

CURRICULUM VITAE

NADIA RAFFAELLI

Full Professor of Biochemistry

**Department of Agricultural, Food and Environmental Sciences, Marche Polytechnic University,
Ancona, Italy**

Via Brecce Bianche, 60131 Ancona

E-mail: n.raffaelli@staff.univpm.it; tel. +0712204682

EDUCATION AND TRAINING

- | | |
|----------------|---|
| 1984 | Doctoral Degree in “Biological Sciences” at the University of Camerino, Italy |
| 1/1987-12/1987 | Post-doctoral fellowship at the Department of Biochemistry and Molecular Biology, University of Florida, Gainesville, USA |
| 1988 | Specialization in “Microbiology” at the University of Camerino, Italy |

POSITIONS

- | | |
|-------------------|--|
| 11/1989-11/1990 | Researcher of Biochemistry at the Department of Molecular and Cellular Biology, Faculty of Sciences, University of Camerino, Italy. |
| 12/1990-3/2001 | Qualified Laboratory Technician at the Biochemistry Institute, Faculty of Medicine, University of Ancona, Italy |
| 4/2001-10/2001 | Researcher of Biochemistry at the Faculty of Medicine, University of Ancona, Italy |
| 11/2001-10/2006 | Associate Professor of Biochemistry, Faculty of Agriculture, Polytechnic University of Marche, Italy |
| 11/2006 - present | Full Professor of Biochemistry, Department of Agricultural, Food and Environmental Sciences, Polytechnic University of Marche, Italy |

TEACHING ACTIVITY

- | | |
|---------------------|---|
| 2001/2002 | “Analisi delle piante officinali e loro derivati”, B.Sc. “in Tecniche Erboristiche”, Faculty of Agriculture, University of Ancona |
| 2001/2002-2003/2004 | “Propedeutica Biochimica”, B.Sc. in “Scienze e Tecnologie Agrarie ed Alimentari”, Faculty of Agriculture, University of Ancona |

2004/2005-2009/2010	“Biochimica”, B.Sc. in “Scienze degli Alimenti”, Faculty of Agriculture, University of Ancona
2008/2009	“Chimica ed analisi degli alimenti”, M.Sc. in “Scienze degli Alimenti e della Nutrizione”, Faculty of Agriculture, Polytechnic University of Marche
2010/2011-2016/2017	“Biochimica degli Alimenti”, B.Sc. in “Scienze e Tecnologie Alimentari”, Department of Agricultural, Food and Environmental Sciences (D3A), Polytechnic University of Marche
2010/2011-present	“Biochimica 2”, B.Sc. in “Scienze e Tecnologie Alimentari”, D3A, Polytechnic University of Marche
2016/2017- present	“Food Biochemistry”, M.Sc. in “Food and Beverage Innovation and Management”, D3A, Polytechnic University of Marche
2001-2007	Member of the School for the PhD program in “Biomedical Biotechnologies”, Faculty of Medicine, Polytechnic University of Marche
2007 -present	Member of the board of the PhD program in “Agricultural, Food and Environmental Sciences”, Polytechnic University of Marche, Italy

Since 2002/2003 Prof. Raffaelli has been the supervisor of several B.Sc. and M.Sc. students, 8 PhD students, and several postdoctoral fellows.

INSTITUTIONAL RESPONSABILITIES

2015 - present	Vice Director of the Department of Agricultural, Food and Environmental Sciences, Polytechnic University of Marche, Italy
2017 - present	President of the Ethics Committee, Polytechnic University of Marche, Italy
2017 - present	Member of the Discipline Committee, Polytechnic University of Marche, Italy
2019 – present	Rector’s Delegate for Research

MEMBERSHIPS AND OTHER ACTIVITIES

1992 - present	Member of the Italian Society of Biochemistry
2015 - present	Member of the Scientific Advisory Board of the Institute of Food Sciences, National Research Council of Italy, Avellino, Italy

Expert nominated by the Italian Ministry of University and Research as member of the Committee for the selection of research projects “Life Science” financed by the “Fund for investment in basic research, FIRB” (2011)

External examiner for awarding the PhD degree at the Universities of Milan (2010), Piemonte Orientale (2013, 2015), Nottingham, UK (2016) and Camerino (2019).

External examiner in the selection procedure for awarding research fellowships financed by the University of Trieste (2012) and Milan (2015).

COLLABORATIONS WITH BIOTECH COMPANIES

2011 – present	academic collaborator for TES Pharma (Perugia, Italy), a company focusing on drug discovery against key targets in metabolic diseases and oncology, providing expertise in Biochemistry and Enzymology
----------------	--

SCIENTIFIC ACTIVITY

Since 1986, Prof. Raffaelli's research has been mostly focused on the study of enzymatic proteins involved in NAD metabolism, both in bacteria and in eukaryotes, including humans. By combining bioinformatic analyses and biochemical techniques, she identified and characterized for the first time genes coding for key regulatory enzymes of the coenzyme's metabolism, and, in collaboration with other groups, she contributed to the resolution of the three-dimensional structure of most of them. More recently, Prof. Raffaelli's research has been mainly focused on the understanding of how the various metabolic pathways leading to NAD biosynthesis in mammals are affected depending on the cell-type and metabolic status, and how alteration of the intracellular NAD pool impacts on energy metabolism and cell growth. She is particularly interested in defining the role of NAD metabolism in the pathogenesis of various conditions, including cancer and neurodegenerative diseases, also with the aim to develop novel therapeutic strategies.

Additional contributions of her research activity to science include: i) characterization of enzymes involved in the metabolism of pyrimidine nucleotides; ii) biochemical study of the mechanisms underlying host-pathogen interactions in plants, ii) purification and characterization of novel antimicrobial peptides secreted by yeasts which show potential application as natural antimicrobials in food industry, iii) characterization of the biosynthesis of the signal molecule cyclic-di-GMP, also with the aim to identify novel antimicrobial agents with anti-biofilm activity, iv) assessment of the protein quality of edible insects.

Her scientific production is reported in several publications in International Journals with impact factor, and more than 100 communications to National and International Meetings. She has been invited as lecturer at several international and national Meetings. She also contributed to several reviews on the enzymology of NAD metabolism, and a few of these reviews have been considered of outstanding value from referees.

Prof. Raffaelli has been reviewer of several papers for international Journals, including PLoS One, FEBS Journal, Biochimica Biophysica Acta, European Journal of Nutrition, Biomolecules, Structure, Nature Communication, Cell Metabolism.

BIBLIOMETRIC INDICATORS (at April 2020)

93 articles (Web of Science)

h-index: 30

Sum of the Times Cited: 2445

Sum of Times Cited without self-citations: 2199

RESEARCH SUPPORT

Characterization of key enzymes of NAD(P) biosynthesis in bacteria and their regulation: essential steps to find targets of new drugs

PI

Application: 2005055378002

Agency: MIUR

TYPE: PRIN

Period: 01/2006– 02/2008

The goal of this project was to discover and develop effective antimicrobial targets

Characterization of hydrolytic enzymes secreted by Pichia fermentas during dimorphic transition and their role in the yeast antagonist and pathogenic behavior

PI

Application: 2007FRBK9N002

Agency: MIUR

TYPE: PRIN

Period: 09/2008-10/2010

The goal of this project was to identify and characterize the hydrolytic activities of the yeast (mainly pectinases) likely involved in the transition from antagonist to pathogen

Novel insights into NAD biosynthesis and regulation in bacteria

PI

Agency: ITALIAN MINISTER OF FOREIGN AFFAIRS

TYPE: SIGNIFICANT BILATERAL PROJECTS WITHIN THE JOINT DECLARATION FOLLOWING THE 10TH REVIEW CONFERENCE ON SCIENTIFIC AND TECHNOLOGICAL COOPERATION BETWEEN ITALY AND THE UNITED STATES OF AMERICA FOR THE YEARS 2011-2013

Period: 2011/2012

The goal of this project was to identify and characterize novel enzymes and transcriptional regulators of the pyridine nucleotide cycle in bacteria. The project was co-funded by Dr. Andrei Osterman, at the Burnham Institute for Medical Research, La Jolla, CA, USA.

Variability in human axon survival

CoPI

Research grant MR/N004582/1

Agency: MEDICAL RESEARCH COUNCIL

Period: 02/2016- 01/2019

The goal of this project was the biochemical and functional characterization of variants of the enzyme NMNAT2 associated with neuropathies

Edible insects: new frontiers in food (FoodIN)

CoPI

Agency: UNIVERSITA' POLITECNICA DELLE MARCHE

TYPE: PROGETTO STRATEGICO DI ATENEO

Period: 01/ 2017-12/2018

The goal of this project was the characterization of the biochemical and nutritional features of *Tenebrio molitor* larvae reared on various feed substrates

Understanding and targeting the extracellular NADome in inflammation

PI

Application: 2017CBNCYT

Agency: MIUR

TYPE: PRIN

Period: 2019– 2021

The goal of this project is to characterize the enzymes and the metabolites of the NAD biosynthetic pathways which are active in the extracellular environment.

Structure-based insights into the inflammatory functions of extracellular NAD biosynthetic enzymes

PI

Agency: Fondazione Cariverona

Period: 2020-2022

The goal of this project is to structurally characterize the interaction between extracellular NAD biosynthetic enzymes capable of triggering an inflammatory response and their receptor.

PEER-REVIEWED PUBLICATIONS

Minazzato G, Gasparrini M, Amici A, Cianci M, Mazzola F, Orsomando G, Sorci L, **Raffaelli N**. Functional characterization of COG1713 (YqeK) as a novel diadenosine tetraphosphate hydrolase family. *J Bacteriol*, JB.00053-20. doi: 10.1128/JB.00053-20. Online ahead of print.

Ruschioni S, Loreto N, Foligni R, Mannozi C, **Raffaelli N**, Zamporlini F, Pasquini M, Roncolini A, Cardinali F, Osimani A, Aquilanti L, Isidoro N, Riolo P, Mozzon M. Addition of olive pomace to feeding substrate affects growth performance and nutritional value of mealworm (*Tenebrio molitor* L.) larvae *Foods* 9 (3), 317, dx.doi.org/10.3390/foods9030317, 2020

Gaudino F, Manfredonia I, Managò A, Audrito V, **Raffaelli N**, Vaisitti T, Deaglio S. Subcellular Characterization of Nicotinamide Adenine Dinucleotide Biosynthesis in Metastatic Melanoma by Using Organelle-Specific Biosensors. *Antioxid Redox Signal* 31(15), 1150-1165, DOI: 10.1089/ars.2019.7799, 2019

Managò A, Audrito V, Mazzola F, Sorci L, Gaudino F, Gizzi K, Vitale N, Incarnato D, Minazzato G, Ianniello A, Varriale A, D'Auria S, Mengozzi G, Politano G, Oliviero S, **Raffaelli N**, Deaglio S. Extracellular nicotinate phosphoribosyltransferase binds Toll like receptor 4 and mediates inflammation *Nature Communications* 10 (4116), DOI: 10.1038/s41467-019-12055-2, 2019

Audrito V, Managò A, Gaudino F, Sorci L, Messana VG, **Raffaelli N**, Deaglio S. NAD-Biosynthetic and Consuming Enzymes as Central Players of Metabolic Regulation of Innate and Adaptive Immune Responses in Cancer *Frontiers in Immunology*, 10 (1720), DOI: 10.3389/fimmu.2019.01720, 2019

Sociali G, Grozio A, Caffa I, Schuster S, Becherini P, Damonte P, Sturla L, Fresia C, Passalacqua M, Mazzola F, **Raffaelli N**, Garten A, Kiess W, Cea M, Nencioni A, Bruzzone S. SIRT6 deacetylase activity regulates NAMPT activity and NAD(P)(H) pools in cancer cells *FASEB Journal* 33, 3704-3717, 2019

Roncolini A, Milanovic V, Cardinali F, Osimani A, Garofalo C, Sabbatini R, Clementi F, Pasquini M, Mozzon M, Foligni R, **Raffaelli N**, Zamporlini F, Minazzato G, Trombetta MF, Van Buitenen A, Van Campenhout L, Aquilanti L. Protein fortification with mealworm (*Tenebrio molitor* L.) powder: effect on textural, microbiological, nutritional and sensory features of bread *PLoS One* 14 (2) e0211747, 2019

Katsyuba E, Mottis A, Zietak M, De Franco F, van der Velpen V, Gariani K, Ryu D, Cialabrini L, Matilainen O, Liscio P, Giacchè Nicola, Stokar-Regenscheit N, Legouis D, de Seigneux S, Ivanisevic J, **Raffaelli N**, Schoonjans K, Pellicciari R, Auwerx J. De novo NAD synthesis enhances mitochondrial function and improves health *Nature* 563 (7731) 354- 359, 2018

Lynch JH, Sa N, Saeheng S, **Raffaelli N**, Roje S. Characterization of a non-nudix pyrophosphatase points to interplay between flavin and NAD(H) homeostasis in *Saccharomyces cerevisiae*

PLoS One 13 (6) e0198787, 2018

Osimani A, Milanović V, Cardinali F, Roncolini A, Garofolo C, Clementi F, Pasquini M, Mozzon M, Foligni R, **Raffaelli N**, Zamporlini F, Aquilanti L.

Bread enriched with cricket powder (*Acheta domesticus*): A technological, microbiological and nutritional evaluation

Innovative Food Science and Emerging Technologies 48, 150-163, 2018

Audrito V, Managò A, Zamporlini F, Rulli E, Gaudino F, Madonna G, D'Atri S, Antonini Cappellini GC, Ascierio PA, Massi D, **Raffaelli N**, Mandalà M, Deaglio S

Extracellular nicotinamide phosphoribosyltransferase (eNAMPT) is a novel marker for patients with BRAF-mutated metastatic melanoma

Oncotarget 9 (27), 18997-19005, 2018

Buonvicino, D; Mazzola, F; Zamporlini, F; Resta, F; Ranieri, G; Camaioni, E; Muzzi, M; Zecchi, R;

Pieraccini, G; Dolle, C; Calamante, M; Bartolucci, G; Ziegler, M; Stecca, B; **Raffaelli, N**; Chiarugi, A.

Identification of the Nicotinamide Salvage Pathway as a New Toxication Route for Antimetabolites
Cell Chemical Biology 25 (4), 471-482, 2018

Thongon, N; Zucal, C (; D'Agostino, VG; Tebaldi, T; Ravera, S; Zamporlini, F; Piacente, F; Moschoi, R; **Raffaelli, N**; Quattrone, A; Nencioni, A; Peyron, JF; Provenzani, A.

Cancer cell metabolic plasticity allows resistance to NAMPT inhibition but invariably induces dependence on LDHA

Cancer & Metabolism 6 (1), 10.1186/s40170-018-0174-7, 2018

Audrito, V; Manago, A; La Vecchia, S; Zamporlini, F; Vitale, N; Baroni, G; Cignetto, S; Serra; Bologna, C; Stingi, A; Arruga, F; Vaisitti, T; Massi, D; Mandala, M; **Raffaelli, N**; Deaglio, S.

Nicotinamide Phosphoribosyltransferase (NAMPT) as a Therapeutic Target in BRAF-Mutated Metastatic Melanoma

JNCI – Journal of The National Cancer Institute 110 (3), dx198, 2018

Pellicciari, R; Liscio, P; Giacche, N; De Franco, F; Carotti, A; Robertson, J; Cialabrini, L; Katsyuba, E; **Raffaelli, N**; Auwerx, J.

alpha-Amino-beta-carboxymuconate-epsilon-semialdehyde Decarboxylase (ACMSD) Inhibitors as Novel Modulators of De Novo Nicotinamide Adenine Dinucleotide (NAD(+)) Biosynthesis

Journal of Medicinal Chemistry 61 (3), 745-759, 2018

Amici, A; Grolla, AA; Del Grosso, E; Bellini, R; Bianchi, M; Travelli, C; Garavaglia, S; Sorci, L; **Raffaelli, N**; Ruggieri, S; Genazzani, AA; Orsomando, G.

Synthesis and Degradation of Adenosine 5'-Tetraphosphate by Nicotinamide and Nicotinate Phosphoribosyltransferases

Cell Chemical Biology 25 (4), 471-482, 2017

Ummarino, S; Mozzon, M; Zamporlini, F; Amici, A; Mazzola, F; Orsomando, G; Ruggieri, S; **Raffaelli, N**.

Simultaneous quantitation of nicotinamide riboside, nicotinamide mononucleotide and nicotinamide adenine dinucleotide in milk by a novel enzyme-coupled assay

Food Chemistry 221, 161-168, 2017

Di Stefano, M; Loreto, A; Orsomando, G; Mori, V; Zamporlini, F; Hulse, RP; Webster, J; Donaldson, LF; Gering, M; **Raffaelli, N**; Coleman, MP; Gilley, J; Conforti, L.
NMN Deamidase Delays Wallerian Degeneration and Rescues Axonal Defects Caused by NMNAT2 Deficiency In Vivo
Current Biology 27 (6), 784-794, 2017

Cardinali F, Osimani A, Taccari M, Milanovic V, Garofalo C, Clementi F, Polverigiani S, Zitti S, **Raffaelli N**, Mozzon M, Foligni R, Franciosi E, Tuohy K, Aquilanti L.
Impact of thistle rennet from *Carlina acanthifolia* All. subsp *acanthifolia* on bacterial diversity and dynamics of a specialty Italian raw ewes' milk cheese
International Journal of Food Microbiology 255 (7-16), 2017

Osimani A, Garofalo C, Mllanovic V, Taccari M, Cardinali F, Aquilanti L, Pasquini M, Mozzon M, **Raffaelli N**, Ruschioni S, Riolo P, Isidoro N, Clementi F.
Insight into the proximate composition and microbial diversity of edible insects marketed in the European Union
European Food Research and Technology 243 (7) 1157-1171, 2017

Sociali G, Raffaghello L, Magnone M, Zamporlini F, Emionite L, Sturla L, Bianchi G, Vigliarolo T, Nahimana A, Nencioni A, **Raffaelli N**, Bruzzone S.
Antitumor effect of combined NAMPT and CD73 inhibition in an ovarian cancer model.
Oncotarget 7 (3), 2968-2984, 2016

Ruggieri S, Orsomando G, Sorci L, **Raffaelli N**.
Regulation of NAD biosynthetic enzymes modulates NAD-sensing processes to shape mammalian cell physiology under varying biological cues.
Biochim Biophys Acta 1854(9), 1138-49, 2015

Audrito V, Serra S, Brusa D, Mazzola F, Arruga F, Vaisitti T, Coscia M, Maffei R, Rossi D, Wang T, Inghirami G, Rizzi M, Gaidano G, Garcia JG, Wolberger C, **Raffaelli N**, Deaglio S.
Extracellular nicotinamide phosphoribosyltransferase (NAMPT) promotes M2 macrophage polarization in chronic lymphocytic leukemia.
Blood 125 (1), 111-123, 2015

Mori V, Amici A, Mazzola F, Di Stefano M, Conforti L, Magni G, Ruggieri S, **Raffaelli N**, Orsomando G.
Metabolic profiling of alternative NAD biosynthetic routes in mouse tissues
PLoS One 9(11):e113939, 2014

Zamporlini F, Ruggieri S, Mazzola F, Amici A, Orsomando G, **Raffaelli N**.
Novel Assay for Simultaneous Measurement of Pyridine Mononucleotides Synthesizing Activities Allows Dissection of NAD⁺ Biosynthetic Machinery in Mammalian Cells.
FEBS Journal 281 (22), 5104-5119, 2014

Sorci L, Ruggieri S, **Raffaelli N**
NAD homeostasis in the bacterial response to DNA/RNA damage
DNA Repair 23, 17-26, 2014

Sorci L, Brunetti L, Cialabrini L, Mazzola F, Kazanov MD, D'Auria S, Ruggieri S, **Raffaelli N**.
Characterization of bacterial NMN deamidase as a Ser/Lys hydrolase expands diversity of serine amidohydrolases.
FEBS Letters 588(6),1016-1022, 2014

Grozio A, Sociali G, Sturla L, Caffa I, Soncini D, Salis A, **Raffaelli N**, De Flora A, Nencioni A, Bruzzone S. CD73 as a source of extracellular precursors for sustained NAD⁺ biosynthesis in FK866-treated tumor cells.

J Biol Chem 288 (36), 25938-25949, 2013

Cialabrini L, Ruggieri S, Kazanov MD, Sorci L, Mazzola F, Orsomando G, Osterman AL, **Raffaelli N** Genomics-Guided Analysis of NAD Recycling Yields Functional Elucidation of COG1058 as a New Family of Pyrophosphatases.

PLoS One 8 (6) e65595, 2013

Antoniani D, Rossi E, Rinaldo S, Bocci P, Lolicato M, Paiardini A, **Raffaelli N**, Cutruzzolà F, Landini P. The immunosuppressive drug azathioprine inhibits biosynthesis of the bacterial signal molecule cyclic-di-GMP by interfering with intracellular nucleotide pool availability.

Appl Microbiol Biotechnol 97 (16) 7325-7336, 2013

Galeazzi L, Bocci P, Amici A, Brunetti L, Ruggieri S, Romine M, Reed S, Osterman AL, Rodionov DA, Sorci L, **Raffaelli N**.

Identification of nicotinamide mononucleotide deamidase of the bacterial pyridine nucleotide cycle reveals a novel broadly conserved amidohydrolase family.

J Biol Chem 286 (46), 40365-75, 2011

Kostick JL, Szkotnicki LT, Rogers EA, Bocci P, **Raffaelli N**, Marconi RT.

The diguanylate cyclase, Rrp1, regulates critical steps in the enzootic cycle of the Lyme disease spirochetes.

Mol Microbiol 81(1):219-31, 2011

Raffaelli N.

Nicotinamide Coenzyme Synthesis: A Case of Ribonucleotide Emergence or a Byproduct of the RNA World?

"Origins of Life: the Primal Self-Organization", Richard Egels, Dirk-Henner Lankenau, Armen Y. Mulkidjanian Eds. Springer Verlag, Berlin, Heidelberg, 2011

Sorci L, Blaby I, De Ingeniis J, Gerdes S, **Raffaelli N**, de Crécy Lagard V, Osterman A.

Genomics-driven reconstruction of acinetobacter NAD metabolism: insights for antibacterial target selection.

J Biol Chem 10, 39490-9, 2010

Tagliabue L, Antoniani D, Maciag A, Bocci P, **Raffaelli N**, Landini P.

The diguanylate cyclase YddV controls production of the exopolysaccharide poly-N acetylglucosamine (PNAG) through regulation of the PNAG biosynthetic pgaABCD operon.

Microbiology 156, 2901-11, 2010

Antoniani D, Bocci P, Maciag A, **Raffaelli N**, Landini P.

Monitoring of diguanylate cyclase activity and of cyclic-di-GMP biosynthesis by whole-cell assays suitable for high-throughput screening of biofilm inhibitors.

Appl Microbiol Biotechnol 85(4), 1095-104, 2010

Garavaglia S, Perozzi S, Galeazzi L, **Raffaelli N**, Rizzi M.

The crystal structure of human alpha-amino-beta-carboxymuconate-epsilon-semialdehyde decarboxylase in complex with 1,3-dihydroxyacetonephosphate suggests a regulatory link between NAD synthesis and glycolysis.

FEBS J 276, 6615-23, 2009

Huang N, De Ingeniis J, Galeazzi L, Mancini C, Korostelev YD, Rakhmaninova AB, Gelfand MS, Rodionov DA, **Raffaelli N**, Zhang H
Structure and function of an ADP-ribose-dependent transcriptional regulator of NAD metabolism.
Structure 17(7), 939-51, 2009

Magni G, Di Stefano M, Orsomando G, **Raffaelli N**, Ruggieri S
NAD(P) biosynthesis enzymes as potential targets for selective drug design
Current Med Chem 16 (11), 1372-1390, 2009

De Ingeniis J., **Raffaelli N.**, Ciani M., Mannazzu I.
Pichia anomala DBVPG 3003 Secretes a Ubiquitin-Like Protein That Has Antimicrobial Activity
Appl Environ Microbiol 75 (4) 1129-1134, 2009

Magni G., Orsomando G., **Raffaelli N.**, Ruggieri S.
Enzymology of mammalian NAD metabolism in health and disease.
Frontiers in Bioscience 13: 6135-54, 2008

Rodionov DA, Ingeniis JD, Mancini C, Cimadamore F, Zhang H, Osterman AL, **Raffaelli N.**
Transcriptional regulation of NAD metabolism in bacteria: NrtR family of Nudix-related regulators.
Nucleic Acid Research 36(6), 2047-2059, 2008

Huang N., Sorci L., Zhang X., Brautigam C., Li X., **Raffaelli N.**, Magni G., Grishin N.V., Osterman A., Zhang H
Bifunctional NMN adenylyltransferase/ADP ribose pyrophosphatase: structure and function in bacterial NAD metabolism
Structure 16(2), 196-209, 2008

Pucci L., Perozzi S., Cimadamore F., Orsomando G., **Raffaelli N.**
Tissue expression and biochemical characterization of human 2-amino 3-carboxymuconate 6-semialdehyde decarboxylase, a key enzyme in tryptophan catabolism.
FEBS J 274, 827-840, 2007

Magni G., Orsomando G., **Raffaelli N.**
Structural and functional properties of NAD kinase, a key enzyme in NADP biosynthesis
Mini Reviews in Medicinal Chemistry 6, 109-120, 2006

Amici A., Ciccio K., Naponelli V., **Raffaelli N.**, Magni G.
Evidence for essential catalytic determinants for human erythrocytes pyrimidine 5'-nucleotidase
Cellular and Molecular Life Sciences 62, 1613-1620, 2005

Garavaglia S., **Raffaelli N.**, Finaurini L., Magni G., Rizzi M.
A novel fold revealed by Mycobacterium tuberculosis NAD kinase, a key allosteric enzyme in NADP biosynthesis
J Biol Chem 279, 40980-40986, 2004

Raffaelli N., Finaurini L., Mazzola F., Pucci L., Sorci L., Amici A., Magni G.
Characterization of Mycobacterium tuberculosis NAD kinase: functional analysis of the full-length enzyme by site-directed mutagenesis
Biochemistry 43, 7610-7617, 2004

Magni G., Amici A., Emanuelli M., Orsomando G., **Raffaelli N.**, Ruggieri S.

Structure and function of nicotinamide mononucleotide adenylyltransferase
Current Med Chem 11, 873-885, 2004

Magni G., Amici A., Emanuelli M., Orsomando G., **Raffaelli N.**, Ruggieri S
Enzymology of NAD⁺ homeostasis in man.
Cellular and Molecular Life Sciences 61, 19-34, 2004

Emanuelli M, Amici A, Carnevali F, Pierella F, **Raffaelli N**, Magni G
Identification and characterization of a second NMN adenylyltransferase gene in *Saccharomyces cerevisiae*
Protein Expression and Purification 27 (2) 357-364, 2003

Raffaelli N., Sorci L., Amici A, Emanuelli M, Mazzola F, Magni G
Identification of a novel human nicotinamide mononucleotide adenylyltransferase
Biochem Biophys Res Comm 297, 835-840, 2002

Amici A, Emanuelli M, Ruggieri S, **Raffaelli N**, Magni G
Kinetic evidence for covalent phosphoryl-enzyme intermediate in phosphotransferase activity of human red cell pyrimidine nucleotidases
Methods in Enzymology 354, 149-159, 2002

Orsomando G., Lorenzi M., **Raffaelli N.**, dalla Rizza M., Mezzetti B., Ruggieri S.
Phytotoxic protein PcF, purification, characterization, and cDNA sequencing of a novel hydroxyproline-containing factor secreted by the strawberry pathogen *Phytophthora cactorum*
J Biol Chem 276 (24), 21578-21584, 2001

Emanuelli M., Carnevali F., Saccucci F., Pierella F., Amici A., **Raffaelli N.**, Magni G.
Human NMN adenylyltransferase: molecular cloning, chromosomal localization, tissue mRNA levels, bacterial expression and enzymatic properties
J Biol Chem 276 (1) 406-412, 2001

Raffaelli N., Pisani F.M., Lorenzi T., Emanuelli M., Amici A., Ruggieri S., Magni G.
Nicotinamide mononucleotide adenylyltransferase from *Methanococcus jannaschii*
Methods in Enzymology, 331, 292-298, 2001

Raffaelli N., Lorenzi T., Emanuelli M., Amici A., Ruggieri S., Magni G.
Nicotinamide mononucleotide adenylyltransferase from *Sulfolobus solfataricus*
Methods in Enzymology, 331, 281-292, 2001

D'Angelo I., **Raffaelli N.**, Dabusti V., Lorenzi T., Magni G., Rizzi M.
Structure of nicotinamide mononucleotide adenylyltransferase: a key enzyme in NAD biosynthesis
Structure with Folding & Design 8, 1005-1014, 2000

Amici A., Emanuelli M., **Raffaelli N.**, Ruggieri S., Saccucci F., Magni G.
Human erythrocyte pyrimidine 5'-nucleotidase, PN-I, is identical to p36, a protein associated to lupus inclusions formation in response to alfa-interferon
Blood 96 (4), 1596-1598, 2000

Raffaelli N., Emanuelli M., Pisani F.M., Amici A., Lorenzi T., Ruggieri S., Magni G.
Identification of the archaeal NMN adenylyltransferase gene
Mol Cell Biochem 193, 99-102, 1999

Magni G., Amici A., Emanuelli M., **Raffaelli N.**, Ruggieri S.

Enzymology of NAD synthesis

Advances in Enzymology and Related Areas of Molecular Biology, Part A-73, p. 135-182, D.L. Purich (ed.), John Wiley and Sons, New York, 1999

Raffaelli N., Lorenzi T., Amici A., Emanuelli M., Ruggieri S., Magni G.

Synechocystis sp. slr0787 protein is a novel bifunctional enzyme endowed with both nicotinamide mononucleotide adenylyltransferase and «Nudix» hydrolase activities

FEBS Letters 444, 222-226, 1999

Emanuelli M., Carnevali F., Lorenzi M., **Raffaelli N.**, Amici A., Ruggieri S., Magni G.

Identification and characterization of YLR328W, the *Saccharomyces cerevisiae* structural gene coding for NMN adenylyltransferase. Expression and characterization of the recombinant enzyme.

FEBS Letters 455, 13-17, 1999

Raffaelli N., Lorenzi T., Mariani P.L., Emanuelli M., Amici A., Ruggieri S., Magni G.

Escherichia coli NadR regulator is endowed with nicotinamide mononucleotide adenylyltransferase activity

J Bacteriol 181, 5509-5511, 1999

Amici A., Emanuelli M., **Raffaelli N.**, Ruggieri S., Magni G.

Pyrimidine nucleotidase/phosphotransferase from human erythrocyte

Nucleosides & Nucleotides 18 (4&5), 853-855, 1999

Magni G., Emanuelli M., Amici A., **Raffaelli N.**, Ruggieri S.

Purification of human nicotinamide mononucleotide adenylyltransferase

Methods in Enzymology, 280, 241-247, 1997

Magni G., **Raffaelli N.**, Emanuelli M., Amici A., Natalini P., Ruggieri S.

NMN adenylyltransferase from yeast and other microorganisms

Methods in Enzymology, 280, 248-255, 1997

Amici A., Emanuelli M., Magni G., **Raffaelli N.**, Ruggieri S.

Pyrimidine nucleotidases from human erythrocyte possess phosphotransferase activities specific for pyrimidine nucleotides

FEBS Letters 419, 263-267, 1997

Raffaelli N., Pisani F.M., Lorenzi T., Emanuelli M., Amici A., Ruggieri S., Magni G.

Characterization of nicotinamide mononucleotide adenylyltransferase from thermophilic archaea

J Bacteriol 179, 7718-7723, 1997

Emanuelli M., **Raffaelli N.**, Amici A., Fanelli M., Ruggieri S., Magni G.

Three-minute high-performance liquid chromatographic assay for NMN adenylyltransferase using a 20-mm-long reversed-phase column

J Chromatogr B 676, 13-18, 1996

Balducci E, Emanuelli M, **Raffaelli N.**, Ruggieri S, Amici A, Magni G, Orsomando G, Polzonetti V, Natalini P.

Assay methods for NMN adenylyltransferase of wide applicability

Anal Biochem 228, 64-68, 1995

Balducci E, Orsomando G, Polzonetti V, Vita A, Emanuelli M, **Raffaelli N.**, Ruggieri S, Magni G, Natalini P.

NMN adenylyltransferase from bull testis: purification and properties

Biochem J 310, 395-400, 1995

Emanuelli M, **Raffaelli N**, Amici A, Balducci E, Natalini P, Ruggieri S, Magni G.
The antitumor drug, 1,3-bis(2-chloroethyl)-1-nitrosourea, inactivates human nicotinamide mononucleotide adenylyltransferase
Biochem Pharmacol 49 (4) 575-579, 1995

Amici A., Emanuelli M., **Raffaelli N.**, Ruggieri S., Magni G.
One-minute high-performance liquid chromatography assay for 5'-nucleotidase using a 20-mm reverse-phase column
Anal Biochem 216, 171-175, 1994

Amici A., Emanuelli M., Ferretti E., **Raffaelli N.**, Ruggieri S., Magni G.
Homogeneous pyrimidine nucleotidase from human erythrocyte. Enzymatic and molecular properties
Biochem J 304, 987-992, 1994

Raffaelli N., Amici A., Emanuelli M., Ruggieri S., Magni G.
Pyridine dinucleotide biosynthesis in archaebacteria: presence of NMN adenylyltransferase in *Sulfolobus solfataricus*
FEBS Letters 355, 233-236, 1994

Raffaelli N., Yamauchi P.S., Purich D.L.
Microtubule-associated protein autophosphorylation alters in vitro microtubule dynamic instability
FEBS Letters 296, 21-24, 1992

Raffaelli N., Scaife R.M., Purich D.L.
ADPRibosylation of chicken red cell tubulin and inhibition of microtubule self-assembly in vitro by the NAD-dependent avian ADPRibosyl transferase
Biochem Biophys Res Comm 184, 414-418, 1992

Emanuelli M., Natalini P., **Raffaelli N.**, Ruggieri S., Vita A., Magni G.
NAD biosynthesis in human placenta: purification and characterization of homogeneous NMN adenylyltransferase
Arch Biochem Biophys 298, 29-34, 1992

Balducci E., Emanuelli M., Magni G., **Raffaelli N.**, Ruggieri S., Vita A., Natalini P.
Nuclear matrix-associated NMN adenylyltransferase activity in human placenta
Biochem Biophys Res Comm 189, 1275-1279, 1992

Ruggieri S., Gregori L., Natalini P., Vita A., Emanuelli M., **Raffaelli N.**, Magni G.
Evidence for an inhibitory effect exerted by yeast NMN adenylyltransferase on poly(ADP-ribose) polymerase activity
Biochemistry 29, 2501-2506, 1990

Vita A., Cacciamani T., Natalini P., Ruggieri S., **Raffaelli N.**, Magni G.
A comparative study of some properties of cytidine deaminase from *Escherichia coli* and chicken liver
Comp Biochem Physiol 93B (3), 591-594, 1989

Natalini P., Ruggieri S., **Raffaelli N.**, Magni G.
Nicotinamide mononucleotide adenylyltransferase. Molecular and enzymatic properties of the homogeneous enzyme from baker's yeast
Biochemistry 25, 3725-3729, 1986

PATENTS

Roberto Pellicciari Johan Auwerx, **Nadia Raffaelli** (2016)

Inhibitors of alpha-amino-beta-carboxymuconic acid semialdehyde decarboxylase

US2016/0060226A1, TES PHARMA S.r.l. Corciano (Italy)

Ancona, April 17th, 2020