(a) NMDS of euclidean distances between genome changes of known and unknown function 8 -10 -5 5 10 nmds 1 Phage added \triangle Phage added repeatedly Existing de novo Ancestor ☐ Control ♦ variant variant (b) (d) (c) 125 number of SNPs / indels 150 40 100 alpha diversity 100 75 · 20 50 50 -25 Control Control Phage Phage Control Phage Phage Phage Phage added added added added added added repeatedly repeatedly repeatedly once once once

nmds 2

genotypic distance from ancestor