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.


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