

Curriculum vitae

Prof. Nicola Volpi, BIOS-07/A Biochimica
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Training

Prof. Nicola Volpi, associate professor of Biochemistry, BIO/10. Since July 1992 university researcher for group E05A, Biochemistry and General Biology, Faculty of Science, degree course in Biological Sciences, University of Modena. Confirmed University Researcher (BIO/10 group) since July 1995. Eligible for the comparative assessment procedure to cover 1 full-time professor position, sector BIO/10 - Biochemistry - at the Faculty of Medicine and Surgery, branch of Varese of the University of Insubria, on 31 July 2001. On 19 September 2002, the Faculty of Sciences, unanimously, called Prof. Volpi Nicola to fill the role of level II of SSD BIO/10 Biochemistry, at the University of Modena and Reggio Emilia.

Teachings

Responsible for the preparation and completion of the practical exercises connected to the course of Biological Chemistry (years 89/90, 90/91, 95/96, 96/97) and Molecular Biology (years 95/96, 96/97) for the Degree course in Biological Sciences of the Faculty of Sciences of the University of Modena. Supervisor and co-supervisor of numerous degree theses for Biological Sciences, Natural Sciences, Chemistry and Biotechnology. Conferment of the teaching of Molecular Biology for the degree course in Biological Sciences for the year 95/96, Biological Chemistry for the degree course in Chemistry from the year 96/97 to the year 04/05, Biological Chemistry for the degree course in Biotechnology from year 97/98 to year 98/99, Biochemistry for the degree course in Biological Sciences from 00/01 to today, Enzymology for the degree course in Biotechnology, Industrial Biotechnology course, from year 98/99 to date, Laboratory of Biochemistry and Microbiology for the Degree Course in Biotechnology, new regulation, from the year 02/02 to today, Bioassisted Chemical Processes for the Degree Course in Biotechnology, new regulation, from the year 02/03 to today. Chemistry and biochemical propaedeutics for Medicine and surgery (D.M.270/04) and Dentistry and dental prosthetics (D.M.270/04).

Research and Development experiences

The Scientific activity is currently divided into 2 Italian texts, 4 popular publications, 218 Publications in National and International journals, 62 communications at National and International Congresses, 3 "Invited Lectures" at International Congresses, and two volumes published with the responsibility of Editors. h-Index 55. The total Impact Factor is currently greater than 200 (I.F. taken from SCI Journal Citation Reports, 2005).

He collaborates as Reviewer with the following international journals: Experimental Cell Research, Carbohydrate Research, Journal of Chromatography, Journal of Chemical Technology and Biotechnology, Biomaterials, Biochimica Biophysica Acta, Electrophoresis, Journal of Biotechnology, FEBS Letters, FEBS Journal, Analytical Biochemistry, Life Sciences, Journal of Food Composition and Analysis, Biochimie, Enzyme and Microbial Technology, Journal of Veterinary Medicine, Journal of Pharmaceutical and Biomedical Analysis, Invertebrate Survival Journal, Carbohydrate Polymers, Process Biochemistry, IUBMB Life, Food Technology & Biotechnology, Micron, The International Journal of Biochemistry & Cell Biology. He is a member of the Editorial Board of the scientific journals "Anti-Inflammatory & Anti-Allergy Agents in Medicinal Chemistry", "Current Proteomics", "The Open Medicinal Chemistry Journal" and "The Open

Microbiology Journal". He collaborates with numerous national and international institutions and public and private bodies.

Skills Fields of Research

Glycosaminoglycans constitute a class of macromolecules characterized by a marked heterogeneity of structure, by peculiar chemical-physical properties and by distinct biological activities, often of significant pharmacological interest. They are high molecular weight heteropolysaccharides formed by alternating monosaccharide units (iduronic and glucuronic acid, N-acetyl-galactosamine and N-acetyl-glucosamine) and bearing esterified sulphate groups in different numbers and positions. The biological and pharmacological properties of these molecules are the subject of in-depth studies and in particular the interaction with numerous molecular and cellular systems is studied. Numerous studies have shown that interactions at the molecular and cellular level are highly specific and caused by peculiar oligosaccharide sequences (by type and number of monosaccharide units, number and position of sulphate groups, types of bond involved). The activity of many growth factors is regulated by glycosaminoglycans. Also in this case the interaction is highly specific and caused by peculiar oligosaccharide sequences. Interaction with glycosaminoglycans protects growth factors from protease activity as well as increasing their biological activity by exposing their reactive groups. Currently, great attention is paid to the study of the biological properties of glycosaminoglycans and their derivatives, in particular in the regulation of cell growth factors, both in normal conditions and in neoplastic processes; to the study of processes related to metastatic invasion and the regulation of cell growth and angiogenesis processes.

Research and Development Topics

"Post-genomic biology" area

Glycoconjugates

Proteoglycans

Biocompatible materials (biomaterials)

SYSADOA drugs (slow acting drugs).

Study of the structure and function of complex polysaccharides and their degradation products in biological fluids and human fibroblasts. Production and purification of acidic polysaccharides from bacteria by fermentation processes. biotechnological approaches. Characterization of glycosaminoglycans in corneal stem cells in normal subjects and subjects affected by corneal macular dystrophy. Evaluation of the effect of chemically modified polysaccharides on hippocampal neurons and astrocytes of the U373 lineage. Evaluation of dermal glycosaminoglycans as homeostasis regulators in human subjects. Fine structural modifications of complex polysaccharides in rat brains: an experimental model for studying Alzheimer's disease. Fine structural modifications of complex polysaccharides in aortic and mitral heart valves. Area of "Structural Biology" Glycobiology and Glycomics. Structure and function of glycoconjugates, proteoglycans and complex polysaccharides; Structural and functional characterization of complex polysaccharides (glycosaminoglycans) in invertebrates; Fine structural characterization of polyphenols and phenolic acids in active ingredients for pharmacological use. Quali/quantitative determination of amino acids in biological fluids and tissues by HPLC-ESI-MS. Area of "Biodiagnostics and bioremediation", Food protein intolerances in humans.

Modena, 07/07/2025

