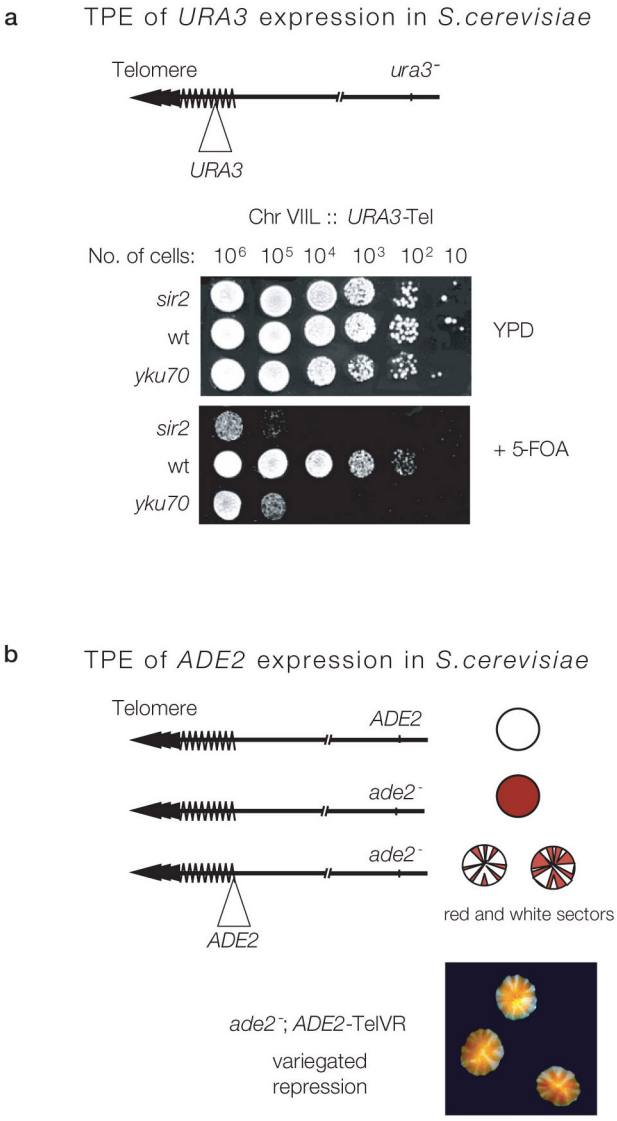

Figure 1. Silencing and TPE in Yeast

(*a*) The *Ura3* gene, inserted near the telomeric simple TG-rich repeat at the left arm of chromosome VII, is silenced by telomeric heterochromatin in this yeast strain. In normal rich medium (YPD), no growth difference can be detected between wild-type (wt) cells that repress the subtelomeric *Ura3* gene and silencing mutants that lose telomeric heterochromatin and express *Ura3*. In media containing 5-FOA (*lower panel*), on the other hand, cells that repress *Ura3* (e.g., wt cells) can grow, whereas cells that express it (*sir2* and *yku70* mutants) cannot. This is because the *Ura3* gene product converts 5-FOA to the toxic intermediate 5-fluorouracil. The serial dilution/drop assay allows detection of silencing in as few as 1 in 10^6 cells. (*b*) Cells containing the wt *Ade2* gene produce a colony that is "white," whereas those containing mutant ade2 appear red, due to the accumulation of a reddish intermediate in adenine biosynthesis. When the *Ade2* gene is inserted near the telomere at the right arm of chromosome V, it is silenced in an epigenetic manner. The silent *Ade2* state and the active *Ade2* state in genetically identical cells are both inherited, creating red and white sectors in a colony (much like PEV).