[Print | E-mail | ➕ Share [Close Window]

Contact: Dr. Joshua Auerbach
joshua.auerbach@epfl.ch
802-239-4955
Public Library of Science

Environment affects an organism's complexity

Press release from PLOS Computational Biology

Scientists have demonstrated that organisms with greater complexity are more likely to evolve in complex environments, according to research published this week in *PLOS Computational Biology*. The researchers, based at École Polytechnique Fédérale de Lausanne and University of Vermont, created a programme that simulated the evolution of virtual creatures in a variety of landscapes.

Each virtual organism was made using a particular form of genetic encoding to create three-dimensional models and then simulated in a physically-realistic virtual world. Creatures that evolved in flat landscapes had a simple shape, but could not adequately navigate more complex environments. Later environments were designed with elevated "ice blocks". These obstacles were constructed so that each organism had to reach inside the gaps between the blocks to move forwards.

Overall, the researchers found that the investigated environments actively induced selection on the body plans and nervous systems of the simulated creatures. More complex landscapes led to more complex organisms than simpler environments due to the cost inherent in morphological complexity: evolution only produces complex body shapes in environments that demand them.

Study author Joshua Auerbach comments:

"Our work supports the idea that the morphological complexity of organisms is influenced by the complexity of the environments in which they evolve. While our work does not prove anything about biological complexity, it does provide a new methodology for investigating questions about the evolution of complexity in silico."

###

Please add this link to the freely available article in online versions of your report (the link will go live when the embargo ends): http://www.ploscompbiol.org/article/info:doi/pcbi.1003399

Contact:

Dr. Joshua Auerbach
École Polytechnique Fédérale de Lausanne
Laboratory of Intelligent Systems

Lausanne, Switzerland
+1 (802) 239-4955
joshua.auerbach@epfl.ch

Disclaimer

This press release refers to an upcoming article in *PLOS Computational Biology*. The release is provided by the article authors. Any opinions expressed in these releases or articles are the personal views of the journal staff and/or article contributors, and do not necessarily represent the views or policies of PLOS. PLOS expressly disclaims any and all warranties and liability in connection with the information found in the releases and articles and your use of such information.

About *PLOS Computational Biology*

PLOS Computational Biology features works of exceptional significance that further our understanding of living systems at all scales through the application of computational methods. All works published in *PLOS Computational Biology* are open access. Everything is immediately available subject only to the condition that the original authorship and source are properly attributed. Copyright is retained.

About the Public Library of Science

The Public Library of Science (PLOS) is a nonprofit publisher and advocacy organization founded to accelerate progress in science and medicine by leading a transformation in research communication. PLOS engages in outreach activities that promote Open Access and innovations in the communication of research for scientists and the public. 2013 marks PLOS's tenth year as an Open Access publisher, reaching an international audience through immediate and free availability of research on the Internet. PLOS publishes a suite of seven journals: *PLOS Biology, PLOS Medicine, PLOS Genetics, PLOS Computational Biology, PLOS Pathogens, and PLOS Neglected Tropical Diseases* and *PLOS ONE*, which publishes research from more than 50 diverse scientific fields and is the largest journal in the world.

[Print | E-mail ➕ Share] [Close Window]

Back To EurekAlert!