

A

Bruchini: A and X dNdS violin plot and permutation test

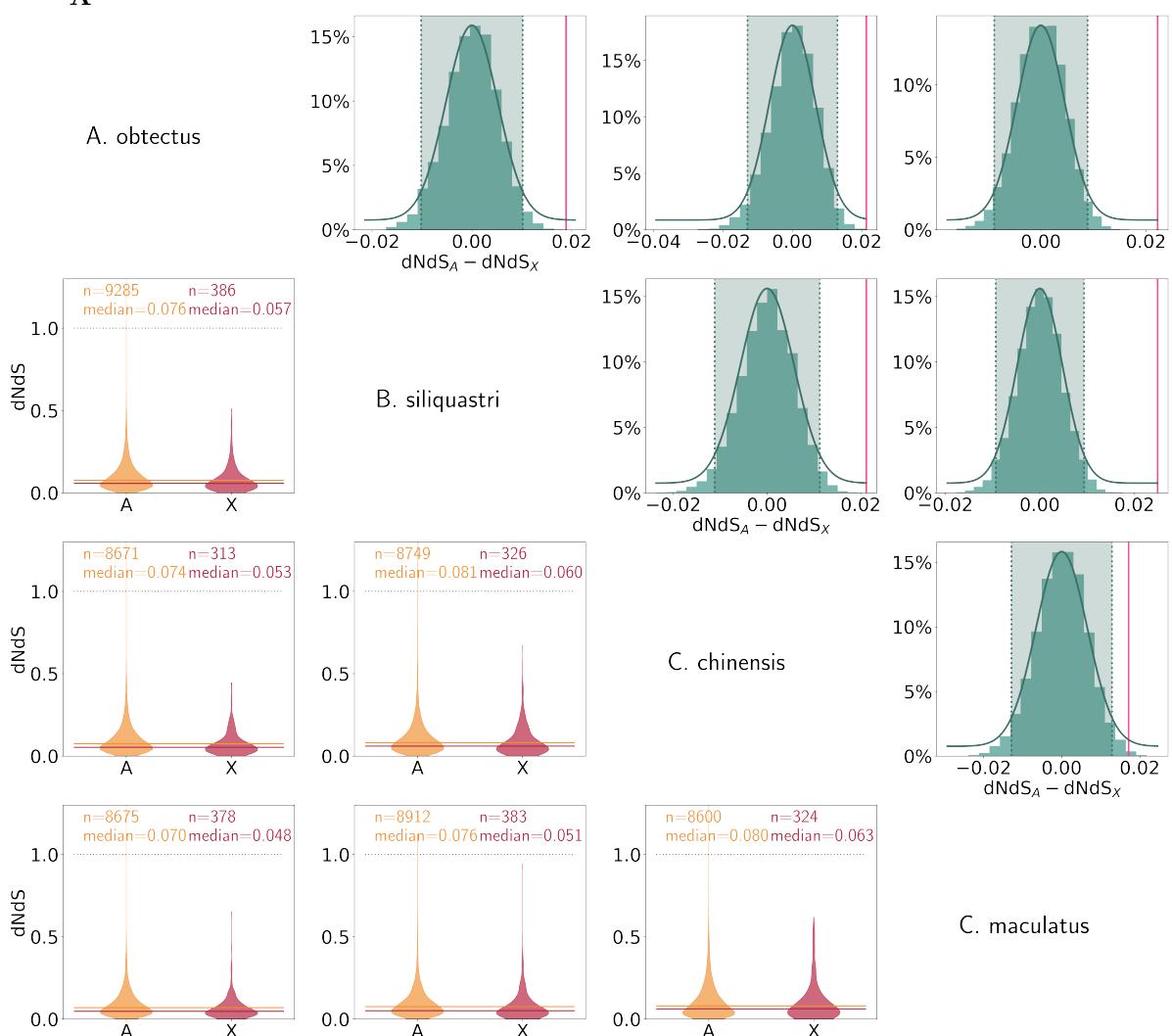
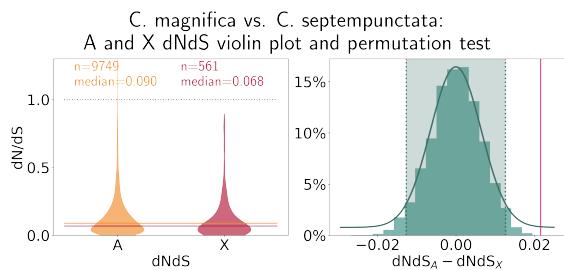
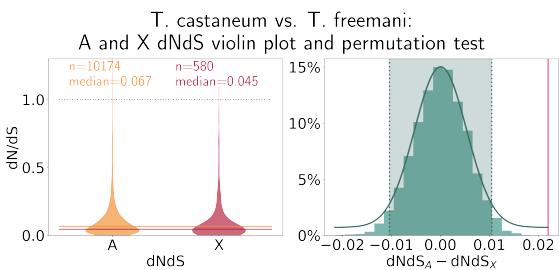
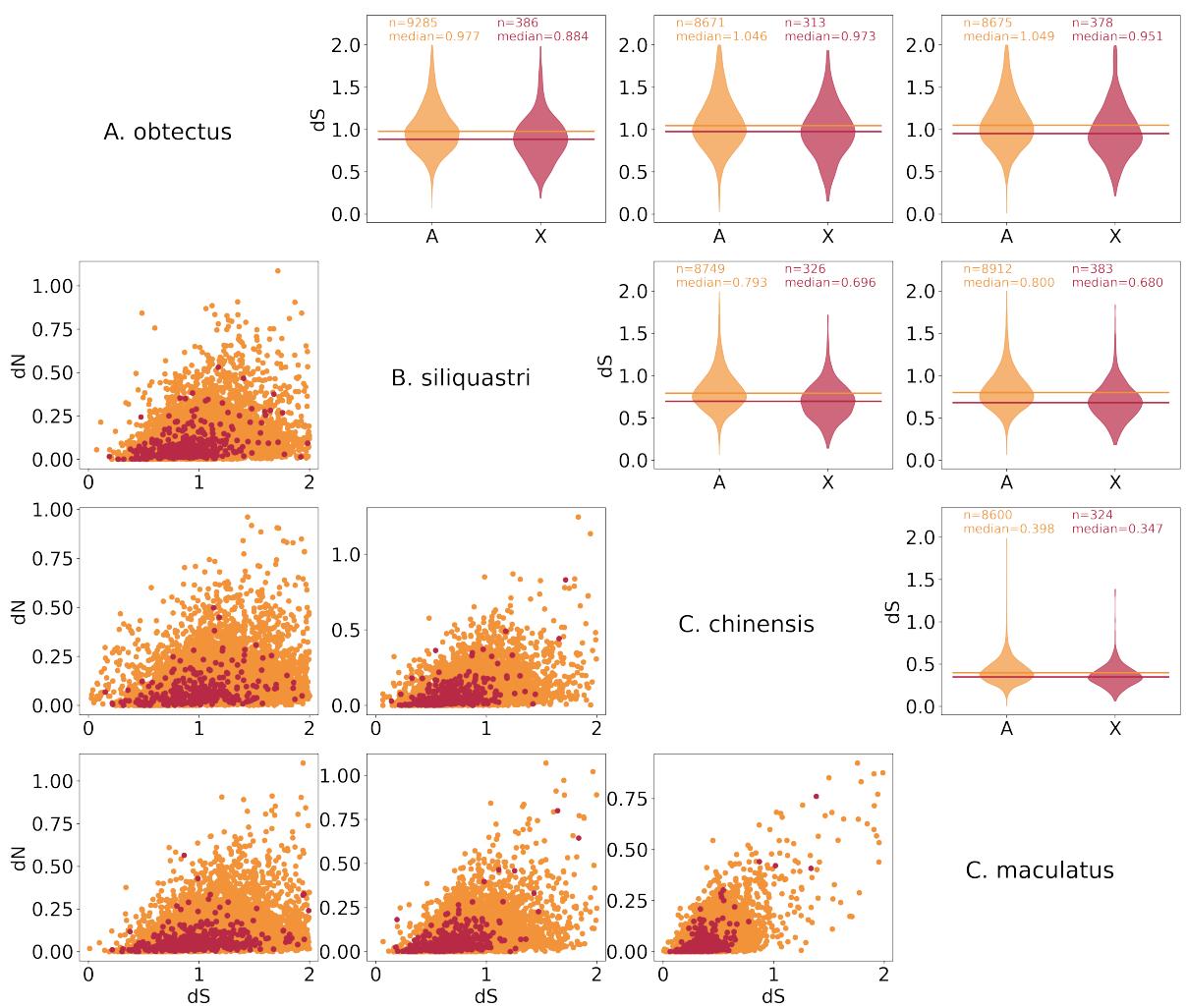
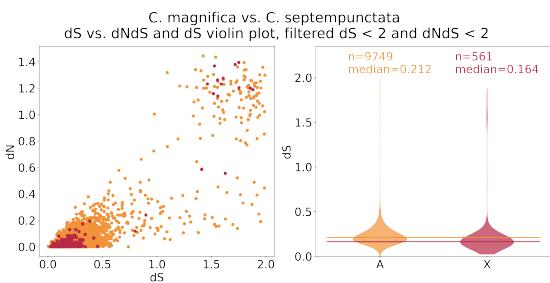
**B****C**

Figure 1: d_N/d_S ratio and permutation tests for significance. Pairwise comparisons between members of three species groups with violin plots of d_N/d_S values for X-linked and autosomal 1-to-1 orthologs, and permutation tests (10000 permutations) to assess significance. All pairwise comparisons show significantly lower d_N/d_S values on X-linked orthologs. The within-family comparisons are performed for three species groups: *Bruchini* (**A**), *Coccinella* (**B**) and *Tribolium* (**C**).

A Bruchini: dS vs. dNdS and dS violin plot, filtered dS < 2 and dNdS < 2



B



C

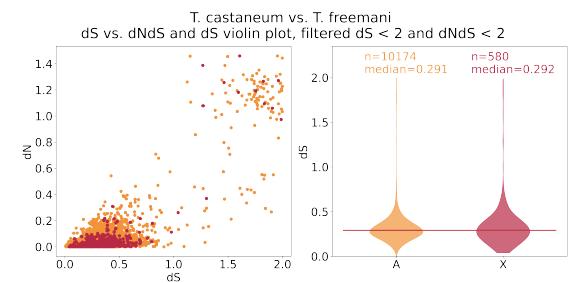


Figure 2: d_S vs. d_N scatterplots and violin plots of d_S values from X-linked and autosomal orthologs. Pairwise comparisons between members of three species groups with violin plots of d_S values for X-linked and autosomal 1-to-1 orthologs, and scatterplots of d_S vs. d_N . d_S is lower for X-linked orthologs in all comparisons except *Tribolium*, where it is almost equal. The within-family comparisons are performed for three species groups: *Bruchini* (**A**), *Coccinella* (**B**) and *Tribolium* (**C**).

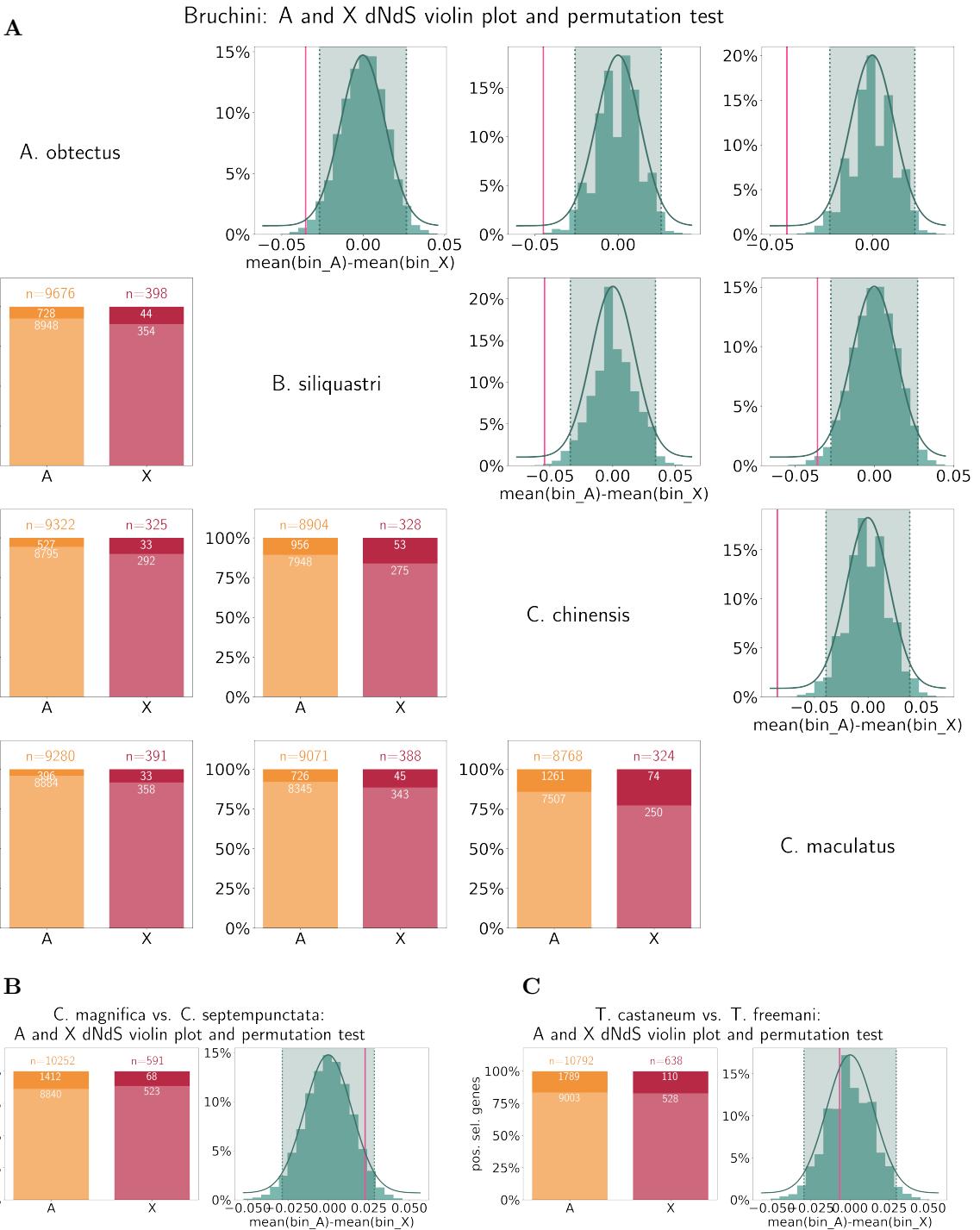


Figure 3: positively selected orthologs split into autosomal or X-linked. Positively selected genes are determined via likelihood ratio test comparison between paml site models M1a and M2a. The within-family comparisons are performed for three species groups: *Bruchini* (**A**), *Coccinella* (**B**) and *Tribolium* (**C**).

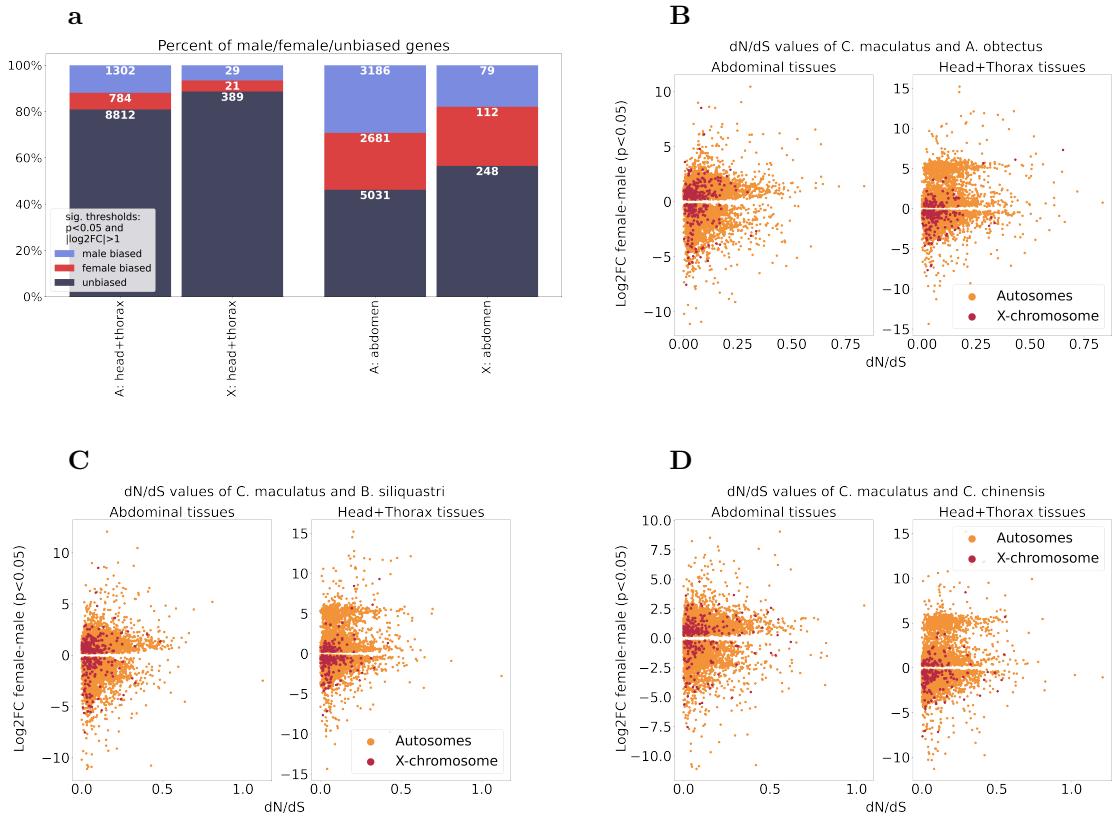


Figure 4: Differential expression analysis. We are utilizing the log₂ fold change (LFC) information from genes in *C. maculatus* and combining it with d_N/d_S between these genes and their 1-to-1 orthologs in other bruchids. **A:** number of sex biased genes in abdominal (reproductive) tissues and head and thorax (somatic) tissues. **B-D:** Scatterplot of significantly differentially expressed genes showing d_N/d_S of *A. obtectus* (**B**), *B. siliquastri* (**C**) and *C. chinensis* (**D**) respectively.