

Pietro Speziale

Curriculum Vitae

Laurea in Scienze Biologiche, Università di Palermo (1971).

Diploma di Perfezionamento in Chimica Biologica conseguito presso l'Università di Pavia (1975).

Professore incaricato di Scienze degli Alimenti, Enzimologia e di Biochimica Applicata per gli studenti di Scienze Biologiche presso la Facoltà di Scienze Matematiche Fisiche e Naturali dell'Università degli Studi di Pavia a partire dal 1976.

Professore Associato di Biochimica Applicata presso la Facoltà di Scienze dell'Università di Pavia a decorrere dal 1983.

Professore Straordinario di Chimica Biologica per gli studenti di Medicina e Chirurgia (Corso di Laurea in Odontoiatria e Protesi Dentaria) dell'Università di Sassari a decorrere dal 1986.

Professore di Biochimica per gli studenti di Medicina e Chirurgia presso la Facoltà di Medicina e Chirurgia (sede di Varese) dell'Università di Pavia a decorrere dal 1986.

Professore Ordinario di Biochimica per gli studenti di Medicina e Chirurgia (corso di Laurea in Odontoiatria e Protesi Dentaria) dell'Università degli Studi di Pavia a decorrere dal 1989.

Professore e Coordinatore del corso di Biochimica per gli studenti di Medicina e Chirurgia ("Corso Golgi") dell'Università di Pavia a decorrere dal 2005.

Professore e Coordinatore del corso di Chimica e Propedeutica Biochimica per gli studenti di Medicina e Chirurgia (Corso Harvey) dell'Università di Pavia nell'anno accademico 2014/2015.

Professore e Coordinatore del modulo di Biochimica per gli studenti del Corso di Laurea Magistrale in Bioingegneria dell'Università di Pavia (2012-2016).

Professore a contratto del modulo di Biochimica per gli studenti del Corso di Laurea Magistrale in Bioingegneria dell'Università di Pavia (anno accademico 2016-2017).

E' stato Direttore del Dipartimento di Biochimica dell'Università di Pavia nel periodo 2000-2006

L'attività di ricerca svolta è documentata da oltre 130 lavori pubblicati *in extenso* su riviste internazionali e da comunicazioni a congressi nazionali e internazionali.

Gli argomenti di ricerca hanno riguardato:

- Studi sulle proprietà catalitiche e cinetiche degli enzimi coinvolti nella biosintesi dei precursori dei glicosaminoglicani.

-Analisi della struttura e organizzazione dei proteoglicani delle matrici extracellulari.

-Studio sulle interazioni di batteri Gram-positivi con macromolecole dei tessuti dell'ospite.

-Identificazione, clonaggio genico, isolamento e caratterizzazione biochimica di adesine stafilococciche e streptococciche e loro impiego vaccinale.

-Identificazione e caratterizzazione biochimica e immunologica di proteine secrete da *Streptococcus agalactiae* e loro interferenza con l'attività dell'immunità innata.

- Studi sulla organizzazione e proprietà strutturali del biofilm di *Staphylococcus aureus*.

E' stato ospite presso il Department of Virology dell'Università di Helsinki nel 1980 e ha soggiornato presso il Department of Biochemistry dell'Università dell'Alabama a Birmingham (U.S.A.) negli anni 1980-1981 come Visiting Scientist e a più riprese presso l'Institute of Biosciences and Technology della Texas A&M University di Houston (Texas). Ha inoltre soggiornato per motivi di studio presso l'Università di Uppsala in Svezia e presso il Trinity College di Dublino in Irlanda. Ha inoltre svolto attività seminariale presso diverse Università europee e americane. Dal 1982 è stato coordinatore di ricerche finanziate dal Ministero della Pubblica

Istruzione e dal Ministero della Ricerca Scientifica e Tecnologica (quota 40%) nell'ambito del Progetto di Ricerca di interesse nazionale: "Biochimica dei sistemi macromolecolari". Dal 1983 è stato coordinatore locale di progetti di ricerca finanziati dal Ministero della Ricerca Scientifica e Tecnologica (quota 60%). Nel triennio 1986-89 ha coordinato un progetto di ricerca finanziato dal Ministero della Sanità nel campo delle neuromotulesioni e disadattamenti sociali.

Nel triennio 1990-1993 ha ricevuto finanziamenti nell'ambito del progetto strategico "Icaros" del C.N.R. Nel 1994 ha avuto un contributo del C.N.R. su un progetto singolo di ricerca.

E' stato coordinatore di progetti di ricerca finanziati dalla NATO nei quadrienni 1984/88 e 1994/98.

E' stato per diversi anni coordinatore locale di progetti di ricerca di rilevante interesse nazionale finanziati dal MURST e ha coordinato progetti di ricerca nell'ambito del Cofinanziamento di programmi di ricerca d'interesse nazionale PRIN e FIRB finanziati dal MURST e dal MIUR.

E' stato titolare di diversi contributi di ricerca da parte del Ministero della Sanità e della Fondazione CARIPLO.

Dal 1998 al 2004 ha ricevuto contributi di ricerca dalla Società di Biotecnologie Inhibitex Inc. con sede in Alpharetta, Georgia (USA). Nel 2007, 2009, 2011 e 2014 ha ricevuto contributi di ricerca da Novartis Vaccines/GSK per svolgere ricerche nell'ambito delle proteine di superficie da *Streptococcus agalactiae* e *Streptococcus pyogenes*.

Brevetti Internazionali:

1) Fibronectin-binding protein compositions, antibodies thereto, and methods of use.

Patent number: WO9831389

2) Cross-reactive displacing antibodies from collagen-binding proteins and method of identification and use. Patent number: WO0170267

3) Cross reactive monoclonal and polyclonal antibodies which recognize surface proteins from coagulase-negative staphylococci and *Staphylococcus aureus*. Patent number: WO02102829

4) Monoclonal antibodies that are cross-reactive against bacterial collagen binding proteins.

Patent number: WO03072607

E? stato co-Editor di "BMC Microbiology nel periodo 2010-2017

Journal Peer Reviewer: Journal of Biological Chemistry; Infect. Immunity; Microbiology; Vaccine; BMC Microbiology; Toxicon; FEMS Microbiology Review, Cellular Microbiology, Molecular Microbiology, Plos One, Acta Biomaterialia, BBA, Scientific Reports, Frontiers in Cellular and Infection Microbiology.

Granting Agency Reviewer: The Wellcome Trust; London; Deutsche Forschungsgemeinschaft (German Research Foundation) (Transregional Research Centre 34).

Principali pubblicazioni

1. Buffa M, **Speziale P**, Calatroni A.
Glicopeptidi acidi da urine umane normali.
Boll. Soc. Ital. Biol. Sper. 1974; **50**: 1547-1551.
2. Speziale P, De Luca G, Crea R, Ruggeri A, Balduini C.
Subcellular localization of xilosiltransferase in epiphysial plate cartilage.
Ital. J. Biochem. 1974; 23: **5**, 306-319.
3. De Luca G, **Speziale P**, Balduini C, Castellani AA.
Biosynthesis of glycosaminoglycans: UDP-glucose-4-epimerase from cornea and epiphysial plate cartilage. Connective Tissue Research. 1975; **3**: 39-47.
4. Balduini C, De Luca G, **Speziale P**, Castellani AA.
UDP-glucose: a key branch-point in the regulation of glycosaminoglycan biosynthesis.
Protides of the Biological Fluids: 22nd Colloquium.
Ed. H. Peeters Pergamon Press, Oxford, New York, 1975; 213-217.
5. De Luca G, **Speziale P**, Rindi S, Balduini C, Castellani AA
Effects of some nucleotides on the regulation of glycosaminoglycan biosynthesis.
Connective Tissue Research. 1974; **4**: 247-254.
6. Balduini C, De Luca G, Brovelli A, **Speziale P**, Rindi S, Castellani AA
The regulation of glycosaminoglycan biosynthesis at the nucleotide-sugar-level
Front. Matrix. Biol. 1976; **3** : 202-217.
7. **Speziale P** , Sosso Speziale M, Galligani L, Balduini C
Interactions between different corneal proteoglycans
Biochem. J., 1978; **173**: 935. **IF: 4.100**
8. **Speziale P**, Bardoni A, Balduini C
Interactions between bovine cornea proteoglycans and collagen
Biochem. J. 1980; **187**: 655-659. **IF: 4.100**
9. **Speziale P**, Höök M, Wadström T, Timpl R,
Binding of the basement membrane protein laminin to *Escherichia coli*.
FEBS Lett., 1982; 146: 55-58. **IF:3.372**
10. Ryden C, Rubin K, **Speziale P**, Höök M, Lindberg M, Wadström T.
Fibronectin receptors from *Staphylococcus aureus*.
J. Biol.Chem. 1983; **258**: 3396-3401. **IF:5.808**
11. **Speziale P**, Höök M, Switalski LM, Wadström T
Fibronectin binding to a *Streptococcus pyogenes* strain.
J. Bacteriol., 1984; **157**: 420-427 **IF:3.993**

12. Switalski LM, **Speziale P**, Höök M, Wadström T, Timpl R
Binding of *Streptococcus pyogenes* to laminin
J. Biol. Chem., 1984; **259**: 3734-3738. **IF:5.808**
13. Mignatti P, **Speziale P**, Debbiaggi M, Perduca M, Cereda PM, Romero E
Caratterizzazione biochimica dell'inibitore sierico non anticorpale dei coronavirus.
L'Igiene Moderna, 1985; **83**: 203-208.
14. Mignatti P, **Speziale P**, Pagano L, Romero E.
Degradation of human fibronectin by strains of *Escherichia coli* K12 carrying R factors from
Klebsiella Pneumoniae. Microbiologica, 1985; **8**: 67-71
15. **Speziale P**, Höök M, Wadström T.
Binding of type II collagen to staphylococci. The Staphylococci. Zentralblatt fur
Bakteriologie Mikrobiologie und Hygiene. Ed. J. Keljaszewicz. Gustav Fischer Verlag.
Stuttgart, New York 1985, Suppl. 14, 191-196.
16. Wadström T, Switalski LM, **Speziale P**, Rubin K, Ryden C, Froman G, Faris A, Lindberg
M, Höök M Binding of microbial pathogens to connective tissue fibronectin: an early step in
localized and invasive infections. The pathogenesis of bacterial infections. Bayer Symposium
VIII. Springer Verlag. Berlin, Heidelberg. 1985; 193-207.
17. **Speziale P**, Raucci G, Visai L, Switalski LM, Höök M
Binding of collagen to *Staphylococcus aureus* Cowan 1
J. Bacteriol., 1986; **167**: 77-81 **IF:3.993**
18. Fröman G, Switalski LM, **Speziale P**, Höök M Isolation and characterization of a
fibronectin receptor from *Staphylococcus aureus* J. Biol. Chem., 1987; **262**: 6564-6571.
IF:5.808
19. Wadström T, **Speziale P**, Rozgonyi F, Ljungh A, Maxe I, Ryden C Interactions of
coagulase-negative staphylococci with fibronectin and collagen as possible first step of tissue
colonization in wounds and other tissue trauma. Zentralblatt fur Bakteriologie Mikrobiologie
und Hygiene 1987; Suppl. 16, 83-91
20. **Speziale P**, Raucci G, Meloni, Meloni ML, Wadström T
Binding of collagen to group A, B, C and D Streptococci
FEMS Microbiol. Lett., 1987; **48**: 47-51 **IF:2.068**
21. **Speziale P**, Meloni ML, Raucci G, Switalski LM, Höök M
Collagen binding to a *Staphylococcus aureus* strain.
in 'Macromolecules in the functioning cell' Proceeding of the fifth Soviet-Italian Symposium.
Pavia, 22-24 Settembre 1986. Ed. A. A. Castellani, C. Balduini, P. Volpe.
Consiglio Nazionale delle Ricerche 1988; 235-242.
22. Voitek A, Gristina AG, Barth E, Myrvik Q, Switalski LM, Höök M, **Speziale P**
Staphylococcal adhesion to collagen in intraarticular sepsis. Biomaterials, 1988; 9: 107-110
IF: 5.196
23. Switalski L M, **Speziale P**, Höök M

Isolation and characterization of a putative collagen receptor from *Staphylococcus aureus* strain Cowan 1. J. Biol. Chem. 1989; **264**: 21080-21086 **IF:5808**

24. **Speziale P**, Visai L, Bozzini S

Studio cinetico sul legame dei collagene ad un ceppo enterotossigenico di *Escherichia coli*
L'Igiene Moderna. 1990; **94**: 441-449

25. Visai L, **Speziale P**, Bozzini S

Binding of collagen to an enterotoxigenic strain of *Escherichia coli*.
Infect.Immun.1990; **58**: 449-455 **IF:4.004**

26. Visai L, Bozzini S, Petersen TE, Speciale L, **Speziale P**

Binding sites in fibronectin for an enterotoxigenic strain of *E. coli* B34289c.
FEBS Lett. 1991; **290**: 111-114 **IF:3.372**

27. Lindgren PE, **Speziale P**, McGavin M, Monstein HJ, Höök M, Visai L, Kostianen T, Bozzini S, Lindberg M

Cloning and expression of two different genes from *Streptococcus dysgalactiae* encoding fibronectin receptors
J. Biol. Chem. 1992; **267**: 1924-1931 **IF: 5.808**

28. Bozzini S, Visai L, Pignatti P, Petersen TE, **Speziale P**

Multiple binding sites in fibronectin and staphylococcal fibronectin receptor.
Eur. J. Biochem. 1992; **207**: 327-333 **IF: 2.779**

29. Switalski LM, Butcher WG, Patti JM, **Speziale P**, Gristina AG, Höök M

Collagen receptors of *Staphylococcus aureus*: In bacterial adhesion and invasion (Eds. M. Höök, L. M. Switalski) Springer Verlag, N. Y. 1992; pp 101-114

30. Switalski LM, Patti JM, Butcher W, Gristina A, **Speziale P**, Höök M.

A collagen receptor on *Staphylococcus aureus* strains isolated from patients with septic arthritis mediates adhesion to cartilage.
Mol. Microbiol .1993; **7**: 99-107 **IF:5.634**

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32. Conaldi PG, Serra L, Dolei A, Basolo F, Falcone V, Mariani G, **Speziale P**, Toniolo A.

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36. Labò M, Gusberti L, DeRossi E, **Speziale P**, Riccardi G. Determination of a 15437 nucleotide sequence around the *inhA* gene of *Mycobacterium avium* and similarity analysis of the products of putative ORFs. *Microbiology.* 1998; **144**: 807-814 **IF:3.13**
37. Casolini F, Visai L, Joh D, Conaldi PG, Toniolo A, Höök M, **Speziale P**. Antibody response to fibronectin binding MSCRAMM in patients with *Staphylococcus aureus* infections. *Infect. Immun.* 1998; **66**: 5433-5442 **IF:4.004**
38. Joh D, **Speziale P**, Gurusiddappa S, Manor J, Hook M. Multiple specificities of the staphylococcal and streptococcal fibronectin-binding microbial surface components recognizing adhesive matrix molecules. *Eur. J. Biochem.* 1998; **258**: 897-905 **IF:3.579**
39. Joh D, Wann ER, Kreikemeyer B, **Speziale P**, Höök M. Role of fibronectin-binding MSCRAMMs in bacterial adherence and entry into mammalian cells. *Matrix. Biol.* 1999; **18**: 211-223 **IF:3.679**
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41. Petrini P, Tanzi MC, Visai L, Casolini F, **Speziale P**. Novel Poly (urethane-aminoamides). An in vitro study of the interaction with heparin. *J Biomater Sci Polym Ed.* 2000; **11**: 353-365 **IF:1.607**
42. Visai L, Xu Y, Casolini F, Rindi S, Höök M, **Speziale P**. Monoclonal antibodies to CNA, a collagen-binding microbial surface component recognizing adhesive matrix molecules detach *Staphylococcus aureus* from a collagen substrate. *J. Biol. Chem.* 2000; **275**: 39837-39845 **IF:5.808**
43. Mohammed N, Visai L, **Speziale P**, Ross J. Quantification of *Staphylococcus aureus* cell surface adhesins using flow cytometry. *Microb. Pathog.* 2000; **29**: 357-361 **IF: 2.258**
44. Visai L, Rindi S, **Speziale P**, Petrini P, Farè S, Tanzi MC. In vitro interactions of biomedical polyurethanes with macrophages and bacteria. *J. Biomater Appl.* 2002; **16**: 191-214. **IF: 1.310**
45. Bowden MG, Visai L, Longshow CM, Holland KT, **Speziale P**, Höök M. Is the GehD lipase from *Staphylococcus epidermidis* a collagen-binding adhesin? *J. Biol. Chem.* 2002; **277**: 43017-43023. **IF:5.808**
46. Toniolo A, Falcone V, Bernasconi C, Basolo F, **Speziale P**, Onodera T. DNA immunization of mice against the VP1 capsid protein of coxsackievirus B4.

Scand J. Immunol. 2002; **56**: 448-455. **IF:2.090**

47. Rindi S, Cicalini S, Pietrocola G, Petrosillo N, **Speziale P**. Antibody response to staphylococcal slime and lipoteichoic acid. Lancet. 2002; **360**: 1977-1978. **IF:25.8**

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49. Visai L, De Rossi E, Valtulina V, Casolini F, Rindi S, Gugliera P, Pietrocola G, Bellotti V, Riccardi G, **Speziale P**. Identification and characterization of a new ligand-binding site in FnbB, a fibronectin-binding adhesin from *Streptococcus dysgalactiae*. Biochimica Biophysica Acta. General Subjects 2003; **1646/1-2**: 173-183 **IF:2.024**

50. Mascari L, Ymele-Leki P, Eggleton CD, **Speziale P**, Ross JM. Fluid shear contributions to bacteria cell detachment initiated by a monoclonal antibody. Biothecology and Bioengineering. 2003; **83**: 65-75. **IF: 2.999**

51. Rivas JM, **Speziale P**, Patti JM, Höök M. MSCRAMM-targeted vaccines and immunotherapy for staphylococcal infection. Current Opinion in Drug Discovery & Development. 2004; **7**:223-227 **IF: 4.319**

52. Roche FM, Downer R, Keane F, **Speziale P**, Park PW, Foster TJ. The N-terminal A domain of fibronectin-binding proteins A and B promotes adhesion of *Staphylococcus aureus* to elastin. J. Biol Chem. 2004; **279**: 38433-34840 **IF: 5.808**

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56. Farè S, Valtulina V, Petrini P, Alessandrini E, Pietrocola G, Tanzi MC, **Speziale P**, Visai L. In vitro interaction of human fibroblasts and platelets with a shape-memory polyurethane. J Biomed Mater Res A. 2005; **73A(1)** :1-11. **IF: 2.497**

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58. Fassina L, Visai L, Farè S, Asti L, Benazzo F, Magenes G, **Speziale P**, Tanzi MC. SAOS-2 Cells Calcified Bone Matrix Production Inside a Polyurethane Porous Scaffold Using a Perfusion Bioreactor. Tissue Engineering . 2005; **11**: 685-700 **IF: 3.725**
59. C.R. Arciola, S. Gamberini, D. Campoccia, L. Visai, **P. Speziale**, L. Baldassari, L. Montanaro. A multiple PCR method for the detection of all five individual genes of *ica* locus in *Staphylococcus epidermidis*. A survey on 400 clinical isolates from prosthesis associated infections. J Biomed. Mater Res. 2005; **75**:408-413. **IF: 2.497**
60. C.R. Arciola, D. Campoccia, S. Gamberini, M.E. Donati, V. Pini, L. Visai, **P. Speziale**, L. Montanaro. Antibiotic resistance in exopolysaccharide-forming *Staphylococcus epidermidis* clinical isolates from orthopaedic implant infections Biomaterials. 2005. **26**:6530-6535. **IF:5.196**
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