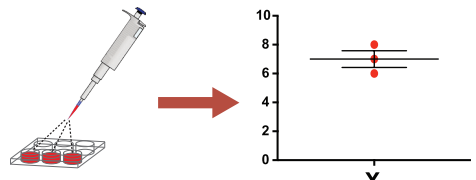
HEY, RESEARCHER! LEAVE THOSE BARS ALONE!

Good practices for reporting numerical and statistical results

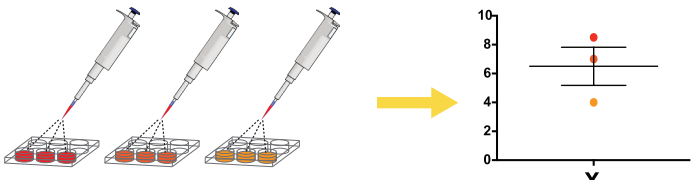
1. Show error bars for independent (biological) replicates only, not technical replicates from a single experiment.

NO



Technical replicates

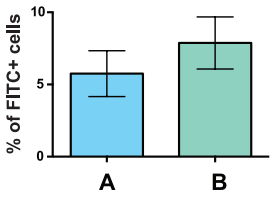
YES



Biological replicates

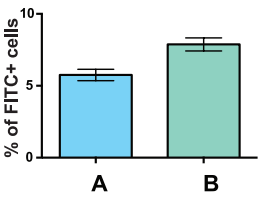
2. Know when to use standard deviation (s.d.) or standard error or the mean (s.e.m.)[1].

SD



(Same data plotted)

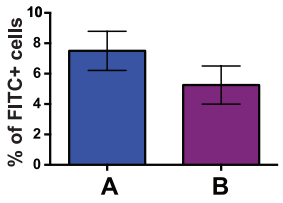
SEM



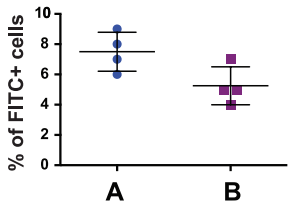
[1] *Standard deviation (s.d.) measures the variability or spread of the data in one group. Standard error of the mean (s.e.m.) is an estimate of the variability of the means based on the sample size. The larger the sample size, the smaller the standard error.*

3. When including error bars in a graph, explain what the bars represent (s.d. or s.e.m.)[1] and state the number of independent data points (n) shown in the graph. Consider showing all data points in the graph if n is less than 5.

NO



YES



Error bars represent s.d. (n=4)

4. Use the statistical test most appropriate to evaluate your data, and include the name of the statistical test used to generate the P values. State the threshold for significance (alpha), and report the actual P values in the figure legend.

NO

$P < 0.05$

YES

(Example) Statistical significance was determined by Student's *t* test. A P value < 0.05 was considered statistically significant. P = 0.023

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