THURSDAY, DECEMBER 27, 2012

10:30 A.M.–2:30 P.M.

Online registration for teachers only at
www.rockefeller.edu/holidaylecture/2012

Attn: High school science teachers and science program coordinators

On Thursday, December 27, 2012, The Rockefeller University will present the 53rd Annual Rockefeller University Holiday Lecture on Science for High School Students. We would like your school to select 10 students with a strong interest in science who would like to attend the lecture. Please give preference to juniors and seniors.

Please post this program announcement in your classroom and photocopy for students. After you have selected 10 students, please complete the online registration form at www.rockefeller.edu/holidaylecture/2012. (Instructions are provided if you wish to select more than 10 students.) Kindly register **no later than Friday, December 7, 2012**. Tickets will be mailed to you for distribution to your students before your holiday break.

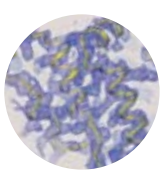
If you cannot access our online registration form, or have any questions about the procedure for registering students or about the lecture itself, please call Gloria Phipps in Communications and Public Affairs at 212-327-8967 or e-mail phippsg@rockefeller.edu.

About
The Rockefeller University

The Rockefeller University is a world-renowned center for research and graduate education. The university's 73 laboratories conduct research into a diverse range of biological and biomedical problems with the mission of improving the understanding of life for the benefit of humanity. A total of 24 scientists associated with The Rockefeller University have received the Nobel Prize since the university's founding over 100 years ago.

The Rockefeller University Holiday Lectures on Science were established in 1959 by Alfred E. Mirsky, a biochemist and Rockefeller University librarian. Dr. Mirsky modeled these lectures on a popular series of science lectures for children pioneered in London in 1826 by Michael Faraday, known as one of the greatest experimenters in the history of science.

THE ROCKEFELLER UNIVERSITY
COMMUNICATIONS AND PUBLIC AFFAIRS
1230 YORK AVENUE, BOX 68, NEW YORK, NY 10065



53RD ANNUAL ROCKEFELLER UNIVERSITY
HOLIDAY LECTURES ON SCIENCE
ESTABLISHED BY ALFRED E. MIRSKY

The Rockefeller University
1901
SCIENTIA · PRO · BONO · HUMANI · GENERIS

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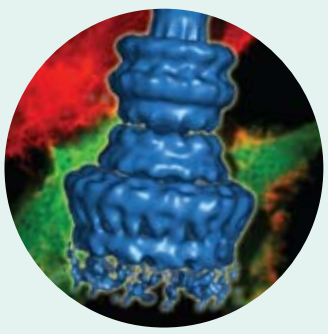

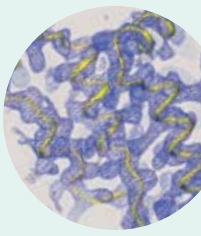

THURSDAY, DECEMBER 27, 2012

Bacteria's Deadly Design:

How Earth's most prevalent life-form uses a microscopic syringe to invade and attack

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HOLIDAY LECTURES ON SCIENCE
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Bacteria's Deadly Design:

How Earth's most prevalent life-form uses a microscopic syringe to invade and attack

Lecture by **C. Erec Stebbins,** Associate Professor

As a molecular biologist, Dr. Stebbins examines how bacteria cause disease, and in particular how bacterial proteins — called virulence factors — target and manipulate host cells. By working to understand the structure of the molecular machinery that enables bacteria to be so successful at infection, Dr. Stebbins hopes to learn more about how bacteria interact with the environment. Dr. Stebbins joined Rockefeller in 2001. He received his Ph.D. in biochemistry and structural biology in 1999 from Cornell University's Weill Graduate School of Medical Sciences and did postdoctoral work in microbial pathogenesis at the Yale University School of Medicine. He is the recipient of several governmental and private awards, including the EUREKA award from the National Institutes of Health. By shedding light on host-pathogen interaction, Dr. Stebbins's research could lead to new drugs that stop the spread of bacterial infections, which are increasingly resistant to antibiotics.

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10:30 A.M.–2:30 P.M.

Lunch served
12–1 p.m.

Lecture will be held
in Caspary Auditorium

The Rockefeller University
1230 York Avenue
(at East 66th Street)
New York, NY 10065

Online registration for teachers only at
www.rockefeller.edu/holidaylecture/2012

Scan to learn more about bacteria and view a video from Dr. Stebbins's lab.

"We have a love-hate relationship with bacteria. They keep us alive and can also make us sick. By studying their structure, we can learn how such a simple organism evolves such a complex and intelligent means of survival."

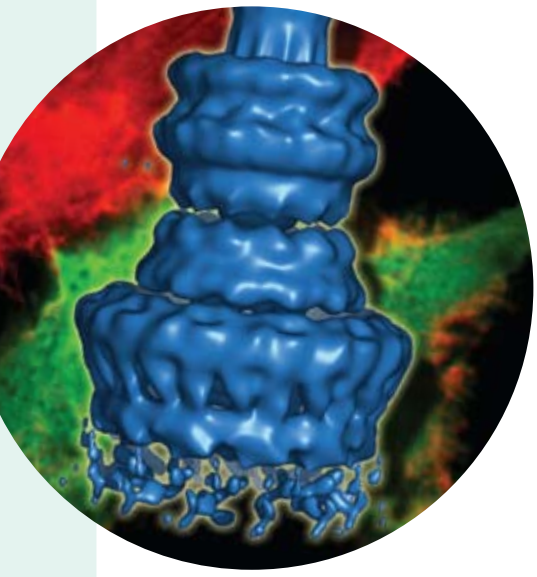
When it comes to the evolution of life on earth, those who have been here longest have seniority. And after four billion years, bacteria reign supreme. Unfortunately for us, some of them have been using that time to scheme at invading our bodies and outsmarting our cells. Bacteria make up the largest part of the biosphere, outnumbering plants and animals by trillions. They even outnumber the cells in your own body. They have become adept at forming relationships with animals, often cooperative business relationships that help both organisms.

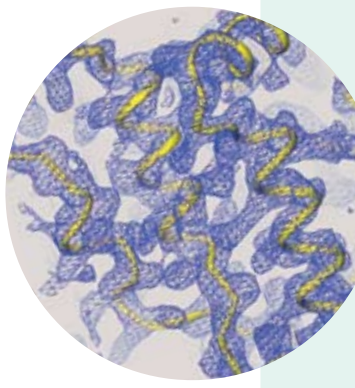
But while most bacteria are good for the planet — they play a major role in sustaining and shaping life on Earth — some are not so nice. Some inject toxins into your body and hijack your cells in order to reproduce. And thanks to the beauty of evolution, they've developed a sophisticated, sinister way to do that: with a tiny protein syringe capable of penetrating your cells' protective membranes. Earth's early nanotechnology.

This "virulence device," protruding from bacteria such as Salmonella, E. coli and Yersina pestis, is capable of injecting proteins into the hosts' cells that can take over their machinery and manipulate them like a puppet. Some proteins tell the cells to invite more bacteria in, forcing the cells to be an unwitting aide to their own demise. Others take over the cell cycle and command the cell to self-destruct. The nano-syringe, along with the proteins that pass through it, is one of the primary ways by which bacteria communicate with and control their environment.

Rockefeller University's Erec Stebbins studies the methods by which bacteria target and infect their hosts. In his Laboratory of Structural Microbiology, Dr. Stebbins and his lab members use techniques from biochemistry, microbial cell biology and x-ray crystallography to uncover the molecular architecture that enables bacteria to spread disease.

Having the blueprints for these nanostructures allows scientists to understand how they work. And understanding how bacteria work helps researchers develop the antibiotics to stop them from making people sick. Join Dr. Stebbins for a presentation on the biology behind infectious bacteria — a product of evolution that is both beautiful and frightening.





Left: Bacterial nano-syringe
Middle: *Salmonella* bacteria
Right: Atomic structure of a bacterial toxin