STATISTICAL TESTS

To test if the averages of the reference strains are equal, we performed a few statistical tests. First, we checked if the data follows a normal distribution using the one sample Kolmogorov-Smirnov test of composite normality (null hypothesis: the data follows a normal distribution). Then we tested the homoscedasticity using the modified Levene test (null hypothesis: the variances of the data groups are equal). If both tests turned out positive (p ≥ 0.05), a pooled-variance two-sample t-test (null hypothesis: the means of both data groups are equal) was applied when two reference strains were used. Alternatively, when more than two reference strains were available, a one-way ANOVA (null hypothesis: the means of all data groups are equal) was used to confirm the similarity of the averages of the reference strains. If at least one test was negative, the data was checked using the exact Wilcoxon rank-sum test (null hypothesis: median difference between the pairs is zero) or the Kruskal-Wallis rank sum test (null hypothesis: the data groups follow identical distributions) when more than 2 reference strains were used.

8 + p5 JUMP

The obtained p-value of the one sample Kolmogorov-Smirnov is 0.0554. We can thus accept the null hypothesis and conclude that the distribution of the data is not significantly different from the normal distribution.

The obtained p-value of the modified Levene test is 0.573.
We can thus accept the null hypothesis and conclude that the variances of the data groups are not significantly different from each other.

The obtained p-value of the pooled-variance two-sample t-test is 0.0001.
We cannot accept the null hypothesis and must conclude that the means of the data groups are significantly different from each other.

Because the p-value of the one sample Kolmogorov-Smirnov is not much higher than 0.05, we will use the exact Wilcoxon rank-sum test to support our previous conclusions.
The obtained p-value of the exact Wilcoxon rank-sum test is 0.0286.
We cannot accept the null hypothesis and must conclude that the median differences of the data groups are significantly.

8 + p5 STEP

The obtained p-value of the one sample Kolmogorov-Smirnov is 0.5. We can thus accept the null hypothesis and conclude that the distribution of the data is not significantly different from the normal distribution.

The obtained p-value of the modified Levene test is 0.342.
We can thus accept the null hypothesis and conclude that the variances of the data groups are not significantly different from each other.

The obtained p-value of the pooled-variance two-sample t-test is 0.297.
We can accept the null hypothesis and conclude that the means of the data groups have no significant difference from each other.

8 + p10 JUMP

The obtained p-value of the one sample Kolmogorov-Smirnov is 0.5. We can thus accept the null hypothesis and conclude that the distribution of the data is not significantly different from the normal distribution.

The obtained p-value of the modified Levene test is 0.943.
We can thus accept the null hypothesis and conclude that the variances of the data groups are not significantly different from each other.

The obtained p-value of the pooled-variance two-sample t-test is 0.0009.
We cannot accept the null hypothesis and must conclude that the means of the data groups are significantly different from each other.

8 +p10 STEP

The obtained p-value of the one sample Kolmogorov-Smirnov is 0.0147. We cannot accept the null hypothesis and conclude that the distribution of the data is significantly different from the normal distribution.

The obtained p-value of the exact Wilcoxon rank-sum test is 0.686.
We can thus accept the null hypothesis and conclude that the median differences of the data groups are not significantly different from each other.

8 + p20 JUMP

The obtained p-value of the one sample Kolmogorov-Smirnov is 0.0592. We can thus accept the null hypothesis and conclude that the distribution of the data is not significantly different from the normal distribution.

The obtained p-value of the modified Levene test is 0.844.
We can thus accept the null hypothesis and conclude that the variances of the data groups are not significantly different from each other.

The obtained p-value of the pooled-variance two-sample t-test is 0.
We cannot accept the null hypothesis and must conclude that the means of the data groups are significantly different from each other.

Because the p-value of the one sample Kolmogorov-Smirnov is not much higher than 0.05, we will use the exact Wilcoxon rank-sum test to support our previous conclusions.
The obtained p-value of the exact Wilcoxon rank-sum test is 0.0286.
We cannot accept the null hypothesis and must conclude that the median differences of the data groups are significantly.

8 + p20 STEP

The obtained p-value of the one sample Kolmogorov-Smirnov is 0.5. We can thus accept the null hypothesis and conclude that the distribution of the data is not significantly different from the normal distribution.

The obtained p-value of the modified Levene test is 0.676.
We can thus accept the null hypothesis and conclude that the variances of the data groups are not significantly different from each other.

The obtained p-value of the pooled-variance two-sample t-test is 0.670.
We can accept the null hypothesis and conclude that the means of the data groups have no significant difference from each other.

8 + pSB6A1 (16) JUMP

Because these results are obtained from only one plate, and thus have only one reference strain, there is no need to check if the reference strains have equal averages.

8 + pSB6A1 (16) STEP

The obtained p-value of the one sample Kolmogorov-Smirnov is 0.5. We can thus accept the null hypothesis and conclude that the distribution of the data is not significantly different from the normal distribution.

The obtained p-value of the modified Levene test is 0.852.
We can thus accept the null hypothesis and conclude that the variances of the data groups are not significantly different from each other.

The obtained p-value of the pooled-variance two-sample t-test is 0.499.
We can accept the null hypothesis and conclude that the means of the data groups have no significant difference from each other.

5 + p5 JUMP

Because these results are obtained from only one plate, and thus have only one reference strain, there is no need to check if the reference strains have equal averages.

5 + p5 STEP

The obtained p-value of the one sample Kolmogorov-Smirnov is 0.5. We can thus accept the null hypothesis and conclude that the distribution of the data is not significantly different from the normal distribution.

The obtained p-value of the modified Levene test is 0.756.
We can thus accept the null hypothesis and conclude that the variances of the data groups are not significantly different from each other.

The obtained p-value of the one-way ANOVA test is 0.095.
We can accept the null hypothesis and conclude that the means of the data groups have no significant difference from each other.

5 + p10 JUMP

The obtained p-value of the one sample Kolmogorov-Smirnov is 0.092. We can thus accept the null hypothesis and conclude that the distribution of the data is not significantly different from the normal distribution.

The obtained p-value of the modified Levene test is 0.519.
We can thus accept the null hypothesis and conclude that the variances of the data groups are not significantly different from each other.

The obtained p-value of the pooled-variance two-sample t-test is 0.0003.
We cannot accept the null hypothesis and must conclude that the means of the data groups are significantly different from each other.

5 + p10 STEP

The obtained p-value of the one sample Kolmogorov-Smirnov is 0.5. We can thus accept the null hypothesis and conclude that the distribution of the data is not significantly different from the normal distribution.

The obtained p-value of the modified Levene test is 0.615.
We can thus accept the null hypothesis and conclude that the variances of the data groups are not significantly different from each other.

The obtained p-value of the one-way ANOVA test is 0.00007.
We cannot accept the null hypothesis and conclude that the means of the data groups are significant different from each other.

5 + p20 JUMP

Because these results are obtained from only one plate, and thus have only one reference strain, there is no need to check if the reference strains have equal averages.

5 + p20 STEP

The obtained p-value of the one sample Kolmogorov-Smirnov is 0.5. We can thus accept the null hypothesis and conclude that the distribution of the data is not significantly different from the normal distribution.

The obtained p-value of the modified Levene test is 0.048.
We cannot accept the null hypothesis and conclude that the variances of the data groups are significantly different from each other.

The obtained p-value of the Kruskal-Wallis rank sum test is 0.033.
We cannot accept the null hypothesis and must conclude that the data groups originate from different distributions.

8 + pSB6A1 (4) JUMP

The obtained p-value of the one sample Kolmogorov-Smirnov is 0.5. We can thus accept the null hypothesis and conclude that the distribution of the data is not significantly different from the normal distribution.

The obtained p-value of the modified Levene test is 0.287.
We can thus accept the null hypothesis and conclude that the variances of the data groups are not significantly different from each other.

The obtained p-value of the one-way ANOVA test is 0.213.
We can thus accept the null hypothesis and conclude that the means of the data groups are not significant different from each other.

8 + pSB6A1 (4) STEP

The obtained p-value of the one sample Kolmogorov-Smirnov is 0.0005. We cannot accept the null hypothesis and conclude that the distribution of the data is significantly different from the normal distribution.

The obtained p-value of the Kruskal-Wallis rank sum test is 0.397.
We can thus accept the null hypothesis and must conclude that the data groups originate from the same distribution.