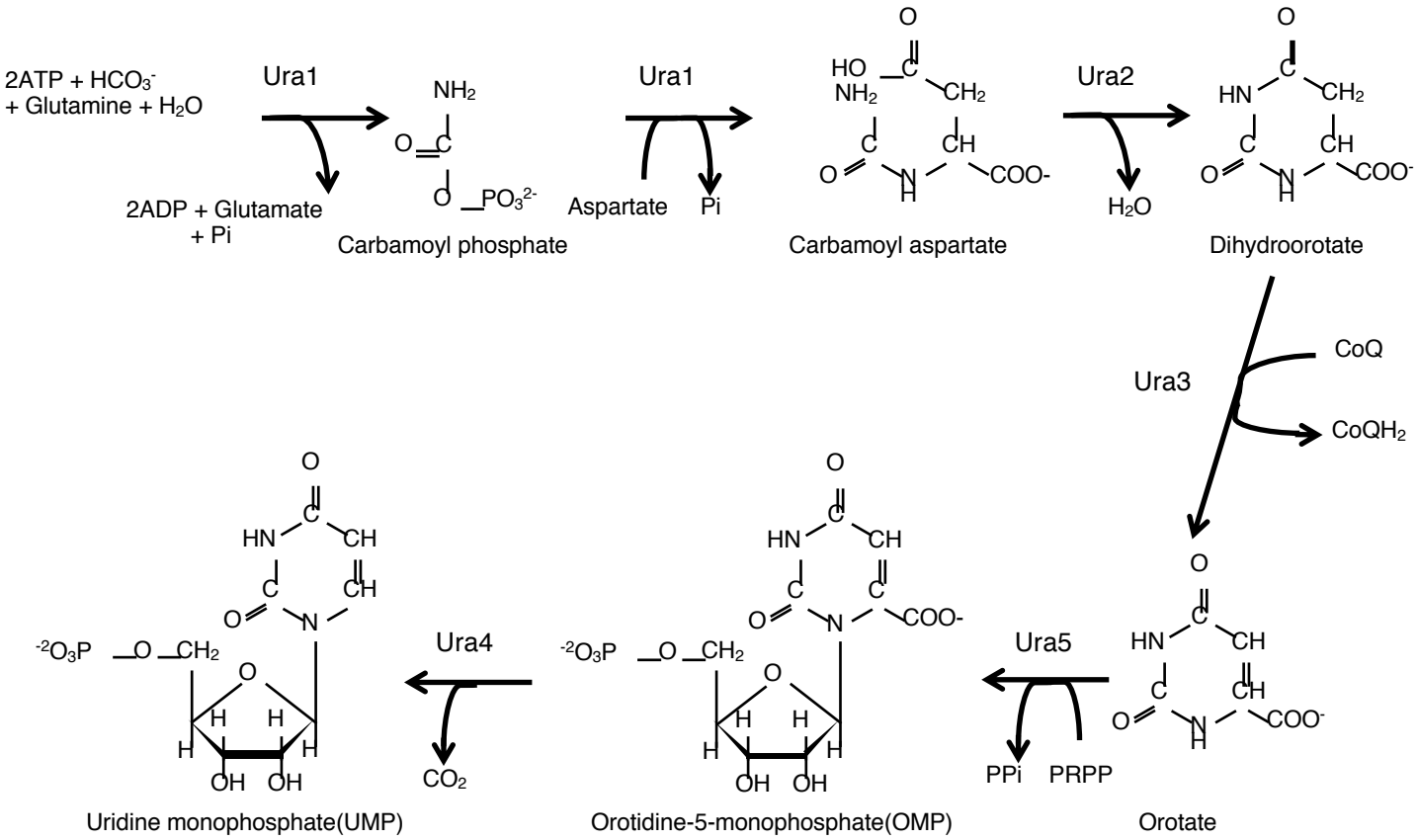

Fig. S1. *de novo* UMP synthesis in *S. pombe* involves six steps and five enzymes. The *de novo* synthesis of UMP in *S. pombe* is outlined. Ura1 is a bi-functional enzyme consisting of carbamoyl phosphate synthetase I and aspartate transcarbamoylase, Ura2 is dihydroorotase, Ura3 is dihydroorotate dehydrogenase that requires quinone as a cofactor and localizes in mitochondria, Ura5 is orotate phosphoribosyltransferase, and Ura4 is OMP decarboxylase.

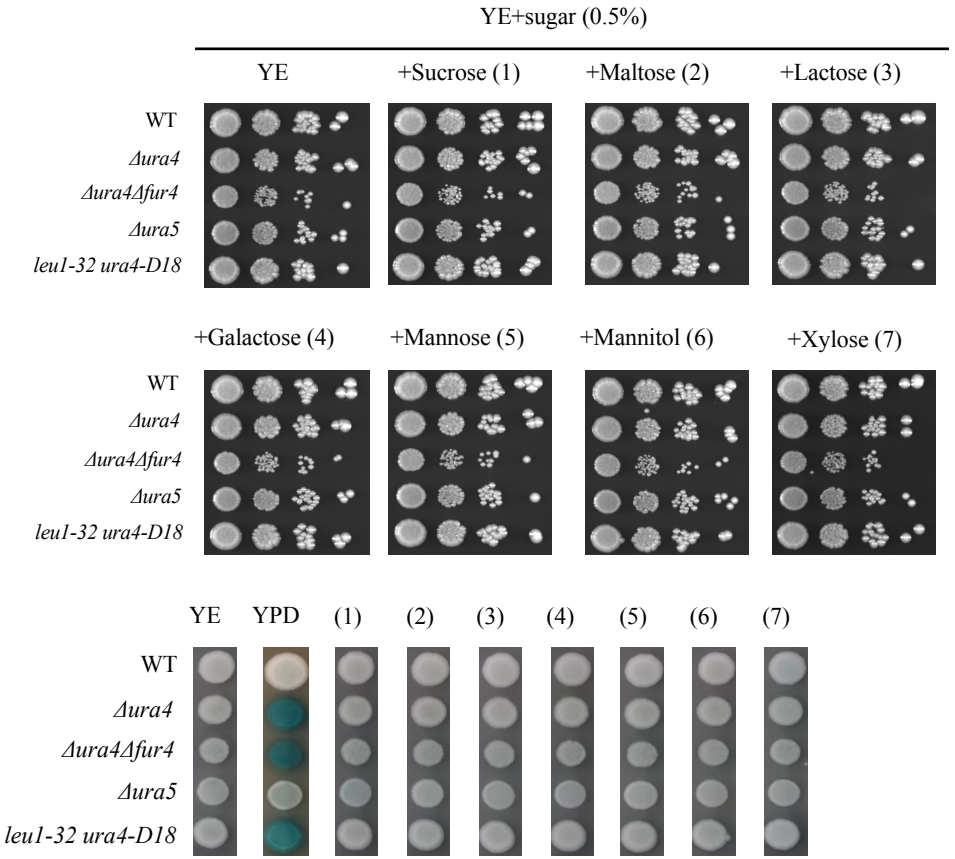

Fig. S2. Effect of sugars on cell lysis
L972 (WT; *ura4*$^{+}$), UMP31 (Δ*ura4*), KNP27 (Δ*ura4*Δ*fur4*), UMP37 (Δ*ura5*), and PR109 (*ura4-D18*) were grown for 12 h, and then spotted onto YE in the presence of indicated sugars. For the alkaline phosphatase assay, BCIP was used as described in Fig. 1.

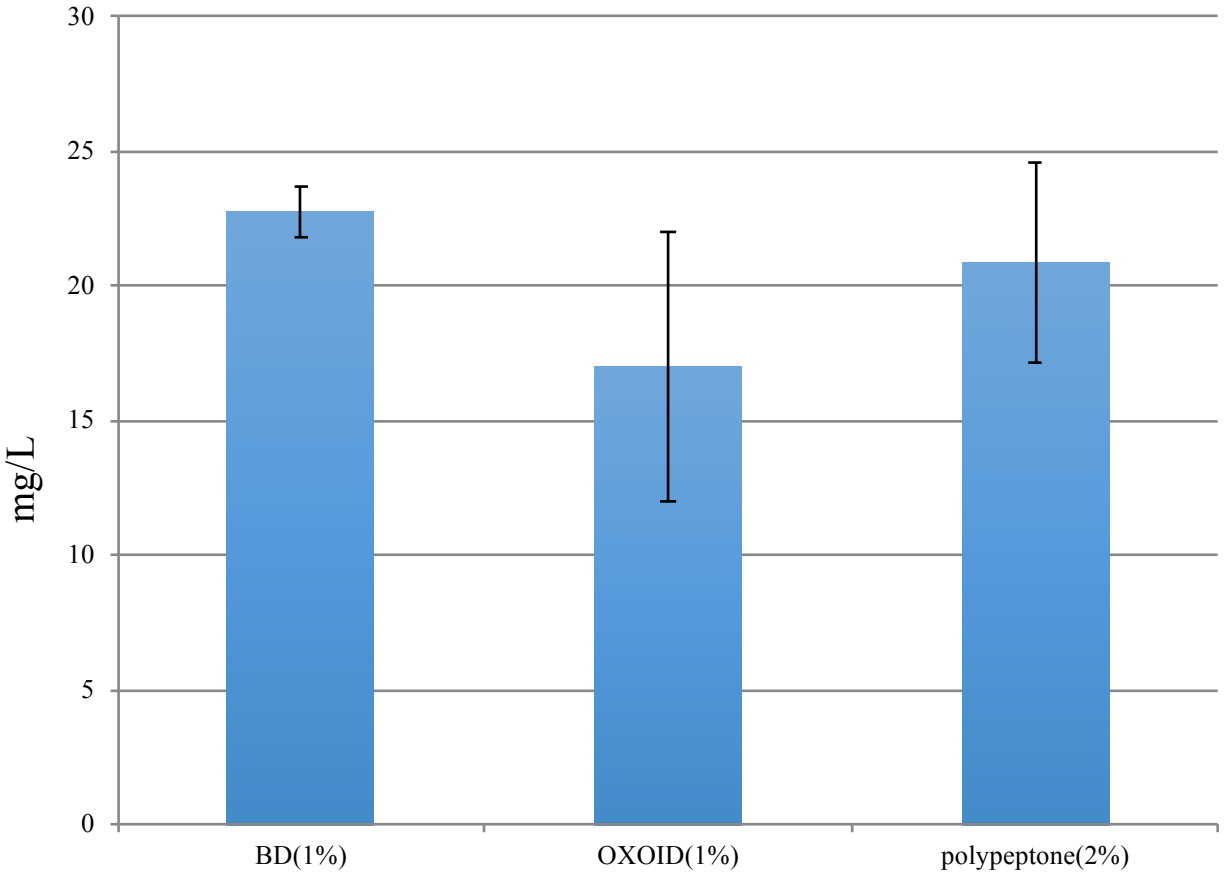

Fig. S3. Urea measurement in yeast extracts and polypeptone
Concentrations of urea in 1% yeast extract (BD and OXOID) and 2% polypeptone were measured by urea assay kit (BioAssay Systems). S.D. in duplicate samples are shown.

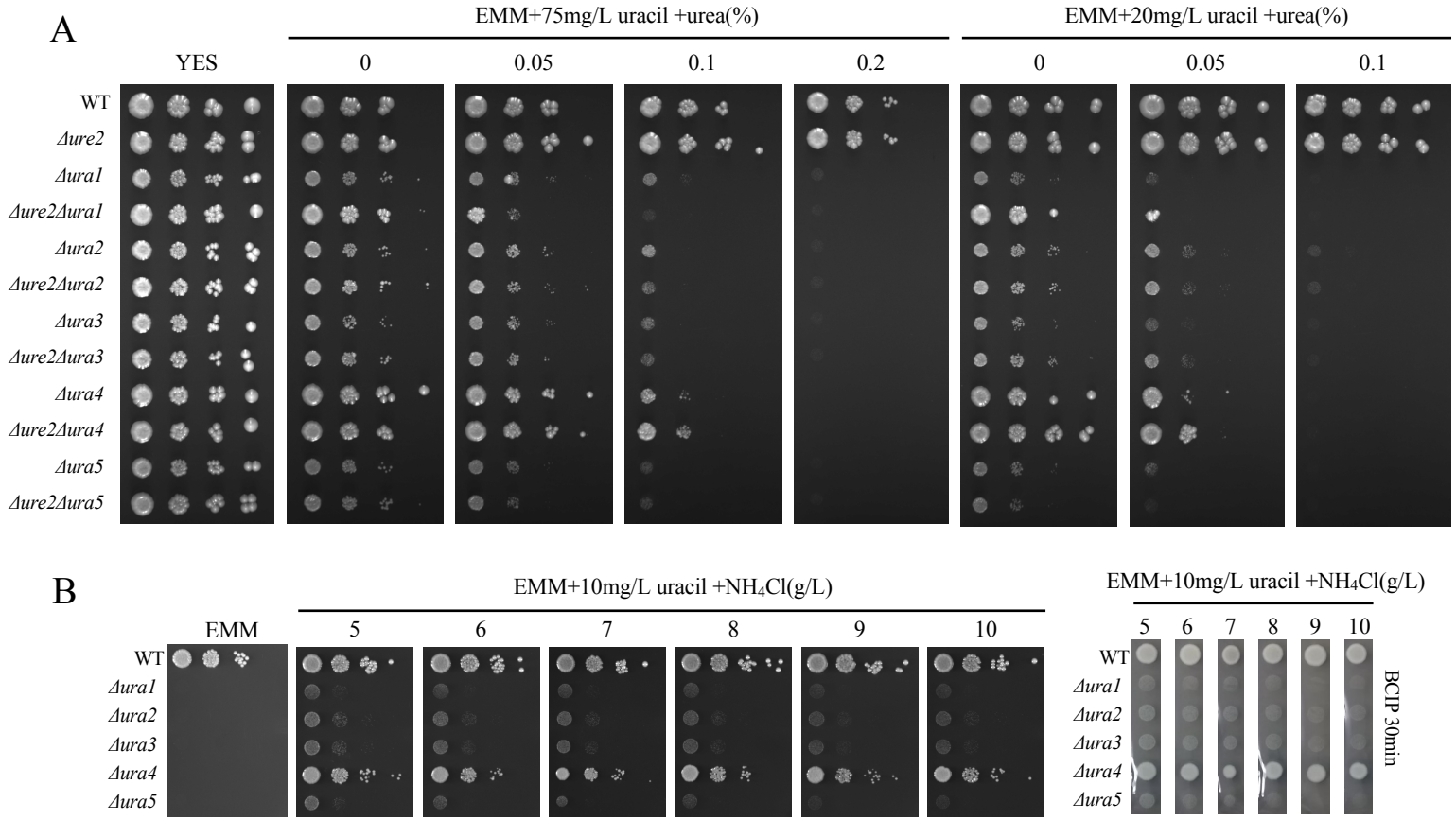

Fig. S4. (A) Deletion of the *ure2* gene does not suppress growth of uracil auxotrophic strains on EMMU medium. L972 (WT; *ura4*$^{+}$), UMP34 (Δ*ura1*), UMP35 (Δ*ura2*), UMP36 (Δ*ura3*), UMP31 (Δ*ura4*), UMP37 (Δ*ura5*), KNP174 (*Δure2*), KNP178 (Δ*ura1Δure2*), KNP180 (Δ*ura2Δure2*), KNP182 (Δ*ura3Δure2*), KNP176 (Δ*ura4Δure2*), and KNP184 (Δ*ura5Δure2*) were grown for 12 h, and then spotted onto EMMU (10mg/L uracil) in the presence or absence of urea (0%, 0.05%, or 0.1%) and incubated for 3 days. (B) High concentration of NH_4Cl does not induce cell lysis of Δ*ura4* strains in EMM medium. L972 (WT; *ura4*$^{+}$), UMP34 (Δ*ura1*), UMP35 (Δ*ura2*), UMP36 (Δ*ura3*), UMP31 (Δ*ura4*), and UMP37 (Δ*ura5*) were grown for 12 h, spotted on low uracil-containing EMM medium (10 mg/L) in the presence or absence of NH_4Cl (5, 6, 7, 8, 9 or 10g/L), and incubated for 3 days. For the alkaline phosphatase assay, BCIP was used as described in Fig. 2.