CURRICULUM VITAE

MASSIMO PORRO

Professional Positions Held

1988 to present:	Founder, CEO & CSO of BIOSYNTH S.r.l., Milano and Rapolano Terme –SIENA-Italy
2016-2021:	Co-Founder, CEO & CSO of VaxYnethic Srl, Milano and Rapolano Terme, Siena-Italy
1986-1991:	Special Consultant to the President of PRAXIS BIOLOGICS Inc.-Rochester, NY-USA (later incorporated in Wyeth, now Pfizer)
1985-1986:	Director, Research and Development Bacterial Vaccines and Large-scale Production SCLAVO S.p.A.-SIENA, Italy (now Glaxo Smith Kline)
1982-1984:	Manager, Laboratories of R&D Bacterial Vaccines SCLAVO S.p.A.-SIENA
1976-1981:	Head, Research Laboratories for Bacterial Vaccines Sclavo Research Center SCLAVO S.p.A.-SIENA, Italy
1974-1975:	Scientist at Laboratories for Bacterial Vaccines Sclavo Research Center SCLAVO S.p.A.-SIENA, Italy

Honorary Scientific Positions

1986-1987:	Advisor at the WORLD HEALTH ORGANIZATION (W.H.O.), Geneve (SW) for the development program of Glycoconjugate Bacterial Vaccines

International Experiences as *Visiting and Guest Scientist*

1985	*"Guest Scientist"* at the Japanese National Institute of Health, Tokyo-Japan, Dept. of Bacteriology (Dr Y. SATO)
1983-1984	*"Guest Scientist"* at the Harvard Medical School and at Boston University, Boston (MA), Dept. of Bacteriology and Molecular Genetics (Dr J.R. MURPHY and Dr A.M. PAPPENHEIMER)
1978	*"Guest Scientist"* at the Office of Biologics, Food and Drug Administration (FDA) Bethesda, MD-USA, Branch of Bacterial Polysaccharides (Dr J.B. ROBBINS and Dr C.E.FRASCH)
1978	*"Visiting Scientist"* at the Rockefeller University, New York-USA, Dept. of Bacteriology and Immunology (Dr E.C. GOTSCHLICH)

Education and Training

1984	Master on Solid-phase Synthetic Oligonucleotides and Recombinant Synthetic Oligomers at Harvard University, Boston (Mass)-USA
1983	Master on Solid-phase Synthetic Peptides at Boston University, Boston (Mass)-USA
1978	Master on Immunochemistry and Molecular Immunology at the Rockfeller University, New York (NY)-USA
1974	Degree in Chemistry and Pharmaceutical Technology "Magna cum Laude" at the University of Siena, Italy, Faculty of Pharmacy
1969	High School degree in Industrial Chemistry at the Technology Institute for Industrial Chemistry "G.e M. Montani" – Fermo, Italy

R&D Projects directed as *Project Leader*

1980-1982	The non-toxic mutant protein CRM197, cross-reactive with Diphtheria Toxin and Toxoid, as native carrier protein for glycoconjugate vaccines;
1981-1991	Oligosaccharide and Polysaccharide-based glycoconjugate vaccines;
1993 to present	Detoxification of the Lipid A moiety of Lipopolysaccharides by SAEP (Synthetic Anti Endotoxin Peptides) forming Endotoxoids as a new generation of LPS-based vaccines for pathogenic Gram-negative bacteria; Drugs based on SAEP as inhibitors of LPS in the activation of the pro-inflammatory cytokine cascade involving αTNF, IL1, IL6 and γIFN Drugs based on SAEP as adjuvants of the conventional Antibiotic therapy
2010 to present	Semi-synthetic antigens expressing multiple epitopes for Gram-positive and Gram-negative encapsulated bacteria: a new generation of polyvalent vaccines for prevention of IMD and IPD using various carrier proteins;
2012-2018	Development of an "ad hoc" Algorithm-based strategy for using proteins of different structures (CRM197 vs. TT) in the molecular design of glycoconjugate vaccines for prevention of IMD and IPD
2015-2021	Endotoxoid L7 Conjugate as a broad-spectrum vaccine for *Group B meningococci*
2017 to present	Candidate vaccine for *C.difficile* based on bactericidal and antitoxic properties
2019 to present	Endotoxoid-based vaccines as a new generation of specific vaccines for the Pathogenic/Antibiotic-resistant bacteria *K.pneumoniae, E.coli, S.typhi*
2020 to present	*Nanostructured* Vector System for Bacterial and Viral Antigens

Scientific Presentations at International Meetings

About 20 scientific presentations in the field of :

Bacterial Vaccines; Immunochemistry of protein and carbohydrate antigens; Chemistry of glycoconjugates and peptides; Immunochemistry of synthetic peptides with restricted (cyclic) conformation for neutralizing the toxicity of the Lipid A structure in the bacterial Lipopolysaccharides.

INTERNATIONAL PATENTS

Author of 16 International Patents issued (1986 – 2021 ; whole list in the Company's web site)
Author of 1 International Patent Application (filed 2022)

BIBLIOGRAPHY

Author of 31 Articles published in the most authoritative scientific Journals having as topics: the mutant protein protein CRM197 as carrier for glycoconjugates of H. influenzae type b, N. meningitidis and S. pneumoniae capsular Ps; conformationally-restricted synthetic peptides mimicking the structure of antibiotics (SAEP); Lipid A and Lipopolysaccharides of Gram-negative bacteria; semi-synthetic antigens expressing multiple epitopes.

Author of 4 Chapters published in scientific Books covering synthetic and semi-synthetic antigens and SAEP.

MAIN BIBLIOGRAPHY BY ARGUMENTS

SAEP TECHNOLOGY

"Molecular Mapping and Detoxification of the Lipid A Binding Site by Synthetic Peptides"
Rustici A., Velucchi M., Faggioni R., Sironi M., Ghezzi P., Quataert S., Green B., Porro M.
Science, Vol.259,361-365,
1993

"Molecular Requirements of Peptide Structures Binding to the Lipid-A Region of Bacterial Endotoxins"
Velucchi M., Rustici A., Porro M.
Vaccines '94, Cold Spring Harbor Laboratory Press, 141-146
1994

"Structural basis of endotoxin recognition by natural polypeptides"
Porro M.
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1994

"Cyclic or linear conformations of sequences binding lipid A: does it really matter? "
Porro M., Aketagawa J., Velucchi M., Rustici A.
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1994

"Group of Peptides that act sinergistically with hydrophobic antibiotics against Gram-negative enteric bacteria"
Vaara M. and Porro M.
Antimicrobial Agents and Chemoterapy, Vol. 40 (8), 1801-1805
1996

"Inhibition of LPS-induced systemic and local TNF production by a synthetic anti-endotoxin peptide (SAEP-2)"
Demitri M.T., Velucchi M., Bracci L., Rustici A, Porro M., Villa P., Ghezzi P.
Journal of Endotoxin Research, Vol.3 (6), 445-454
1996

"Natural and synthetic polypeptides that recognize the conserved lipid A binding site of lipopolysaccharides"
Porro M., Rustici A., Velucchi M., Agnello D., Villa P., Ghezzi P.
Endotoxin and sepsis: Molecular mechanism of pathogenesis, host resistance and therapy, John Wiley & Sons, New York, 316-324
1996

"Neisseria Meningitidis LOS micelle-based vaccine"
Velucchi M., Rustici A., Porro M.
Tenth International Pathogenic Neisseria Conference
Sept. 1996

"A model of Neisseria Meningitidis vaccine based on LPS micelles detoxified by synthetic anti-endotoxin peptides"
Velucchi M., Rustici A., Meazza C., Villa P., Ghezzi P., Tsai C-M., Porro M.
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1997

"LPS/lipid A binding synthetic peptides"
Porro M.
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1999

"Influence of synthetic antiendotoxin peptides on lypopolysaccharide (LPS) recognition and LPS-induced proinflammatory cytokine responses by cells expressing membrane-bound CD14"
Iwagaki A., Porro M., Pollak M.
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2000

"Structure-Function Studies of Antimicrobial and Endotoxin Neutralizing Peptides"
Sylvie E. Blondelle, Jerala R., Lamata M., Moriyon I., Brandenburg K., Andrő J., Porro M., Lohner K.
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American Peptide Society
2003

"Endotoxin neutralizing Peptides"
Jerala R., Porro M.
Curr.Topics Med. Chem., Vol. 4, 1173-1184
2004

"Antimicrobial Peptides"
Porro M. & al
World Intellectual Property Organization
Publication Reference Number: WO 2008/006125 A1
Jan 17, 2008

CONJUGATION TECHNOLOGIES

Purification of capsular polysaccharides from contaminant LPS

"The biological and physico - chemical characteristics of meningococcus polysaccharide Group C prepared by two different methods of purification"
Porro M. & al.
J. Biol. Standard., 8: 7-13
1980

The non-toxic mutant diphteria protein CRM197as new carrier for vaccines

"Immunogenic correlation between cross-reacting material (CRM197) produced by a mutant of C. diphtheriae and diphtheria toxoid"
Porro M. & al.
J. Infect. Dis., 142:716-724
1980

Determination of group-specific polysaccharides in multivalent vaccines

"Immunoelectrophoretic characterization of the molecular weight polydispersion of polysaccharides in multivalent bacterial capsular polysaccharide vaccines"
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Development of glycoconjugate vaccines combining the first generation of reductive amination with ester-activated linkers

"Immunochemistry of Meningococcal group B oligosaccharide-protein conjugates"
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"Specific antibodies to diphteria toxin and type 6A Pneumococcal capsular polysaccharide induced by a model of semi-synthetic glycoconjugate antigen"
Porro M & al.
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1985

"A semi-synthetic glycoconjugate antigen prepared by chemical glycosylation of pertussis toxin by a meningococcal group C oligosaccharide hapten"
Porro M & al.
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Development of glycoconjugate vaccines with built-in multiple specificities

"A molecular model of artificial gycoprotein with predetermined multiple immunodeterminants for Gram-Positive and Gram-negative encapsulated bacteria"
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1986

"Artificial glycoproteins of predetermined multivalent antigenicity as a new generation of candidate vaccines to prevent infections from encapsulated bacteria: analysis of antigenicity versus immunogenicity"
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1987

Development of glycoconjugate vaccines combining the second generation of reductive amination with ester-activated

" Strategies for type-specific glycoconjugate vaccines of Streptococcus pneumoniae"
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OTHER TOPICS

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1975

"New Hemolytic Method for Determination of Antistreptolysin O in Whole Blood"
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Journal of Clinical Microbiology ,Vol. 8 n° 3, p.263-267
1978

"Modifications of the park-Johnson Ferricyanide Submicromethod for the Assay of reducing groups in Carbohydrates"
Porro M., Viti S., Antoni G., Neri P. & al.
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1981

"Ultrasensitive Silver-stain method for the detenction of Proteins in Polyacrylamide Gels and Immunoprecipitates on Agarose Gels"
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Analytical Biochemistry, Vol.127 N°2, p.316-321
1982