Supplementary Data

Table S1, related to Experimental Procedures

Oligonucleotides used in this study.

DNA	**Sequences**
ssDNA	5’ T $(TTT)_{26}$ T 3’ (80dT) or 5’ ATGTCCTAGCAAGCCAGAATTCGGC 3’ (25 nt)
blunt	5’ ATGTCCTAGCAAGCCAGAATTCGGCAGCGTC 3’ 5’GACGCTGCCGAATTCTGGCTTGCTAGGACAT 3’
bubble	5’ATGTCCTAGCAAGCCAGAATTCGGCAGCGTCTT$(TTT)_{26}$CCACGTCGGCGTCGCCACGAGC 3’ 5’ GCTCGTGGCGACGCCGACGTGGTT$(TTT)_{26}$ GACGCTGCCGAATTCTGGCTTGCTAGGACAT 3’

Table S2, related to Experimental Procedures

Yeast strains used in this study.

Strain	Genotipe	Source
BY25924	*MAT**a** ura 3-1::GAL-OsTIR1-9MYC(URA3) mcm10::mcm10-1-aid (KanMX) cdc45::CDC45-5FLAG (hphNT) ade2-1 his3-11,15 leu2-3,112 trp1-1 ura3-1 can1-100*	Yeast Genetic Resource Center
BY25925	*MAT**a** ura 3-1::GAL-OsTIR1-9MYC(URA3) mcm10::mcm10-1-aid (KanMX) psf2::PSF2-5FLAG (hphNT) MCM4::mcm4-6ha (k.l. TRP1) ade2-1 his3-11,15 leu2-3,112 trp1-1 ura3-1 can1-100*	Yeast Genetic Resource Center
BY25926	*MAT**a** ura 3-1::GAL-OsTIR1-9MYC(URA3) mcm10::mcm10-1-aid (KanMX) rfa1::RFA1-5FLAG (HIS3) ade2-1 his3-11,15 leu2-3,112 trp1-1 ura3-1 can1-100*	Yeast Genetic Resource Center
RSY728	*MAT**a** bar1 his6 mcm5-bob1-1 leu2 ura3 lys2 his3-Δ1 cyh2*	Sclafani lab (Sclafani, R.A. *et al.* 2002 Genetics)
PP3278	*MAT**a** ura 3-1::GAL-OsTIR1-9MYC(URA3) mcm10::mcm10-1-aid (KanMX) mcm5::mcm5-bob1-1 ade2-1 his3-11,15 leu2-3,112 trp1-1 ura3-1 can1-100*	Perez-Arnaiz 2016

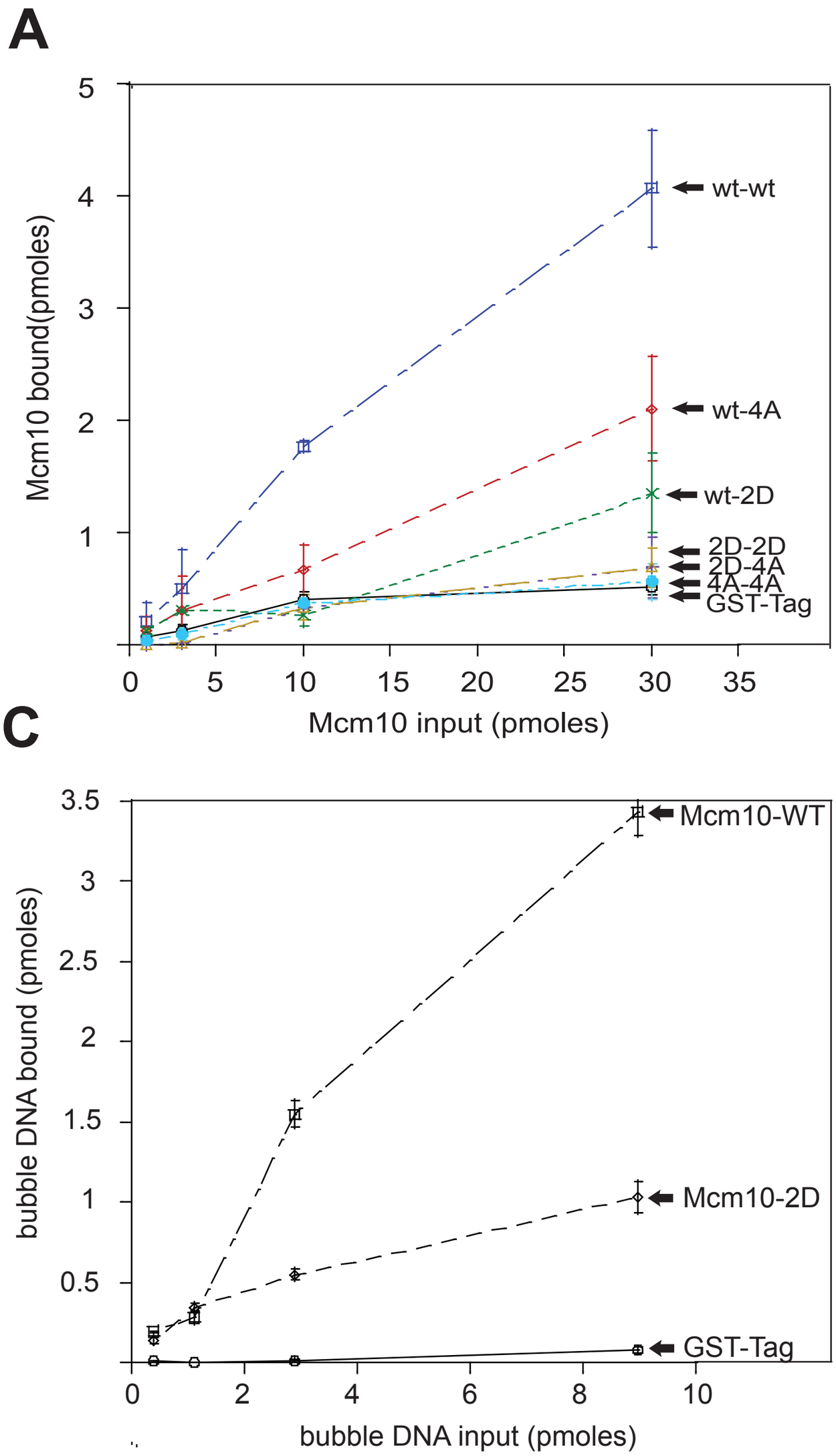
Figure S1. Mcm10-2D is defective in self-interaction and in DNA, Mcm2-7 and Mcm2 in binding *in vitro.* **A**. 30 pmoles of *wild-type* GST-Mcm10, GST-Mcm10-2D, GST-Mcm10-4A or GST tag was incubated with increasing concentrations of radiolabeled *wild-type* PKA-Mcm10, PKA-Mcm10-2D or PKA-Mcm10-4A at 30ºC for 10 minutes in a GST pulldown assay. The products of the pulldown were analyzed by SDS-PAGE followed by phosphorimaging. Results from similar experiments were quantified, averaged and plotted. **B**. 30 pmoles of *wild-type* GST-Mcm10, GST-Mcm10-2D or GST tag was incubated with increasing concentrations of radiolabeled ssDNA at 30ºC for 10 minutes in a GST pulldown assay. The products of the pulldown were analyzed by SDS-PAGE followed by phosphorimaging. Results from similar experiments were quantified, averaged and plotted. **C**. 30 pmoles of *wild-type* GST-Mcm10, GST-Mcm10-2D or GST tag was incubated with increasing concentrations of radiolabeled bubble DNA at 30ºC for 10 minutes in a GST pulldown assay. The products of the pulldown were analyzed by SDS-PAGE followed by phosphorimaging. Results from similar experiments were quantified, averaged and plotted. **D**. 30 pmoles of *wild-type* GST-Mcm10, GST-Mcm10-2D or GST tag was incubated with increasing concentrations of radiolabeled dsDNA at 30ºC for 10 minutes in a GST pulldown assay. The products of the pulldown were analyzed by SDS-PAGE followed by phosphorimaging. Results from similar experiments were quantified, averaged and plotted. **E**. 30 pmoles of *wild-type* GST-Mcm10, GST-Mcm10-2D or GST tag was incubated with increasing concentrations of radiolabeled PKA-Mcm2-7 at 30ºC for 10 minutes in a GST pulldown assay. The products of the pulldown were analyzed by SDS-PAGE followed by phosphorimaging. Results from similar experiments were quantified, averaged and plotted. Graphs from (A), (B), (C), (D), and (E) represent mean values from two independent experiments and error bars indicate the standard deviation of the mean.

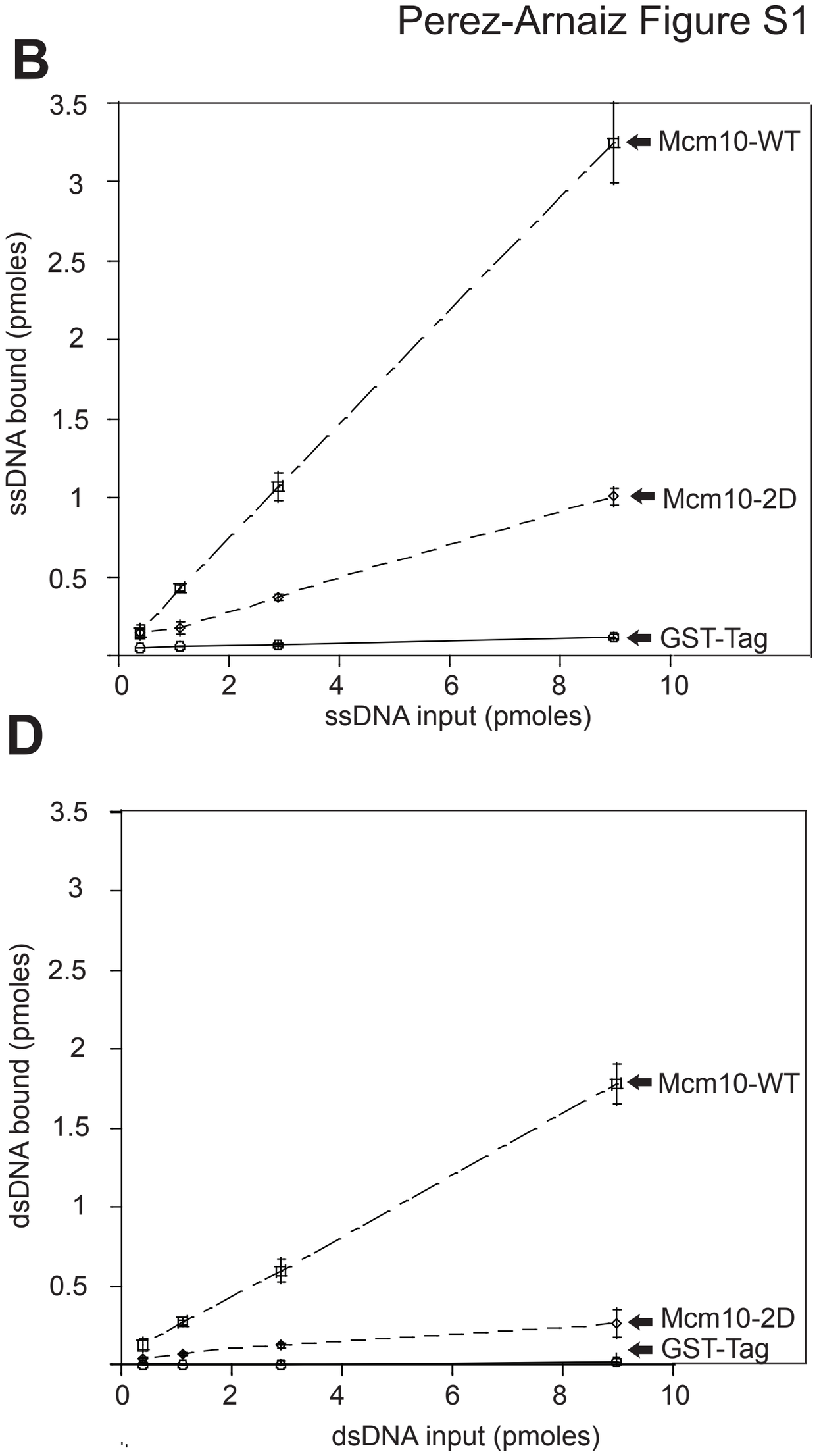
Figure S2. Plasmid copy of mcm10 from GalS promoter is expressed at *wild-type* levels. A. *mcm10-1*-aid cells (in the absence of IAA) and *mcm10-1*-aid cells expressing *MCM10-WT* under the control of the GalS promoter (in the presence of IAA and Gal) were grown as described in Material and Methods. Whole cell extracts were analyzed by Western blot for the expression of Mcm10. Results from similar experiments were quantified, averaged and plotted. Graph represents mean values from two independent experiments and error bars indicate the standard deviation of the mean.

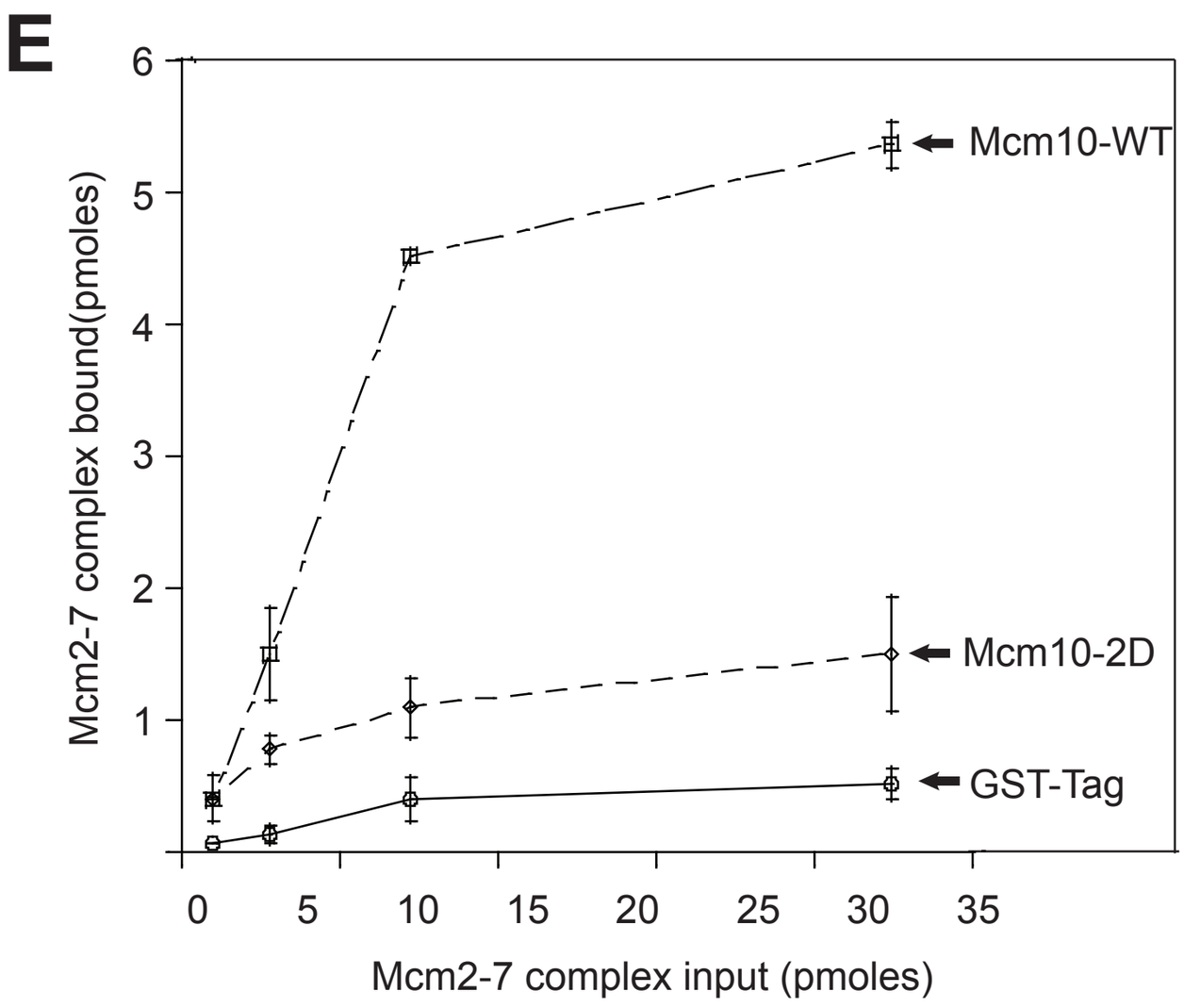
Figure S3. The presence of *mcm5-bob1* mutation partially suppresses the growth defect observed in cells expressing *mcm2-2A*. **A**. 10-fold serial dilution analysis of budding yeast *mcm10-1*-aid cells expressing MCM2-WT and *mcm2-2A* from the GAL-S plasmid inducible promoter system (pRS415). Plates were incubated for 3 days at 25ºC. **B.** similar to A, except the cells harbored the *mcm5-bob1* mutation.

Figure S4. An intact Mcm10 coiled-coil interaction surface is important for cell growth. 10-fold serial dilution analysis of budding yeast *mcm10-1*-aid cells expressing *MCM10-WT, mcm10-4A,* vector, or *mcm10-D1-150. MCM10* was expressed from either the GAL-S plasmid inducible promoter system (pRS415) or from MCM10 native prompter. Plates were incubated for 3 days at 25ºC.

Perez-Arnaiz Figure S1

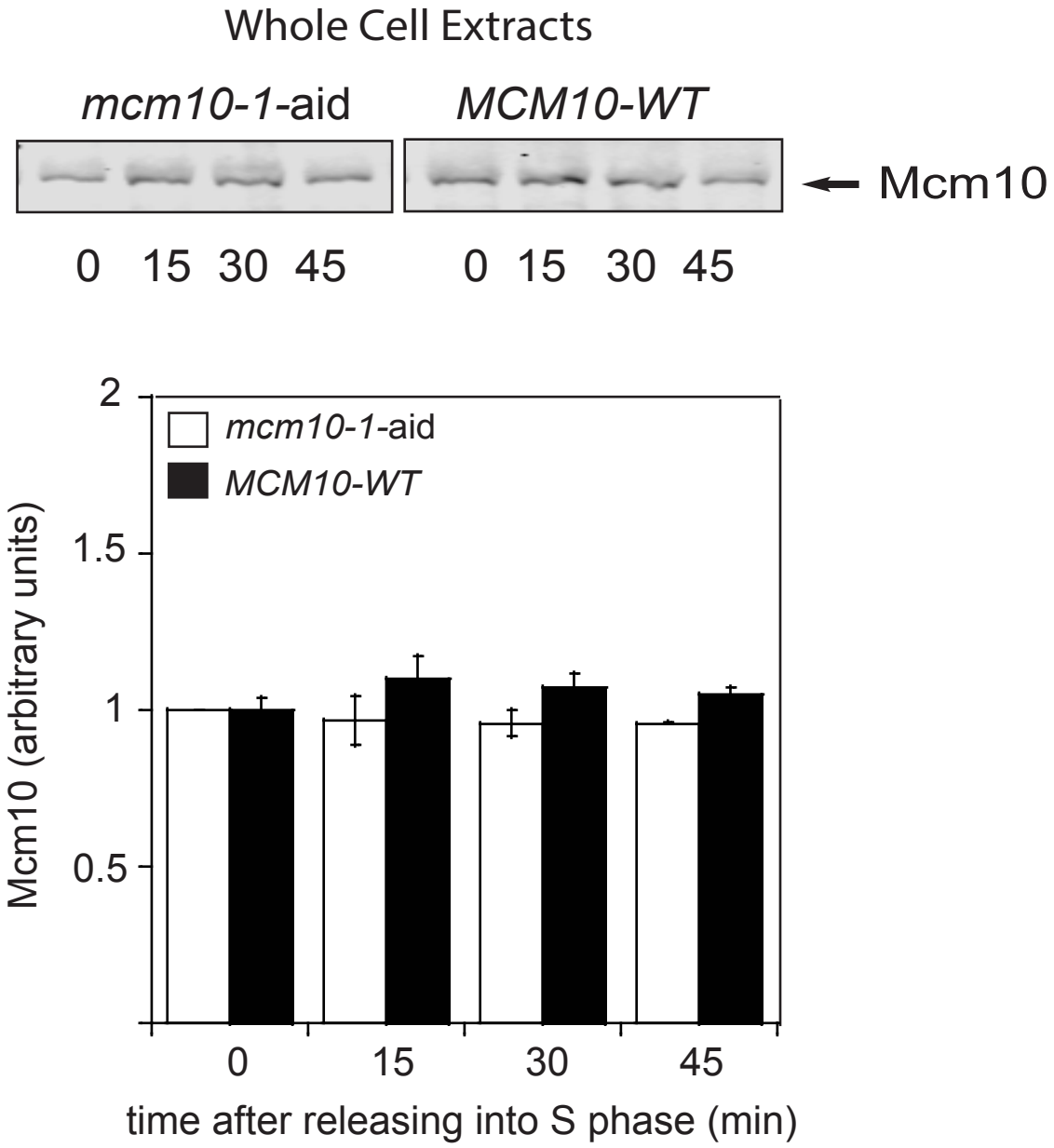






Perez-Arnaiz Figure S2

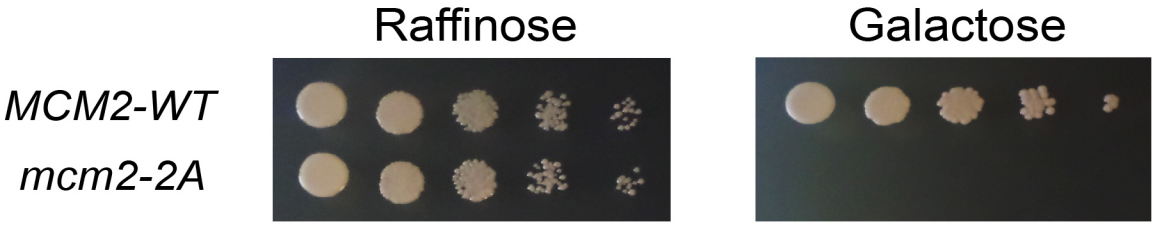
A



Perez-Arnaiz Figure S3

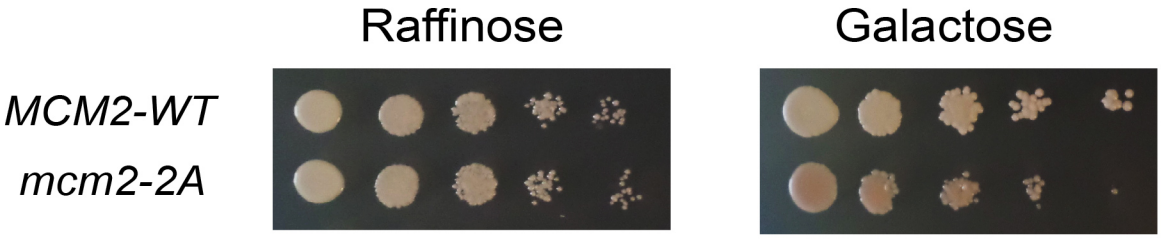
A

mcm10-1-aid *MCM5-WT* background



B

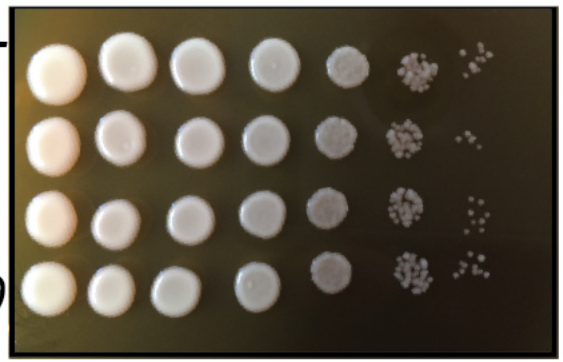
mcm10-1-aid *mcm5-bob1* background



Perez-Arnaiz Figure S4

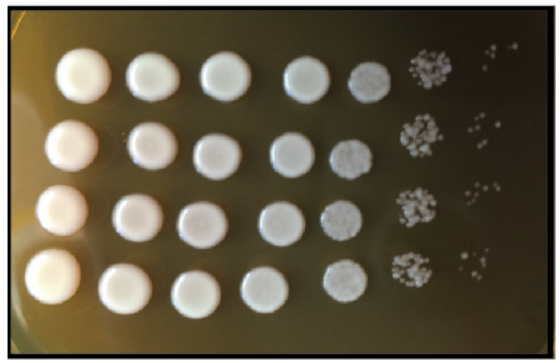
Permissive Conditions
Gal Promoter

MCM10-WT
mcm10-4A
vector
mcm10-Δ1-100



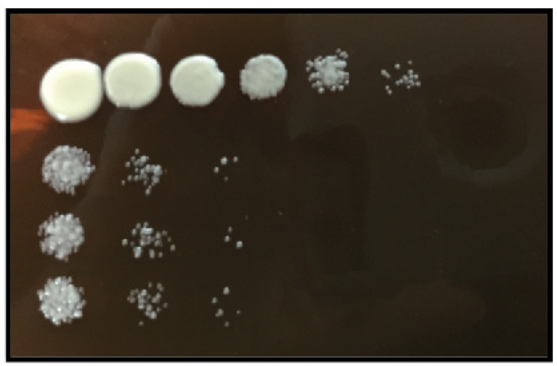
Permissive Conditions
Native Promoter

MCM10-WT
mcm10-4A
vector
mcm10-Δ1-100



Restrictive Conditions
Gal Promoter

MCM10-WT
mcm10-4A
vector
mcm10-Δ1-100



Restrictive Conditions
Native Promoter

MCM10-WT
mcm10-4A
vector
mcm10-Δ1-100