

Curriculum Vitae



PERSONAL DATA

Full Name: Josep Sardanyés i Cayuela.

Date and place of birth: 6th August 1976 in Granollers (Barcelona).

Institutional address/affiliations:

Gladstone Institute of Virology and Immunology
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1.- EDUCATION

1. Postdoc in the Evolutionary Systems Virology Group (headed by Prof. Santiago F. Elena) at Institute of Molecular and Cellular Plant Biology (IBMCP) - National Spanish Research Council (CSIC) in València (Spain), from September 2009 to May 2011.

2. Ph.D. in Biology graduated Excellent *Cum Laude* at Universitat Pompeu Fabra (UPF), Barcelona, 6th May 2009.

Thesis title: Dynamics, evolution and information in nonlinear dynamical systems of replicators.

Supervisor: Dr. Ricard V. Solé.

Tribunal Members: Dr. Jordi Garcia-Ojalvo, Prof. David Jou, Prof. Santiago F. Elena, Dr. Esteban Domingo and Dr. Antonio Mas.

3. Master in Biomedicine (BIOMED 2007-2008) held at UPF in Barcelona.

4. Ph.D. classes on ecology at the University of Barcelona (UB) in 2003, qualification: Grade A.

5. Bachelor in Biology at UB in 2002.

LANGUAGES:

English:

First Certificate Exam (Cambridge University) in 1998.

I.C.C. (International Certificate Conference) in 1997.

Spanish: Mother tongue.

Catalan: Mother tongue.

COMPUTER SKILLS:

C programming. Fortran programming. Knowledge of the Linux environment: Xmgrace, Xfig, and *LaTEX* editing. File Maker Pro. Mathematica.

2.- SCIENTIFIC WORKING EXPERIENCE

1. Postdoc in Dr. Leor Weinberger's Lab (Gladstone Institute of Virology and Immunology), University of California San Francisco (UCSF), San Francisco CA, USA. October 2011 –.

2. Postdoc in Prof. Santiago F. Elena's Lab (Institute of Molecular and Cellular Plant Biology) – National Spanish Research Council, Universitat Politècnica de València (UPV). **Project:** Human Science Frontier Program Organization project RGP12/2008 “*Evolutionary implications of virus-encoded gene-silencing suppression*”. Project in collaboration with Dr. Ricard V. Solé (Universitat Pompeu Fabra, Barcelona) and Prof. Nam-Hai Chua (The Rockefeller University, New York). Duration of the postdoc: September 2009 – May 2011.

3. Employed as a superior technician of scientific research assistance at the *Complex Systems Lab* (group headed by Ricard V. Solé) located at the Barcelona Biomedical Research Park (PRBB), Department of Health and Life Sciences (Universitat Pompeu Fabra, UPF). **Project:** PACE (*Programmable Artificial Cell Evolution*) funded by the European Union FP-06002035 during March 2007 to June 2008.

4. Employed as a scientific research assistant at the Complex Systems Lab (UPF) funded by the European P.A.C.E. **Project:** PACE (*Programmable Artificial Cell Evolution*) funded by the European Union FP-06002035 from December 2006 to February 2007.

5. Scholar at the Complex Systems Lab (UPF) with a grant from the European P.A.C.E. **Project:** PACE (*Programmable Artificial Cell Evolution*) funded by the European Union FP-06002035 from July 2004 to November 2006.

3.- SCIENTIFIC INTERESTS

Broadly speaking, I am working on Systems Biology within the fields of theoretical Biology, nonlinear mathematical modeling and complex systems. My current research is concerned with theoretical and computational Virology focusing on human immunodeficiency virus (HIV-1) and herpes simplex virus 1 (HSV-1). Specifically, I am interested in the co-evolutionary dynamics of HIV-1 with the so-called therapeutic interfering particles, which are HIV-1 engineered genomes lacking key genes for viral replication and transmission, acting as parasites of the full HIV-1 genomes. I am also studying spatial models of cell-to-cell HIV-1 infection to investigate the problem of virus persistence and resistance to the immune system and drugs. Previously, in my first postdoc I developed research on plant RNA viruses from both dynamical and evolutionary perspectives, closely collaborating with experimentalists in an international project about virus RNA silencing involving groups from New York and Barcelona. During my PhD at the *Complex Systems Lab* in Barcelona I worked with the quasispecies and the hypercycle theories, also studying host-pathogen co-evolution. Most of my research is concerned with dynamics, which I address using the qualitative theory of dynamical systems, together with computer simulations. I also study biological systems using non-spatial and spatial (e.g., cellular automaton) individual-based models. In addition to my main research in Virology, I am also interested in Immunology, Epidemiology, molecular and organismal theoretical Ecology as well as in broader topics of complex systems such as bifurcations and transients, control theory and chaos.

4.- PRIZES

1. Knowledge Transference Prize 2010 (3000 € award) in health and life sciences to the doctorate thesis: *Dynamics, Evolution and Information in Nonlinear Dynamical Systems of Replicators*, awarded by the Social Council of Universitat Pompeu Fabra (UPF), Barcelona (Spain).

2. PhD extraordinary prize of the course 2008/9 awarded by the UPF Doctorate and Postgraduate Commission.

5.- INTERNATIONAL RESEARCH STAYS

1. ISEL – Engineering Superior Institute of Lisbon. Department of Mathematics (Lisbon, Portugal), 16–22 June, 2011.

2. Kavli Institute for Theoretical Physics (University of California Santa Barbara, UCSB), Santa Barbara, California (USA), from January 31 to March 18, 2011. Research stay partially funded by the National Science Foundation under Grant N° NSF PHY05-51164.

3. Centre for Mathematical Analysis, Geometry and Dynamical Systems, Instituto Superior Técnico, Lisbon, Portugal in June 2010.

4. Centre for Mathematical Analysis, Geometry and Dynamical Systems, Instituto Superior Técnico, Lisbon, Portugal in April 2010.

5. The Santa Fe Institute (Santa Fe, New Mexico - USA) in February 2010.
6. Centre for Mathematical Analysis, Geometry and Dynamical Systems, Instituto Superior Técnico, Lisbon, Portugal in July 2009.
7. The Santa Fe Institute (Santa Fe, New Mexico - USA) in March 2009.
8. Centre for Mathematical Analysis, Geometry and Dynamical Systems, Instituto Superior Técnico, Lisbon, Portugal in January 2009.
9. The Santa Fe Institute (Santa Fe, New Mexico - USA), Protocell Dynamics Group in December 2005.

6.- NATIONAL RESEARCH STAYS

1. Instituto de Biología Molecular y Celular de Plantas (IBMCP), Consejo Superior de Investigaciones Científicas-UPV, (in Santiago F. Elena's lab) in June 2008.

7.- ATTENDANCE TO WORKSHOPS AND COURSES

1. *Cell Press Lablinks: Synthetic Biology* workshop. Genentech Hall, University of California San Francisco (USA), December 14, 2011.
2. Workshop 2: *Stochastic Processes in Cell Population Biology*. Mathematical Biosciences Institute. The Ohio State University, Columbus Ohio (USA), October 24-28, 2011.
3. BioFiViNet, First meeting of the Interdisciplinary Spanish Network of Virus Biophysics. Universitat de Barcelona (UB), Barcelona (Spain), April 6-8, 2011.
4. Conference *Microbian and Viral Evolution* on theoretical and experimental biology of pathogens. Kavli Institute for Theoretical Physics, University of California Santa Barbara (UCSB), Santa Barbara, California (USA), from January 31 to March 18, 2011.
5. 4th Annual French Complex Systems Summer School 2010. Institut des Systèmes Complexes, Paris (France). August 2-20, 2010.
6. XVII Seminar of *Population Genetics and Evolution*, Guitiriz, Galicia (Spain), 5-7 May 2010.
7. *REVIPLANT II* Meeting of the Spanish network of plant virologists. Puerto de Santa Maria, Cadiz (Spain), 8-10 March 2010.
8. 5th Meeting of the Spanish Network of Systems Biology, Madrid (Spain), 13-15 December 2009.
9. 2nd Meeting of the Spanish Network of Evolutionary Biology (SESBE), València (Spain), from November 29 to December 2, 2009.
10. Jacques Monod Conference *Understanding emergence of infectious diseases: focus on new experimental and theoretical approaches to virus evolution*. Roscoff (France), September 2009.
11. Summer school on *Steps in Evolution: Perspective from Physics, Biochemistry, and Cell Biology (150 years after Darwin)*, held at Jacobs University, Bremen (Germany), from June 28 to July 5, 2009.
12. Course on *Adaptive Dynamics* by Prof. Stephan Geritz held at "Dipartimento di Elettronica e Informazione di Politecnico di Milano" Milano (Italy), 21-23 March, 2009.
13. National congress "*Nolineal 2008*" held at Universitat Politècnica de Catalunya from, Barcelona (Spain), 16-19 June, 2008.
14. International Workshop-School, *Chaos and Dynamics in Biological Networks 2008*, Institute d'Etudes Scientifiques de Cargese, Cargese (Corsica), 5-9 May, 2008.
15. Summer school NEEDS 2007 (*Nonlinear Evolution Equations and Dynamical Systems*), l'Ametlla de Mar

(Spain), 16th-17 June, 2007.

16. Workshop NEEDS 2007, l'Ametlla de Mar (Spain), 18-24 June, 2007.

17. *Advanced Course on Long time integrations* - LTI07, held at the Facultat de Matemàtiques of the University of Barcelona, Barcelona (Spain), 3-7 September, 2007.

18. *Advanced Course on Computer Assisted Proofs in Dynamics* - CAP 2007, held at the Facultat de Matemàtiques of the University of Barcelona, Barcelona (Spain), 12-23 February, 2007.

19. Workshop “*Chemical Evolution and Self-Assembly*”, held at the European Center for Living Technology (ECLT) Venice (Italy), 21-22 May, 2007.

20. Conference “*Conference on Living Technology*”, held at the ECLT Venice (Italy), 25-26 May, 2007.

21. Workshop “*Modeling Populations of Protocells*”, held at the ECLT Venice (Italy), 18-19 March, 2007.

22. V CRG Symposium (Centre for Genomic Regulation) . “*Systems Biology: A Cell in the Computer*”, held at the Barcelona Biomedical Research Park, Barcelona (Spain), 15-16 December, 2006.

23. 20th Sitges conference on statistical mechanics. *Physical Biology: from Molecular Interactions to Cellular Behavior*, Sitges (Spain), 5-9 June, 2006.

24. Workshop “*Evolution, Information and Computation: From Living to Non-Living Matter*”, held at the ECLT Venice (Italy), 23-26 May, 2006.

25. Workshop “*Protocells: experiments, ethics, and technological potential*” held at the ECLT Venice (Italy), 21-25 March 2005.

26. Intensive courses on C Programming language at BIT Academy in Barcelona (Spain), 2003.

8.- PUBLICATIONS

RESEARCH ARTICLES IN PEER-REVIEWED JOURNALS:

1. **Sardanyés J.***, Duarte J., Januário C., and Martins N., Controlling delayed transitions with applications to prevent single species extinctions. Under review in *Advances in Differential Equations and Control Processes* (2012). **corresponding author*

2. Duarte J., Januário C., Martins N., and **Sardanyés J.***, On chaos, transient chaos and ghosts in single population models with *Allee* effects. *Nonlin. Analys. Series B* (2012). In Press.

3. **Sardanyés J.***, Martínez F., Daròs J. A., and Elena, S. F., Dynamics of alternative modes of RNA replication for positive-sense RNA viruses. *J. Roy. Soc. Interface* (2012). In Press.

4. Duarte J., Januário C., Martins N., and **Sardanyés J.***, Scaling law in saddle-node bifurcations for one dimensional maps: a complex variable approach. *Nonlinear Dyn.* 67: 541-547 (2012).

5. **Sardanyés J.**, Duarte J., Januário C. and Martins N., Topological entropy of catalytic sets: Hypercycles revisited. *Commun. Nonlin. Sci. Num. Sim.* 17 (2): 795-803 (2012).

6. **Sardanyés J.*** and Elena S.F., Quasispecies spatial models for RNA viruses with different replication modes and infection strategies. *PLoS ONE* 6 (9): e24884 (2011).

7. Lafforgue G. [©], Martínez F. [©], **Sardanyés J. [©]**, de la Iglesia F., Shi-Shun L., Qi-Wen N., Solé R. V., Chua N-H., Daròs J. A., and Elena S.F., Tempo and mode of plant RNA virus escape from RNA interference-mediated resistance. *J. Virol.* 85 (19): 9686-9695 (2011). [©] *equal contribution*. *This article was selected by the Editors of J. Virol as Article of Significant Interest, Spotlight in J. Virol.* 85 (19): 9657 (2011).

8. Martínez F., **Sardanyés J.**, Elena, S. F., and Daròs J. A., Dynamics of a plant RNA virus accumulation: stamping machine versus geometric replication. *Genetics* 188: 637-646 (2011).

9. **Sardanyés J.**, Low dimensional homeochaos in coevolving host-parasitoid dimorphic populations: Extinction thresholds under local noise. *Commun. Nonlin. Sci. Num. Sim.* 16: 3896-3903 (2011).
10. Lafforgue G., **Sardanyés J.**, and Elena S.F., Differences in accumulation and virulence determine the outcome of outcompetition during *Tobacco etch virus* coinfection. *PLoS ONE* 6: e17917 (2011).
11. Duarte J., Januário C., Martins N., and **Sardanyés J.***, Quantifying chaos for ecological stoichiometry, *Chaos* 20: 033105 (2010). *This article was selected for publication in the Virtual Journal of Biological Physics Research 20 (3): Statistical and Nonlinear Physics (2010). This paper was in the Top 20 Most Downloaded Articles of September 2010 in the Chaos Journal website.*
12. Elena S. F., Solé R. V., and **Sardanyés J.**, Simple genomes, complex interactions: Epistasis in RNA virus. *Chaos* 20: 026106 (2010). *This paper was highlighted in Chaos: Getting a step ahead of pathogens. This paper was in the Top 20 Most Downloaded Articles of September 2010 in the Chaos Journal website.*
13. **Sardanyés J.*** and Elena S. F., Error threshold in RNA quasispecies models with complementation. *J. Theor. Biol.* 265: 278-286 (2010).
14. **Sardanyés J.*** and Fontich E., On the metapopulation dynamics of autocatalysis: extinction transients related to ghosts. *Int. J. Bifurc. and Chaos* 20 (4): 1-8 (2010).
15. Duarte J., Januário C., Martins N., and **Sardanyés J.***, Chaos and crises in a model for cooperative hunting: a symbolic dynamics approach. *Chaos* 19: 043102 (2009).
16. **Sardanyés J.***, Solé R. V., and Elena S. F., Replication mode and landscape topology differentially affect RNA virus mutational load and robustness. *J. Virol.* 83 (23): 12579-12589 (2009). *This paper was featured in the Human Frontier Science Program website.*
17. Fontich E., and **Sardanyés J.**, Dynamical role of the degree of intraspecific cooperation: a simple model for prebiotic replicators and ecosystems. *Physica A* 388 (9): 1867-1878 (2009).
18. **Sardanyés J.***, Ghosts in high dimensional non linear dynamical systems: The example of the Hypercycle. *Chaos, Solitons and Fractals* 39 (1): 92-100 (2009).
19. Fontich E., and **Sardanyés J.**, General scaling law in the saddle-node bifurcation: a complex phase space study. *J. Phys. A: Math. and Theor.* 41 (15102): 1-9 (2008).
20. **Sardanyés J.**, Elena S. F. and Solé R. V., Simple quasispecies models for the survival-of-the-flattest effect: the role of space. *J. Theor. Biol.* 250(3): 560-568 (2008).
21. **Sardanyés J.***, Error threshold ghosts in a simple hypercycle with error prone self-replication. *Chaos, Solitons and Fractals* 35: 313-319 (2008).
22. **Sardanyés J.**, and Solé R. V., Matching allele dynamics and coevolution in a minimal predator-prey replicator model. *Phys. Lett. A* 372 (4): 341-350 (2008).
23. **Sardanyés J.*** and Solé R. V., Delayed transitions in nonlinear replicator networks: About ghosts and hypercycles. *Chaos, Solitons and Fractals* 31 (2): 305-315 (2007).
24. **Sardanyés J.*** and Solé R. V., Space-time dynamics in simple asymmetric hypercycles under weak parasitic coupling. *Physica D* 231 (2): 116-129 (2007).
25. **Sardanyés J.*** and Solé R. V., Red Queen strange attractors in host-parasite replicator gene-for-gene coevolution. *Chaos, Solitons and Fractals* 32 (5): 1666-1678 (2007).
26. **Sardanyés J.*** and Solé R. V., Chaotic stability in spatially-resolved host-parasite replicator: The Red Queen on a lattice. *Int. J. Bifurc. and Chaos* 17 (2): 1-18 (2007).
27. **Sardanyés J.*** and Solé R. V., The role of cooperation and parasites in nonlinear replicator delayed extinctions. *Chaos, Solitons and Fractals* 31(5): 1279-1296 (2007).
28. **Sardanyés J.**, and Solé R. V., Bifurcations and phase transitions in spatially-extended two-member hypercycles. *J. Theor. Biol.* 243 (4): 468-482 (2006).
29. **Sardanyés J.*** and Solé R. V., Ghosts in the origins of life? *Int. J. Bifurc. and Chaos* 16 (9):2761-2765

(2006).

30. Solé R. V., **Sardanyés J.**, Diez J., and Mas A., Information catastrophe in RNA viruses through replication thresholds. *J. Theor. Biol.* 240 (3): 353-359 (2006).

BOOK CHAPTERS:

31. Duarte J., Januário C., Martins N. and **Sardanyés J.**, Symbolic dynamics and control in chaotic systems. Chapt. 1, p. 1-41 in *Advanced Topics in Chaos Theory and Dynamics*, (ed. E. Zeraoulia). Science Publishers (2012).

32. **Sardanyés J.**, The hypercycle: from molecular to ecosystems dynamics. Chapt. 6, in *Landscape Ecology Research Trends*, (Eds. Arthur Dupont and Hugo Jacobs). Nova Publishers (2008).

33. Solé R. V., Macía J., Fellermann H., Munteanu A., **Sardanyés J.** and Valverde S., Models of protocell Replication. In *Protocells: bridging living and non-living matter*, (Eds. S. Rasmussen *et al.*). MIT Press (2008).

10.- TALKS AS A GUEST

1. *Dynamics of alternative modes of RNA virus replication: bifurcations and extinction thresholds*, University of Exeter, Exeter (UK), 7th July 2011.

2. *Studying the mode of replication in RNA viruses*, Instituto Gulbenkian de Ciencia, Oeiras (Portugal), 20th June 2011.

3. *Alternative modes of RNA virus replication: dynamics, bifurcations and extinction thresholds*, Department of Chemistry and Biochemistry. University of California San Diego (UCSD) La Jolla, CA (USA), May 31, 2011.

4. *Approaching to virologically realistic quasispecies models: the interplay between space, replication mode, fitness landscape, and superinfection*, 6th Meeting of the Spanish Systems Biology Network. Systems Biology: Bridging the gaps between disciplines, Barcelona (Spain) 9-10 December, 2010.

5. *Complex systems and evolution: Stochastic modeling of RNA-silencing mediated resistance breaking by evolving plant RNA virus quasispecies*, 5^{ième} Workshop du “Réseau Evolution Virale” (REV), Montpellier (France), September 30 – October 1, 2010.

6. *Exploring the interplay between RNA virus replication mode and landscape topologies: theoretical and computational models*, XVII Seminar of Population Genetics and Evolution, Guitiriz, Galicia (Spain), 5-7 May 2010.

7. *Error threshold in RNA quasispecies models with complementation*, Instituto Superior Técnico, Lisboa (Portugal), 30th March 2010.

8. *Error threshold in RNA quasispecies models with complementation*, II Meeting of the Spanish Network of Plant Virologists 2010, El Puerto de Santa Maria, Cadiz (Spain), 9th March 2010.

9. *Replication Mode and Landscape Topology Differentially Affect RNA Virus Mutational Load and Robustness*, The Santa Fe Institute, Santa Fe, New Mexico (USA), February 25, 2010.

10. *Replication Mode and Landscape Topology Differentially Affect RNA Virus Mutational Load and Robustness*. 5th Meeting of the Spanish Network of Systems Biology, Madrid (Spain), December 13, 2009.

11. *On the dynamics of RNA viruses through nonlinear differential equations*, Instituto Superior Técnico, Lisboa (Portugal), July 7, 2009.

12. *Theoretical and computational models for RNA virus dynamics: The survival of the flattest effect*, Department of Plant Molecular Biology. The Rockefeller University, New York (USA), March 17, 2009.

13. *Theoretical models of cooperation with ODEs: from prebiotic evolution to complex ecosystems*, Instituto Superior Técnico, Lisboa (Portugal), January 27, 2009.

14. “Simple quasispecies models for the survival-of-the-flattest effect: the role of space”. Workshop on Spatial Evolutionary Dynamics, organized by the Institut des Systèmes Complexes, Paris (France), October 17, 2008.

11.- POSTER PRESENTATIONS

1. *Tempo and mode of plant RNA virus escape from RNA interference-mediated resistance*, Workshop 2: Stochastic Processes in Cell Population Biology. Mathematical Biosciences Institute. The Ohio State University, Columbus Ohio (USA), October 24-28, 2011.

1. *Studying viral RNA intracellular accumulation under differential replication modes: A dynamical systems approach*, presented in the XI National Workshop of Virology, Granada (Spain), from May 29 to June 1, 2011.

2. *Approaching to virologically realistic quasispecies models: the interplay between space, replication mode, fitness landscape, and superinfection*, presented in the First meeting of the Interdisciplinary Spanish Network of Virus Biophysics (BioFiViNet). Universitat de Barcelona (UB), Barcelona (Spain), 6-8 April, 2011.

3. *Approaching to virologically realistic quasispecies models: the interplay between space, replication mode, fitness landscape, and superinfection*, presented in the 6th Meeting of the Spanish Systems Biology Network. Systems Biology: Bridging the gaps between disciplines, Barcelona (Spain) 9-10 December, 2010.

4. *Replication Mode and Landscape Topology differentially affect RNA virus mutational load and robustness*, presented in the 2nd Meeting of the Spanish Network of Evolutionary Biology. València (Spain), November 2010.

5. *Replication Mode and Landscape Topology differentially affect RNA virus mutational load and robustness*, presented in the Jacques Monod Conference: Understanding emergence of infectious diseases: focus on new experimental and theoretical approaches to virus evolution. Roscoff (France), September 2009.

6. *Delayed transitions in Hypercycles: ghosts in the origins of life?*, presented in NEEDS 2007, International Conference in Nonlinear Evolution Equations and Dynamical Systems held in “l’Ametlla de Mar”, 15-24 June, 2007.

12.- PARTICIPATION IN INTERNATIONAL RESEARCH PROJECTS

1. **Project RGP12/2008** “*Evolutionary implications of virus-encoded gene silencing suppression*”, funded by the Human Frontier Science Program Organization. 2008-2011. IP: Prof. Santiago F. Elena. Project in collaboration with the groups of Prof. Ricard V. Solé (Universitat Pompeu Fabra, Barcelona) and Prof. Nam-Hai Chua (Rockefeller University, New York). - (**1st Postdoc project**).

2. Integrated **Project PACE** “*Programmable Artificial Cell Evolution*”, supported by the European Commission in its Future Emerging Technologies program FP6-002035 from 2004-2008. Coordinator: Prof. John S. McCaskill. - (**Ph.D. project**).

13.- RECEIVED COMPETING RESEARCH GRANTS

1. Postdoctoral Grant “Juan de la Cierva” 2011 from the Ministry of Science and Innovation (MICINN), Spanish Government - (*Rejected due to the incorporation to Gladstone Institute of Virology and Immunology, UCSF*).

2. Postdoctoral Grant “JAE-Doc-0217” 2011 from the National Spanish Research Council (CSIC) - (*Rejected due to the incorporation to Gladstone Institute of Virology and Immunology, UCSF*).

14.- SUPERVISED PhD THESIS

1. Carla Cristina Morbey Rodrigues (University of Évora). 2011-
Thesis co-supervised together with Carlos Correia Ramos (University of Évora) and Jorge Duarte (High Institute

of Engineering of Lisbon).

15.- OTHER MERITS

1. Acceptance letter from the Dept. of Ecology and Evolutionary Biology at Yale University (New Haven, USA) to apply for postdoctoral Grants for 2011 (*I finally joined Gladstone Institute of Virology and Immunology, UCSF*).

16.- OTHER SCIENTIFIC EXPERIENCE

1. **Editorial Board:** Frontiers in Virology.
Advances in Life Sciences.

2. **Referee for:** Cell.
Nature Medicine.
Molecular Systems Biology.
PLoS Computational Biology.
Proceedings of the Royal Society B.
Journal of Theoretical Biology.
Physics Letters A.
International Journal of Applied Mathematics and Statistics.
Theoretical Population Biology.
Advances in Life Sciences.
Origins of Life and Evolution of Biospheres.
International Journal of Bifurcation and Chaos.
Journal of Sound and Vibration.
Frontiers in Virology.
Chaos, Solitons and Fractals.
Journal of Agricultural Science.
Biological Sciences.

3. Member of the Program Committee of the *Artificial Life XII* Conferences (Odense, Denmark) 2010.

Latest modification – **January 2012**