Supplemental Information for “Connecting mechanosensitive channel copy number to probability of survival under osmotic shock in *E. coli.”*

Heun Jin Leea, Griffin Chureb, and Rob Phillipsa, b, c, \*

Departments of Applied Physicsa, Biochemistry and Molecular Biophysicsb, and Division of Biology and Biological Engineeringc, California Institute of Technology, Pasadena, California, USA

\* Send correspondence to phillips@pboc.caltech.edu

**Strain Construction**

Information about strain backgrounds, how the  Δ7 strain was made, and information about the RBS design.

**Flow Cell**

More information about the glass and adhesive used. Maybe some more description of the experimental set up

**Image Processing**

Details about segmentation procedure and mapping to mouse-clicks. Comment on the occasionally inaccuracy of the segmentation technique, but a majority of the segmented objects are single-cells

Talk about evening the illumination field using the median of all positions when a fluorescent slide image was not available.

Talk about scaling the fluorescence to the longest exposure, assuming that the relationship between A.U. and exposure time is linear.

**Predicting survival probability through logistic regression**

Short paragraph summarizing why we chose logistic regression. Maybe include some figures of the survival probability from the binned data and talk about the caveats therein.

The primary assumption of logistic regression is that the log-odds probability of success, , is a linear function of a predictor variable

where the intercept is the log-odds probability of survival when and is the relative change in the log-odds probability of survival with a one unit increase in By solving for , we arrive at the expression

which is bounded between 0 and 1. Note that in the log-odds calculation, the values are not bounded and can be anything between and .

As is described in the main text,