RAUT, CAROLINE, Detroit Institute of Cancer Research, and Wayne University College of Medicine, Detroit, Michigan. The effect of ultraviolet light of various wavelengths on the production of cytochrome-deficient yeast. — Normal and cytochrome-deficient haploid strains of yeast were irradiated at various wavelengths of ultraviolet light. Both strains were killed at comparable rates with maximum rate of kill at 2600 Å. The action spectrum corresponds to the absorption spectrum of nucleic acid. A large proportion of the survivors of the irradiated normal cells produce cytochrome-deficient "petite" colonies. This cytochrome deficiency is cytoplasmically rather than genically determined. The production of petite colonies also exhibits a maximum at 2600 Å. It is suggested that absorption of ultraviolet by nucleic acid is involved in the destruction or inactivation of the cytoplasmic particles necessary for the production of the complete cytochrome system and possibly that the particles themselves contain nucleic acid.