Evolution in Action

Richard Lenski

John Hannah Distinguished Professor of Microbial Ecology, Department of Microbiology and Molecular Genetics

CURRENT RESEARCH

Performing experiments to see, quantify, and understand the evolutionary process

Evolution is usually thought of as a slow process—one that cannot be directly observed but instead can only be studied by looking back in time using fossils or the comparative method to see the past history of life. However, Dr. Lenski's approach is to watch evolution while it happens in experiments under controlled conditions. To study evolution in action requires organisms that replicate and evolve quickly, so that one can see and measure the resulting changes on a reasonable time scale. Dr. Lenski is advancing the study of evolution in action on several fronts including a unique multi-decade experiment with bacteria, research on viruses that can infect and coevolve with bacteria, and a multidisciplinary collaboration on artificial life in the form of computer programs that can evolve the ability to solve complex problems.

Dr. Lenski describes his research as "curiosity driven" but it also has important practical implications and applications. His expertise on the mechanisms and dynamics of evolution have led him to serve on panels that examined the scientific approaches used to investigate the 2001 anthrax letter attacks and that proposed frameworks for evaluating the benefits and potential risks of genetically engineered organisms. The analyses and findings from his experiments on evolving microbes are widely cited and emulated by researchers studying infectious diseases and even cancers. And his work on evolving computer programs has been highly influential for researchers who want to apply the power of biological evolution to solve problems in computational and engineering domains.

Dr. Lenski's on-going research projects include:

- Long-Term Evolution Experiment: In...

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AFFILIATION

Michigan State University

EDUCATION

- A.B., in Biology, 1977 , Oberlin College
- Ph.D., in Zoology, 1982 , University of North Carolina, Chapel Hill
- Postdoctoral research on microbial evolution, 1982 - 1985 , University of Massachusetts, Amherst

AWARDS

- Honorary Doctorate
- National Academy of Sciences, USA
- American Academy of Arts and Sciences
- "Genius" Award
- Presidential Young Investigator Award

RESEARCH AREAS

Life Science, Infectious

FUNDING REQUEST

Your donations will support the research of Dr. Richard Lenski, an elected member of the National Academy of Sciences, and his team at Michigan State University. By funding the stipend and research activities of a postdoctoral scientist (~$80K per year), a graduate student (~$50K per year), or an undergraduate student (~$8K for a summer), you will support new discoveries about the evolution of bacteria and viruses, advance our understanding of the genetic and ecological process that generated the diversity of life on earth, and support the development of the next generation of scientists.