

Curriculum vitae

Dott.ssa Odile Francesca Restaino

Personal informations

Name and Surname: Odile Francesca Restaino

Phone number: +39-(0)81-5667661/ 5667666.

E-mail: odilefrancesca.restaino@unicampania.it

Professional information

November 2017 to date: Two-year renewal of the contract as a fixed-term researcher of type A at the Department of Experimental Medicine of the Second University of Naples, the current University of Campania "Luigi Vanvitelli" in the SSD BIO 10.

July 26, 2017: National scientific qualification as Associate Professor in the BIO SSD 10.

October 2014 to date: Three-year contract as a fixed-term researcher of type A at the Department of Experimental Medicine of the Second University of Naples, the current University of Campania "Luigi Vanvitelli" in the SSD BIO 10.

February 2014-September 2014: Contract of professional collaboration at the Department of Experimental Medicine of the Second University of Naples on "Support to the research activities of the project PON01_01226 entitled" from the nutraceutical to the drug for integrated strategies- Nutrafast ", with particular reference to the development of methods of biochemical and structural characterization of products of interest to the project.

December 2012-December 2013: Research grant entitled "Development of strategies for the production of molecules of pharmaceutical interest" within the POR Campania project FSE 2007/2013, STRAIN project, at the Department of Experimental Medicine of the Second University of Naples. Research activity: Production on a laboratory and pre-industrial scale of molecules of pharmaceutical interest such as steroids and polysaccharides of microbial origin with pharmacological potential through the use of fermentation techniques.

March 2012-October 2012: Fulbright fellowship as Visiting Scholar at the laboratories of Prof. Robert Linhardt in the Chemistry Department of the Rensselaer Polytechnic Institute, Troy, NY, USA. Research activity: Production of biotechnological heparin, optimization of high-density

fermentation strategies for the production of recombinant sulfotransferases from engineered *E. coli* strains.

September 2011-January 2012: Project collaboration agreement at Novartis-Torre Annunziata for the development and validation of analytical methods and implementation of testing monographs.

January 2011-September 2011: Coordinated and continuous collaboration contract at the Regional Biotechnology Expert Center in Biotechnology SCpA, for the biotechnological set-up for the production of biomolecules of pharmaceutical interest.

February 2010-December 2010: Coordinated and continuous collaboration contract at the Department of Experimental Medicine of the Second University of Naples for the "Optimization of fermentation processes, development of purification processes and new analytical characterization methodologies for the production of molecules of pharmaceutical interest".

March 2009-January 2010: Scholarship, at the Interdepartmental Research and Management Center of the Second University of Naples in the framework of the project "Production of Chondroitin Sulfate Biotechnology" having as object "Innovative methods for the production and characterization of molecules polysaccharides of applicative interest".

July 2008-September 2008: Visiting scientist at the laboratories of Prof. Robert Linhardt in the Chemistry Department of the Rensselaer Polytechnic Institute, Troy, NY, USA. Research activity: Analytical methods for the structural determination of the sulfation pattern of glycosaminoglycans of human origin.

December 2007-November 2008: Scholarship, at the Interdepartmental Research and Management Center of the Second University of Naples in the framework of the project "Biotechnological production of Chondroitin" having as object the "Development of innovative methods for obtaining for biotechnological route of polysaccharides of pharmaceutical interest".

January 2007 - July 2007: Visiting Ph.D. Student at the laboratories of Professor Robert Linhardt in the Chemistry Department of the Rensselaer Polytechnic Institute, Troy, NY, USA. Research activity on purification and characterization for the determination of the sulfation pattern of glycosaminoglycans of human origin.

January 2004-December 2007: PhD in "Food and Health: Biotechnologies and Methodologies applied to the digestive physiopathology" of the Second University of Naples, at the Department of Experimental Medicine (SSD BIO 10). Research activity on biotechnological production processes by fermentation and methods of characterization of polysaccharides of microbial origin with potential applications in the biomedical field.

May 2003-November 2003: Coordinated and continuous collaboration contract at the Department of Experimental Medicine of the Second University of Naples for research activities on production by fermentation, purification and characterization of polysaccharides of bacterial origin of pharmacological interest.

October 2001-March 2003: Internship held at the Department of Organic and Biological Chemistry of the Faculty of Chemistry of the University of Naples Federico II with research on the structural characterization of polysaccharides and lipopolysaccharides of bacterial origin.

Education and Training

October 2010: Mass spectrometry course at the Interdepartmental Center of Physical Chemistry Methodologies of the University of Naples Federico II.

February 2010: Basic Course on Quality Management Systems in compliance with the UNI EN ISO 9001: 2008 standard.

March-June 2008: GMP Course at the Department of Experimental Medicine of the Second University of Naples.

December 2007: Achievement of the Ph.D. degree at the Second University of Naples. Title of the experimental thesis: "Microbial polysaccharides as functional foods: production and characterization".

Enrollment in the Professional Register of Chemists (2004).

Enabling the practice of chemistry (1st session of the 2003 State Exam).

May 2003-October 2003: Title of basic nuclear magnetic resonance (NMR) operator, obtained at the Interdepartmental Center of Physical Chemical Methodologies of the University of Naples Federico II in the context of the regional plan for Higher Education 2000- 2006.

March 2003: Degree in Chemistry obtained with the 106/110 mark at the University of Naples "Federico II" with an experimental thesis in Organic Chemistry entitled "Determination of the structure of the oligosaccharide component of the lipopolysaccharide fraction of the Agrobacterium fici bacterium."

July 1997: Scientific diploma obtained at the Liceo Scientifico "G. Mercalli" of Naples with 60/60 rating.

Partecipations to national and international meetings:

Extremophiles 2018-12th International Congress on Extremophiles. Ischia 16-20/9/2018. **Speaker: Restaino O. F.**, Borzacchiello M. G., Scognamiglio I, Fedele L., De Rosa M., Schiraldi C. “Biotechnological process design for high yield manufacturing of three recombinant thermophilic phosphotriesterases useful as bioremediation tools and bioscavengers”.

SIB 2017-59th Congress. Caserta 20-22/9/2017. Abstract and poster: **Restaino O. F.**, di Lauro I., De Rosa M., Schiraldi C. “Profiling of UDP-sugar precursors of microbial chondroitin and heparosan-like capsular polysaccharides”.

SIB 2017-59th Congress. Caserta 20-22/9/2017. Abstract and poster:: Borzacchiello M. G., **Restaino O. F.**, Scognamiglio I, Fedele L., Schiraldi C. “Biotechnological process design for the production and purification of two recombinant thermophilic phosphotriesterases”.

SIB 2017-59th Congress. Caserta 20-22/9/2017. Abstract and poster: Diana P., **Restaino O. F.**, Finamore R., Vitiello M., De Rosa M., Schiraldi C. “Determining the keratan sulfate contamination in animal origin chondroitin sulphate”.

EUROCARB-19th European Carbohydrate Symposium. Barcellona 2-6/7/2017. Abstract and poster: **Restaino O. F.**, Finamore R., Diana P., Vitiello M., De Rosa M., Schiraldi C. “Methods to detect the keratan sulfate contamination in animal origin pharmaceutical grade chondroitin sulphate”.

ECB2016. Krakow 3-6/7/2016. **Speaker: Restaino O. F.**, Borzacchiello M. G., Scognamiglio I, Fedele L., Schiraldi C. “Biotechnological process design for the production and purification of three recombinant thermophilic phosphotriesterases”.

Exobio. Nantes 10-6-2016. **Invited speaker: Restaino O.F.** “Biotechnological production of molecules with interesting industrial applications”.

EUROCARB-18th European Carbohydrate Symposium. Moscow 2-6/8/2015. **Speaker: Restaino O. F.**, di Lauro I., Carlino E., Schiraldi C., De Rosa M., “Determination of bacterial glycosaminoglycan-like capsular polysaccharide nucleotide sugar precursors”

2nd International Congress on Bioprocess and Engineering. Valencia 26-27/6/2014. **Speaker: Restaino O. F.**, Borzacchiello M. G., Scognamiglio I, Fedele L., De Rosa M., Schiraldi C. “Fermentation strategies for recombinant thermophilic phosphotriesterase enzyme production”.

EUROCARB-16th European Carbohydrate Symposium. Sorrento 03-07/7/2011. **Speaker: Restaino O. F.**, di Lauro I., Carlino E., Cimini D., De Mattia R., De Rosa M., Schiraldi C. "Enhancement of chondroitin-like Escherichia coli K4 capsular polysaccharide production by monosaccharide supplementation".

IBS 2010. Rimini 14-18/09/2010. Abstract and poster: **Restaino O. F.**, De Mattia R., Andreozzi L., Di Lauro I., Cimini D., M. De Rosa, Schiraldi C. "Molecular weight determination of biotechnologically produced chondroitin".

ECB14-14th European Congress on Biotechnology. Barcellona 13-16/09/2009. Abstract and poster: **Restaino O. F.**, Vinciguerra S., Carcarino L., Andreozzi L., Alfano A., Cimini D., De Mattia R. and Schiraldi C. "Molecular weight studies on chondroitin-like microbial capsular polysaccharides".

8th Carbohydrate Bioengineering Meeting. Ischia 11-13/05/2009. Abstract and poster: **Restaino O. F.**, Schiraldi C., Aquino G., Cimini D., Panariello A., De Rosa M. "High performance capillary electrophoresis for the determination of glycosaminoglycans-like microbial polysaccharides in biotechnological productive processes".

ECB13-13th European Congress on Biotechnology. Barcellona 16-22/09/2007. Abstract and poster: Cimini D., Viggiani A., **Restaino O. F.**, Panariello A., De Rosa M. and Schiraldi C. "Molecular studies on capsular polysaccharide biosynthesis".

International Congress on Biocatalysis. Hamburg 03-07/09/2006. Abstract and poster: Ruggiero A., D'Avino A., **Restaino O. F.**, Schiraldi C. and De Rosa M. "*Saccharomyces pastorianus* as cell factory to improve production of metabolites of industrial interest using novel fermentation strategies".

ECB12-12th European Congress on Biotechnology. Copenhagen 21-24/08/2005. **Speaker: Valli V., Restaino O. F.**, Marzaioli I., Schiraldi C., Carteni M. and De Rosa M. "Exopolysaccharides producing strains with probiotic potentialities".

Participation in the activities of a research group characterized by collaborations at national or international level

Participation in the activities of the group of Professor Robert Linhardt in the Chemistry Department of the Rensselaer Polytechnic Institute, Troy, NY, USA, from 27-01-2007 to 31-10-2012.

Responsibility for scientific studies and research entrusted by qualified public or private institutions

Responsibility of physiology studies of small-scale streptomycetes and characterization of the products of secondary metabolism in the context of the research project activated by the Regional Competence Center in Industrial Biotechnology- BioTekNet SCpA from 17-11-2016 to 29-9-18.

Formal assignment of teaching or research assignments (fellowships) to qualified foreign and supranational universities and research institutes

Fulbright fellowship as a Visiting Scholar at the laboratories of Prof. Robert Linhardt in the Chemistry Department of the Rensselaer Polytechnic Institute, Troy, NY, USA. Research activity: "Production of biotechnological heparin, optimization of cellular high-density fermentation strategies for the production of recombinant sulfotransferases from engineered E. coli strains" from 01-03-2012 to 30-10-2012.

Achievement of prizes and awards for scientific activity

Winner as Responsible for the research project "Biotechnological production of eparosane as precursor of antithrombic drugs and drug delivery HEBP-Heparosan biotechnological production" of the tender for the awarding of awards for fixed-term researchers of type A for project proposals organized by "Luigi Vanvitelli" University of Campania, as part of the Scientific Research program called "Programma Valere" (DR No. 15 of 04/01/2018).

Winner, together with Dr. Cimini Donatella and Dr. Antonietta Stellavato, for the research project "Production, molecular weight characterization and evaluation of biological activity of biotechnological chondroitin", admitted to a funding of the Department of Experimental Medicine of the University of Studies of the Campania "Luigi Vanvitelli", formerly the Second University of Naples, on the basis of a call for the creation of a special program of Scientific Research called "Start to Scientific Research" issued with DD n. 217 of 2 December 2015. (Prot. No. 4723 of 01-02-2016 of the Department of Experimental Medicine of the "Luigi Vanvitelli" University of Campania, formerly the Second University of Naples).

Winner of the Fulbright Research Fellowship 2011-2012 as a visiting scholar for the "Biotechnological production of heparin" at the laboratories of Prof. Robert Linhardt, Rensselaer Polytechnic Institute, Troy, NY, USA.

Winner of the award for the best PhD thesis of the Ercolanese Academy-year 2009.

Winner of the competition for research projects "Writing the Future" for "Research and Innovation in Campania-Campania Region" promoted by the Department of University and Scientific Research, together with Dr. Donatella Cimini and Dr. Annalisa Lagatta. 06/15/2009.

Patents

Registered patent-Bedini E., De Rosa M., De Castro C., Di Nola A., Parrilli M., Restaino OF, Schiraldi C. "Process for obtaining chondroitin sulphated at the position 4- or 6- of N-acetyl - galactosamine residues ". Patent number WO2012062917 A2 dated 18-05-2012 - application number MI2010A002092 dated 11-11-2010.

Patent pending registration: Linhardt RJ, Dordick JS, Bhaskar U., Restaino OF, Paul P., Li L. "High cell density cultivation of a key enzyme in bioengineered heparin production", US PATENT PENDING. -12-2012; Registration number: 56896.

Teaching activity

Academic year 2018-2019: Teaching assignment (18 hours) in the Biochemistry course for the integrated module of Physiology, Pathology and Biochemistry for the Degree Course in Medical Radiology Techniques of the University of Campania Luigi Vanvitelli.

Academic year 2018-2019: Teaching assignment (10 hours) in Chemistry and biochemical preparatory course for the Degree Course in Dentistry and Dental Prosthetics of the Luigi Vanvitelli University of Campania.

Academic year 2018-2019: Teaching assignment (10 hours) in the course of Chemistry and biochemical propaedeutics for the integrated module of Basic Biomedical Sciences for the Degree Course in Dental Hygiene of the University of Campania Luigi Vanvitelli.

Academic year 2017-2018: Teaching assignment (10 hours) in Chemistry and biochemical preparatory course for the Degree Course in Dentistry and Dental Prosthetics of the University of Campania Luigi Vanvitelli.

Academic year 2017-2018: Teaching assignment (6 hours) in the Chemistry and biochemical propaedeutics course for the integrated module of Basic Biomedical Sciences for the Degree Course in Dental Hygiene of the Luigi Vanvitelli University of Campania.

Academic year 2016-2017: Teaching assignment (10 hours) in Chemistry and biochemical preparatory course for the Degree Course in Dentistry and Dental Prosthetics of the Second University of Naples.

Academic year 2016-2017: Teaching assignment (6 hours) in the Chemistry and biochemical propaedeutics course for the integrated module of Basic biomedical Sciences for the Degree Course in Dental Hygiene of the Second University of Naples.

May 2014: Teaching assignment (6 hours) for the teaching module of "Bioprocesses for the production of drugs, nutraceuticals and medical devices" as part of the POR-Campania project entitled "STRAIN-Innovative therapeutic strategies", in the high training for the development of innovative therapeutic strategies.

June 2013: Teaching assignment (30 hours) for the toxicological chemistry teaching module within the project P.O.N. entitled "Chemical-Toxicological Safety of the Environment" (PON01_01585), entrusted by the National Research Council, Dept. of Biochemical Sciences, IBP-Institute of Protein Biochemistry.

Academic Year 2013-2014: Assistance to the teaching activities of the Chemistry course and biochemical propaedeutics for the Degree Course in Dentistry and Dental Prosthetics of the Second University of Naples. - Recovery course (22 hours).

October 2010: Teaching assignment (32 hours) for general and inorganic chemistry teaching modules, organic chemistry, fermentation biochemistry and pharmacological biotechnology during the pilot project of higher technical education and training "Higher Technician in Industrial Biotechnology" in under the regional IFTS plan POR CAMPANIA 2009/2013, entrusted by the "Fermi-Gadda" State Technical Industrial School.

January 2010-December 2014: Expert of the subject for the course of Chemistry of fermentation, Degree Course in Medical-Scientific Informants, Second University of Naples.

September 2007: Teaching assignment (5 hours) for the course of "Industrial applications of biotechnologies" as part of the "Distance learning e-learning" project, entrusted by the Interdepartmental Research and Management Center of the Second University of Naples.

Academic years 2007-2008; 2008-2009; 2009-2010: Assistance activities for practical laboratory exercises in the course of Principles of Inorganic Chemistry and Principles of Organic Chemistry

for the Three-year Degree Course in Scientific Medical Informer of the Second University of Naples.

Academic years 2006-2007; 2007-2008; 2008-2009; 2009-2010; 2010-2011: Assistance activities for practical laboratory exercises in the course of fermentation biochemistry and Laboratory for the Inter-Faculty Degree Course in Biotechnology of the Second University of Naples.

Thesis thesis supervisor

Correlator of the candidate Riccardo Ventriglia for the experimental degree thesis in biochemistry of the fermentation of the three-year degree course in biotechnology of the "Luigi Vanvitelli" University of Campania. Thesis entitled: "Purification of capsular polysaccharide K4 and its molecular weight" academic year 2017-2018.

Correlator of the candidate Domenico Caserta for the experimental degree thesis in industrial biochemistry of the degree course in biology of the "Luigi Vanvitelli" University of Campania. Thesis entitled: "Optimization of the biotechnological production of a macrolide drug precursor produced by *Streptomyces cyaneogriseus*" academic year 2016-2017.

Correlator of the candidate Luigi Fedele for the experimental degree thesis in industrial biochemistry of the master's degree program in biotechnology for the health of the Second University of Naples, the current University of Campania "Luigi Vanvitelli". Thesis entitled: "Optimization of the biotechnological production of a recombinant thermophilic phosphotriesterase enzyme" academic year 2013-2014.

Correlator of the candidate Maria Giovanna Borzacchiello for the experimental degree thesis in industrial biochemistry of the specialistic degree in biotechnology for health and environment of the Second University of Naples, the current University of Campania "Luigi Vanvitelli". Thesis entitled "New strategies of biosynthesis of 16 β -hydroxyhydrocortisone", academic year 2010-2011.

Publications Odile Francesca Restaino.

Cimini D., **Restaino O.F.**, Schiraldi C. "Microbial production and metabolic engineering of chondroitin and chondroitin sulfate". Emerging topic in Life Science. 2018 doi.org/10.1042/ETLS20180006.

Porzio E., F. Bettazzi, L. Mandrich, I. Del Giudice, **Restaino O.F.**, Laschi S., Febbraio F., De Luca V., Borzacchiello M.G., Carusone T.M., Worek F., Pisanti A., Porcaro P., Schiraldi C., De Rosa M.,

Palchetti I., Manco G. “Innovative biocatalysts as tools to detect and inactive nerve agents”. Scientific Reports. 2018 8(1), 13773. DOI:10.1038/s41598-018-31751-5.

Restaino O.F., Borzacchiello M. G., Scognamiglio I., Fedele L., Alfano A., Porzio E., Manco G., Donatiello C., De Rosa M., Schiraldi C. “High yield production and purification of two recombinant thermostable phosphotriesterase-like lactonases from *Sulfolobus acidocaldarius* and *Sulfolobus solfataricus* useful as bioremediation tools and bioscavengers”. BMC Biotechnology. 2018 18 (1):18 doi.org/10.1186/s12896-018-0427-0.

Cimini D., Iacono I. D., Carlino E., Finamore R., **Restaino O.F.**, Diana P., Bedini E., Schiraldi C. “Engineering *S. equi subsp. zooepidemicus* towards concurrent production of hyaluronic acid and chondroitin biopolymers of biomedical interest”. AMB Express. 2017 7(1):61. doi: 10.1186/s13568-017-0364-7.

Restaino O.F., di Lauro I., Di Nuzzo R., De Rosa M., Schiraldi C. "New insight into chondroitin and heparosan-like capsular polysaccharide synthesis by profiling of the nucleotide sugar precursors". Biosci Rep. 2017 Feb 20;37(1). doi: 10.1042/BSR20160548.

Restaino O. F., Borzacchiello M. G., Scognamiglio I., Porzio E., Manco G., Fedele L., Donatiello C., De Rosa M., Schiraldi C. “Boosted large-scale production and purification of a thermostable archaeal phosphotriesterase-like lactonase for organophosphate decontamination”. J Ind Microbiol Biotechnol. 2017 Mar;44(3):363-375. doi: 10.1007/s10295-016-1892-x.

Restaino O. F., Finamore R., Diana P., Marseglia M., Vitiello M., Casillo A., Bedini E., Parrilli M., Corsaro M. M., Trifuoggi M., De Rosa M., Schiraldi C. “A multi-analytical approach to better assess the keratan sulfate contamination in animal origin chondroitin sulfate”. Analytica Chimica Acta (2017); 958:59-70. doi: 10.1016/j.aca.2016.12.005.

Restaino O. F., Marseglia M., Diana P., Borzacchiello M.G., Finamore R., Vitiello M., D’Agostino A., De Rosa M., Schiraldi C. “Advances in 16 α -hydroxy transformation of hydrocortisone by *Streptomyces roseochromogenes*”. Process biochemistry. (2016); 51(1):1-8. doi: 10.1016/j.procbio.2015.11.009.

Squillaci G., Finamore R., Diana P., **Restaino O. F.**, Schiraldi C., Arbucci S., Ionata E., La Cara F., Morana A. “Production and properties of an exopolysaccharide synthesized by the extreme

halophilic archaeon *Haloterrigena turkmenica*". Appl Microbiol Biotechnol. (2015); 100(2):613-623. doi: 10.1007/s00253-015-6991-5.

Cimini D., Fantaccione S., Volpe F., De Rosa M., **Restaino O. F.**, Aquino G., Schiraldi C. "IS2-mediated overexpression of *kfoC* in *E. coli* K4 increases chondroitin-like capsular polysaccharide production". Appl Microbiol Biotechnol. (2014); 98(9):3955-64. doi: 10.1007/s00253-014-5506-0.

Restaino O. F., Marseglia M., De Castro C., Diana P., Forni P., Parrilli M., De Rosa M., Schiraldi C. "Biotechnological transformation of hydrocortisone to 16 α -hydroxy hydrocortisone by *Streptomyces roseochromogenes*". Appl Microbiol Biotechnol. (2014); 98(3):1291-9. doi: 10.1007/s00253-013-5384-x.

Restaino O. F., Bhaskar U., Paul P., Li L., De Rosa M., Dordick J.S., Linhardt R.J. "High cell density cultivation of a recombinant *E. coli* strain expressing a key enzyme in bioengineered heparin production". Appl Microbiol Biotechnol. (2013); 97(9):3893-900. doi: 10.1007/s00253-012-4682-z.

Restaino O. F., di Lauro I., Cimini D., Carlino E., De Rosa M., Schiraldi C. "Monosaccharide precursors for boosting chondroitin-like capsular polysaccharide production". Appl Microbiol Biotechnol. (2013); 97(4):1699-709. doi: 10.1007/s00253-012-4343-2.

Schiraldi C., Alfano A., Cimini D., De Rosa M., Panariello A., **Restaino O. F.**, De Rosa M. "Application of a 22L scale membrane bioreactor and cross-flow ultrafiltration to obtain purified chondroitin". Biotechnol Prog. (2012); 28(4):1012-8. doi: 10.1002/btpr.1566.

Bedini E., De Castro C., De Rosa M., Di Nola A., **Restaino O. F.**, Schiraldi C., Parrilli M. "Semi-synthesis of unusual chondroitin sulfate polysaccharides containing GlcA(3-O-sulfate) or GlcA (2,3-di-O-sulfate) units." Chem. Eur. J. (2012); 18 (7): 2123-30. doi: 10.1002/chem.201102458.

Bedini E., De Castro C., De Rosa M., Di Nola A., Iadonisi A., **Restaino O. F.**, Schiraldi C., Parrilli M. "A microbiological-chemical strategy to produce chondroitin sulfate A,C." Angew Chem Int Ed Eng. (2011); 50 (27): 6160-3. doi: 10.1002/anie.201101142.

Restaino O. F., Cimini D., De Rosa M., Catapano A., De Rosa M and Schiraldi C. "High cell density cultivation of *Escherichia coli* K4 in a microfiltration bioreactor: a step towards improvement of chondroitin precursor production". Microbial cell fact. (2011);10:10. doi: 10.1186/1475-2859-10-10.

Schiraldi C., Carcarino I.L., Alfano A., **Restaino O. F.**, Panariello A. and Mario De Rosa. "Purification of chondroitin precursor from *Escherichia coli* K4 fermentation broth using membrane processing". *Biotechnology Journal*. (2011); 6(4):410-9. doi: 10.1002/biot.201000266.

Cimini D., De Rosa M., Viggiani A., **Restaino O. F.**, Carlino E., Schiraldi C. "Improved fructosylated chondroitin production by kfoC overexpression in *E. coli* K4". *J Biotechnology* (2010); 150: 324-331. doi: 10.1016/j.jbiotec.2010.09.954.

Zanfardino A., **Restaino O. F.**, Notomista E., Cimini D., Schiraldi C., De Rosa M., De Felice M., Varcamonti M. "Isolation of an *Escherichia coli* K4 kfoC mutant over-producing capsular chondroitin". *Microb Cell Fact*. (2010); 9: 34. doi: 10.1186/1475-2859-9-34.

Cimini D., **Restaino O. F.**, Catapano A., De Rosa M., Schiraldi C. "Production of capsular polysaccharide from *Escherichia coli* K4 for biotechnological applications". *Appl Microbiol Biotechnol*. (2010); 85(6): 1779-87. doi: 10.1007/s00253-009-2261-8.

Restaino O. F., Cimini D., De Rosa M., De Castro C., Parrilli M., Schiraldi C. "High-performance CE of *Escherichia coli* K4 cell surface polysaccharides". *Electrophoresis*. (2009); 30(22): 3877-83. doi: 10.1002/elps.200900279.

Chi L., Wolff J. J., Laremore T. N., **Restaino O. F.**, Xie J., Schiraldi C., Toida T., Amster I. J. and Linhardt R. J. "Structural analysis of bikunin glycosaminoglycan." *J Am Chem Soc*. (2008); 130(8): 2617-2625. doi: 10.1021/ja0778500.

Book chapters

Restaino O. F., De Rosa M., Cimini D., Schiraldi C., in: Pomin V. H., *Chondroitin Sulfate: Structure, Uses and Health Implications*, Nova Science Publishers, New York 2013a, pp. 41-56.

Book chapter translation

Bono A.; Cammarota M.; Cimini D.; Coletta M.; D'Agostino A.; Damonte G.; De Rosa M.; Di Gaudio F.; Galliano M.; Giuliano M.; La Gatta A.; Marini S.; Meggio F.; Minchiotti L.; **Restaino O. F.**; Santucci R.; Schiraldi C.; Spisni A.-curatela del libro Bettelheim, Brown, Campbell, *Chimica e propedeutica biochimica*, EdiSeS 2011.

La sottoscritta Odile Francesca Restaino nata il 30-08-1978 a Benevento, residente nel Comune di Napoli, a Viale Maria Cristina di Savoia 18, 80122, RSTDFR78M70A783A

-consapevole delle responsabilità cui può andare incontro in caso di dichiarazione mendace o di esibizione di atto falso o contenente dati non più rispondenti a verità nonché delle sanzioni penali richiamate dall'articolo 76 del D.P.R. n. 445/2000, per le ipotesi di falsità in atti e dichiarazioni mendaci;

- ai sensi degli artt. 46/47 del D.P.R. n. 445 del 28.12.2000;

dichiara che tutte le informazioni riportate nel presente curriculum sono esatte e veritiere ed autorizza il trattamento dei dati personali, ivi compresi quelli sensibili, ai sensi e per gli effetti del D.Lgs. 196/2003 e s.m.ei.

In fede, Napoli 29/11/2018.