

Compare Biological vs Technical Replicates

BEST!!! Both variance terms go to zero the fastest.

Biological Replicates

$$\text{Average} = \mu + \frac{5 - 1 + 4 + 2 - 5}{5} + \frac{-2 + 5 + 2 - 2 - 1}{5} \xrightarrow{\text{The more samples you do...}} = \mu$$

PRETTY BAD

Some Biological replicates

$$\text{Average} = \mu + \frac{5 + 5 - 1 - 1 - 1}{5} + \frac{-2 + 5 + 2 - 2 - 1}{5}$$

But requires more biological reps. (and convergence is slower)

\searrow $= \mu$

\searrow $= \mu + \text{constant}$

WORST

No Biological Replicates

$$\text{Average} = \mu + 5 + \frac{-2 + 5 + 2 - 2 - 1}{5} \xrightarrow{\text{The more samples you do...}} = \mu + 5$$

With only more technical reps.