**Supplementary Table S1:**

Strain Table. All strains are isogenic to W303.

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| **Strain No**  | **Genotype** |
| GRY104  | *MATa ade2-1 LYS2 HMRaΔp- (TY1-tRNA-TY1) - a1* |
| GRY106  | *MATa ade2-1 LYS2 HMRaΔp- (TY1∆-tRNA∆-TY1∆)::pUC - a1* |
| GRY110  | *MATa ade2-1 LYS2 HMRa∆p- (TY1∆-tRNA 300 bp-TY1∆)::pUC - a1* |
| GRY211  | *MATα ADE2 nup2∆::kanMX HMRa∆p- a1-(TY1-tRNA-TY1)* |
| GRY238 | *MATα ADE2 HMRa∆p- a1-(TY1-tRNA-TY1)*  |
| GRY266  | *MATa ade2 ppr1∆::kanMX HMR-URA3-(TY1-tRNA-TY1)* |
| GRY323  | *MATa nup60∆::kanMX ade2-1 LYS2 HMRa∆p- (TY1-tRNA-TY1) - a1* |
| GRY325  | *MATa nup60∆::kanMX ade2-1 LYS2 HMRa∆p- (TY1∆-tRNA∆-TY1∆)::pUC - a1* |
| GRY704  | *MATa nup60∆::kanMX ade2-1 LYS2 HMRa∆p- (TY1∆-tRNA 300 bp-TY1∆)::pUC - a1* |
| PSY2946  | *MATa NUP2-9xMyc(C-term)::TRP1 ade2* |
| GRY356  | *MATa NUP2-9xMyc(C-term)::TRP1 ade2 HMR-tRNA∆* |
| GRY400  | *MATa nup2∆::kanMX ade2-1 LYS2 HMRa∆p- (TY1-tRNA-TY1) - a1* |
| GRY402  | *MATa nup2∆::kanMX ade2-1 LYS2 HMRa∆p- (TY1∆-tRNA∆-TY1∆)::pUC - a1* |
| GRY414  | *MATa nup2∆::kanMX ade2-1 LYS2 HMRa∆p- (TY1∆-tRNA 300 bp-TY1∆)::pUC - a1* |
| PSY2825  | *MATa NUP60-9xMyc(C-term)::TRP1 ade2* |
| GRY512  | *MATa NUP60*-9xMyc(C-term)::*TRP1 ade2* *HMR-tRNA∆* |
| GRY291  | *MATα ade2 ppr1Δ::kanMX HMRE-URA3-HMRI* |
| GRY575  | *MATα ade2 nup2∆::kanMX ppr1Δ::kanMX HMRE-URA3-HMRI* |
| GRY684  | *MATα ade2 sir3∆::HIS3 ppr1Δ::kanMX HMRE-URA3-HMRI* |
| GRY686  | *MATα ade2 nup60∆::HIS3 ppr1Δ::kanMX HMRE-URA3-HMRI* |
| GRY687  | *MATα ade2 esc1∆::kanMX ku70∆::Hph ppr1Δ::kanMX HMRE-URA3-HMRI* |
| GRY264  | *MATα ade2 ppr1∆::kanMX HMRI-URA3-tRNAThr* |
| GRY541  | *MATa ade2 ppr1∆::kanMX nup2∆::kanMX HMRI-URA3-tRNAThr* |
| GRY685  | *MATα ade2 ppr1∆::kanMX nup60∆::HIS3 HMRI-URA3-tRNAThr* |
| GRY683 | *MATα ade2 ppr1∆::kanMX sir3∆::HIS3 HMRI-URA3-tRNAThr* |
| GRY691  | *MATα ade2 ppr1∆::kanMX esc1∆::kanMX ku70∆::Hph HMRI-URA3-tRNAThr* |
| GRY630  | *MATα LacI-GFP::ADE2 RECR::LEU2 HMR-GIT1-256xLacO::TRP1 esc1∆::kanMX ku70∆::Hph YIPLac-HDEL-dsRED::natMX ura3 LYS2* |
| GRY632  | *MATα LacI-GFP::ADE2 RECR::LEU2 HMR-GIT1-256xLacO::TRP1 nup60∆::HIS3 esc1∆::kanMX ku70∆::Hph YIPLac-HDEL-dsRED::natMX ura3 LYS2* |
| GRY636  | *MATa LacI-GFP::ADE2 RECR::LEU2 HMR-GIT1-256xLacO::TRP1 YIPLac-HDEL-dsRED::natMX ura3 his3* |
| GRY701  | *MATa LacI-GFP::ADE2 RECR::LEU2 HMR-GIT1-256xLacO::TRP1 nup60∆::HIS3 YIPLac-HDEL-dsRED::natMX ura3* |
| GRY716  | *MATa NUP60*-9xMyc(C-term)::*TRP1* *ade2* *sir4Δ::HIS3* |
| GRY567  | *MATα NUP60*-9xMyc(C-term)::*TRP1* *esc1Δ::kanMX ku70Δ::Hph ura3 ade2* *LYS2* |
| JRY4806  | *MATα ade2 HMR-E::ss(5G-E-B)-HMR-∆I* |
| TM47  | *MATα ADE2 lys2 HMR-E::ss(5G-E-B)-HMR-I::ss(B-5G) trp1* |
| TM58  | *MATα HMR-E::ss(5G-E-B)-HMR-I trp1* |
| TM69  | *MATα HMR-E::ss(5G-E-B)-HMR-I::ss(B-5G) ADE2 LYS2 trp1 sir3∆::LEU2* |
| TM82  | *MATα HMR-E::ss(5G-E-B)-HMR-I::ss(B-5G) ade2 LYS2 trp1 esc1∆::kanMX ku70∆::Hph* |
| SLJ2594  | *MATa* *NUP49*-GFP *his3*::GFP-LacI::*HIS3* *ARS607*::256xLacop-4xlexAop::*TRP1* |