

Prof. Francesco Malatesta

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Curriculum vitae

Prof. Francesco Malatesta

Curriculum vitae et studiorum

- Born in Padova on May 9, 1952.
- Classical studies at the European School of Brussels.
- Degree in Biology magna cum laude University of Rome in 1979.
- 1981-1983: postdoctoral student at the Institute of Molecular Biology, Eugene, University of Oregon, USA.
- 1983-1984: postdoctoral student at the ETH Zurich Polytechnic
- 1984-1994: university researcher (scientific disciplinary sector E05A - Biological chemistry) at the Faculty of Medicine and Surgery of the University of Rome Tor Vergata
- 1985-1986: Visiting Professor at the CNRS Center d'Océanologie de Marseille of the University of the Mediterranean in Marseille.
- 1994-1997: full professor of Biological Chemistry at the Faculty of Sciences MM.FF.NN. of the University of L'Aquila.
- 1997-2008: full professor at the same Faculty of Sciences MM.FF.NN. until 31 July 2005 and from 1 August 2005 at the Faculty of Biotechnology of the University of L'Aquila.
- Since 1 November 2008 he has been full professor at the 1st Faculty of Medicine and Surgery of the Sapienza University of Rome and since 22 December 2008, he has been a member of the Department of Biochemical Sciences "A. Rossi Fanelli "

Teaching activity

Prof. Malatesta contributed from 1984 to 1994, as a university researcher, to the teaching of Chemistry for the Degree Course in Medicine and Surgery at the Faculty of Medicine and Surgery of the University of Rome "Tor Vergata".

From 1994 to 2005, as full professor, he was holder of the institutional Courses of Biological Chemistry and Biological Chemistry II of the Degree Course in Biological Sciences of the Faculty of Mathematical, Physical and Natural Sciences of the University of L ' Aquila; from 2005 to 2008 he is the holder of the Biochemistry I Course of the Degree Course in Biotechnology of the Faculty of Biotechnology of the University of L'Aquila.

From the academic year 1997/98 to 2008, Prof. Malatesta has held, by assignment, at the University of L'Aquila, numerous teaching courses relating to the scientific BIO/10 as part of the University Diploma in Agro-industrial Biotechnology, of the Degree Course in Environmental Sciences, of the Degree Course in Biological Sciences, of the Degree Courses in Chemistry and in Chemical and Materials Sciences and Technologies, of the Degree Course in Biotechnology, of the Degree Course in Cosmetological and Herbal Sciences and Technologies and the Specialist Degree Course in Industrial Biotechnology.

Prof. Malatesta is a member of the Board of Professors of the PhD Course in Cellular and Molecular Biology at the Department of Basic and Applied Biology of the University of L'Aquila; he also took part as a member of the International Commission for the award of the title of Doctor of Research (PhD) at the Institut für Biochemie, Biozentrum der Johann Wolfgang Goethe-Universität of the University of Frankfurt.

From 1999 to 2008, Prof. Malatesta, at the University of L'Aquila, was graduate advisor to numerous students (21) of Biological Sciences, Biotechnology and Computer Science who he personally followed in carrying out the experimental and / or compilation thesis; he was also the lead lecturer for several students (3) of the PhD in Cellular and Molecular Biology.

Since 2009 he has been coordinator of the Chemistry and Biochemical Propaedeutics course (channel C) at Sapienza University of Rome. Since 2017 he has taught in the Chemistry and Introduction to Biochemistry course of the Master's Degree Course Medicine and Surgery (course F) in English of the Sapienza University of Rome.

Prof. Malatesta held the position of Coordinator of the University Diploma Course in Agroindustrial Biotechnology (academic three-year period 1998/99-2000/01), President of the Didactic Area Council of the University Diploma in Agroindustrial Biotechnology (three-year period 1998/99-2001)), President of the Didactic Area Council of the Degree Course in Biotechnology (2004/5) and Vice-Dean of the Faculty of Biotechnology of the University of L'Aquila. He was a member of the organizing committee of the new Faculty of Biotechnology established in 2005.

He was coordinator of the PhD Course in Biochemistry of the Sapienza University of Rome (2011-2016) and to this day he oversees its management.

Since 2012 he has been coordinator of the Biochemistry course in the English Medicine and Surgery Master's Degree Course (course F) of the Sapienza University of Rome.

Prof. Malatesta is co-author of the didactic volume "Medical Chemistry Guide to Self-evaluation", published in 1989 by the Esculapio publishing company and now in its 3rd edition in 2015. Authors: P. Arcari, M. Brunori, A. Dello Russo, S. Marini, F. Malatesta.

Prof. Malatesta is co-author of the book "Chemistry preparatory to bio-medical sciences". Authors E. Santaniello - M. Coletta - F. Malatesta - G. Zanotti - S. Marini, Piccin Ed. October 2018

Scientific Activity

The research activity of prof. Francesco Malatesta has addressed the correlation between structure and function of water-soluble and membrane metalloproteins involved in redox processes (electron transfer). As part of this line of research he went in 1981 to Eugene at the Institute of Molecular Biology, University of Oregon, as a postdoctoral student, where he began to structurally characterize cytochrome c oxidase extracted from bull's heart. These same research continued from 1983 in Rome (at the A. Rossi Fanelli Department of Biochemical Sciences of the Sapienza University of Rome and the Department of Experimental Medicine of the University of Rome Tor Vergata) where he studied, in particular, the mechanism of action of the enzyme in terms of kinetics of electron transfer and proton translocation by means of spectroscopic and stopped-flow techniques.

After the period spent at the Polytechnic of Zurich (1983), as a post-doctoral student, and after his stay at the Center d'Océanologie de Marseille (1985), as Visiting Professor, Prof. Malatesta began to study and characterize also the terminal oxidases (cytochrome c: O₂ oxidoreductase) extracted from marine bacteria (*Pseudomonas nautica* ora *Marinobacter hydrocarbonoclasticus*), from thermophilic (*Thermus thermophilus*) and terrestrial bacteria (*Paracoccus denitrificans*).

From November 1994, he was appointed full professor and began to carry out his research activity at the Department of Basic and Applied Biology of the University of L'Aquila where he developed a line of research concerning the extraction and characterization of numerous proteins and redox enzymes extracted from the halophilic marine bacterium *Marinobacter hydrocarbonoclasticus* (cytochrome c₅₅₂, polyphosphate kinase, polyhydroxyalkanoate synthase, sodium dependent complex I, sodium dependent NADH dehydrogenase polypeptide A and F).

Since 1998, as part of a scientific collaboration with Prof. Bernd Ludwig, he has visited several times at the Institut für Biochemie, Biozentrum der Johann Wolfgang Goethe-Universität of the University of Frankfurt to study the mechanism of the enzymatic catalysis of cytochrome c oxidase extracted from *Paracoccus denitrificans* and of multiple site-specific mutants obtained with molecular biology techniques.

Professor Malatesta, as part of new lines of research, has developed a new equation of a general nature that analytically describes the behavior of second-order reactions in conditions that are also very far from pure pseudo-first-order. This equation has proved to be of considerable importance in the study a) of electron transfer processes between metalloproteins with very similar absorption spectra and b) of protein folding induced by ligands.

His research has focused on the sequencing of the *nqr* operon (over 5900 nucleotide bases) which encodes the sodium-translocating NADH dehydrogenase (complex I of the bacterium's respiratory chain). This oxidoreductase is a crucial enzyme for the sodium-dependent

bioenergetics also of numerous pathogenic and enteric bacteria similar to *Marinobacter hydrocarbonoclasticus* from a phylogenetic point of view; therefore, the structural and functional characterization of this enzyme has been useful for the design of new alternative drugs. Unfortunately, all scientific material was lost during the 2009 L'Aquila earthquake. Prof. Malatesta cloned the phosphodiesterase V gene from bovine lung. This enzyme is the target of sildenafil (Viagra) and the determination of its atomic structure may be of help for the synthesis of new molecules without the side effects of the drug currently used. The following enzymes and proteins were studied from a structural and functional point of view: trypanothione reductase from *Leishmania infantum*, pyridoxine 5'-phosphate oxidase from *Escherichia coli*, GTPase RsgA from *Pseudomonas aeruginosa*, the heme transport protein HmuY from *Porphyromonas gingivalis*, and human ferritin.

The research activity of Prof. Malatesta is documented by > 100 scientific publications in qualified international journals with wide circulation.

Since 1994 he has been the holder of numerous grants from MIUR, CNR and the University of L'Aquila and Sapienza University of Rome.

From 1998 to 2001 he organized, on an annual basis, the "Course on the Structure and Function of Proteins" at the INFN Laboratories of Gran Sasso in L'Aquila.

He was President of the Scientific Committee of the "XVI Meeting of the Protein Workgroup" of the Italian Society of Biochemistry and Molecular Biology, which took place in L'Aquila from 6-8 June 2002.

In 2019 he is President of the Scientific Committee and Organizer of the international conference "Excellence in Learning and Teaching Biochemistry - A FEBS Education Meeting" Rome, 16-17 September 2019. The event is sponsored by the FEBS (Federation of the European Biochemical Societies), by SIB (Italian Society of Biochemistry and Molecular Biology), from the IUBMB (International Union of Biochemistry and Molecular Biology).

He is a member of the following scientific societies: - Italian Society of Biochemistry and Molecular Biology - Italian Group of Bioenergetics and Biomembranes. - American Chemical Society - American Society of Biochemistry and Molecular Biology.

He was Editor of the International Journal of Biochemistry and Cell Biology (1998-2001).

He was scientific director of the Italian Journal of Biochemistry (2001-2007). He has been repeatedly invited to evaluate manuscripts submitted for publication (peer reviewing) to international biochemistry journals (Biochemistry, Biophysical Chemistry, FEBS Letters, Italian Journal of Biochemistry, International Journal of Biochemistry and Cell Biology, Journal of Inorganic Biochemistry and many others).

Since 2018 he is Education Ambassador within the FEBS Education Committee (Federation of the European Biochemical Societies).

Starting January 2023 he is a member of the FEBS Education Commission.

Publications

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- 2) Malatesta F, Capaldi R.

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- 4) Capaldi RA, Malatesta F, Darley-USmar VM.
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 Bioelectrochemistry and Bioenergetics (1986) 16:159-165.
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Roma, 31/03/2023

Prof. Francesco Malatesta