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Measurement of gating forces of mechanosensitive channels of large conductance in *Escherichia coli* ELVIS PANDZIC, PAUL WISEMAN, MARIA KILFOIL, Physics McGill, J. L. NADEAU TEAM[1], J. A. MAURER COLLABORATION[2] — In order to sense and respond to external mechanical stimuli, cells have evolved schemes to incorporate mechanosensors within their plasma membranes. Mechanosensitive channels of large conductance (MscL) are used by bacterial cells to respond quickly and effectively to hypo-osmotic shock: the opening of this channel permits cells to quickly release large amounts of osmolytes in order to quickly equalize unbalanced osmotic pressure across a membrane. In this study, we are investigating the physical mechanism of the MscL gating within the native environment of the *Escherichia coli* cells. We are using the green fluorescent protein (GFP) and derivative proteins (CFP, BFP) to label the C-termini of MscL subunits in order to observe the channels in live bacteria by fluorescence microscopy. Moreover, we label the opposite termini with a different chromophore system that constitutes an excellent fluorescence resonance energy transfer (FRET) pair with CFP. Channels are activated within the bacterial membrane by osmotic stress and interactions between differently labeled subunits are measured by fluorescence microscopy.

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