



**Enrico Caruso**

UNIVERSITY OF INSUBRIA



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## Contact data

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## Biography

Graduated with a degree in organic chemistry in October 1998 from the University of Milan; then I attended at the Graduate School in Organic Chemistry of Politecnico of Milan for two years, collaborating with Prof. Stefano Servi.

In 2001 I won different grants in University of Insubria (Varese) and I worked under the supervision of Prof. Stefano Banfi; the collaboration with Prof. Banfi is ongoing and in 2004 I earned a position of researcher (Organic Chemistry) at the University of Insubria (Varese).

Since then I have been working in the Department of Structural and Functional Biology and teaching Laboratory of Chemistry and Analytical Chemistry in different courses of the School of Sciences.

## Qualifications and awards

Assistant Professor in Organic Chemistry

## Research interests

The research interests are in the field of the Photodynamic Therapy applied on tumours (PDT) and the Photodynamic Antimicrobial Chemotherapy (PACT). These two methodologies, although addressed to different cells, shares the same principle i.e. the activation by low energy irradiations (visible light or near IR) of molecules characterized by the present of wide, insaturated frame. These molecules generally indicated as Photosensitizer, when excited by a beam of light, induce energy transfer to the surrounding molecular oxygen, thus producing the highly reactive and cytotoxic single oxygen. These last is able to kill both eucariotic and procariotic cells. The selectivity of the treatment is insured by the different uptake of ionic and non ionic molecules by procariotic and eucariotic cells respectively.

In collaboration with the groups of the microbiology and pharmacology of the same Department we are currently studying the in vitro activity of cationic porphyrins on bacteria and that of neutral and low polar compounds on tumour cell. Recent results obtained with a panel of newly synthesized diaryl- and monoaryl-porphyrins are the promising and allow and envisage new powerful photosensitizers for both PDT and PACT.

## Teaching experience and

Since 2004 I am in charge of the following lectures:

## appointments

Laboratory of Chemistry for the course of Biology of Health.

Analytical Chemistry (part of molecular spectroscopy).

## Representative publications

1) Cinzia Barbieri, Enrico Caruso, Paola D'Arrigo, Giuseppe Pedrocchi Fantoni and Stefano Servi. Chemo-enzymatic synthesis of (R)- and (S)-3,4-dichloro-phenylbutanolide intermediate in the synthesis of sertraline. *Tetrahedron: asymmetry* 10 (1999) 3931-3937

2) Enrico Caruso, Paola D'Arrigo, Sara Frattini, Giuseppe Pedrocchi-Fantoni, Stefano Servi. A biocatalytic resolution of chiral ketals, intermediates in the synthesis ofazole drugs. *J. Mol. Catal B: enzymatic* 11 (2001) 427-432

3) Cinzia Barbieri, Enrico Caruso, Paola D'Arrigo, Sara Frattini, Giuseppe Pedrocchi Fantoni and Stefano Servi. Bis-phenylacetyl and –phenoxyacetyl groups as substrates for penG and penV amidases. *J. Mol. Catal B: enzymatic* 11 (2001) 487-490

4) Stefano Banfi, Lucia Carlucci, Enrico Caruso, Gianfranco Ciani and Davide M. Proserpio. Using long bis(4-pyridyl) ligands designed for the self-assembly of coordination frameworks and architectures. *J. Chem. Soc., Dalton Trans.*, (2002) 2714-2721

5) Stefano Banfi, Elisabetta Cassani, Enrico Caruso, Mersia Cazzaro. Oxidative Cleavage of Plasmid Bluescript by Water-Soluble Mn-Porphyrins and Artificial Oxidants Or Molecular Oxygen. *Bioorganic & Medicinal Chemistry* 11 (2003) 3595-3605

6) Stefano Banfi, Lucia Carlucci, Enrico Caruso, Gianfranco Ciani and Davide M. Proserpio. An unusual three-dimensional coordination network formed by parallel polycatenation of two-fold interpenetrated (6,3) layers based on a novel three-connecting ligand. *Crystal growth & design* 4 (2004) 29-32

7) Stefano Banfi, Enrico Caruso, Stefania Caprioli, Luigi Mazzagatti, Gianfranco Canti, Raffaella Ravizza, Marzia Gariboldi and Elena Monti. Photodynamic effects of porphyrin and chlorin photosensitizers in human colon adenocarcinoma cells. *Bioorganic & Medicinal Chemistry* 12 (2004) 4853-4860

## Clinical interests

In the future I will be interested in the in vivo applications of new photosensitizers for photodynamic therapy applied both on tumour and on bacteria. Collaborations with clinicians will possibly allow to set up first clinical trials on specific tumours or on infections.