

Curriculum Vitae

Professor of Physics, Padua University - Italy (2003 -)
Dean of the School of Excellence “Scuola Galileiana”, Padua, Italy (2004 - 2010)
Professor of Physics, SISSA Trieste – Italy (1994 -2003)
Scientific consultant, ICTP Trieste – Italy (1997-2003)
Associate Professor of Physics, Padua University - Italy (1991 - 1994)
Associate Professor of Physics, Bari University – Italy (1987 - 2001)
Research Associate of Physics, Padua University – Italy (1983 - 1987)

Education:

Physics degree at the University of Padova (1979);
Ph.D. in Physics at SISSA, Trieste (1983).

Academic Appointments:

Dean of the School of Excellence “Scuola Galileiana di Studi Superiori”, Padua-Italy (2004 - 2010)
Scientific consultant, ICTP Trieste – Italy (1997-2003)
Correspondent resident member of "Istituto Veneto di Lettere Scienze ed Arti (2006-).

Teaching: Quantum Mechanics, Statistical Physics, Physics of Complex Systems, Basic Physics, Non-Equilibrium Statistical Mechanics, Stochastic Processes.

Thesis: About 30 PhD students, 40 undergraduate students and 20 Postdocs.

Publications: 295 original publications in refereed journals including 3 in Science, 13 in Nature, 22 in Proceedings of the National Academy of the United States, 55 in Physical Review Letters, 2 in Review of Modern Physics, 32 in Physical Review E, 12 in Journal of Statistical Physics, 12 in Journal of Chemical physics, 27 in Journal of Physics A-Mathematical and General, 5 in Nuclear Physics B, 2 in Physics Letters B, 1 in Physics Letters A, 2 in Nuovo Cimento, 2 in Europhys Letters etc..

Total number of citations: 5700

h-index: 42

Active collaborations: J.R. Banavar, J. Brown, M. Moses, J. Damuth, S. Hubbell, I. Rodriguez-Iturbe (USA); M. Cieplak (Poland); T.X. Hoang (Vietnam); S. Azaele (UK); B. Kunin (UK), S. Cornel (UK); A. Rinaldo, E. Bertuzzo, (Switzerland); T. Anfodillo, M. Carrer , G. Castellani, A. Laio, A. Trovato, F. Seno, M. Zamparò(Italy); M. Munoz (Spain).

International recognition and diffusion: Our work has been disseminated in invited talks in American Physical Society Meetings, Canadian Physical Society Meeting, Stat Phys Meeting, and talks in US, England, Poland, Denmark, Switzerland, China, India, Canada, France, Vietnam, Mexico and Italy. Our research has been mentioned in Science (06/04/99), Scientific American (06/14/99), Science News (10/16/99), New York Times (11/23/99), Nature (7/20/00), Chemical and Engineering News (7/24/00), Science (07/28/00), Science News (08/19/00), Physics World (05/00), Business Week (11/5/01), Times Higher Education Supplement (4/12/02), Science News (8/23/02), The Scientist (4/21/03), Deccan Herald, India (7/15/03), Nature (2/28/03), Discover Science Almanac (2003), Physics Today (9/04), “Power, sex, and suicide” by Nick Lane, Oxford University Press (2005), “In the beat of a heart” by John Whitfield, Joseph Henry Press (2006), APS Focus on Physics (2010).

Efforts and ability to inspire younger researchers: Mentoring of PhD students and post-docs who now hold faculty positions:

PhD students:

1. G. Gonnella, Department of Physics, University of Bari, Italy ;
2. G.L. Lattanzi, Department of Medicine University of Bari, Italy;
3. M. Marsili, International Center of Theoretical Physics, Trieste, Italy ;
4. A. Trovato, Department of Physics, University of Padova, Italy;
5. C. Clementi, Department of Chemistry, Rice University, Texas, USA ;
6. D. Marenduzzo, University of Edinburgh, School of Physics & Astronomy, Scotland;
7. M. Vendruscolo, University of Cambridge, Department of Chemistry, Cambridge, England;
8. P. De Los Rios, Ecole Polytechnique, Institute of Theoretical Physics, Lausanne, Switzerland;
9. G. Caldarelli, University of Roma, Centre of Statistical Mechanics & Complexity, Rome, Italy;
10. F. Colaiori, University of Roma La Sapienza and CNR, Roma, Italy;
11. A. Flammini, Indiana University, School of Informatics, Bloomington, Indiana USA.
12. S. Azaele, University of Leeds, UK.

Post-docs:

1. C. Micheletti, International School for Advanced Studies, Trieste, Italy;

2. M. R. Swift, University of Nottingham, School of Physics & Astron, Nottingham, England;
3. A. Giacometti, University of Venice, Dipartimento Chimica-Fisica, Venice, Italy;
4. T.X. Hoang, Academy of Science & Technology, Institute of Physics, Hanoi 10000, Vietnam;
5. F. Cecconi, Center for Statistical Mechanics & Complexity, Roma, Italy.

Funding ID. Current grants:

PRIN (Programmi di Ricerca scientifica di rilevante Interesse Nazionale) 2009-2012. Title of the project: Dynamics of communities.

Fondazione Cariparo 2010-2013. Title of the project: A framework for spatiotemporal processes in ecosystem dynamics - a physics perspective.

Top 10 cited publications since 2001

1. NS Holter, A Maritan, M Cieplak, NV Federoff and JR Banavar, *Dynamic modeling of gene expression data*, Proceeding of the National Academy of Science (USA), **98**, 1693-1698 (2001). Times cited 144.
2. A Vazques, A Flammini, A Maritan and A Vespignani, *Global protein function prediction from protein-protein interaction network*, Nature Biotechnology, **21**, 23697-700 (2003). Times cited 162.
3. I Volkov, JR Banavar, SP Hubbell and A Maritan, *Neutral theory and relative species abundance in ecology*, Nature **424**, 1035-1037 (2003). Times cited 166.
4. TX Hoang, ATrovato, F Seno, JR Banavar and A Maritan, *Geometry and symmetry presculpt the free-energy landscape of proteins*, Proceeding of the National Academy of Science (USA), **101**, 7960-7964 (2004). Times cited 65.
5. I Volkov, JR Banavar, FL He, SP Hubbell and A Maritan, *Density dependence explains tree species abundance and diversity in tropical forests*, Nature **438**, 658-661 (2005). Times cited 60.
6. JR Banavar, A Maritan, *Colloquium: Geometrical approach to protein folding: a tube picture*, Review Modern Physics, **75**, 23-24 (2003). Times cited 57.
7. D Marenduzzo, A Trovato, A Maritan, *Phase diagram of force-induced DNA unzipping in exactly solvable model*, Physical Review **E64**, 031901 (2001). Times cited 52.
8. C Micheletti, P Carloni, A Maritan, *Accurate and efficient description of protein vibrational dynamics: Comparing molecular dynamics and Gaussian models*, Proteins-Structure Function and Bioinformatics **55**, 635-645 (2004). Times cited 49.
9. S Azaele, S Pigolotti, JR Banavar and A Maritan, *Dynamical evolution of ecosystem*, Nature, **444**, 926-928 (2006). Times cited 14
10. I Volkov, JR Banavar, SP Hubbell and A Maritan, *Patterns of relative species abundance in rainforests and coral reefs*, Nature **450**, 45-49 (2007). Times cited 26.

B. Research monographs, chapters in collective volumes and any translations.

1. JR Banavar and A. Maritan, *Life on earth: the role of proteins*, In Fitness of the Cosmos for Life, Biochemistry and fine-tuning, edited by JD Barrow et al. (Cambridge University Press, 2008).
2. J R Banavar, TX Hong, A. Maritan and A. Trovato, *Spin glasses, tubes and proteins*, In *Protein Folding and Drug Design: Proceedings of the International School of Physics "Enrico Fermi" : Course Clxv : Varenna on Lake Como, Villa Monastero, 165*, 135-144, edited by RA Broglia, EI Shakhnovich and G Tiana (IOS Press Amsterrdam, 2007).
3. J. R. Banavar, T X Hoang, A. Maritan and A. Trovato, in *Protein Folding, Evolution and Design*, Proceedings of the International School of Physics "Enrico Fermi" : Course Cxlv : Varenna on Lake Como, Villa Monastero, **145**, 135-144, Edited by RA Broglia, EI Shakhnovich and G Tiana (IOS Press, Amsterdam, 2001).

C. Granted patents: Patent S.I.S.S.A. n. RM2001A000633 dd. 25.10.2001; Title: "Method of identifying a consensus sequence for intracellular antibody". Inventors: Cattaneo, Visintin, Maritan and Settanni. This patent has been sold. We describe the application of an intracellular antibody capture technology (IACT) as a generic *in vivo* selection procedure for isolating intracellular antibodies or ICABs. The development of IACT, together with the possibility of scaling up in a high throughput and automated format, makes IACT a new enabling tool for target validation in functional genomics and global proteomics. Visintin M, Settanni G, Maritan A, Graziosi S, Marks JD and Cattaneo A.J. Mol. Biol. **317**, 73-83 (2002).

D. Invited presentations at:

1. *Statphys 21*, Cancun, Mexico, 2001.

2. *XI Workshop on Computational Material Science* Cagliari, Italy, 2001.
3. *Workshop College on Biophysics: From Molecular Genetics to Structural Biology*, ICTP, Trieste, Italy, 2001.
4. *Workshop of the Biophysical Society*, Copenhagen, Denmark, 2002.
5. *Workshop Typical-Case Complexity, Randomness and Analysis of Search Algorithms* ICTP, Trieste, Italy, 2002.
6. *Summer School on Environmental Dynamics*, Venezia, Italy, 2004.
7. *Workshop on Biopolymers: Thermodynamics, Kinetics and Mechanics of DNA, RNA and Proteins*, ICTP Trieste, Italy, 2005.
8. *Summer School on Environmental Dynamic*, Venezia, Italy, 2005.
9. *International Workshop on Infectious Disease: Theoretical, Ecological and Economic Approaches*, ICTP Trieste, Italy, 2005.
10. *Protein Folding and Drug Design*", Varenna Summer School at International School of Physics "Enrico Fermi" 2006.
11. *Evolvability: the evolution of evolution*, Varenna, International School of Physics "Enrico Fermi" , 2007.
12. *Summer School on Environmental Dynamic*, Istituto Veneto Scienze Lettere ed Arti, Venezia 2007.
13. *Sysbiohealth Symposium*, Bologna, Italy, 2008.
14. *NetSci 09 International Workshop and Conference on Complex Networks and their Applications*, Venezia, Italy, 2009.
15. And at 50 other conferences and universities around the world.

E. Organisation of International conferences:

1. *International Workshop on Protein Folding, Structure and Design*, 2001 ICTP Trieste (Italy). Organizers: J. Banavar and A. Maritan.
2. Member of the National Advisory Committee of Statphys 2003, Italy.
3. *International Workshop on "Proteomics: Protein Structure, Function and Interactions"* 2003 ICTP Trieste (Italy). Organizers: J. Banavar, A. Maritan
4. *International Workshop on "Quantitative Ecology"* 2005 ICTP Trieste (Italy). Organizer(s): J. Banavar, J.D. Damuth, J. Harte and A. Maritan

F. Memberships to Editorials Boards of International Journals: Member of the editorial board of *ComplexUs*.

G. Referee of *Nature*, *Proceeding of the National Academy of Science (USA)*, *Physical Review Letters*, *Journal of Theoretical Biology*, *Journal of Molecular Biology*, *Journal of Statistical Physics*, *Journal of Chemical Physics*, *Nuclear Physics*, *National Science Foundation (USA)* .

