



Supplemental Fig S1: Deep coverage datasets are handled by splitting them into  $k$  patches of 750x each, because SAVAGE *Stage a* has been tailored to perform optimally on such coverage levels. For the simulated benchmarks and the lab mix  $k = 30$ , for the ZIKV data  $k = 50$ , and for the HCV data  $k = 75$ . The contigs resulting from *Stage a* are combined into one collection of contigs on which we apply SAVAGE *Stage b*. This gives us a set of maximally extended contigs, which can then (optionally) be merged into master strains using *Stage c*.