Obtained by Wheat or Corn Hydrolysis and Fermentation

Chemtex Srl - IT

5000 euros - Pricipal investigator

Aim of this project was to evaluate the difference in dinamic viscosity of the streams denominated *Mash*, *Thin stillage* and *Syrup* using wheat and corn as starting products for the production of ethanol by fermentation. For Mash, Thin stillage and Syrup we mean, respectively, the suspension coming

out of the liquefaction section, the residue separated from the suspended solids and the concentrated residue.

2006 - 2007

Funding of Socrates/Erasmus Programme 2006/2007 with UVIGO Campus di Ourense for Professors Mobility

UNIGE - IT

1200 euros - Pricipal investigator

2005 - 2006

Funding of Socrates/Erasmus Programme 2005/2006 with La Coruna University for Professors Mobility

UNIGE - IT

1200 euros - Pricipal investigator

2004 - 2005

Funding of Socrates/Erasmus Programme 2004/2005 with UVIGO Campus di Ourense for Professors Mobility

UNIGE - IT

1200 euros - Pricipal investigator

2004

Funding of Researchers Training in High Qualified Centres Prot. n. 4367 Recipient Paolo Torre.

UNIGE - IT

Participant

Research Fellowship. Recipient Paolo Torre.

2003 - 2005

Kinetic Characterization of Biotransformations in Organic Solvent and Applications in Reactor

UNIGE/MIUR - IT

Pricipal investigator

Research Fellowship, scientific sector CHIM/11. Recipient: Laura Maria Binaghi

2002 - 2003

Funding of Research and International Cooperation Activities with USP

UNIGE - IT

Pricipal investigator

Prot. n. 1532 (13/12/2002)

2002 - 2003

UNIGE Funding of Research and International Cooperation Activities with FAENQUIL Lorena Brazil

UNIGE - IT

Pricipal investigator

Prot. n. 1531 (13/12/2002)

2002

Influence of the Filling Material on the Biofiltration of Benzene Vapours

UNIGE - IT

Pricipal investigator

Research Project, Prot. n. 13084.

The aim of the present research was to reduce the environmental risk associated with the emission of benzene vapors by using biological abatement systems for atmospheric pollutants, with particular reference to the biofiltration process of benzene, a notoriously carcinogenic compound.

2001 - 2002

Scientific Research Programme of High National Interest PRIN 2001 Prot. n. 2001075847 'Optimization and Engineering Aspects of Vanillin Bioproduction

MIUR/UNIGE - IT

39251 euros - Pricipal investigator

During the two-year period, in accordance with the program originally presented, the three Research Units involved in the project dealt with the research, development and characterization of new biocatalysts for the transformation of ferulic acid into vanillin. The research involved innovative aspects of molecular biology and applied microbiology to study the feasibility and realization on a laboratory scale of bioprocesses suitable to promote the transformation, otherwise difficult to obtain.

2001 - 2002

Funding of Research and International Cooperation Activities with USP

UNIGE - IT

Pricipal investigator

Prot. n. 30364 (13/08/2001)

2001 - 2002

Funding of Research and International Cooperation Activities with FAENQUIL

UNIGE - IT

Pricipal investigator

Prot. n. 30363 (13/08/2001)

2008 - 2009

CO2 removal from emissions by microalgal growth biomass characterization and its transformation into biodiesel

EU

23000 euro - Pricipal investigator

Research fellowship within the EU Program Erasmus Mundus Research

Training. Recipient: Aïcha Menyar Ben Hamissa.
In this research project the Fellows developed a system for CO2 removal from gaseous emissions in which the cyanobacterium Arthrospira Spirulina platensis was cultivated and grown in different photobioreactor configurations. The produced biomass was characterized phisicochemically and in terms of lipid, carbohydrate, protein and ash composition, with the aim os using it as raw material for biodiesel production.

Editorial activity

Editorial activity

- 1986-1988: **Coordinator of Editorial Reviews** of SIBA on the AES and Tuttochimica journals.
- 2004-present: **Member of the Editorial Board of *CYTA-Journal of Food***, Taylor & Francis, London, previously "Ciencia y Tecnología Alimentaria"
- 2005-present: **Member of the Editorial Board of *Brazilian Journal of Pharmaceutical Sciences***, Faculty of Pharmaceutical Sciences of USP, São Paulo-SP, Brazil
- 2006-present: **Member of the Editorial Board of *Brazilian Journal of Microbiology***, Brazilian Society of Microbiology, São Paulo-SP, Brazil
- 2010-present: **Member of the Editorial Board of *Food Science and Technology***, Brazilian Society Brasileira of Food Science and Technology, Campinas-SP, Brazil
- 2012-2013: **Guest Editor of the Special Issue** "New Trends in Biotechnological Processes to Increase the Environmental Protection", *BioMed Research International*, Ed. Hindawi Publishing Corporation, New York

Didactic Books

- A. Converti, *Chimica Generale e Inorganica*, Vol. 1, 1st Edn., RCS Libri & Grandi Opere, Milan, October 1994, ISBN 88-453-0715-7
- A. Converti, *Chimica Generale e Inorganica con Elementi di Organica*, Vol. 2, lst Edn., RCS Libri & Grandi Opere, Milan, October 1994, ISBN 88-453-0714-X
- E. Palazzi, A. Converti, *Chimica per Ingegneria*, Vol. 6, lst Edn., RCS Libri & Grandi Opere, Milan, February 1995, ISBN 88-453-0716-6
- A. Converti, M. Zilli, *Chimica Organica*, Vol. 11, lst Edn., RCS Libri & Grandi Opere, Milan, September 1995, ISBN 88-453-0718-2
- A. Converti, M. Zilli, "I microrganismi nei diversi comparti ambientali. 4.1. Atmosfera", Capitolo 4, pp. 107-110, "Aria/Biofiltrazione", Capitolo 14, pp. 439-452, In: P. Barbieri, G. Bestetti, E. Galli e D. Zannoni (Eds.), *Microbiologia Ambientale ed Elementi di Ecologia Microbica*, 1a edizione, Casa Editrice Ambrosiana, Milano, aprile 2008 (ISBN 978-88-08-18434-4)
- A. Converti, "Recupero di prodotti biotecnologici", Capitolo 14, pp. 413-445, In: S. Donadio, G. Marino (Eds.), *Biotecnologie Microbiche*, 1a

edizione, Casa Editrice Ambrosiana, Milano, settembre 2008 (ISBN 978-88-08-18438-2)

Assigments abroad

Research and teaching assignments abroad

- 1992: **10-Day Research Activity at Aracruz Celulose A.S.**, Rio de Janeiro-RJ, Brazil, on "Enzymatic Cellulose Bleaching", **funded by UNIGE**
- 1996: **Weekly Research Stage** at the **National Institute of Technology and Industrial Engineering** (INETI) of Lisbon, **funded by CNR**, Prot. N. 015751, within the Framework of Scientific Cooperation Agreement between CNR and JNICT
- 1999: **Weekly Research Stage funded by UNIGE**, Prot. N. 2609, "Update on Lignocellulosic Materials Hydrolysis Techniques", Department of Biotechnology, Faculty of Chemical Engineering of Lorena (FAENQUIL) Lorena-SP, Brazil, now School of Engineering of Lorena (EEL), University of Sao Paulo (USP)
- 1999: **3-Week Research Stage** within the **CNR Program "Short Term Mobility 1999"**, Prot. 065474, "Optimization of the Pilot-Scale Process of Acid Hydrolysis of Lignocellulosic Residues for the Production of Xylitol by Fermentation", Department of Biotechnology, FAENQUIL
- 2000: **Weekly Research Stage funded by UNIGE**, Prot. N. 2934, "Update on Xylitol Production Techniques from Lignocellulosic Materials", Department of Biochemical and Pharmaceutical Technology (FBT), Faculty of Pharmaceutical Sciences (FCF), São Paulo University (USP), São Paulo-SP, Brazil
- 2001: **Weekly Research Stage funded by UNIGE**, Prot. N. 3092, "Update on Microalgae Biomass Production Techniques", FBT, FCF, USP
- 2003: **Weekly Research Stage** at INETI on "Technology for Soils Decontamination" under the SISIFO Project, **funded by the National Inter-University Consortium "The Chemistry for the Environment"** (INCA)
- 2005: **9-Day Research Stage financed by UVIGO** at the Department of Chemical Engineering, Faculty of Sciences of Ourense, University of Vigo (UVIGO), Spain
- 2005: **40-Day Research and Teaching Stay** at FBT, FCF, USP, **funded by São Paulo Research Foundation** (FAPESP), São Paulo, Brazil
- 2006: **9-Day Research Stage** at the Department of Chemical Engineering, Faculty of Sciences of Ourense, UVIGO, Spain, **funded by UVIGO**
- 2006-2007: **50-Day Research and Teaching Stay** at FBT, FCF, USP, **funded by USP Post-Graduate Pro-Rectorate**
- 2008: **45-Day Research and Teaching Stay** at FBT, FCF, USP, **funded by Coordination for the Improvement of Higher Education Personnel** (CAPES), Brasilia-DF, Brazil
- 2008: **45-Day Research and Teaching Stay** at FBT, FCF, USP, **funded by National Counsel of Technological and Scientific Development**

(CNPq), Brasilia-DF, Brazil

- 2009: **40-Day Research and Teaching Stay** at FBT, FCF, USP, **funded by USP International Cooperation Pro-Rectorate**
- 2009: **50-Day Research and Teaching Stay** at FBT, FCF, USP, **funded by USP Post-Graduate Pro-Rectorate**
- 2010: **40-Day Research and Teaching Stay** at FBT, FCF, USP, **funded by USP Post-Graduate Pro-Rectorate**
- 2010: **3-Month Research and Teaching Stay** as "Foreign Visiting Professor – PhD Senior" at FBT, FCF, USP, **funded by CAPES**
- 2011: **40-Day Research and Teaching Stay** at FBT, FCF, USP, **funded by FAPESP**
- 2012: **40-Day Research Stay**, at FBT, FCF, USP **funded by USP Post-Graduate Pro-Rectorate**
- 2012: **40-Day Research and Teaching Stay** at FBT, FCF, USP, **funded by FAPESP**
- 2013: **45-Day Research and Teaching Stay** as "Foreign Visiting Professor – PhD Senior" at FBT, FCF, USP, **funded by USP Post-Graduate Pro-Rectorate**
- 2013: **45-Day Research and Teaching Stay** as "Foreign Visiting Professor – PhD Senior" at FBT, FCF, USP, **funded by USP Post-Graduate Pro-Rectorate**
- 2014-2017: **3-Year Research and Teaching Assignment** within the **Federal Brazilian Programme "Science without Borders"**, as **"Special Visiting Researcher"**, in alternate 1.5 month periods, at FBT, FCF, USP, **funded by CAPES**
- 2017-2018: **55-Day Research and Teaching Stay** at FBT, FCF, USP, **funded by FAPESP**