

Roberto Chignola

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Personal informations

Birthdate: March 27th, 1966
Birthplace: Verona, Italy

Present position

Associate Professor (as of Dec. 28, 2018)
Area: 09 – Industrial and Information Engineering
Sector: 09/G2 – Bioengineering
Sub-sector: ING-IND/34 – Industrial Bioengineering
Department of Biotechnology, University of Verona

Education

- 1984: High school diploma
- 1989: Degree (Laurea) In Biology, University of Padova. Thesis title: *Application of flow cytometry to study the endocytosis of proteinaceous toxin vectors: correlation between endocytosis and cytotoxicity* (thesis advisor Prof. Cesare Montecucco)
- 1991: National qualification as professional biologist

Teaching qualification

- 2017: Habilitation in Applied Physics
- 2017: Habilitation in Bioengineering

Research interests

- Experimental and theoretical oncology
- Experimental and theoretical immunology
- Toxicity analysis of food components and of drugs
- Applied statistics
- Modeling of biological systems

Short description

I started my scientific career at the Immunology Institute of the University of Verona where I prepared my thesis work (that I discussed at the University of Padova). I worked in the field of ligand/toxin conjugates as experimental anti-tumor therapeutics and I was asked to study their intracellular trafficking and their cytotoxic effects on tumor cells grown in three-dimensional cell culture systems (tumor spheroids). At that time I could learn the basics of biochemical, molecular biology and cell culture techniques, and I became skilled in the cytotoxicity testing of drugs and in the production of monoclonal antibodies.

Stimulated by continuous discussions with colleagues, however, I started studying the immunopathology of tumors and of autoimmune diseases. I then used my acquired skills on the cytotoxicity testing of drugs and my knowledge of immunology to cooperate with food scientists in topics such as the toxicity of food components on the immune system at the gastro-intestinal interface.

Since the very beginning of my research activity, I thought that a quantitative approach could have helped us improving our knowledge of complex diseases such as cancer. I therefore attended biophysical courses and I started to work with experts from different disciplines such as Physics, Mathematics, Engineering. I succeeded in modeling the intracellular trafficking of toxins (first half of the '90s). Then I focused my research on the mathematical modeling of tumor growth, keeping in mind that the mathematical/physical modeling of biological processes must always proceed in parallel with experimentation. This approach has permeated all my research activity, up to recent times where my research is mainly devoted to the bottom-up numerical modeling of solid cancers.

Thus, during the course of my studies I have acquired new skills. I can now translate model equations into laboratory experiments and vice versa, and use basic and advanced statistical methods to analyse data and grasp biological information.

Post-lauream training courses

- 1989: International course on *Molecular mechanisms of intracellular targeting and sorting*, University of Trieste and University of Udine in collaboration with the Biophysics and Molecular Biology Society
- 1990: First national course on *Tumor immunology*, University of Verona
- 1997: International course on *Chaos and noise in biology and medicine*, Italian Institute of Philosophy Studies and International School of Biophysics, Ischia (Napoli)
- 1997: National course on *Complex systems in biology*, School of Pure and Applied Biophysics, Venezia
- 2008: National course on *From genes to models and return*, PhD School in Molecular and Biological Sciences, University of Milano

Profession

- 1990 – 1992: Three-years fellowship from the Italian Association for Cancer Research (AIRC). Project title: *Production of chimeric toxins with improved trans-membrane translocation properties for the synthesis of anti-tumor ligand/antibody toxin conjugates*
- 1993: International Cancer Technology Transfer grant from the National Cancer Institute (NCI, USA) and the Union Internationale Contre le Cancer (UICC, Switzerland).

Project title: *Immunotoxins in cancer treatment: improvement of pharmacologic potential*. Supervisor: Dr. Richard J. Youle. Place: National Institutes of Health (Bethesda, USA)

- 1993 – 1994: Fellowship from the Italian Ministry of Health. Project title: *Production of a chimeric gp41/Ricin A chain toxin*
- 1994 – 1996: Fellowship from the local health units ULSS25 followed by a contract with the University of Verona. Project title: *Study on the chemico-physical and biological properties of cytotoxic molecules for the production of novel anti-tumor molecules*
- 1996 – 2002: Permanent position as Laboratory Technician, Immunology Institute, University of Verona
- 2000 and 2001: Visiting fellow at the Instituto Gulbenkian de Ciência, Lisboa, Portugal
- 2000 – 2001: Research contract with the National Research Council. Project title: *Organized fluctuations in complex biological systems*. Place: Institute of Electronic Circuits, Genova
- 2002 – 2014: Associate fellow at the National Institute for Nuclear Physics
- 2002 – 2018: (Dec. 30, 2002 – Dec. 28, 2018) Assistant Professor, Area 06/A2 – General and Clinical Pathology, Sector MED/04 – General Pathology, Department of Biotechnology, University of Verona

Responsibilities

- 2002 – now: I lead the Experimental and Theoretical Immunology and Oncology Lab (launched in 2002 with grants from Fondazione Cariverona) at the Department of Biotechnology
- 2002 – 2012: I am the co-investigator of several initiatives in the field of biophysics of cancer (Virtus, VBL, VBL-Rad and now eBON, with grants from the Commission V, INFN)
- 2002 – 2004: Research unit leader, project *Physiopathological aspects of the interactions between cereal-based foodstuffs and the immune system*, granted by the Fondazione Cariverona
- 2002 – 2005: Research unit leader, project title *Food quality and health*, FISR, sponsored by four Governmental Ministries
- 2005: Member of the scientific committee, National Meeting *BIOSYS 2005*, National Association for Automation
- 2005 – 2015: Member of the teaching/tutoring staff, PhD in Applied Biotechnology, PhD School in Sciences, Engineering and Medicine
- 2006 – 2009: I actively participated in the project *Scientific Degrees* (Lauree Scientifiche) sponsored by the Ministry of Instruction, University and Research. I organized lessons and practical short courses of applied mathematics for high-school students
- 2007 – 2010: Research unit leader, project *Development of models to assess the risks*

deriving from the addition of enzymes to cereal flours on human health, granted by the Fondazione Cariverona

- 2010: Co-investigator of an HPC (High Performance Computing) project related to VBL/eBON at CINECA (C type grant)
- 2010: Co-investigator of an HPC project related to VBL at CASPUR (standard HPC grant)
- 2010: Co-investigator, project title *New technologies for the “made in Italy”*, Ministry of Economic Development (36 months)
- 2011: Co-investigator of an HPC project related to eBON at CASPUR (standard HPC grant)
- 2011: Local coordinator of the two years PRIN (Projects of Relevant National Interest) project *Numerical simulation of tumor spheroids*
- 2011: Co-investigator of a two years Joint Project (University/Industry). Project title *Strategies for the development of new vaccines for wheat allergy*
- 2014: Local coordinator, project title *MERIDIAN* (Measuring the Effects of Radiation on Immunity and Differentiation), Commission V, INFN
- 2017 – 2019: Principal investigator, project title *Slowing down the aggressiveness of solid tumors*, Basic Research Program, University of Verona

Institutional responsibilities

- 2003 – 2004: Member of the board of experts for the development of a new specialistic academic course on Molecular and Industrial Biotechnology, University of Verona
- 2004 – 2010: Member of the Student File Commission, bachelor’s and master degree courses in Biotechnology, University of Verona
- 2005 – 2015: Member of the Teaching Staff Council, PhD in Applied Biotechnologies, PhD School in Science, Engineering and Medicine, University of Verona
- 2005 – 2009: Member of the Biotechnology Department Board, University of Verona
- 2010: Member of the Inter-departmental Center of Experimental Research Service, as the representative of the Department of Biotechnology
- 2017: Member of the committee for the development of a scientific and didactic departmental project, national competition “Dipartimenti di Eccellenza” (Department of Excellence) sponsored by the Italian Ministry of Education, University and Research (positive evaluation)
- 2017 – 2018: Member of the board of experts for the development of a new master degree course on Industrial Biotechnology, University of Verona (activated in 2019)
- 2017 – now: Member of the emergency unit of the Department of Biotechnology, University of Verona (BLSD, fire hazard and rescue certifications)
- 2019 – now: Member of the Quality Assurance Board of the University of Verona as the representative of the Science and Engineering Macro-area

Teaching

- 1991 – 1995: General Immunology and Immunoematology (first and second year courses, respectively), Regional High School for Professional Nurses
- 1995 – 1996: Immunoematology, University Diploma in Nursing Sciences, Faculty of Medicine, University of Verona
- 2002 – 2010: Immunology, Biotechnology Degree Course, Faculty of Sciences, University of Verona
- 2003 – 2010: Techniques of Animal Cell Cultures, Biotechnology Degree Course, Faculty of Sciences, University of Verona
- 2008 – 2010: Introduction to Pathology and Oncology, Master Degree in Molecular and Industrial Biotechnology, University of Verona
- 2012 – 2013: Introduction to Pathology and Immunology, Biotechnology Degree Course, University of Verona
- 2005 – 2015: advanced courses in Experimental and Theoretical Oncology, Applied Statistics, PhD Program in Applied Biotechnology, PhD School in Sciences, Engineering and Medicine, University of Verona
- 2015 – now: Statistics, Biotechnology Degree Course, University of Verona
- 2017 – now: Mathematical models in biology/Mathematical and statistical methods in biology, Applied Mathematics Degree Course, University of Verona
- 2019 – now: Quantitative methods for Biotechnology, Master Degree in Biotechnology for bioresources and sustainable development, University of Verona
- 2002 – now: Advisor (with full responsibility) of numerous thesis works (>30), Degree Courses in Biotechnology

Invited talks at National and International Meetings

- 1990: *DNA analysis by flow cytometry*, National meeting on Actualities on Colon-Rectum Carcinoma, University of Pisa, Pisa (Italy)
- 1998: *Mathematical approaches to complex systems*, National meeting of the Italian Neuroimmunology Association, Chieti (Italy)
- 2001: *Order and disorder in natural systems*, National meeting on Mathematics and Neurosciences (Neuromat-II), Pavia (Italy)
- 2002: *Mathematical modeling of multicellular tumor spheroid growth: implications for the growth of solid tumors*, International meeting on Advances in the use of multicellular spheroids in cancer biology and therapy, ISS, Rome (Italy)
- 2002: *Toxicological aspects and problems of foodstuffs from genetically modified organisms*, National meeting on Foodstuffs and GMO, Verona (Italy)
- 2006: *Metabolism and cell population dynamics*, Gordon Research Conference on Metabolism and Ecology, Bates College, Portland, Maine (USA)
- 2006: *Virtual Biophysics Lab*, National meeting on Applications of physics to biology

and medicine, INFN and University of Trieste, Trieste (Italy)

- 2008: *Ab initio computational modeling of tumor spheroids*, 1st Transatlantic Workshop on multilevel cancer modeling, Bruxelles (Belgium)
- 2013: *From tumor microenvironment dynamics to scaling-laws in oncology*, XCIX National meeting of the Italian Physics Society, Trieste (Italy)

Science communication

Public conferences

- 2009: *On the origins of tumors: when a cell loses control*, High School E. Medi, Villafranca (Verona, Italy)
- 2010: *The immune system: how we defend ourselves against the attack of evolving pathogens*, High School E. Medi, Villafranca (Verona, Italy)
- 2011: *On the origin of tumors: the basis for a personalized therapy*, civic center, San Pietro di Lavagno (Verona, Italy)
- 2019: *Mathematics and Tumors*, R. Chignola and L. Corso, Accademia di Agricoltura Scienze e Lettere (Verona, Italy). Teacher training day.

Scientific Degrees Plan (PLS)

PLS is an initiative of the Italian Ministry of Education, University and Research, of the National Conference of Science and Technology Faculty Chairs and of the General Confederation of Italian Industry

(website: <https://www.pianolaureescientifiche.it/pianolaureescientifiche/>)

- 2006: *Mathematics in oncology: growth kinetics of solid tumors*, laboratory of biomathematics for secondary school students. The project was developed and carried out in collaboration with professors from the secondary school Istituto Tecnico Industriale Statale G. Marconi (Verona, Italy)
- 2007: *Mathematics and tumor radiotherapy*, laboratory of biomathematics for secondary school students. The project was developed and carried out in collaboration with teachers from the secondary school Istituto Tecnico Industriale Statale G. Marconi (Verona, Italy)
- 2009: *Prey-predator dynamics: computer simulations*, laboratory of biomathematics for secondary school students. The project was developed and carried out in collaboration with professors from the secondary school Istituto Tecnico Industriale Statale G. Marconi (Verona, Italy)
- 2019: *Mathematics and Tumors*, R. Chignola and L. Corso, Accademia di Agricoltura Scienze e Lettere (Verona, Italy). Teacher training day.

Scientific societies

- 1997-2001: Member of the Society for Mathematical Biology

- since 2015: Member of the Italian Society of Cancerology and of the European Association for Cancer Research
- since 2019: National Bioengineering Group

Awards

- 2006: Award from the National Association for Automation

Patents

- Highly efficient method used for the screening of bioactive molecules. R. Chignola, C. Dalla Pellegrina, C. Tomelleri. University of Verona, Patent number: IT1380835-B (Sep. 13, 2010)
- Multi-layered particles. F. Zanoni, G. Zoccatelli, M. Vakarelova, R. Chignola. US Provisional Patent Application 62/769,642; Patent 067641-P0001A RDG (2018)

Publications

(most recent items come first)

Refereed papers in scientific journals

1. E. Binatti, G. Zoccatelli, F. Zanoni, G. Donà, F. Mainente, R. Chignola. Effects of Combination Treatments with Astaxanthin-Loaded Microparticles and Pentoxifylline on Intracellular ROS and Radiosensitivity of J774A.1 Macrophages. *Molecules* (2021), 26: 5152
2. G. Baggio, R.A. Groves, R. Chignola, E. Piacenza, A. Presentato, I.A. Lewis, S. Lampis, G. Vallini, R.J. Turner. Untargeted Metabolomics Investigation On Selenite Reduction To Elemental Selenium By *Bacillus mycoides* SeTE01. *Frontiers in Microbiology* (2021), 12: 711000
3. E. Binatti, G. Zoccatelli, F. Zanoni, G. Donà, F. Mainente, R. Chignola. Phagocytosis of astaxanthin loaded microparticles modulates TGF β production and intracellular ROS levels in J774A.1 macrophages. *Marine Drugs* (2021), 19, 163
4. C. Cavallini, M. Galasso, E. Dalla Pozza, R. Chignola, O. Lovato, I. Dando, M.G. Romanelli, M. Krampera, G. Pizzolo, M. Donadelli, M.T. Scupoli. Effects of CD20 antibodies and kinase inhibitors on BCR signalling and survival of CLL cells. *British Journal of Haematology* (2021), 192: 333-342
5. N. Piasentin, E. Milotti, R. Chignola. The control of acidity in tumor cells: a biophysical model. *Scientific Reports* (2020), 10: 13613
6. S. Patmanidis, R. Chignola, A. C. Charalampidis, G. P. Papavassilopoulos. A comparison between nonlinear least squares and maximum likelihood estimation for the prediction of tumor growth on experimental data of human and rat origin. *Biomedical Signal Processing and Control* (2019), 54: 101639
7. T. Fredrich, H. Rieger, R. Chignola, E. Milotti. Fine-grained simulations of the microenvironment of vascularized tumours. *Scientific Reports* (2019), 9: 11698
8. L. Andolfi, S.L.M. Greco, D. Tierno, R. Chignola, M. Martinelli, E. Giolo, S. Luppi, I. Delfino, M. Zanetti, A. Battistella, G. Baldini, G. Ricci, M. Lazzarino. Planar AFM macro-probes to study the biomechanical properties of large cells and 3D spheroids. *Acta Biomaterialia* (2019), 94: 505-513
9. G. Badino, R. Chignola. Fluctuations of atmospheric pressure and the sound of underground karst systems: the Antro del Corchia case (Apuane Alps, Italy). *Frontiers in Earth Science* (2019), 7: 147
10. R. Chignola, M. Sega, B. Molesini, A. Baruzzi, S. Stella, E. Milotti. Collective radioresistance of T47D breast carcinoma cells is mediated by a Syncytin-1 homologous protein. *PLoS ONE* (2019), 14: e0206713
11. S. Stella, R. Chignola, E. Milotti. Dynamical detection of boundaries and cavities in biophysical cell-based simulations of growing tumour tissues. *IEEE/ACM Transactions on Computational Biology and Bioinformatics* (2019), 16: 1901-1911
12. C. Cavallini, R. Chignola, I. Dando, O. Perbellini, E. Mimiola, O. Lovato, C. Laudanna, G. Pizzolo, M. Donadelli, M.T. Scupoli. Low catalase expression confers redox hypersensitivity and identifies an indolent clinical behavior in CLL. *Blood* (2018), 131: 1942-1954
13. A. Menin, F. Zanoni, M. Vakarelova, R. Chignola, G. Donà, C. Rizzi, F. Mainente, G. Zoccatelli. Effects of microencapsulation by ionic gelation on the oxidative stability of flaxseed oil. *Food Chemistry* (2018), 269: 293-299
14. B. Molesini, G.L. Rotino, V. Dusi, R. Chignola, T. Sala, G. Mennella, G. Francese, T. Pandolfini. Two metallopeptidase inhibitors are implicated in tomato fruit development and regulated by the Inner No Outer transcription factor. *Plant Science* (2018), 266: 19-26

15. E. Milotti, V. Vyshemirsky, S. Stella, F. Dogo, R. Chignola. Analysis of the fluctuations of the tumor/host interface. *Physica A* (2017), 486: 587-594
16. G. Gonzato, G. Rossi, R. Chignola. Basalt intrusions in palaeokarst caves in the central Lessini Mountains (Venetian Prealps, Italy). *Acta Carsologica* (2017), 46: 33-45
17. E. Milotti, S. Stella, R. Chignola. Pulsation-limited oxygen diffusion in the tumour microenvironment. *Scientific Reports* (2017), 7: 39762
18. D. Treggiari, G. Zoccatelli, R. Chignola, B. Molesini, P. Minuz, T. Pandolfini. Tomato cystine-knot miniproteins possessing anti-angiogenic activity exhibit in vitro gastrointestinal stability, intestinal absorption and resistance to food industrial processing. *Food Chemistry* (2017), 221: 1346-1353
19. M. Vakarelova, F. Zanoni, P. Lardo, G. Rossin, F. Mainente, R. Chignola, A. Menin, C. Rizzi, G. Zoccatelli. Production of stable food-grade microencapsulated astaxanthin by vibrating nozzle technology. *Food Chemistry* (2017), 221: 289-295
20. S. P. Santero, F. Favretto, S. Zanzoni, R. Chignola, M. Assfalg, M. P. D'Onofrio. Effects of macromolecular crowding on a small lipid binding protein probed at the single-aminoacid level. *Archives of Biochemistry and Biophysics* (2016), 606: 99-110
21. F. Mainente, C. Rizzi, G. Zoccatelli, R. Chignola, B. Simonato, G. Pasini. Setup of a procedure for cider proteins recovery and quantification. *European Food Research and Technology* (2016), 242: 1803-1811
22. V. Guglielmi, G. Vattemi, R. Chignola, A. Chiarini, M. Marini, I. Dal Pra, M. Di Chio, C. Chiamulera, U. Armato, G. Tomelleri. Evidence for caspase-dependent programmed cell death along with repair processes in affected skeletal muscle in patients with mitochondrial disorders. *Clinical Science* (2016), 130: 167-181
23. A. Baruzzi, S. Remelli, E. Lorenzetto, M. Sega, R. Chignola, G. Berton. Sosl regulates macrophage podosome assembly and macrophage invasive capacity. *The Journal of Immunology* (2015), 195: 4900-4912
24. C. Lombardo, M. Bolla, R. Chignola, G. Senna, G. Rossin, B. Caruso, C. Tomelleri, D. Cecconi, A. Brandolini, G. Zoccatelli. A study of the immunoreactivity of *T. monococcum* (Einkorn) wheat in patients with wheat-dependent exercise-induced anaphylaxis for the production of hypoallergenic foods. *Journal of Agricultural and Food Chemistry* (2015), 63: 8299-8306
25. R. Chignola, M. Sega, S. Stella, V. Vyshemirsky, E. Milotti. From single-cell dynamics to scaling laws in oncology. *Biophysical Reviews and Letters* (2014), 9: 273-284
26. M. Sega, R. Chignola. Population ecology of heterotypic tumour cell cultures. *Cell Proliferation* (2014), 47: 476-483
27. G. Gonzato, A. Castellarin, R. Chignola, F. Gamberini, P. Lazzeri, Unione Speleologica Veronese. New dating of paleokarst features at Torricelle hills (Verona, Italy). *Italian Journal of Geosciences* (2014), 133: 427-438
28. S. Stella, R. Chignola, E. Milotti. Efficient and extendible class scheme for the combined reaction-diffusion of multiple molecular species. *Computer Physics Communications* (2014), 185: 826-835
29. E. Milotti, V. Vyshemirsky, M. Sega, S. Stella, R. Chignola. Metabolic scaling in solid tumours. *Scientific Reports* (2013), 3: 1938
30. E. Milotti, V. Vyshemirsky, M. Sega, S. Stella, F. Dogo, R. Chignola. Computer-aided biophysical modeling: a quantitative approach to complex biological systems. *IEEE/ACM Transactions on Computational Biology and Bioinformatics* (2013), 10: 805-810
31. A. Cesano, O. Perbellini, E. Evensen, C.C. Chu, F. Cioffi, J. Ptacek, R.N. Damle, R. Chignola, J. Cordeiro, X. Yan, R.E. Hawtin, I. Nichele, J.R. Ware, C. Cavallini, O. Lovato, R. Zanotti, K.R. Rai, N. Chiorazzi, G. Pizzolo, M.T. Scupoli. Association between B-cell receptor responsiveness and disease progression in B-cell chronic lymphocytic leukemia: results from single cell network profiling studies. *Haematologica* (2013), 98: 626-634

32. E. Milotti, V. Vyshemirsky, M. Sega, R. Chignola. Interplay between distribution of live cells and growth dynamics of solid tumours. *Scientific Reports* (2012), 2: 990
33. G. Zoccatelli, M. Sega, M. Bolla, D. Cecconi, P. Vaccino, C. Rizzi, R. Chignola, A. Brandolini. Expression of α -amylase inhibitors in diploid *Triticum* species. *Food Chemistry* (2012), 135: 2643-2649
34. M. Sega, C. Zanetti, C. Rizzi, M. Olivieri, R. Chignola, G. Zoccatelli. Production and characterization of monoclonal antibodies for the quantification of potentially allergenic xylanases from *Aspergillus niger*. *Food Additives and Contaminants. Part A. Chemistry, Analysis, Control, Exposure & Risk Assessment* (2012), 29: 1356-1363
35. R. Chignola. La distribuzione di Poisson nel laboratorio biomedico. *MatematicaMente* (2012), 168
36. R. Chignola, E. Milotti. Bridging the gap between the micro- and the macro-world of tumors. *AIP Advances* (2012), 2: 011204
37. M. Consolini, M. Sega, C. Zanetti, M. Fusi, R. Chignola, M. De Carli, C. Rizzi, G. Zoccatelli. Emulsification of simulated gastric fluids protects wheat alpha-amylase inhibitor 0.19 epitopes from digestion. *Food Analytical Methods* (2012), 5: 234-243
38. R. Chignola, M. Farina, A. Del Fabbro, E. Milotti. Modular model of TNF α cytotoxicity. *Bioinformatics* (2011), 27: 1754-1757
39. R. Chignola, A. Del Fabbro, M. Farina, E. Milotti. Computational challenges of tumor spheroid modeling. *Journal of Bioinformatics and Computational Biology* (2011), 9: 559-577
40. R. Chignola, E. Milotti. Batteri, virus, mutazioni e statistica: l'esperimento di Luria e Delbrück. *MatematicaMente* (2011), 157
41. E. Milotti, R. Chignola. Emergent properties of tumor microenvironment in a real-life model of multi-cell tumor spheroids. *PLoS ONE* (2010), 5: e13942
42. R. Chignola, A. Del Fabbro, E. Milotti. Dynamics of intracellular Ca²⁺ oscillations in the presence of multisite Ca²⁺-binding proteins. *Physica A - Statistical Mechanics and its Applications* (2010), 389: 3172-3178
43. A. Gliozzi, C. Guiot, R. Chignola, P. Delsanto. Oscillations in growth of multicellular tumor spheroids: a revisited quantitative analysis. *Cell Proliferation* (2010), 43: 344-353
44. C. Tomelleri, C. Dalla Pellegrina, R. Chignola. Microplate spectrophotometry for the high-throughput screening of cytotoxic molecules. *Cell Proliferation* (2010), 43: 130-138
45. E. Milotti, A. Del Fabbro, R. Chignola. Numerical integration methods for large-scale biophysical simulations. *Computer Physics Communications* (2009), 180: 2166-2174
46. C. Dalla Pellegrina, O. Perbellini, M. T. Scupoli, C. Tomelleri, C. Zanetti, G. Zoccatelli, M. Fusi, A. Peruffo, C. Rizzi, R. Chignola. Effects of wheat germ agglutinin on human gastrointestinal epithelium: insights from an experimental model of immune/epithelial cells interaction. *Toxicology and Applied Pharmacology* (2009), 237: 146-153
47. E. Milotti, R. Chignola, C. Dalla Pellegrina, A. Del Fabbro, M. Farina, D. Liberati. VBL: Virtual Biophysics Lab. *Il Nuovo Cimento* (2008) 31C: 109-118
48. E. Milotti, A. Del Fabbro, C. Dalla Pellegrina, R. Chignola. Statistical approach to the analysis of cell desynchronization data. *Physica A - Statistical Mechanics and its Applications* (2008) 387: 4204-4214
49. C. Tomelleri, E. Milotti, C. Dalla Pellegrina, O. Perbellini, A. Del Fabbro, M. T. Scupoli, R. Chignola. A quantitative study on the growth variability of tumour cell clones in vitro. *Cell Proliferation* (2008) 41: 177-191
50. G. Zoccatelli, C. Dalla Pellegrina, M. Consolini, M. Fusi, S. Sforza, G. Aquino, A. Dossena, R. Chignola, A. Peruffo, M. Olivieri, C. Rizzi. Isolation and identification of two lipid transfer proteins in pomegranate (*Punica granatum*). *Journal of Agricultural and Food Chemistry* (2007) 55: 11057-11962

51. R. Chignola, A. Del Fabbro, C. Dalla Pellegrina, E. Milotti. Ab initio phenomenological simulation of the growth of large tumor cell population. *Physical Biology* (2007) 4: 114-133
52. E. Milotti, A. Del Fabbro, C. Dalla Pellegrina, R. Chignola. Dynamics of allosteric action in multisite protein modification. *Physica A - Statistical Mechanics and its Applications* (2007), 379: 133-150
53. G. Zoccatelli, C. Dalla Pellegrina, S. Mosconi, M. Consolini, G. Veneri, R. Chignola, A. Peruffo, C. Rizzi. Full-fledged proteomic analysis of bioactive wheat amylase inhibitors by a three-dimensional analytical technique: Identification of new heterodimeric aggregation states. *Electrophoresis* (2007), 28: 460-466
54. R. Chignola, C. Dalla Pellegrina, A. Del Fabbro, E. Milotti. Thresholds, long delays and stability from generalized allosteric effect in protein networks. *Physica A - Statistical Mechanics and its Applications* (2006), 371: 463-472
55. R. Chignola, P. Dai Pra, L. M. Morato, P. Siri. Proliferation and death in a binary environment: a stochastic model of cellular ecosystems. *Bulletin of Mathematical Biology* (2006), 68: 1661-1680
56. G. Veneri, G. Zoccatelli, S. Mosconi, C. Dalla Pellegrina, R. Chignola, C. Rizzi. A rapid method for the recovery, quantification and electrophoretic analysis of proteins from beer. *Journal of the Institute of Brewing* (2006), 112: 26-27
57. R. Chignola, A. Del Fabbro, R. Foroni, E. Milotti. Modellizzazione biofisica per la crescita dei tumori solidi. *Automazione e Strumentazione* (2005) 10: 87-93
58. C. Dalla Pellegrina, C. Rizzi, S. Mosconi, G. Zoccatelli, A. Peruffo, R. Chignola. Plant lectins as carriers for oral drugs: is wheat germ agglutinin a suitable candidate? *Toxicology and Applied Pharmacology* (2005), 207: 170-178
59. C. Dalla Pellegrina, G. Padovani, F. Mainente, G. Zoccatelli, G. Bissoli, S. Mosconi, G. Veneri, A. Peruffo, G. Andrighetto, C. Rizzi, R. Chignola. Anti-tumour potential of a gallic acid-containing phenolic fraction from *Oenothera biennis*. *Cancer Letters* (2005), 226: 17-25
60. R. Chignola, E. Milotti. A phenomenological approach to the simulation of metabolism and proliferation dynamics of large tumor cell populations. *Physical Biology* (2005), 2: 8-22
61. S. Vincenzi, S. Mosconi, G. Zoccatelli, C. Dalla Pellegrina, G. Veneri, R. Chignola, A. Peruffo, A. Curi-
oni, C. Rizzi. Protein recovery from wine and their quantification: development of a new procedure. *American Journal of Enology and Viticulture* (2005), 56: 182-187
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