



FIGURE 22.21. Genetics of incompatibility between *Drosophila simulans* and *Drosophila melanogaster*. (A) Hybrids are produced that carry an X chromosome from *D. melanogaster* (red, left) and a deficiency in a small region of an autosome (red, right). Any recessive allele in the corresponding region of the *D. simulans* genome (black bar) that interacts with recessive alleles on the *D. melanogaster* X will be unmasked by this deficiency, and these hybrid male genotypes will die. (B) The sharp peak shows an excess of amino acid substitution in the region of *Nup96* containing the incompatibility. The red curve shows the ratio of amino acid replacements relative to synonymous substitutions (K_a/K_s). (C) Comparisons between species show that the amino acid changes occurred in the lineage connecting *D. melanogaster* with *D. simulans* and *Drosophila mauritiana* (heavy lines), but before the latter two diverged. The figures give the numbers of replacement/synonymous substitutions (A/S) in *Nup96* for each branch of the phylogeny.

22.21A–C, redrawn from Presgraves D.C. et al., *Nature* **423**: 715–719, © 2003 Macmillan, www.nature.com