

2007 Boulder School for Condensed Matter and Materials Physics Biophysics

MORE PERFECT THAN WE IMAGINED: A PHYSICIST'S VIEW OF LIFE



Wednesday, July 18th, 2007

7 to 8 p.m.

Duane Physics Building

Room G1B20

University of Colorado

For more information call (303) 492-5436 or 3367

In order to survive in the world, all organisms (including us!) have to solve a wide variety of problems. For many of these problems, such as sensing the environment or controlling the internal chemistry of cells, the laws of physics set limits on how well things can work. Remarkably, many real organisms actually perform very near these physical limits: in a certain sense, nature has found nearly perfect solutions to the problems of survival. In this lecture I will explore examples of this near perfect performance in different organisms, from bacteria to bats and from flies to humans. I'll also try to step back from the examples and ask how this evidence of performance near the physical limits changes our view of life: is what we see around us just an accident of evolutionary history, or are the mechanisms of life perfectly matched to the physics of our environment?



Images from Ohio Department of Natural Resources, Division of Wildlife
<http://www.dnr.state.oh.us/wildlife/resources/wildnotes/pub372.htm>



Professor William Bialek

William Bialek is the John Archibald Wheeler/Battelle Professor in Physics at Princeton University. A theoretical physicist, his work has been inspired by a broad range of biological phenomena, from the dynamics of single protein molecules to the coding and processing of information in the brain. In addition to being well known as a leader in the emerging field of biophysics, Bialek was recently honored with the President's Award for Distinguished Teaching at Princeton, recognizing the clarity and passion with which he communicates science to a wide variety of audiences.

To learn more, see website at <http://www.princeton.edu/~wbialek/wbialek.html>