

Abstract Submitted
for the SES08 Meeting of
The American Physical Society

***In vitro* Electroporation on a microchip with heart valve cells**

HONGBAE KIM, Solco Biomedical Institute, Solco Biomedical Company, JUNG-HAN YI, HUNGSIK KIM, College of Biomedical & Life Science, Konkuk University, Chungju-si, 380-701, YOUN-SUK CHOI, Department of Bio and Brain Engineering, Korea Advanced Institute of Science and Technology, SAEYOUNG AHN, Solco Biomedical Institute, Solco Biomedical Company — Electroporation in biological cells involves rapid structural rearrangement and formation of pores in the lipid bilayer, in response to an externally applied electric field. To investigate electroporation, we fabricated a chip with two electrodes that is 1mm in distance between them, having six electroporation sites of the same geometry that mounted on a Pyrex glass substrate. The electroporation was performed using a sequence of nine dc pulses of having a pulse width 100 μ s each varying the applied amplitudes (375, 750, 1k, 1.3kV/cm), at a frequency of two and five pulses per second so that we may investigate how the applied voltages and pulse number may exert on efficacy of the chip. We used PI and Calcein-AM to measure the efficacy of the electroporation. Cell viability was also measured after electroporation. The analysis have showed that the sample applied 1kV/cm gated at a rate 15.9% and 88.9% than the control along with pulse number 2 and 5 respectively, revealing the increasing exponentially. The cell viability was over 91% as all the applied electrical conditions.

HongBae Kim
Solco Biomedical Institute, Solco Biomedical Company

Date submitted: 17 Sep 2008

Electronic form version 1.4