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**Microfluidic Transducer for Detecting Nanomechanical Movements of Bacteria**[1] VURAL KARA, KAMIL EKINCI, Mechanical Engineering Department, Boston University — Various nanomechanical movements of bacteria are currently being explored as an indication of bacterial viability. Most notably, these movements have been observed to subside rapidly and dramatically when the bacteria are exposed to an effective antibiotic. This suggests that monitoring bacterial movements, if performed with high fidelity, can offer a path to various clinical microbiological applications, including antibiotic susceptibility tests. Here, we introduce a robust and sensitive microfluidic transduction technique for detecting the nanomechanical movements of bacteria. The technique is based on measuring the electrical fluctuations in a microchannel which the bacteria populate. These electrical fluctuations are caused by the swimming of motile, planktonic bacteria and random oscillations of surface-immobilized bacteria. The technique provides enough sensitivity to detect even the slightest movements of a single cell and lends itself to smooth integration with other microfluidic methods and devices; it may eventually be used for rapid antibiotic susceptibility testing.

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