



Figure 1. The ciliate life cycle and fates of their nuclei. (A) Vegetative cells multiply by binary fission, duplicating micro- and macronuclei. Sexual reproduction results in the loss of the parental somatic macronucleus and differentiation of new nuclei. (B) Conjugation: (a) cells pair inducing micronuclear meiosis that ends with selection of one of the haploid products as the gametic nucleus and degeneration of those remaining (dashed line nuclei); (b) an additional replicative division of the selected nucleus produces genetically identical haploid nuclei, and one from each mate is then transferred to its partner; (c) karyogamy produces a diploid zygotic (gray shading) nucleus in each mate; (d) two replicative divisions of these zygotic nuclei in each mate produce undifferentiated micro- and macronuclei; (e) nuclear differentiation: two nuclei become new micronuclei, whereas two begin differentiating into new macronuclei, and the parental macronuclei are resorbed; (f) pair-separation and caryonidal division; (g) resumption of vegetative growth. Nuclei with dashed outline are targets for destruction.