Dr Lorena Caballero Coronado

Jun 18 2014

Lorena Caballero is a Biologist from the Universidad Nacional Autónoma de México, UNAM. With a PhD in Biological Sciences from the Faculty of Sciences and the Institute of Physics, her research uses an interdisciplinary and complexity framework. This includes Biology, Physics and Biomathematics, oriented to the study of morphogenesis and pattern emergence. Her research interests include Theoretical Biology, Evo-Devo, Complexity, Epigenetics and Biosemiotics, including their application to the understanding of complex relations between illnesses and society. Her Bachelor and Master theses have been published by Copit Arxives. She is a Lecturer in Evolution in the Faculty of Science, UNAM, and a founding member of the Seminar in Theoretical Biology at the Centro de Ciencias de la Complejidad C3, UNAM.

Curriculum Vitae

Personal details.

Last name: Caballero

First name: Lorena
Mailing address: Akil Mz. 134 L. 12, Lomas de Padierna. Tlalpan. Cp. 14240. México, D.F.

E-mail address: lrncaballero@gmail.com; ahuehuetemx@yahoo.com.mx

Date and place of birth: 31/08/1975 Mexico City

Institutional affiliation:

National Autonomous University of Mexico, UNAM.

Collaborator to the Institute of Physics. Complex System Department, UNAM.

Collaborator of Biomathematics Group, Faculty of Science, UNAM

Center of Science of complexity C3, UNAM

Member of the network Science and society CONACyT

Professor of Evolution Biology, Science Faculty at UNAM

Present academic position: PhD in Biological Science

Principal research interests: Theoretical biology, complex systems, studies on evolutionary biology, philosophy of biology, interdisciplinary studies, evodevo studies, medical studies, genetic and epigenetic studies, molecular biology, Biophysics, biosemiotic studies.

Professional studies:

1994- 1998: Bachelors of Biology at Faculty of Science, National Autonomous University of Mexico.

1997-1998: Student of Genetic and Toxicology Department at Institute of Biomedical Research under the project: Molecular mechanisms of Arsenic.

1997: VII National Genetic Congress, at the National Autonomous University of Baja California, Poster presenter: "Evaluación de la capacidad reparativa de linfocitos humanos expuestos a Arsenito de sodio, mediante el método de UDS" (Evaluation of the reparative capacity of human lymphocytes exposed to Arsenate of sodium using UDS method).
Honors Graduation date: July 9, 2002. Thesis "La búsqueda del comienzo. El pensamiento complejo en biología, una historia en contra de la linelidad" (In search of beginnings. Complex thinking in biology, a history against linearity). Dr. Germinal Cocho Gil as supervisor.

2002-2004: Master in biological science, Faculty of Science at UNAM with the project "Un puente entre biología del desarrollo y evolución: Modelos matemáticos" (A bridge between development and evolution: mathematical models).

2002: IV Autumn School of Mathematical Biology, at CIMAT Guanajuato. Assistance, November.

2003: Workshop on Interdisciplinary Studies at Physics Institute at UNAM, Assistance, November.

2004: Attached student to the Institute of Physics at UNAM during 2004- continuing.

2004: VI Autumn School of Mathematical Biology at CIMAT, Guanajuato Assistance, November.

2006: Master's graduation with the thesis "Aspectos dinámicos de la biología evolutiva y del desarrollo" (Dynamic aspects of evolutionary and developmental biology) Dr. Pedro Eduardo Miramontes Vidal as supervisor. October.

2006 – 2014: PhD on Biological Science with the project "Morfogénesis de los patrones de color en Vertebrados" (Morphogenesis of color pattern in Veretebrates) directed by Dr. Germinal Cocho Gil.

2007: IX Autumn School of Mathematical Biology and 3rd Latin American Mathematical Biology colloquium, at UAEM, Cuernavaca Morelos, Mexico. Assistance, November

2008: INES-UNAM colloquium: "Science, peace and sustainability" Mexico City y Oaxtepec, Morelos. Assistance, February 29- March 3.

Assistance to the X autumn school of mathematical biology and the IV national meeting of biology and mathematics, which was conducted in the city of Mazatlan from 10 to 14 November 2008.

2008: Obtaining the designation of: a doctoral candidate in Science on 19 November 2008. 2009: Assistance to the first. Congress "Complexity, Science and Society: new agendas for reflection and research". Cocoyoc, Morelos of 22- 24 February 2009.

2009: Attendance at the conference: "Emergence in Chemical Systems 2.0 ", the June 22 2009, Anchorage Alaska USA. With the work "The emergence of color patterns in reptiles, a model of morphogenesis".

2009: Assistance to the XI school of mathematical biology and V meeting of mathematical biology "Evolution, morphogenesis and developmental biology". Universidad Autónoma de Querétaro of November 9. Presentation of the conference: "morphogenetic mechanisms and patterns of color. An experiment in theoretical biology".

2010: Assistance to the XII autumn school of mathematical biology and physiology complex systems, in the Autonomous University of the State of Hidalgo, october 2010 presentation of the conference "physical phenomena in systems in development".

2010: Assistance to the Mexican Congress in complexity sciences Mexico City, October 46 , 2010, with the work "color patterns in snakes".

2010: Assistance to the open-house event of the Institute of Physics UNAM on day 16 of November 2010, with the work "physical restrictions in the systems under development".

2011: Attendance at the XVI International Congress of Philosophy 2011, Philosophy: reason and violence. Philosophy of Biology. Table: Philosophy of Biology 10 with the lecture: "theoretical Biology: a discussion pending".

2012: Assistance: Third discussion meeting on "patterning, segregation and differentiation in complex networks". 8 and 9 February 2012, Institute of Physics, UNAM.

2012: Assistance: XIV Autumn School in mathematical Biology and the 8th National Meeting of mathematical Biology. Evolution and complexity. Faculty of Sciences of the

Universidad Autónoma de San Luis Potosi. With the conference: "through the thought of Turing, an epigenetic model of the color patterns based on mechanical and cellular interactions ". October 15 2012.

2013: Presentation at the I Symposium: Modeling and analysis in morphogenesis. April 12, Center for Complexity Sciences, National Autonomous University of Mexico. With the talk: morphogenetic mechanisms of the color patterns in vertebrates.
2013: Presentation at the seminar for students of the Institute of Physics in the UNAM with the talk "morphogenetic mechanisms of the color patterns in vertebrates" September 9th, at the Institute of Physics of the UNAM.

September2013 to june 2014: Coordination of the project entitled "Analysis of the effects on the immune system of the compound tested InmunoFX" IIDCA, Research and Development Institute of Applied Science.

"Effects of the diet in complex diseases in the health club community Xochimilco".

"Damage to health caused by the consumption of soft drinks and their implications in the Mexican population".

"Mounting a protocol about the consumption of wheat and its relationship to obesity in Mexico".

February 14 2014 obtaining her doctorate in biological sciences.

Scholarship

1997-1998. Project support: Molecular mechanisms of Arsenic at Genetic and Toxicology Department at Institute of Biomedical Research.

2002-2004: CONACyT Scholarship: Master in biological science, Faculty of Science at UNAM with the project “Un puente entre biología del desarrollo y evolución: Modelos matemáticos” (A bridge between development and evolution: mathematical models).

2007-2012: CONACyT Scholarship: PhD on Biological Science with the project “Morfogénesis de los patrones de color en reptiles y felinos” (Morphogenesis of color pattern in reptiles and felines) directed by Dr. Germinal Cocho Gil.

Publications:

Books:

Caballero Lorena, 2008. “Emergencia de las formas vivas: aspectos dinámicos de la biología evolutiva”(The emergency of living forms: dynamical aspects of evolutionary biology). CopIt ArXives, Mexico. TS0004ES http://scifunam.fisica.unam.mx/mir/copit/index.html.

Caballero Lorena, Forthcoming. “La búsqueda del comienzo. El pensamiento complejo en biología” (In search of beginnings. Complex thinking in biology). CopIt ArXives, Mexico. http://scifunam.fisica.unam.mx/mir/copit/index.html.

Articles:

Hodge, Bob and Caballero, Lorena (2005) “Biology, Semiotics, Complexity: An experiment in interdisciplinary”. *Semiótica*, October 2005. Vol. 157. 1-4. Pages 447-449.

Walter de Gruyter. Victoria College, University of Toronto. Canada.

Caballero Lorena, Benitez M, Alvarez-Buylla E, hernández S, Arzola A. V. And Cocho G. 2012 . An epigenetic model for pigment patterning based on mechanical and cellular interactions. J. Exp. Zool. (Mol. Dev. Evol.) 318:209–223.

Hernández-Hernández, Valeria, Denisse Rueda, Lorena Caballero, Elena R. AlvarezBuylla, and Mariana Benitez. "Mechanical forces as information: an integrated approach to plant and animal development." *Plant Systems Biology* 5 (2014): 265.

Chapters:

Lorena Caballero y Gabriela Coronado. In press. "Interdisciplinary Dialogue for In the complex new challenges to social justice in Latin biology." In the book: The emergence of complexity approaches in Latin America. Challenges, contributions and commitments to address the complex problems of XXI century.

Caballero, L. Benitez, M. & Coronado, G. (2012) 'Emergency biological forms in biocultural complexity: Epigenetics and Obesity' in Caparros, N. & Cruz Roche, R. (eds.) Travel Complexity II . The origin of life to the emergence of the psyche: Biological Level, New Library Integration (Madrid). Pp.134-148.
Lorena Caballero, Sergio Hernandez and Germinal Cocho. Ecology of Simple Interactions:
Patterns and Conway's Game of Life. Frontiers in Ecology, Evolution and Complexity Edited by Mariana Benitez, Octavio Miramontes and Alfonso Valiente. COPIT arXives and Editor-C3. In press.

Science Popularization:

26 /07/2013 color patterns in animals, Radio UNAM, national radio

14 /02/2013 University creators, Televisa-UNAM, national television

14 /02/2013 create theoretical model on the color patterns in animals, UNAM Gazette 24 /02/2013 Mechanical and genetics as possible symbiosis, IMER, radio nacional

http://www.algoqueinformar.com/estudiante-unam-intenta-explicar-origen-rayas-cebras-omanchas-jaguares

http://www.dgcs.unam.mx/boletin/bdboletin/2013_097.html

http://www.fisica.unam.mx/noticias_elogianestudiopb2012.php

http://www.portalpolitico.tv/content/site/module/news/op/displaystory/story_id/64868/form at/html/

Seminars:

Seminar in Theoretical Biology Center of Sciences of Complexity C3, Tower of the Institute of Engineering, UNAM.

Research Stays:

2005 University of Western Sydney, with Dr. Bob Hodge.

2009 Stay at the Laboratory of molecular genetics, development and evolution of plants with Dr. Elena Alvarez-Buylla. Instituto de Ecología UNAM.

Teaching:

Professor of evolution I in the biology career, semesters: 2011-1, 2011-2, 1012-1, 2012-2, 2013-1, 2013-2, 2014-1, 2014-2 and up to date in the Faculty of Sciences UNAM.