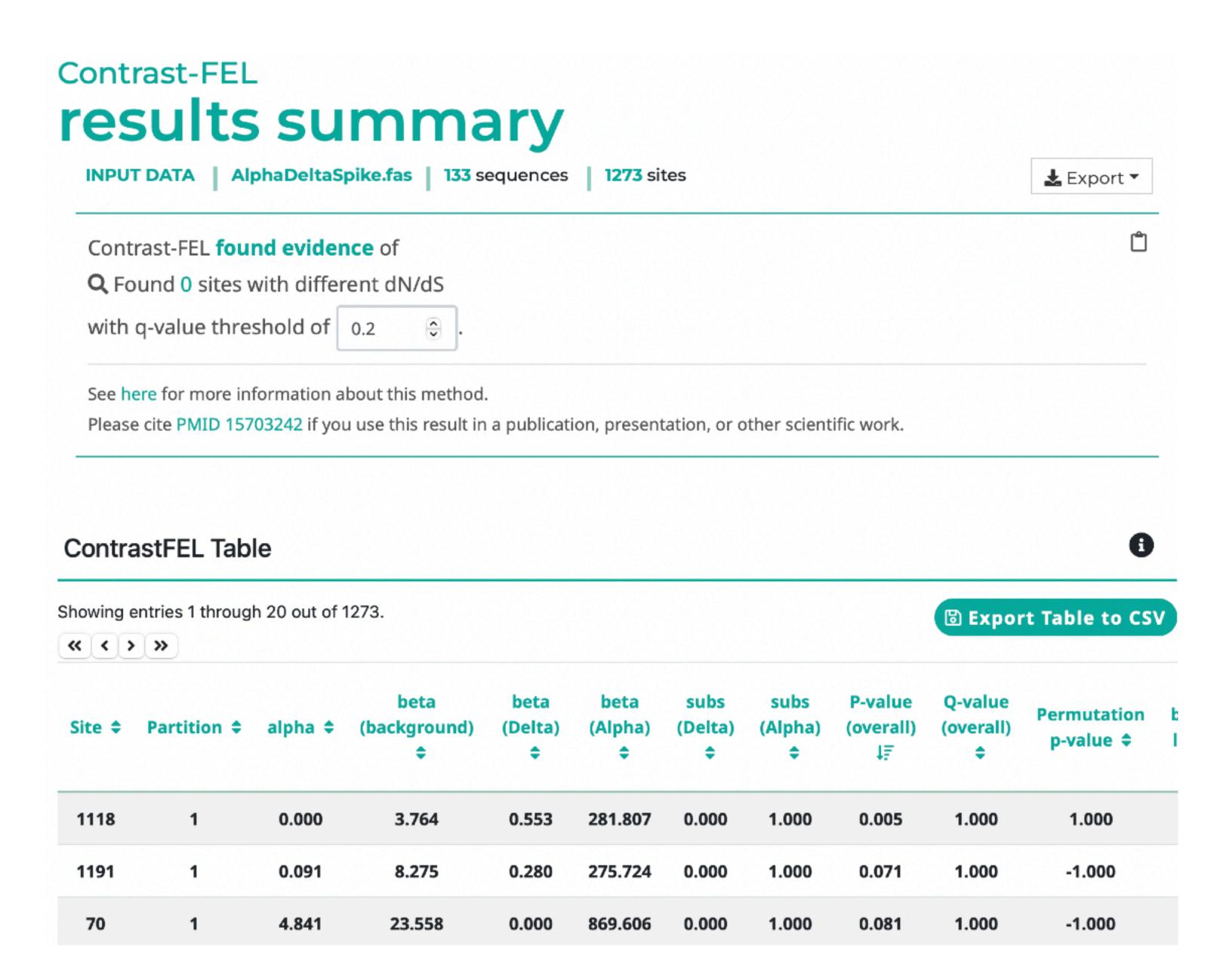
Which sites are evolving differentially?

- We have established that in the HIV example, donor, recipient, and transmission branches evolve differently.
- Can we identify specific sites where this may be occurring?
 - Why is this of interest?
- More generally, given a tree with N sets of branches, we fish to find sites where evolution is different between these N sets, with a degree of statistical significance.

- Solution: use a fixed effects method (Contrast-FEL)
 - For each branch set i, estimate a dN/dS ration (N total ratios)
 - Test whether or not any of the ratios are different (group test)
 - For each pair of ratios, test if they are different [up to N (N-1) / 2 tests]
- Can identify subtle differences among selective pressures.



hyphy contrast-fel --alignment data/AlphaDeltaSpike.fas --tree data/AlphaDeltaSpike.tree --branch-set Alpha --branch-set Delta