



**Antonio Toniolo**

UNIVERSITY OF INSUBRIA



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## Contact data

### Full Professor

**Department of Clinical and Biological Sciences**

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## Biography

Born March 13-3-1948, Siena, Italy. Married, two sons.

Present position: Professor of Medical Microbiology, University of Insubria.

Director of the University Department of Clinical and Biological Sciences;

Director of the Hospital Department of Clinical Pathology (Viale Borri 57,

21100 Varese)

Education: 1966-1972: University of Pisa Medical School; M.D. degree (Hon).

1976: Board certification in Medical Microbiology at the same University

(Hon). 1978-1981: Visiting Associate at the Virology and Immunology

Laboratory directed by Abner L. Notkins, NIH, Bethesda, MD. 1984: Dpt. of

Microbiology, Univ. of Galveston, TX. 1992: NIH, Bethesda, MD. 1997: Dpt. of

Molecular Immunology, University of Tokyo, Japan.

Employment: 1974-1982: Assistant Professor of Microbiology at the University of Pisa, then (1982-85) Associate Professor at the same University.

1985-89: Full Professor of Microbiology and Head of the Clinical Microbiology Laboratory, University of Sassari Medical School. 1990-now: full Professor of

Medical Microbiology at the Universities of Pisa (1990-91), Pavia (1991-98), and Insubria (1998-present).

Member of the Italian Microbiological Societies (SIM and AMCLI), American Soc. Microbiol. (ASM), Int. AIDS Society (IAS), NIH Alumni Ass. (NIHAA).

Achievements include: i. Demonstration that IL6 and IL8 are produced by normal human mammary cells but are suppressed in mammary cancer; ii. Demonstration that macrophages are the main target of the murine Friend retrovirus in the early stages of infection; iii. Demonstration that HIV-1 is capable of infecting mammary epithelial cells. This may explain virus transmission through lactation; iv. Demonstration that HIV-1 is capable of infecting renal cells thus contributing to renal failure; v. Demonstration that one of the foamy viruses can infect humans; vi. Finding of new drug-resistance enzymes in enteric bacteria (IMP-12, VIM-4, TEM-134); vii.

Demonstration that coxsackieviruses can produce diabetes in mice; viii. Demonstration that a DNA-based vaccine may protect against coxsackievirus infections; ix. Demonstration that viruses and chemicals may synergize in causing type-1 diabetes; x. Demonstration that two different classes of antivirals synergize in inhibiting picornaviral replication.

Cumulative impact factor (I.F.), September 2005: 418

## **Qualifications and awards**

Fellowships: Chester Beatty Institute for Cancer Research, London (1970); National Institute for Cancer Research, Milan (1975); CNR International Fellowship, Rome (1977); Fogarty International Center, Bethesda, MD (1978-81).

2001-2005 President, Società Italiana di Microbiologia Medica, Odontoiatrica e Clinica (SIMMOC, Milano). Scientific Director, Giornale Italiano di Microbiologia Medica, Milano.

## **Research interests**

Role of viruses in endocrine and heart disease; retrovirus-induced immunodeficiency; viral tumorigenesis; prion infections; bacterial resistance to antimicrobial drugs; therapeutic use of adult stem cells.

## **Teaching experience and appointments**

Professor of Microbiology, University of Insubria, School of Medicine.

Director, Postgraduate School of Microbiology and Virology, University of Insubria.

2000-Present: Professor, Ph.D. program "Experimental Medicine and Oncology" directed by Professor Roberto Accolla.

2000-Present: co-ordinator EEC "Erasmus Program" for students of the University of Insubria, School of Medicine.

1980-1984: Lecturer of Medical Virology, University of Pisa, Italy

1985-1989: Professor of Medical Microbiology and Director of the Postgraduate School in Microbiology and Virology, School of Medicine, University of Sassari, Italy.

1984-2000: Member, Ph.D. program "Experimental Medical Microbiology".

1989-1990: co-ordinator, EEC "Erasmus Program" (Univ. of Paris V/Reims-Champagne, France and Univ. of Sassari, Italy);

1990-1992: Professor of Dental Microbiology and Lecturer in Virology, School of Medicine, University of Pisa, Italy.

1992-1998: Professor of Microbiology and Director Postgraduate School in Microbiology and Virology, School of Medicine, University of Pavia, Italy.

1997: Visiting Professor of Microbiology, Department of Molecular

Immunology, University of Tokyo, Japan.

2005: Professor of Virology, Faculty of Biological Sciences, University of Siena, Italy.

**Ph.D. students:**

1980-83 Donatella Matteucci, Ph.D. student, now Univ. of Pisa, Italy

1981-84 Romano Mattei, Ph.D. student; now Ospedale di Lucca, Italy

1985-89 Pier Luigi Fiori, Ph.D. student; now Univ. of Sassari, Italy

1985-89 Elisabetta Blasi, Ph.D. student; now Univ. of Modena, Italy

1986-90 Caterina Serra, Ph.D. student; now Univ. of Sassari, Italy

1987-91 Sergio Uzzau, Ph.D. student; now Univ. of Sassari, Italy

1990-94 Valeria Falcone, Ph.D. student; now Univ. of Freiburg, Germany

1996-99 Luigi Biancone, Ph.D. student; now Univ. Torino, Italy

2000 Takuya Nishimura, Ph.D. student; now NIDR, NIH, Bethesda, MD

2000-04 Camilla Bernasconi, Ph.D. student; now JRC, Ispra, Italy

2001-05 Mattia Bonsignori, Ph.D. student; now Duke Univ., Durham, NC

2003-04 Andrea Endimiani, Ph.D. student; now Univ. of Cleveland, OH

2001-05 Andreina Baj, Ph.D. student; now Univ. of Pavia

**Representative publications**

1. Baj A, Bettaccini A, Nishimura T, Onodera T, Toniolo A. Poliovirus type 1 infection of murine PRNP-knockout neuronal cells. *J Neurovirol.* 2005 Jul;11(3):237-46.

2. Endimiani A, Luzzaro F, Brigante G, Perilli M, Lombardi G, Amicosante G, Rossolini GM, Toniolo A. *Proteus mirabilis* bloodstream infections: risk factors and treatment outcome related to the expression of extended-spectrum beta-lactamases. *Antimicrob Agents Chemother.* 2005 Jul;49(7):2598-605.

3. Baj A, Bettaccini AA, Casalone R, Sala A, Cherubino P, Toniolo A. Culture of skeletal myoblasts from human donors aged over 40 years: dynamics of cell growth and expression of differentiation markers. *J Transl Med.* 2005 May 12;3(1):21.

4. Bettaccini AA, Baj A, Accolla RS, Basolo F, Toniolo A. Proliferative activity of extracellular HIV-1 Tat protein in human epithelial cells: expression profile of pathogenetically relevant genes. *BMC Microbiol.* 2005 Apr 27;5(1):20.

5. Brigante G, Luzzaro F, Perilli M, Lombardi G, Coli A, Rossolini GM, Amicosante G, Toniolo A. Evolution of CTX-M-type beta-lactamases in isolates of *Escherichia coli* infecting hospital and community patients. *Int J Antimicrob Agents*. 2005 Feb;25(2):157-62.
6. Ferrari M, Corradi A, Petronini PG, Tosini A, Toniolo A, Robotti C, Moratti R. Evaluation of endogenous pig retrovirus expression and of tumorigenicity in nude mice. *Vet Res Commun*. 2004 Aug;28 Suppl 1:287-90.
7. Basolo F, Giannini R, Faviana P, Fontanini G, Patricelli Malizia A, Ugolini C, Elisei R, Miccoli P, Toniolo A. Thyroid papillary carcinoma: preliminary evidence for a germ-line single nucleotide polymorphism in the Fas gene. *J Endocrinol*. 2004 Sep;182(3):479-84.
8. Luzzaro F, Endimiani A, Docquier JD, Mugnaioli C, Bonsignori M, Amicosante G, Rossolini GM, Toniolo A. Prevalence and characterization of metallo-beta-lactamases in clinical isolates of *Pseudomonas aeruginosa*. *Diagn Microbiol Infect Dis*. 2004 Feb;48(2):131-5.
9. Luzzaro F, Docquier JD, Colinon C, Endimiani A, Lombardi G, Amicosante G, Rossolini GM, Toniolo A. Emergence in *Klebsiella pneumoniae* and *Enterobacter cloacae* clinical isolates of the VIM-4 metallo-beta-lactamase encoded by a conjugative plasmid. *Antimicrob Agents Chemother*. 2004 Feb;48(2):648-50.
10. Endimiani A, Luzzaro F, Perilli M, Lombardi G, Coli A, Tamborini A, Amicosante G, Toniolo A. Bacteremia due to *Klebsiella pneumoniae* isolates producing the TEM-52 extended-spectrum beta-lactamase: treatment outcome of patients receiving imipenem or ciprofloxacin. *Clin Infect Dis*. 2004 Jan 15;38(2):243-51. Epub 2003 Dec 19.
11. Nakamura Y, Sakudo A, Saeki K, Kaneko T, Matsumoto Y, Toniolo A, Itohara S, Onodera T. Transfection of prion protein gene suppresses coxsackievirus B3 replication in prion protein gene-deficient cells. *J Gen Virol*. 2003 Dec;84(Pt 12):3495-502.
12. Endimiani A, Tamborini A, Luzzaro F, Lombardi G, Toniolo A. A two-year analysis of risk factors and outcome in patients with bloodstream infection. *Jpn J Infect Dis*. 2003 Feb;56(1):1-7.
13. Docquier JD, Riccio ML, Mugnaioli C, Luzzaro F, Endimiani A, Toniolo A, Amicosante G, Rossolini GM. IMP-12, a new plasmid-encoded metallo-beta-lactamase from a *Pseudomonas putida* clinical isolate. *Antimicrob Agents Chemother*. 2003 May;47(5):1522-8.
14. Luzzaro F, Viganò EF, Fossati D, Grossi A, Sala A, Sturla C, Saudelli M, Toniolo A; AMCLI Lombardia Hospital Infectious Study Group. Prevalence and drug susceptibility of pathogens causing bloodstream infections in northern Italy: a two-year study in 16 hospitals. *Eur J Clin Microbiol Infect Dis*. 2002 Dec;21(12):849-55. Epub 2002 Dec 11.

15. 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 Nov;56(5):448-55.
16. Lombardi G, Luzzaro F, Docquier JD, Riccio ML, Perilli M, Coli A, Amicosante G, Rossolini GM, Toniolo A. Nosocomial infections caused by multidrug-resistant isolates of *Pseudomonas putida* producing VIM-1 metallo-beta-lactamase. *J Clin Microbiol.* 2002 Nov;40(11):4051-5.
17. Endimiani A, Tamborini A, Luzzaro F, Lombardi G, Toniolo A. Epidemiology of bloodstream infections and time to detection of positive blood cultures: an evaluation of the automated BacT/Alert and BACTEC 9240 systems. *New Microbiol.* 2002 Jan;25(1):9-16.
18. Perilli M, Dell'Amico E, Segatore B, de Massis MR, Bianchi C, Luzzaro F, Rossolini GM, Toniolo A, Nicoletti G, Amicosante G. Molecular characterization of extended-spectrum beta-lactamases produced by nosocomial isolates of Enterobacteriaceae from an Italian nationwide survey. *J Clin Microbiol.* 2002 Feb;40(2):611-4.
19. Basolo F, Giannini R, Toniolo A, Casalone R, Nikiforova M, Pacini F, Elisei R, Miccoli P, Berti P, Faviana P, Fiore L, Monaco C, Pierantoni GM, Fedele M, Nikiforov YE, Santoro M, Fusco A. Establishment of a non-tumorigenic papillary thyroid cell line (FB-2) carrying the RET/PTC1 rearrangement. *Int J Cancer.* 2002 Feb 10;97(5):608-14.
20. Spanu T, Luzzaro F, Perilli M, Amicosante G, Toniolo A, Fadda G; Italian ESBL Study Group. Occurrence of extended-spectrum beta-lactamases in members of the family Enterobacteriaceae in Italy: implications for resistance to beta-lactams and other antimicrobial drugs. *Antimicrob Agents Chemother.* 2002 Jan;46(1):196-202.
21. Docquier JD, Luzzaro F, Amicosante G, Toniolo A, Rossolini GM. Multidrug-resistant *Pseudomonas aeruginosa* producing PER-1 extended-spectrum serine-beta-lactamase and VIM-2 metallo-beta-lactamase. *Emerg Infect Dis.* 2001 Sep-Oct;7(5):910-1.
22. Luzzaro F, Mantengoli E, Perilli M, Lombardi G, Orlandi V, Orsatti A, Amicosante G, Rossolini GM, Toniolo A. Dynamics of a nosocomial outbreak of multidrug-resistant *Pseudomonas aeruginosa* producing the PER-1 extended-spectrum beta-lactamase. *J Clin Microbiol.* 2001 May;39(5):1865-70.
23. Casalone R, Albini A, Righi R, Granata P, Toniolo A. Nonrandom chromosome changes in Kaposi sarcoma: cytogenetic and FISH results in a new cell line (KS-IMM) and literature review. *Cancer Genet Cytogenet.* 2001 Jan 1;124(1):16-9. Review.
24. Luzzaro F, Perilli M, Amicosante G, Lombardi G, Belloni R, Zollo A,

Bianchi C, Toniolo A. Properties of multidrug-resistant, ESBL-producing *Proteus mirabilis* isolates and possible role of beta-lactam/beta-lactamase inhibitor combinations. *Int J Antimicrob Agents*. 2001 Feb;17(2):131-5.

25. Basolo F, Fiore L, Baldanzi A, Giannini R, Dell'Omodarme M, Fontanini G, Pacini F, Danesi R, Miccoli P, Toniolo A. Suppression of Fas expression and down-regulation of Fas ligand in highly aggressive human thyroid carcinoma. *Lab Invest*. 2000 Sep;80(9):1413-9.

26. Conaldi PG, Bottelli A, Wade-Evans A, Biancone L, Baj A, Cantaluppi V, Serra C, Dolei A, Toniolo A, Camussi G. HIV-persistent infection and cytokine induction in mesangial cells: a potential mechanism for HIV-associated glomerulosclerosis. *AIDS*. 2000 Sep 8;14(13):2045-7.

27. Pereira M, Perilli M, Mantengoli E, Luzzaro F, Toniolo A, Rossolini GM, Amicosante G. PER-1 extended-spectrum beta-lactamase production in an *Alcaligenes faecalis* clinical isolate resistant to expanded-spectrum cephalosporins and monobactams from a hospital in Northern Italy. *Microb Drug Resist*. 2000 Spring;6(1):85-90.

28. Biancone L, Cantaluppi V, Boccellino M, Bussolati B, Del Sorbo L, Conaldi PG, Albini A, Toniolo A, Camussi G. Motility induced by human immunodeficiency virus-1 Tat on Kaposi's sarcoma cells requires platelet-activating factor synthesis. *Am J Pathol*. 1999 Nov;155(5):1731-9.

29. Fontanini G, Campani D, Roncella M, Cecchetti D, Calvo S, Toniolo A, Basolo F. Expression of interleukin 6 (IL-6) correlates with oestrogen receptor in human breast carcinoma. *Br J Cancer*. 1999 May;80(3-4):579-84.

30. Falcone V, Leupold J, Clotten J, Urbanyi E, Herchenroder O, Spatz W, Volk B, Bohm N, Toniolo A, Neumann-Haefelin D, Schweizer M. Sites of simian foamy virus persistence in naturally infected African green monkeys: latent provirus is ubiquitous, whereas viral replication is restricted to the oral mucosa. *Virology*. 1999 Apr 25;257(1):7-14.

## Clinical interests

Laboratory diagnosis of infectious diseases: detection of bacterial and viral pathogens by microscopy, culture and molecular methods. Methods for detecting pathogenesis-related genes and drug-resistance determinants. Software applications for tracing the epidemiology of drug resistance. Culture, differentiation and biosafety of adult stem cells. Organization of Medical Microbiology laboratories.