

### ABC-Flow model fitting

In order to characterise the Litcofsky:2012gr toggle switch, I use the data collected in Section sec:ts<sub>i</sub> to fit the Gardn  
Flow, a python package was built as described in the Methods in Section sec : abcflow – meth.

Prior to using ABC-Flow to fit the experimental data to a toggle switch model, ABC-Flow must be validated. In the following sections I first use randomly generated distributions to set the algorithm metrics and distances. Then I use a simulated data set to which I fit a toggle switch model and finally I use ABC-Flow to fit experimental data.

Distance and metrics validation In order to compare the 1D and 2D fitting to the data in ABC-Flow, we must first find out how comparable the distance measures are. Here we simulate two normal distributions, with identical mu and sigma, and calculate the distance between the two using the distance measure used in ABC-Flow. Doing this 1000 times, we then plot the distribution of epsilon. By doing that we can calculate the variance of the epsilon distribution, and find out the error that can be expected when measuring the distance in ABC-Flow. By doing that in 1D and in 2D we can compare the epsilon variances.

figure[htbp] [scale=0.3]chapterABCFlow/images/normal\_sigma\_example.png[LoFcaption]fig : 1d2dsketchComparing