Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Single Bacteria as Turing Machines JULIA BOS, Princeton University, QIUCEN ZANG, University of Illinois Urbana Champagne, SAURABH VYAWAHARE, ROBERT AUSTIN, Princeton University — In Allan Turing's famous 1950 paper on Computing Machinery and Intelligence, he started with the provocative statement: "I propose to consider the question, 'Can machines think?' This should begin with definitions of the meaning of the terms 'machine' and 'think'." In our own work on exploring the way that organisms respond to stress and evolve, it seems at times as if they come to remarkably fast solutions to problems, indicating some sort of very clever computational machinery. Ill discuss how it would appear that bacteria can indeed create a form of a Turing Machine, the first example of a computer, and how they might use this algorithm to do rapid evolution to solve a genomics problem.

Robert Austin
Princeton University

Date submitted: 15 Nov 2013 Electronic form version 1.4