FisMatEcol Boletin

Octubre 2023

Dr. Oliver López Corona
Dra. Elvia Ramírez Carrillo

Eventos

SFE² GfÖ EEF Joint meeting, International Conference on Ecological Sciences

"Ecology and Evolution: New perspectives and societal challenges"

21-25 Nov 2022 Metz (France)

esa 2024
ANNUAL MEETING
LONG BEACH, CA • AUG 4-9

Long Beach, California

Sunday, August 4 – Friday, August 9th

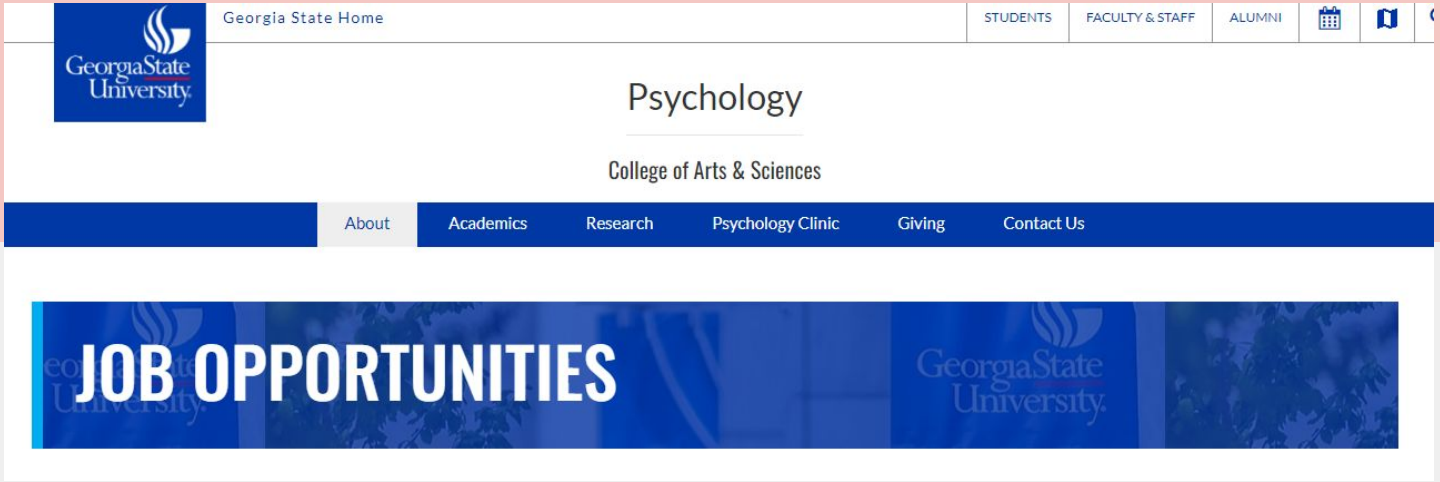
ABOUT REGISTRATION

November 17th - 19th, 2023 - University of California, Riverside

NetSci®
2024
International School and
Conference on Network Science
Québec City Convention Centre
Québec City, Canada

Oportunidades

Population Data Science
Gwyddor Data Poblogaeth
Swansea University
Prifysgol Abertawe
Medical School
Ysgol Feddygaeth
NOW
HIRING
Jobs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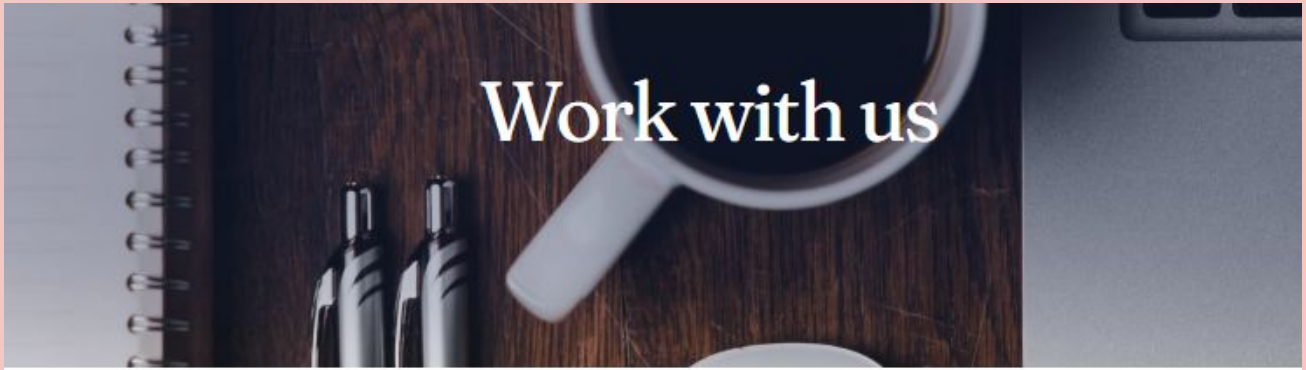
JOB OPPORTUNITIES



Job opportunities

The following positions are spread out across the University but all are data science related.

Research Fellow in Bioanalytical and Biological Mass Spectrometry

Division/Faculty: Science
Department/School: Chemistry
Salary: Level A
Advertising closing date: 16 Oct 2023, 11:55 PM AEDT

Conceptos

What's going on with assembly theory?

Claims, controversial claims and merits after 60 years of complexity science

MANLIO DE DOMENICO

16 OCT 2023

4

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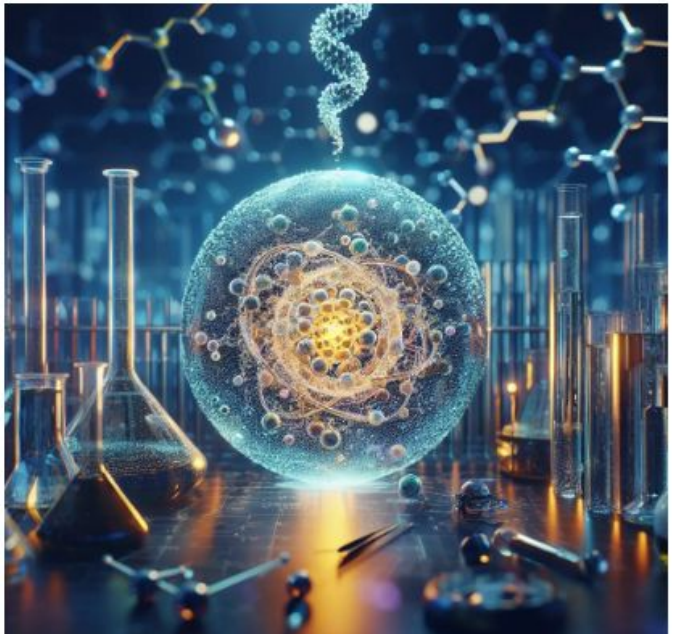


Sistemas alimentarios

Leyes de la biología?

THE Biologist

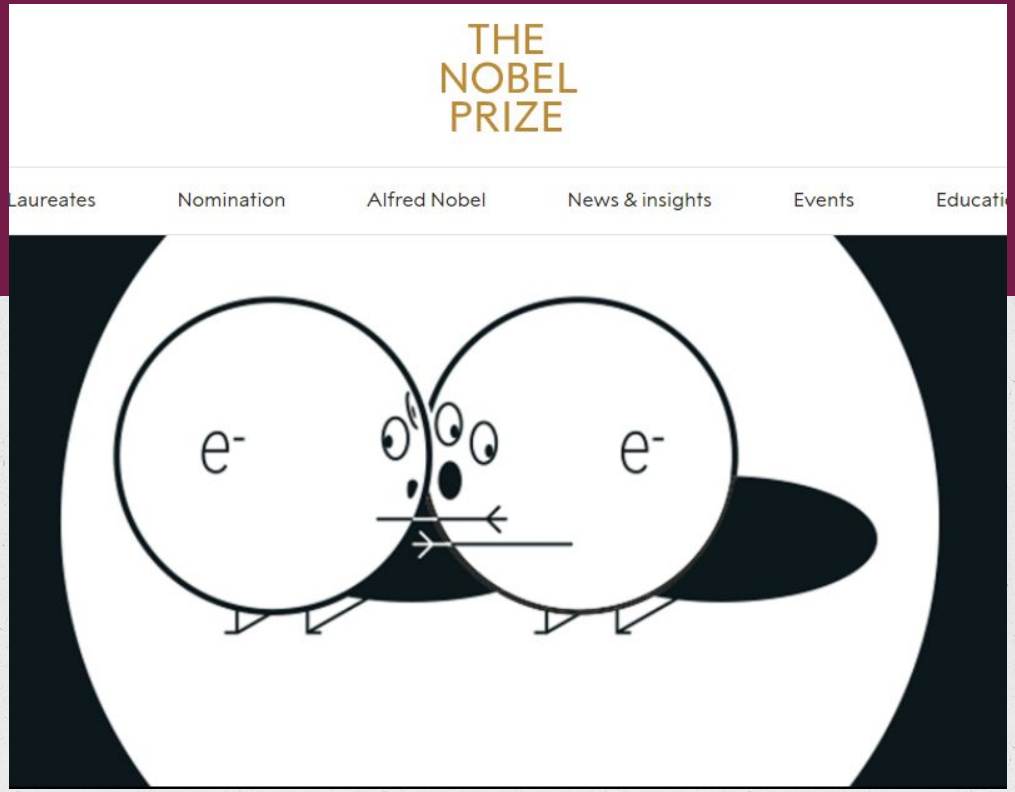
Royal Society of Biology

FEATURES
INTERVIEWS
COVID-19
MEET OUR MEMBERS

OPINION

What are 'the laws of biology'?

Nobel de fisica 2023



Nobel de medicina 2023

© The Nobel Committe for Physiology or Medicine. Ill. Mattias Karlén

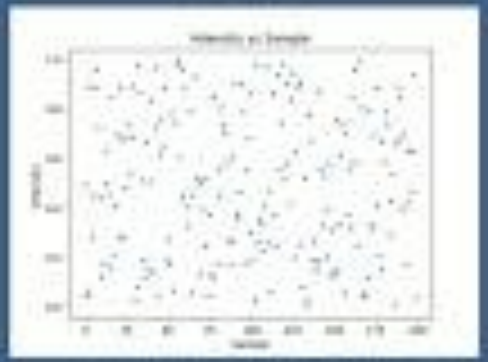
Nobel Prize lessons – Discoveries that laid the foundation for mRNA vaccines

The 2023 medicine prize honours discoveries that were decisive in the development of effective mRNA vaccines for COVID-19 during the pandemic that struck the world in early 2020. The two laureates' ground-breaking research has fundamentally changed our understanding of how mRNA interacts with the immune system. It contributed to the extraordinarily rapid development of new vaccines during the coronavirus pandemic.

El destino del libre albedrío

Cursos

Gráficos de dispersión de datos univariados



python SOFTWARE FOUNDATION

© Gustavo Magallanes-Guijón

https://github.com/
u-genoma/
BioinfinvRepro
GitHub
La terminal de R

MEMORIA DE LA ESCUELA

Game Theory
Collective Behavior
Nonlinear Dynamics
Emergence
Networks
Complex Systems
Self-Organization
Systems Theory
Pattern Formation
Evolution & Adaptation

Curso semestral 2021-2

INTRODUCCIÓN A LA COMPLEJIDAD

Materia optativa de la Facultad de Ciencias – UNAM

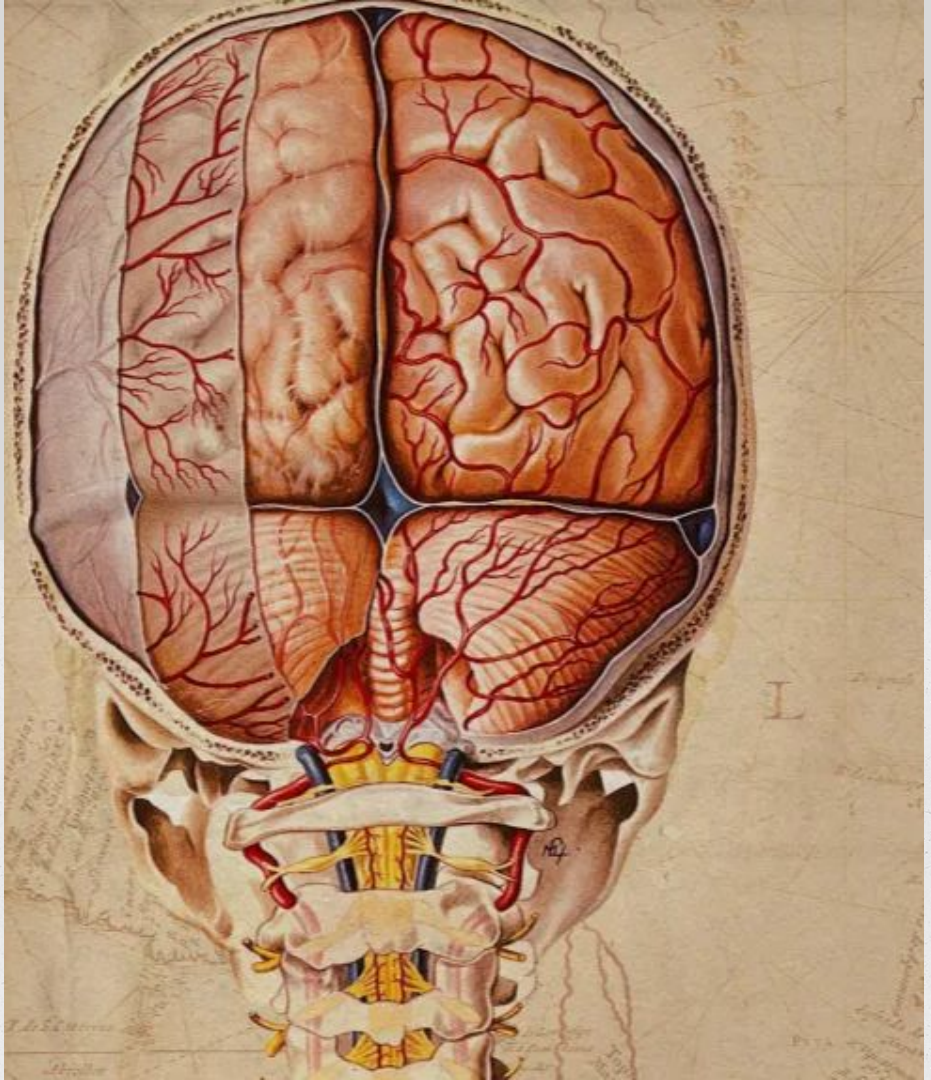
Maximino Aldana

Instituto de Ciencias Físicas y Centro de Ciencias de la Complejidad de la UNAM

02/MAR/21 SESIÓN - 01 ▼

Cultura

Chisme entre artistas
"Proceso creativo para una ilustración ganadora"
Chisme entre artistas
DIARIO DE NATURALEZA
"El cuaderno de campo como herramienta en la observación naturalista"
Viernes 9pm
Chisme entre artistas
"Ciencia y arte: cómo dos biólogas terminan ilustrando "
Chisme entre artistas
"Grandes naturalistas del pasado y actuales: fuente de inspiración"
Chisme entre artistas
Mordida de Rata
"Ilus ek"
Chisme entre artistas
"Ilustración anatómica: huesos humanos"
Jueves 8pm
Chisme entre artistas
"Estudios y formación o ser un artista autodidacta"
Chisme entre artistas
"Experiencias y anécdotas en la biología e ilustración"
Viernes 9pm
Chisme entre artistas
"Responsabilidad crítica sobre: el arte, su difusión y redes sociales"



Stephanie King
Jessica Machnicki

How Randomness Improves Algorithms

7 |

Unpredictability can help computer scientists solve otherwise intractable problems.

Artículo

Prevolutionary dynamics and the origin of evolution

Martin A. Nowak and Hisashi Ohtsuki Authors Info & Affiliations

September 30, 2008 | 105 (39) 14924-14927 | https://doi.org/10.1073/pnas.0806714105

7,862 | 71

Abstract

Life is that which replicates and evolves. The origin of life is also the origin of evolution. A fundamental question is when do chemical kinetics become evolutionary dynamics? Here, we formulate a general mathematical theory for the origin of evolution. All known life on earth is based on biological polymers, which act as information carriers and catalysts. Therefore, any theory for the origin of life must address the emergence of such a system. We describe prelife as an alphabet of active monomers that form random polymers. Prelife is a generative system that can produce information. Prevolutionary dynamics have selection and mutation, but no replication. Life marches in with the ability of replication: Polymers act as templates for their own reproduction. Prelife is a scaffold that builds life. Yet, there is competition between life and prelife. There is a phase transition: If the effective replication rate exceeds a critical value, then life outcompetes prelife. Replication is not a prerequisite for selection, but instead, there can be selection for replication. Mutation leads to an error threshold between life and prelife.

Resilience—Towards an interdisciplinary definition using information theory

Eleni Nisioti[1], Colby Clark[2], Kaushik Kunal Das[3,4], Ekkehard Ernst[3]*, Nicholas A. Friedenberg[5], Emily Gates[6], Maryl Lambros[7], Anita Lazurko[8], Nataša Puzović[9] and Ilvanna Salas[10,11]

[1]Flowers Team Inria and Ensta ParisTech, Bordeaux, France, [2]Philosophy Department University of Kentucky, Lexington, KY, United States, [3]International Labour Organisation, Research Department, Switzerland and Geneva Macro Labs, Geneva, Switzerland, [4]Peregrine Data Inc., Mumbai, India, [5]Corteva Agriscience (US), Indianapolis, IN, United States, [6]Boston College, Chestnut Hill, MA, United States, [7]Avista Therpeutics, Pittsburgh, PA, United States, [8]UK Centre for Ecology and Hydrology Lancaster, Lancaster, United Kingdom, [9]Max Planck Institute for Evolutionary Biology, Plön, Schleswig-Holstein, Germany, [10]Programa de Doctorado en Genómica Integrativa Vicerrectoría de Investigación GEMA Center for Genomics, Ecology & Environment Universidad Mayor Santiago, Santiago, Chile, [11]Konrad Lorenz Institute for Evolution and Cognition Research, Klosterneuburg, Austria

The term "resilience" has risen in popularity following a series of natural disasters, the impacts of climate change, and the Covid-19 pandemic. However, different disciplines use the term in widely different ways, resulting in confusion regarding how the term is used and difficulties operationalising the underlying concept. Drawing on an overview of eleven disciplines, our paper offers a guiding framework to navigate this ambiguity by suggesting a novel typology of resilience using an information-theoretic approach. Specifically, we define resilience by borrowing an existing definition of individuals as sub-systems within multi-scale systems that exhibit temporal integrity amidst interactions with the environment. We quantify resilience as the ability of individuals to maintain fitness in the face of endogenous and exogenous disturbances. In particular, we distinguish between four different types of resilience: (i) preservation of structure and function, which we call "strong robustness"; (ii) preservation of function but change in structure ("weak robustness"); (iii) change in both structure and function ("strong adaptability"); and (iv) change in function but preservation in structure ("weak adaptability"). Our typology offers an approach for navigating these different types and demonstrates how resilience can be

PHYSICAL REVIEW LETTERS

Featured in Physics Open Access

Active Spaghetti: Collective Organization in Cyanobacteria

Mixon K. Faluweki, Jan Cammann, Marco G. Mazza, and Lucas Goehring
Phys. Rev. Lett. **131**, 158303 – Published 13 October 2023

Physics See synopsis: Collective Organization of Spaghetti-like Bacteria

ABSTRACT

Filamentous cyanobacteria can show fascinating examples of nonequilibrium self-organization, which, however, are not well understood from a physical perspective. We investigate the motility and collective organization of colonies of these simple multicellular lifeforms. As their area density increases, linear chains of cells gliding on a substrate show a transition from an isotropic distribution to bundles of filaments arranged in a reticulate pattern. Based on our experimental observations of individual behavior and pairwise interactions, we introduce a nonreciprocal model accounting for the filaments' large aspect ratio, fluctuations in curvature, motility, and nematic interactions. This minimal model of active filaments recapitulates the observations, and rationalizes the appearance of a characteristic length scale in the system, based on the Péclet number of the cyanobacteria filaments.

Videos

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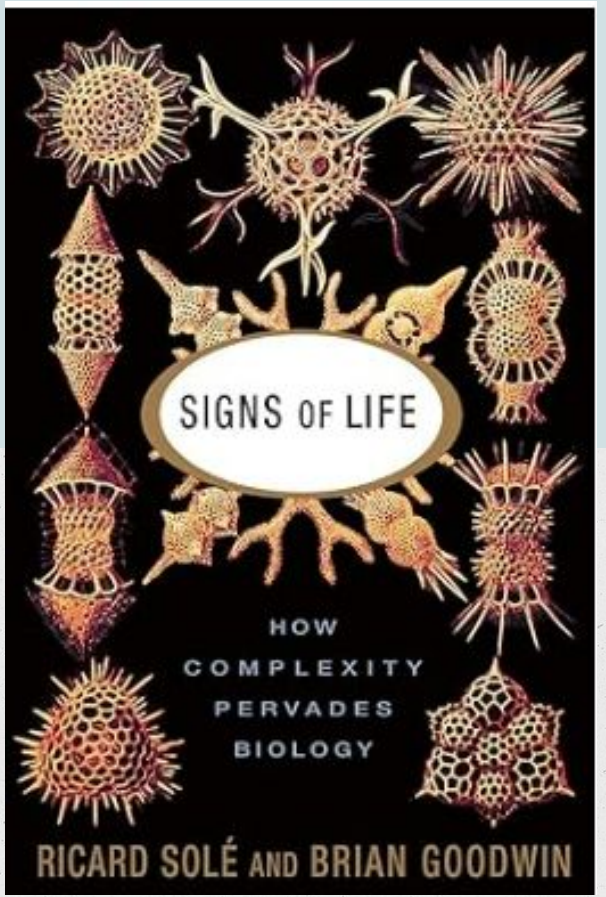
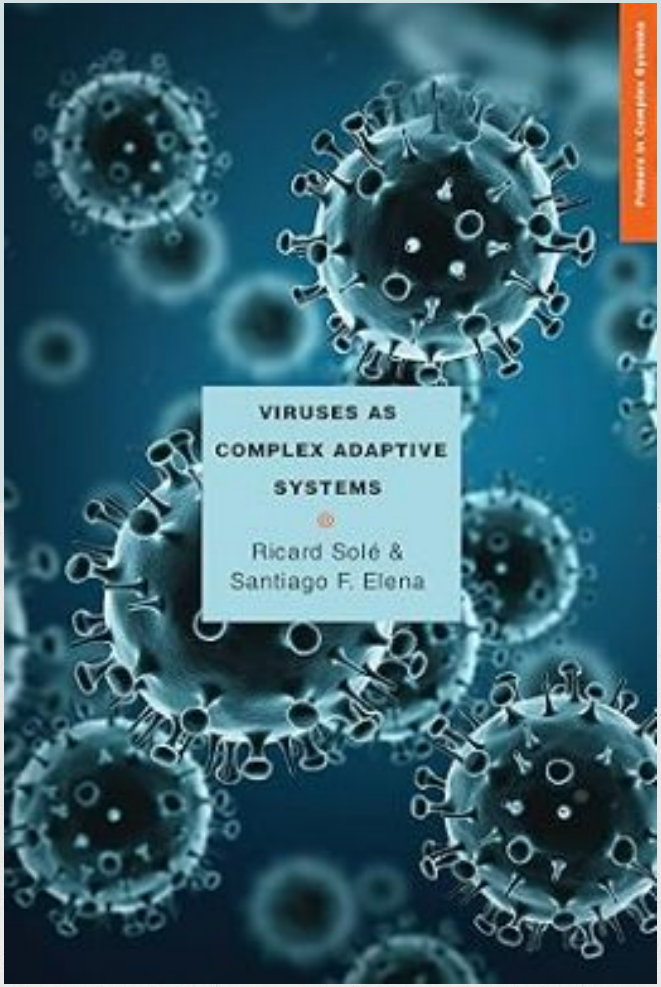
Escuela de Gobierno @EGobiernoyTP · 30 ago.

Hoy en @TheDataPub, el Dr. Oliver López-Corona (@otrasenda_AC) habló del peligro de las narrativas falsas basadas en datos; se refirió a los límites de la inferencia en sistemas complejos, así como a las fallas típicas en el razonamiento estadístico y probabilístico.

Libros


SIGNS OF LIFE
HOW COMPLEXITY PERVADES BIOLOGY
RICARD SOLÉ AND BRIAN GOODWIN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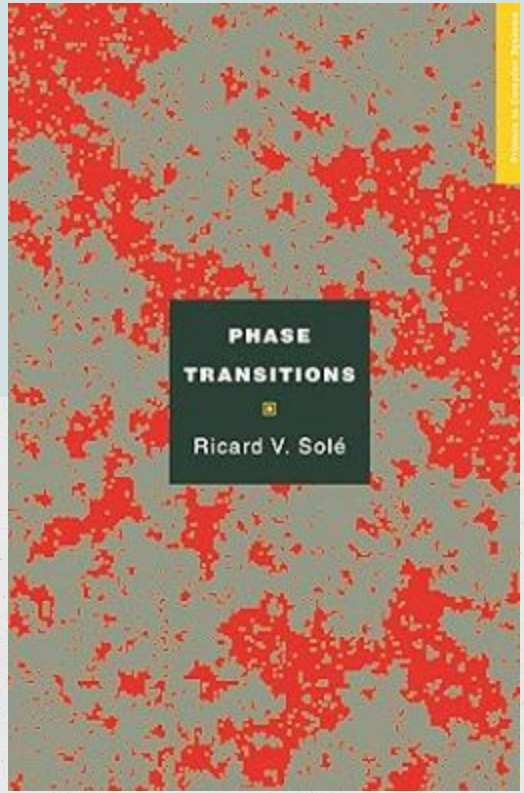
COMPLEX ADAPTIVE
SYSTEMS
Ricard Solé &
Santiago F. Elena


PHASE
TRANSITIONS
Ricard V. Solé

Notas

FEATURE HEALTH & MEDICINE

How brain implants are treating depression

An experimental surgery that sends electricity into the brain may offer relief from mental disorders

Only 21 Of These Enormous Chicken Frogs Remain Alive In The Wild

The mountain chicken frog weighs as much as a bag of flour but is on the verge of disappearing from the wild.

BEN TAUB
Freelance Writer

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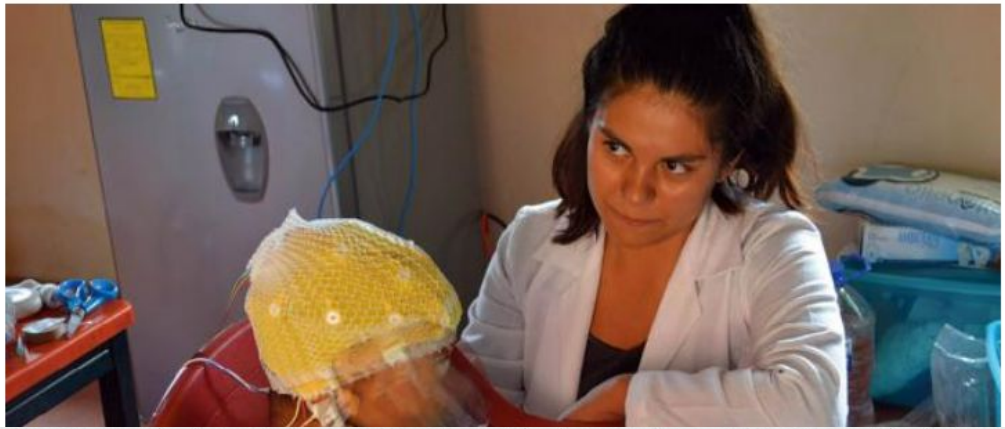
CRÓNICA

Academia

ESTUDIO

UNAM: Ausencia de proteínas durante infancia debilita conectividad cerebral

• Puede fomentar la pérdida de la capacidad del organismo humano para responder ante cambios y perturbaciones del medio ambiente. Los resultados se publican en la revista PLOS ONE



SCIENCE NEWS
STARTING
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WITH SABINE
& HER RED TELEPHONE
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