

LEONARDO BICH

CURRICULUM VITAE

PERSONAL DATA

Office address: UPV/EHU Centro Carlos Santamaria (B12), Plaza Elhuyar 2,
2018, Donostia-San Sebastian (Spain)

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http://www.ias-research.net/people/leonardo_bich/

<http://leonardobich.wordpress.com/>

CURRENT POSITION

Position: Ramón y Cajal Researcher (Tenure track)

Institution: University of the Basque Country (UPV/EHU)

Center: IAS-Research Center for Life, Mind and Society, Department of Logic and
Philosophy of Science

Address: Avenida de Tolosa 70, 20018, Donostia-San Sebastian (Spain)

PREVIOUS POSITIONS

Position: Postdoctoral Fellow – ERC IDEM Project “Immunity, Development and the
Microbiota (IDEM): Understanding the Continuous Construction of Biological Identity”

Institution: CNRS & Université de Bordeaux

Center: ImmunoConcEpT Lab

Address: UMR CNRS 5164, Université de Bordeaux, Bat 1B, RDC; 146 rue Léo Saignat, 33076 Bordeaux, France.

Position: Associate Researcher (FONDECYT - National Foundation for Scientific and Technological Development, Chile); Lecturer in History and Philosophy of Science (September 2015 – September 2016).

Institution: Universidad de Chile

Faculty: Faculty of Sciences

Center: Laboratorio de Neurobiología y Biología del Conocer (Biology of Cognition Lab)

Address: Las Encinas 3370, Ñuñoa, Santiago, Chile.

Position: Short-Term Research Fellow (Visiting Fellowship - January- April 2016)

Institution: University of Pittsburgh, USA

Centre: Center for Philosophy of Science

Address: University of Pittsburgh, 817 Cathedral of Learning, Pittsburgh, PA 15260

Position: Associate Researcher (FONDECYT - National Foundation for Scientific and Technological Development, Chile, March 2015- August 2015)

Institution: Instituto de Filosofía y Ciencias de la Complejidad (IFICC)

Address: Los Alerces 3024, Ñuñoa, Santiago, Chile

Position: Postdoctoral Fellow - Basque Government (January 2014 - February 2015)

Institution: Universidad del País Vasco (UPV/EHU)

Faculty: Faculty of Philosophy and Education

Department: Department of Logic and Philosophy of Science/Philosophy of Biology Group (IAS-Research Center for Life, Mind, and Society)

Address: Avenida de Tolosa 70, 20018, Donostia-San Sebastian, Spain

Position: “Juan de la Cierva” Research Fellow - Spanish Ministry for Science and Innovation (June 2011 - December 2013)

Institution: Universidad del País Vasco (UPV/EHU)

Faculty: Faculty of Philosophy and Education

Department: Department of Logic and Philosophy of Science/Philosophy of Biology Group (IAS-Research Center for Life, Mind, and Society)

Address: Avenida de Tolosa 70, 20018, Donostia-San Sebastian, Spain

Position: Fixed term research fellow (May 2009 – April 2010; June 2010 – May 2011)

Institution: University of Bergamo

Faculty: Faculty of Education

Department: Department of Human Science/Postgraduate School in Anthropology and Epistemology of Complexity

Address: P.le S. Agostino 2, 24129 – Bergamo, Italy.

RESEARCH INTERESTS

Philosophy of Biology and Theoretical Biology

Philosophy of Science

Epistemology and Theory of Complex Systems

Philosophy of Mind and Cognition

Theory and Philosophy of Social Systems

EDUCATION

2008 **PhD**, Epistemology of Complex Systems.

- PhD School in Anthropology and Epistemology of Complexity,
University of Bergamo, Italy.
Scholarship provided by the Italian Ministry of University and
Research (MIUR)
Dissertation title: “*L’ordine invisibile. Ripensare il vivente oltre la
metafora computazionale*” (English translation: “*The Invisible Order:
re-thinking the living beyond the computational metaphor*”)
Thesis supervisor: Prof. Mauro Ceruti
Mark: *Excellent*
- 2004 **Degree** (Italian degree: Ba+Ma), Philosophy
University of Pavia, Italy.
Dissertation title: “*Processi emergenti e autopoiesi: il ruolo
dell’osservatore e l’autonomia dei sistemi*” (English translation:
“*Emergent Processes and Autopoiesis: the role of the observer and
the autonomy of systems*”)
Thesis supervisor: Prof. Eliano Pessa
Mark: *110/110 cum laude*
- 1999-2003 **Philosophical Studies**
University of Pavia
- 1997-1998 First year of the degree in **Architecture**
Academy of Architecture of Svizzera Italiana (Switzerland).
Six annual exams sustained: Technology; Human Ecology, History
of Architecture, History of Modern and Contemporary Art, History
of the Territory, History of the Architectural Thought.
- 1996-1997 First year of the degree in **Biotechnology**
University of Milano Bicocca.
Four annual exams sustained: General Chemistry, Cell Biology,
Genetics, Physics.
- 1996 **High School Graduation**
Liceo Scientifico, Istituto Leone XIII, Milano, Italy
Mark: *60/60 cum laude*

PARTICIPATION IN PROJECTS

- 2016 (European Project) ERC Starting Grant *Immunity, Development and
the Microbiota (IDEM): Understanding the Continuous Construction
of Biological Identity* (637647 – IDEM). Duration: 2015-2020.
Funding Entity: European Research Council (European Horizon

- 2020). Amount of funding: 1,454,000 €. Participants: 6. Principal Investigator: Dr. Thomas Pradeu.
- 2015 (European Project) Trans Domain European COST Action, TD1308: *Origins and evolution of life on Earth and in the Universe (ORIGINS)*. (WG5) Duration 2014-2018. Funding Entity: European Commission. Amount of funding: 560.000 €. Principal Investigator: Dr Muriel Gargaud.
- 2015 (Group Project - Directed) *Biological Regulation: Investigating the Theoretical and Philosophical Foundations of Autonomy and Cognition*. Fondecyt Regular 1150052, Comisión Nacional de Investigación Científica y Tecnológica, Chile (CONICYT). Duration 2015-2018. Amount of funding: 82.664.000 Chilean pesos (around 125.000 €). Participants: 5. Principal Investigator: Dr. Leonardo Bich.
- 2015 (Group Project) *Identidad en interacción: aspectos ontológicos y normativos de la individualidad biológica, cognitiva y social* Ministerio de Ciencia e Innovación, Spain, FFI2014-52173-P. Duration: 2015-2018. Amount of funding: 50.000 €. Participants: 13. Principal Investigator: Dra M. Arantzazu Etxeberria Agiriano.
- 2014 (International Cooperation Project) *Stabilité et variation dans les systèmes biologiques : une enquête épistémologique et théorique*. Université Paris 1 Panthéon Sorbonne. Duration: 2015-2016. Amount of Funding: 15.000 euros. Participants: 12. Principal Investigator: Dr. Matteo Mossio.
- 2013 (Group Project) *Ayudas para apoyar las actividades de los grupos de investigación del sistema universitario vasco (Funding for research groups in the Basque university system)*. Gobierno Vasco IT 590-13. Duration: 2013-2018. Amount of funding: 226.598 €. Principal Investigator: Prof. Alvaro Moreno.
- 2012 (Group Project) *Autonomía y niveles de organización (Autonomy and levels of organization)*. Ministerio de Ciencia e Innovación, Spain, FFI2011-25665. Duration 01/01/2012 – 31/12/2014. Amount of funding: 70950 € (85.849,50 € including indirect costs). Principal Investigator: Dr. Jon Umerez
- 2011 (Group Project) *Subvención a grupos de investigación del sistema universitario vasco. Grupo de Filosofía de la Biología (Funding for research groups in the Basque university system. Philosophy of Biology Group)*. Gobierno Vasco. IT 505-10. Duration: 01/01/2010 - 31/12/2012. Amount of funding: 61.000 euros. Principal Investigator: Dra M. Arantzazu Etxeberria Agiriano.

2011 (Individual Project) *Autonomy and Complexity in Basic Living Systems*, Juan de la Cierva Programme, Ministerio de Ciencia e Innovación, Spain (JCI-2010-06173). Duration: 01/06/2011 – 31/05/2014. Amount of funding: 100.000 €. Principal Investigator: Dr. Leonardo Bich

TEACHING AND THESIS SUPERVISION

2019 Participation in thesis tribunal. “Hacia una teoría general de la comunicación biológica. Una propuesta organizacional”. Ph.D. candidate Ramiro Frick, Universidad Alberto Hurtado, Santiago, Chile, 25/01/2019.

2017- Thesis Supervision (in progress). Co-supervisor of the Ph.D thesis "Structural and organizational conditions for the appearance of functional integration in the transition from prokaryotic to eukaryotic cell". Ph.D. candidate Guglielmo Militello, Universidad del Pais Vasco, Spain.

2015-2019 Thesis supervision. Co-supervisor of the Ph.D. thesis “Hacia una teoría general de la comunicación biológica. Una propuesta organizacional”. Ph.D. candidate Ramiro Frick, Universidad Alberto Hurtado, Santiago, Chile, Ph.D. program in Philosophy. *Thesis defended on the 25/01/2019, awarded the highest mark in the Chilean system: 7/7* (thesis co-funded by the project FONDECYT Regular 1150052, PI: Dr. Leonardo Bich)

2015-2016 Lecturer in History and Philosophy of Science (compulsory course, Degree in Biology)
Department of Biology, Faculty of Sciences, Universidad de Chile (60 hrs)
Teaching evaluation: 3,94/4

2014 Accreditation UNIBASQ (Quality Agency of the Basque University System) as “Profesor Adjunto” in the Humanities.

2013-2014 Lecturer in Philosophy of Science
Department of Logic and Philosophy of Science, University of the Basque Country (UPV/EHU), Spain.
Advanced course in Philosophy of Science (Philosophy of Science 2: 30 hrs)

2013 Invited Lecturer

Department of Logic and Philosophy of Science, University of the Basque Country (UPV/EHU), Spain.

Series of lectures for the advanced course in Philosophy of Science (Philosophy of Science 2, Prof. Alvaro Moreno); didactic support through the UPV Moodle platform.

- 2009-2011 Invited Lecturer
Department of Human and Social Sciences, University of Bergamo, Italy
Series of Lectures for the course in Genetic Epistemology (Prof. Gianluca Bocchi)
- 2007-2010 Research and Teaching Assistant
Department of Human and Social Sciences, University of Bergamo, Italy
Support and assistantship in the organization and management of the research activity in the areas of Philosophy of Science and Epistemology.
Teaching, tutoring, thesis supervision and marking for the following pre-graduate and master courses:
2007/2008 Philosophy of Science; Epistemology of Social Sciences;
2008/2009 Philosophy of Science; Epistemology of Clinical Psychology; Epistemology of Human Sciences;
2009/2010 Philosophy of Science, Epistemology of Psychological Sciences.

SCIENTIFIC PUBLICATIONS

BOOK

- 2012 Bich L., *L'ordine invisibile. Organizzazione, autonomia e complessità del vivente*. Soveria Mannelli: Rubbettino Università (420p., ISBN: 978-88-498-3574-8).

ISI JOURNAL PAPERS

- 2019 Frick, R., Bich, L., & Moreno, A. An organisational approach to biological communication. *Acta Biotheoretica*. 67(2), 103-128. Doi: 10.1007/s10441-019-09342-2 (in press, Scopus Journal Ranking Q1 in Philosophy, ISI Journal Impact Factor, 0,857).
- 2018 Bich, L. and Frick, R., Synthetic modelling of biological communication: a theoretical and operational framework for the investigation of minimal life and cognition. *Complex Systems*,

- 27(3):267-287. doi: 10.25088/ComplexSystems.27.3.0. (SJR Journal Ranking 0,183 (Q3)).
- 2018 Bich, L. and Green, S., Is Defining Life Pointless? Operational definitions at the frontiers of Biology. *Synthese* 195(9), 3919–3946 (DOI: 10.1007/s11229-017-1397-9). (ESF - European Reference Index for the Humanities (ERIH) (Philosophy; Philosophy of Science): Ranking INT1; ISI Journal Impact Factor: 0,739(Q1)).
- 2017 Mossio, M. and Bich, L., What makes biological organization teleological? *Synthese*, 194(4), 1089-1114. (ESF - European Reference Index for the Humanities (ERIH) (Philosophy; Philosophy of Science): Ranking INT1; ISI Journal Impact Factor: 0,739(Q1)).
- 2016 Bich, L., Circularities, Organizations and Constraints in Biology and Systems Theory. *Constructivist Foundations*, 12(1), 14-16. (SJR Journal Ranking: 0,28 (Q2) Scopus (Q2)).
- 2016 Bich, L., Mossio, M., Ruiz-Mirazo, K., and Moreno, A. Biological regulation: controlling the system from within. *Biology & Philosophy* 31(2), 237-265 (ESF - European Reference Index for the Humanities (ERIH) (Philosophy of Science): Ranking INT1; ISI Journal impact factor: 1,190(Q1)).
- 2016 Bich, L., and Moreno, A., The role of regulation in the origin and synthetic modeling of minimal cognition. *BioSystems*, 148, 12-21. (Scopus Journal Ranking: Q1. ISI Journal Impact Factor, 1,548).
- 2013 Mossio, M., Bich, L. and Moreno, A., Emergence, Closure and Inter-level Causation in Biological Systems. *Erkenntnis*, 78(2), 153-178. (ESF - European Reference Index for the Humanities (ERIH) (Philosophy of Science): Ranking INT1; SJR Journal Ranking: 0,646(Q1)).
- 2012 Bich, L., Complex Emergence and the Living Organization: an Epistemological Framework for Biology, *Synthese*, 185, 215-232. (ESF - European Reference Index for the Humanities (ERIH) (Philosophy; Philosophy of Science): Ranking INT1; ISI Journal Impact Factor: 0,649(Q1)).
- 2012 Bich, L. and Damiano, L., Response to Comments on Life, Autonomy and Cognition: An Organizational Approach to the Definition of the Universal Properties of Life, *Origins of Life and Evolution of Biospheres*, 42(5), 402-403. (ISI Journal Impact Factor: 2,660(Q2)).

- 2012 Bich, L. and Damiano, L., On the Emergence of Biology from Chemistry: A Discontinuist Perspective from the Point of View of Stability and Regulation. *Origins of Life and Evolution of Biospheres*, 42(5), 475-482.
(ISI Journal Impact Factor: 2,660(Q2)).
- 2012 Bich, L. and Damiano, L., Life, Autonomy and Cognition: An Organizational Approach to the Definition of the Universal Properties of Life. *Origins of Life and Evolution of Biospheres*, 42(5), 389-397.
(ISI Journal Impact Factor: 2,660(Q2)).
- 2010 Bich L., Biological Autonomy and Systemic Integration, *Origins of Life and Evolution of Biospheres*, 40, 480-484.
(ISI Journal Impact Factor: 2,660(Q2)).
- 2010 Bich L., Bocchi G. and Damiano L., An Epistemology of Contingency: chance and determinism at the origin of life, *Origins of Life and Evolution of Biospheres*, 40, 370-375.
(ISI Journal Impact Factor: 2,660(Q2)).
- 2007 Bich L. and Damiano L., Theoretical and Artificial Construction of the Living: Redefining the Approach from an Autopoietic Point of View, *Origins of Life and Evolution of Biospheres*, 37, 459-464.
(ISI Journal Impact Factor: 2,660(Q2). SJR Journal Ranking 0.76 Q1).

OTHER JOURNAL PAPERS

- 2012 Bich, L. and Arnellos, A., Autopoiesis, Autonomy and Organizational Biology: Critical Remarks on 'Life After Ashby', *Cybernetics and Human Knowing*, 19(4), 75-103.
- 2012 Bich, L., Considerazioni epistemologiche sul cambiamento: discontinuità, emergenza e riorganizzazioni temporali. *Riflessioni Sistemiche*, 6, 5-17.
- 2011 Bich, L. and Mossio, M., On the Role of Constraints in the Emergence of Biological Organization, *Logic and Philosophy of Science*, IX (1), 381-388.
- 2008 Bich L. and Damiano L., Order in the nothing: Autopoiesis and the Organizational Characterization of the Living, *Electronic Journal of Theoretical Physics - Special Issue 2007 - "Physics of Emergence and Organization"*, v. 4, n. 16 (1), I. Licata and A. Sakaji (eds.), World Scientific, 343-373.

BOOK CHAPTERS

- 2019 Bich, L. The problem of functional boundaries in prebiotic and inter-biological systems. In Minati, G., Pessa E. and Abram, M. (Eds.) *Systemics of Incompleteness and Quasi-Systems* (pp. 295-302). New York: Springer ISBN 978-3-030-15277-2. Doi: 10.1007/978-3-030-15277-2_23.
- 2018 Bich, L., *Robustness and autonomy in biological systems. How regulatory mechanisms enable functional integration, complexity and minimal cognition through the action of second order control constraints*. In M. Bertolaso, S. Caianiello, E. Serrelli (Eds.), *Biological Robustness: Emerging Perspectives from within the Life Sciences* (pp. 123-147). New York: Springer (series History, Philosophy and Theory of the Life Sciences).
- 2017 Exteberria, A. and Bich, L. (2017). Auto-organización y autopoiesis. In C. E. Vanney, I. Silva y J. F. Franck (eds.), *Diccionario Interdisciplinar Austral*. Instituto de Filosofía - Universidad Austral (ISSN: 2524-941X).
- 2016 Bich, L. *Systems and Organizations. Thoretical tools, conceptual distinctions and epistemological implications*. In G. Minati, M. Ambram, E. Pessa (eds.), *Towards a Post-Bertalanffy Systemics*, New York : Springer 203-209 (ISBN 978-3-319-24391-7).
- 2014 Mossio, M. and Bich, L., *La circularité biologique: concepts et modèles*. In F. Varenne, S. Dutreuil, P. Huneman and M. Silberstein (eds.), *Modéliser & simuler. Epistémologies et pratiques de la modélisation et de la simulation (tome 2)*, Paris : Editions Matériologiques, 137-170.
- 2013 Bich L. and Etzeberria A., *Autopoietic Systems*, in: W. Dubitzky, O. Wolkenhauer, K.-H Cho, & H. Yokota (eds.), *Encyclopedia of Systems Biology*. New York: Springer, 2110-2113.
- 2013 Bich, L. and Moreno, A., *Autonomía biológica y las raíces de la cognición. El rol de la regulación en la emergencia de un mundo endógenamente generado*. In P. Razeto and R. Ramos (eds.), *Autopoiesis. Un Concepto Vivo*, Santiago de Chile: Editorial Universitas Nueva Civilización, 75-95.
- 2012 Bich, L., *Stability, regulation, and their role in minimal living systems*. In A. Diéguez, V. Claramonte, J. Alcolea Banegas, G. Caponi, A. Etzeberria, P. Lorenzano, A. Marcos, J. Martínez Contreras, A. Rosas (eds.), *I Congreso de la Asociación*

Iberoamericana de Filosofía de la Biología (AIFBI), Universitat de Valencia, 343-350.

- 2012 Bich, L. and Damiano, L., *Riscoprire la teoria dell'autopoiesi nella caratterizzazione dei sistemi sociali*. In I. Licata (ed.), *Sistemi, Emergenza, Organizzazioni. Complessità e Management*, Roma, Messina: Edizioni Corisco, 83-111.
- 2012 Bich L., *Il concetto di "milieu intérieur": ruolo e implicazioni teoriche in un approccio sistemico allo studio del vivente*. In E. Cianci (ed.), *Quaderni del CERCO: Epistemologie in dialogo? Contesti e costruzione di conoscenze*. Rimini: Guaraldi, 179-210.
- 2012 Bich L. and Bocchi G., *Emergent Processes as Generation of Discontinuities*, in G. Minati, E. Pessa, M. Abram (eds.), *Methods, Models, Simulations and Approaches Towards a General Theory of Change*. Singapore: World Scientific, 135-146.
- 2009 Bich L., *Downward Causation and Relatedness in Emergent Systems: Epistemological Remarks*, in G. Minati, E. Pessa, M. Abram (eds.) *Processes of emergence of systems and systemic properties. Towards a general theory of emergence*, Singapore: World Scientific, 591-601.
- 2006 Bich L., *Autopoiesis and Emergence*, in G. Minati, E. Pessa, M. Abram (eds.), *Systemics of Emergence. Research and Development*, New York: Springer, 281-292.

PUBLICATIONS IN NEWSPAPERS

- 2009 *Intervista a Nora Bateson*
Il Quotidiano della Basilicata, Domenica 4 Ottobre 2009
- 2009 *Intervista a Owen Flanagan*
Il Quotidiano della Basilicata, Sabato 3 Ottobre 2009

TALKS IN CONFERENCES

- 2018 Bich, L., Frick, R. An organisational framework for the synthetic modeling of biological communication. *IX Conference of the Spanish Society for Logic, Methodology and Philosophy of Science, UNED, Madrid, 13-16 November 2018*.

- 2018 Bich, L. Operational definitions of life. *IX Conference of the Spanish Society for Logic, Methodology and Philosophy of Science*, UNED, Madrid, 13-16 November 2018.
- 2018 Bich, L. (invited talk), An operational approach to defining life. *International Workshop matter and life: historico-logical issues in post-1800 physics and biology*, University of Ghent, Belgium, 27 August 2018.
- 2017 Bich, L., The problem of functional boundaries in prebiotic and inter-biological systems. *Seventh National Conference on Systems Science - Systemics of Incompleteness and Quasi-Systems*, Milan, 16-17 November, 2017.
- 2017 Bich, L. (invited talk). Naturalising Biological Teleology: An Organisational Account. *Bordeaux-Geneva Colloquium in Philosophy of Biology*, University of Geneva, Genève, 10-11 October, 2017.
- 2017 Bich, L. (invited talk). Biological organisation, teleology and development. *Organisation as a Theoretical Principle for the Life Sciences*. IHPST, Paris, 27-29 September, 2017.
- 2017 Bich, L. (Keynote talk). Interactive models in Synthetic Biology: from protocell colonies to synthbionts. *What can Synthetic Biology offer to (Embodied) Artificial Intelligence (and vice versa)? ECAL 2017 Satellite Workshop*, Lyon, 4 September 2017.
- 2017 Bich, L., Moreau, J. F., Pradeu, T. Understanding multicellular organisms. *Triennial International Conference of the Italian Society for Logic and Philosophy of Science – Silfs 2017 (Symposium on the concept of organism)*. Bologna, 20-24 June, 2017.
- 2017 Bich, L. (invited Lecture). Minimal cognition and its foundations in regulatory mechanisms in basic living systems. *Philosophy and Biology Seminars*, University of Bordeaux, France, 31/05/2017.
- 2017 Bich, L. (invited seminar). Biological regulation. A conceptual clarification and proposal. *Immunoconcept Seminars*, University of Bordeaux, France, 18/05/2017.
- 2017 Bich, L. (invited Lecture) Biological Teleology, Organization and Development, University of Copenhagen, Denmark, 17/03/2017.

- 2016 Bich, L. Biological Regulation: an organizational account. *Third Lisbon International Conference on Philosophy of Science: Contemporary Issues*. University of Lisbon, Portugal, 14-16/12/2016.
- 2016 (invited talk) Bich, L. Building Biological Identity: how regulatory mechanisms provide an essential contribution to functional integration in living systems. *Interidentity Meeting — Identidad en Interacción: aspectos ontológicos y normativos de la individualidad biológica, cognitiva y social*. University of the Basque Country, Zumaia, Spain 28-29/11/2016.
- 2016 Skillings, D., Bich, L., Chiu, L., Pradeu, T., Immunity, Development and the Microbiota (IDEM): *Understanding the Continuous Construction of Biological Identity*. *Philosophy of Science Association Biennial Meeting (PSA 2016)*, Atlanta, USA, 3-5/11/2016.
- 2016 Bich, L. Emergence, Organisation and Complexity: an Epistemological Account. *Quadrennial International Fellows Conference*, University of Lund, Sweden, 11-13/07/2016 (sponsored by the University of Lund and the Center for Philosophy of Science, University of Pittsburgh).
- 2016 Bich, L. Why defining life is not pointless *IAS Talk*, University of the Basque Country, Spain 21/06/2016.
- 2016 (invited talk) Green, S. and Bich, L. Is Defining Life Pointless? *Understanding Life: New Perspectives from Philosophy and Biology*. University of Bern, Switzerland, 26-27/05/2016.
- 2016 (invited lecture) Bich, L. Filosofía de la Biología y Teoría del Organismo. Universidad del Desarrollo, Facultad de Medicina, Santiago, Chile, 25/05/2016.
- 2016 Bich, L. and Damiano, L., The Synthetic method between engineering and science: a new paradigm for the scientific exploration of the frontiers of life? *(Re)Engineering Biology: The Emerging Engineering Paradigm in Biomedical Engineering, Systems Biology, and Synthetic Biology*, University of Pittsburgh, USA, 15-16/04/2016.
- 2016 (invited talk) Bich, L., Biological organization and the naturalization of teleology. *Lunchtime talk*, Center for Philosophy of Science, University of Pittsburgh, USA, 09/02/2016.

- 2016 (invited talk) Bich, L. Emergence, Organisation and Complexity: an Epistemological Account. *International Workshop: Reduction in Physics and Biology*, Instituto de Filosofía y Ciencia de la Complejidad (IFICC), Santiago de Chile, 4-7/01/2016.
- 2015 (invited talk) Bich, L. Regulación biológica: un enfoque organizacional. *Seminarios de Filosofía de la Física y la Biología*, Instituto de Filosofía y Ciencia de la Complejidad (IFICC), Santiago de Chile, 17/08/2015.
- 2015 Bich, L. and Moreno, A. Regulation in Biological Systems. *Conference of the International Society for History, Philosophy, and Social Studies of Biology ISHPSSB 2015*, Montréal, July 5-10, 2015.
- 2015 (invited talk) Bich, L., Biological Regulation: a theoretical model and its implications. *International Workshop: Levels of organisation, causality & top-down relations*, University of the Basque Country, 04/06/2015.
- 2015 (invited talk) Bich, L. Stability and the regulatory control of variation. *Meeting of the project "Stabilité et variation dans les systèmes biologique"*, IHPST, Université Paris 1 Panthéon Sorbonne, Paris, 10/02/2015.
- 2015 (invited talk). Bich, L., Biological regulation. An organisational account. Department of Logic, History and Philosophy of Science, UNED, Madrid, 06/02/2015.
- 2015 (invited talk) Bich, L., Biological regulation and minimal cognition. Mind-Brain group, University of Navarra, Pamplona 29/01/2015.
- 2014 Bich, L., Systems and Organizations: Theoretical tools, conceptual distinctions and epistemological implications. *Sixth Italian Conference on Systems Science*, Pontificio Ateneo S. Anselmo, Rome, Italy, 21st-22nd November, 2014.
- 2014 Bich, L., Biological regulation: A Conceptual Clarification and Proposal. Center for Philosophy of Science, University of Pittsburgh, USA, 21st October, 2014.
- 2014 (Keynote Speaker, talk not given) Bich, L., Biological Autonomy, Regulation, Code: how are they related? *First International Conference in Code Biology*, Université Paris Descartes, Paris, France, 20th – 24th May 2014.

- 2013 (Invited Talk) Bich, L. and Moreno, A., Autonomia biologica y la raíces de la cognición (Biological autonomy and the roots of cognition). *Autopoiesis 40 años: un concepto vivo (40 years of autopoiesis: a living concept)*, Instituto de Filosofía y Ciencia de la Complejidad (IFICC), Santiago de Chile, 25th-29th November 2013.
- 2013 Bich, L. and Moreno, A., On the role of Synthetic Biology in the investigation of minimal cognition: an argument from the point of view of regulation. *Synthetic Modeling of Life and Cognition - SMLC 2013*, Bergamo, Italy, 12th -14th September 2013.
- 2013 Bich, L., Beyond the principle of continuity at the origins of life: Synthetic Biology and the challenge of prebiotic transitions, *Synthetic Modeling of Life and Cognition - SMLC 2013*, Bergamo, Italy, 12th -14th September 2013.
- 2013 Bich, L. and Moreno, A., Biological Regulation and the Synthetic Investigation of Minimal Cognition, *"What can Synthetic Biology offer to Artificial Intelligence? Perspectives in the Bio-Chem-ITC and other Scenarios"*, *ECAL 2013 Satellite Workshop*, Taormina, Italy, 6th September 2013.
- 2013 Bich, L. and Moreno, A., On minimal regulation in biological systems. *Conference of the International Society for History, Philosophy, and Social Studies of Biology ISHPSSB 2013*, Montpellier, France, 7-12 July 2013.
- 2012 Bich, L., Stability, Regulation and Their Role in Minimal Living Systems, *I Congreso de la Asociación Iberoamericana de Filosofía de la Biología*, Universitat de Valencia, Valencia, Spain, 28th-30th November 2012.
- 2012 Bich, L. and Damiano, L., Emergence vs. Evolution of Life, *Open Questions on the Origins of Life 2012*, University of Leicester, Leicester, UK, 1st-4th May 2012.
- 2012 Bich, L. and Damiano, L., Autonomy and Universality, *Open Questions on the Origins of Life 2012*, University of Leicester, Leicester, UK, 1st-4th May 2012.
- 2011 Bich, L. and Mossio, M., On the specificity of biological causation: Two approaches to the modeling of the organization of basic living systems, *Causality and Explanation in the Sciences*, University of Ghent, Ghent, Belgium, 19th – 21st September 2011.

- 2010 Bich, L. and Mossio, M., On the Role of Constraints in the Emergence of Biological Organization, *International Conference of the Italian Society for Logic and Philosophy of Sciences*, University of Bergamo, Bergamo, Italy, 15th- 17th December 2010.
- 2010 Bich, L. and Bocchi, G., Emergent Processes as Generation of Discontinuities, *Fifth National Conference on Systems Science*, Università Politecnica delle Marche, Fermo, Italy, 14th – 16th October 2010.
- 2010 (invited talk) Bich, L., Biological Autonomy: theoretical and heuristic implications of autopoietic theory in investigating living systems at the basic level, *Challenges in Top-Down, Bottom-Up and Computational Approaches in Synthetic Biology*, University of Nottingham, Nottingham, UK, 18th -22nd March 2010.
- 2010 (Invited talk) Bich, L., *Complex Emergence and the Living Organization*, Departamento de Lógica y Filosofía de la Ciencia, Universidad del País Vasco, San Sebastian/Donostia, Spain, 27th January 2010.
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