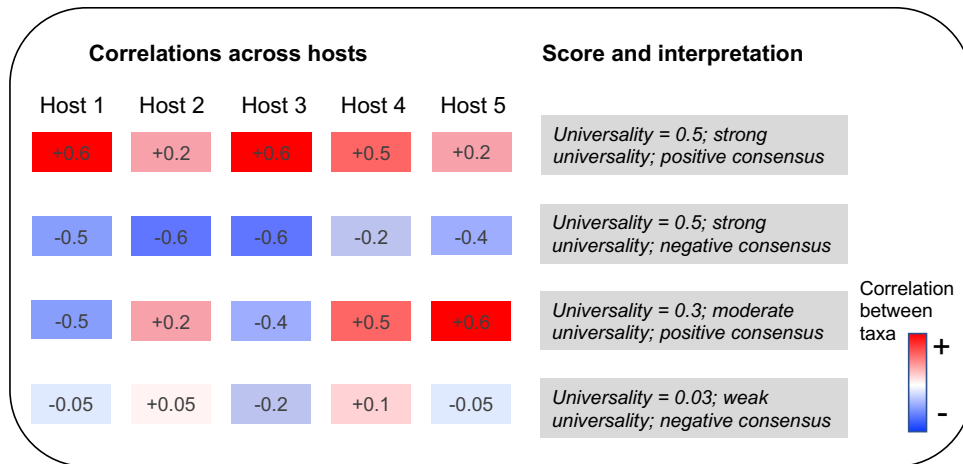


## Calculating the universality score

$$\begin{array}{l} \text{Median} \\ \text{correlation} \\ \text{across 56 hosts} \end{array} \times \begin{array}{l} \text{Correlation} \\ \text{consistency across} \\ \text{56 hosts} \end{array} = \text{Universality score}$$

## Interpreting the universality score



**Figure 2 – figure supplement 4. Our universality score identifies the bacterial pairs that exhibit the most consistent relationships across hosts.** The score multiplies the pair’s median correlation coefficient across hosts with its correlation consistency across hosts (i.e., proportion of hosts in which the correlation has the same sign, either positive or negative). The resulting scores range from 0 to 1, where a score of 1 equates to perfect “universality” (i.e., all hosts have a correlation coefficient of 1 or all hosts have a correlation coefficient of -1). The second panel illustrates the calculation of the score for 4 hypothetical taxa pairs across 5 hosts.