Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Pattern Formation in a Synthetic Multicellular System TING LU, DAVID KARIG, RON WEISS, Princeton University — Pattern formation has been studied for a long history since the Turing's proposal for a reaction-diffusion system and been found in numerous physical, chemical and biological examples. However, experimental study about pattern formation advances slowly. Here we present an artificial pattern formation system. By engineering cellular communication in bacteria *E. Coli* and plating these engineered cells onto a solid-phase agarose plate, we are able to program the pattern formation of this multicellular system. The pattern changes dramatically with different levels of an external inducer IPTG. A simple model is developed to explain the experimental results.

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Date submitted: 27 Nov 2007 Electronic form version 1.4