

**Supplemental Table S1.** Plasmids from the Yeast-tiling collection that rescued commitment defect in Low Ndt80 strain

Clone	Genes
YGPM27k09	[DEP1]&, CYS3, SWC3, MDM10, SPO7, FUN14, ERP2, tP(UGG)A, [SSA1]&
YGPM7c11	[ROX3]*, RPL32, SCS22, MAP2, MRP21, AVT5, [TEL1] &
YGPM24k20	[HHF1]*, HHT1, IPP1, YBR012C, YBR012W-A, [YBR012W-B]*
YGPM26d06	SCO1, CHS2, ATP3, FIG1, FAT1, [YBR042C] &
YGPM2o04	[YBR063C]*, [YBR064W], ECM2, NRG2, TIP1, BAP2, TAT1, YBR070C, YBR071W, HSP26, YBR072C-A, RDH54, [YBR074W]*
YGPM12l03	[MMS4] &, YBR099C, FES1, EXO84, SIF2, YBR103C-A, YMC2, [VID24] &
YGPM22d16	[HIS7]*, ARO4, YBR250W, MRPS5, DUT1, SRB6, TRS20, [YBR255W]*
YGPM22o22	[YCL019W] &, tL(CAA)C, LEU2, NFS1, DCC1, [BUD3]*
YGPM28o02	[BPH1] &, SNT1, FEN1, RRP43, RBK1, [PHO87] &
YGPM23o21	[CPR4] &, IMG2, YCR072C, SSK22, SOL2, ERS1, YCR075W-A, [YCR076C] &
YGPM32d08	[SSB1], YDL228C, HO, GCS1, SHS1, [WHI4] &
YGPM14d22	GCS1, SHS1, WHI4, HBT1, FMP45, YDL221W, [CDC13] &
YGPM14m05	[YDL221W] &, [CDC13], DTD1, YDL218W, TIM22, RRI1, [GDH2] &
YGPM20d10	OSH2, ERP3, CDC7, YDL016C, TSC13, NOP1, [HEX3]*
YGPM23m11	[GRX3]*, tQ(UUG)D2, YDR098C-B, YDR098C-A, BMH2, TVP15, ARX1, YDR102C, STE5, [SPO71] &
YGPM2l13	[SEC1]*, TRM82, SEC5, TAF10, CDC37, STB3, YDR169C-A
YGPM12l05	LPP1, SPG3, PSP1, YDR506C, tL(CAA)D, [GIN4] &
YGPM26m21	[TRP2] &, [YER090C-A], MET6, YER091C-A, IES5, TSC11, [YER093C-A]
YGPM12l10	[RAD24] &, GRX4, TMT1, YER175W-A, ECM32, BMH1, [PDA1]
YGPM26n21	[POP6]*, [YGR031W], YGR031C-A, GSC2, FMP17, RPL26B, YGR035C, YGR035W-A, [CAX4]
YGPM14o13	[CLB1], CLB6, tC(GCA)G, YGR109W-A, YGR109W-B
YGPM20c13	[NDT80], tF(GAA)H2, YHR125W, YHR126C, YHR127W, FUR1, ARP1,

	<i>YHR130C</i> , [ <i>YHR131C</i> ]&
YGPM5m24	[ <i>VTH1</i> ]&, <i>YIL172C</i> , <i>YIL171W-A</i> , <i>YIL171W</i> , <i>YIL170W</i>
YGPM7n05	[ <i>CKA1</i> ]*, <i>CAP2</i> , <i>BCY1</i> , <i>YIL032C</i> , <i>ULP2</i> , <i>YIL030W-A</i> , [ <i>SSM4</i> ]&
YGPM20a02	[ <i>UTP10</i> ]*, <i>PRM10</i> , <i>YJL107C</i> , <i>IME2</i> , <i>SET4</i>
YGPM16m18	[ <i>JEM1</i> ]&, <i>PSF2</i> , <i>ARG2</i> , <i>YJL070C</i> , <i>UTP18</i> , <i>YJL068C</i> , [ <i>YJL067W</i> ], [ <i>MPM1</i> ]&
YGPM13p14	[ <i>YJL067W</i> ], <i>MPM1</i> , <i>DLS1</i> , <i>YJL064W</i> , <i>MRPL8</i> , <i>YJL062W-A</i> , <i>LAS21</i> , <i>NUP82</i> , [ <i>BNA3</i> ]*
YGPM3e15	[ <i>PRP16</i> ]&, <i>OMA1</i> , <i>TVP38</i> , <i>STC1</i> , <i>PXL1</i> , <i>SRL3</i> , <i>SRP40</i> , [ <i>PTR2</i> ]*
YGPM8g21	[ <i>UBI4</i> ]*, <i>ENT4</i> , <i>YLL037W</i> , <i>PRP19</i> , <i>GRC3</i> , <i>RIX7</i> , <i>YLL033W</i> , [ <i>YLL032C</i> ]&
YGPM7a09	[ <i>IMD4</i> ]*, [ <i>snR54</i> ]*, <i>SPC2</i> , <i>CYB2</i> , <i>YML054C-A</i> , <i>tY(GUA)M1</i> , <i>YML053C</i> , <i>SUR7</i> , <i>GAL80</i> , <i>YML050W</i> , [ <i>RSE1</i> ]&
YGPM5d16	[ <i>YML002W</i> ]&, <i>YPT7</i> , <i>CDC5</i> , <i>YMR001C-A</i> , <i>YMR002W</i> , <i>YMR003W</i> , [ <i>MVP1</i> ]*
YGPM30k17	[ <i>YMR110C</i> ]*, <i>YMR111C</i> , <i>MED11</i> , <i>FOL3</i> , <i>YMR114C</i> , <i>FMP24</i> , <i>ASC1</i> , <i>snR24</i> , <i>SPC24</i> , [ <i>YMR118C</i> ]
YGPM21j12	[ <i>PEP5</i> ], <i>FUS2</i> , <i>YMR233W</i> , <i>RNH1</i> , <i>RNA1</i> , <i>TAF9</i> , [ <i>BCH1</i> ]*
YGPM19l23	[ <i>YNL300W</i> ], <i>TRF5</i> , <i>CLA4</i> , [ <i>MON2</i> ], <i>YNL296W</i>
YGPM10o14	[ <i>SIP3</i> ]*, [ <i>FOL1</i> ], <i>GIS2</i> , <i>YNL254C</i> , <i>TEX1</i> , [ <i>MRPL17</i> ]
YGPM12g06	[ <i>YNL228W</i> ], <i>JJJ1</i> , <i>YNL226W</i> , <i>CNM67</i> , <i>YNL224C</i> , <i>ATG4</i> , <i>SSU72</i> , [ <i>snR19</i> ], [ <i>POP1</i> ]&
YGPM10e13	[ <i>SIS1</i> ]*, <i>LST8</i> , <i>MRP7</i> , <i>HRB1</i> , <i>PET8</i> , <i>RLP7</i> , <i>DOM34</i> , <i>CIT1</i> , <i>YNR001W-A</i> , <i>tP(AGG)N</i> , <i>tN(GUU)N2</i> , [ <i>FUN34</i> ]
YGPM2k08	[ <i>PPG1</i> ]&, <i>HUB1</i> , <i>ABZ1</i> , <i>SOL1</i> , <i>YNR034W-A</i> , <i>ARC35</i> , <i>YNR036C</i> , <i>RSM19</i> , <i>DBP6</i> , [ <i>ZRG17</i> ]&
YGPM15l07	[ <i>YOL097W-A</i> ]&, <i>WRS1</i> , <i>COQ3</i> , <i>HMI1</i> , <i>RFC4</i> , <i>TRM10</i> , <i>YOL092W</i> , <i>SPO21</i> , <i>MSH2</i> , [ <i>HAL9</i> ]&
YGPM32g14	[ <i>IRA2</i> ]&, <i>REX4</i> , <i>YOL079W</i> , [ <i>AVO1</i> ]
YGPM3b12	<i>SLY41</i> , <i>SNU66</i> , <i>YOR309C</i> , <i>NOP58</i> , <i>HSD1</i> , <i>RPL20B</i> , <i>SPS4</i> , <i>YOR314W</i> , <i>YOR314W-A</i> , <i>YOR315W</i> , [ <i>COT1</i> ]&
YGPM5l18	[ <i>FMP30</i> ]*, <i>YPL102C</i> , <i>ELP4</i> , <i>ATG21</i> , <i>FMP14</i> , <i>YPL098C</i> , <i>MSY1</i> , <i>ERI1</i> , [ <i>PNG1</i> ]*
YGPM10h21	<i>YPR158C-D</i> , <i>YPR158C-C</i> , <i>tA(AGC)P</i> , <i>KRE6</i> , <i>YPR159C-A</i> , <i>tG(GCC)P2</i> , [ <i>GPH1</i> ]*, <i>YPR160W-A</i> , [ <i>YPR160C-A</i> ]

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YGPM9k24 [MMS1]&, RHO1, MRP2, MET16, NUT2, JIP5, tl(AAU)P2, YPR170C, YPR169W-A, YPR170W-B, YPR170W-A, BSP1, [YPR172W]\*

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[ ]\* indicates that the 3' end of the gene is missing.

[ ]& indicates that the 5' end of the gene is missing.

[ ] indicates that the ORF is intact, but might be missing necessary upstream or downstream sequences.

**Supplemental Table S3 - Strains used in this study:**

All strains are derivatives of W303 (*ade2-1 his3-11, 15 leu2-3,112 trp1-1 ura3-1 can1-100*) unless otherwise noted.

Strain name	Genotype
LY4027	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:LEU2/ P<sub>TUB1</sub>-GFP-TUB1:LEU2, ZIP1-GFP/+ , SPC42-mCherry:kanMX/+</i>
LY4273	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:URA3/+ , ZIP1-GFP/+ , SPC42-mCherry:kanMX/+ , ndt80::kanMX/ ndt80::kanMX, P<sub>NDT80-mse1Δ, mse1Δ</sub>NDT80:HIS3/ P<sub>NDT80-mse1Δ, mse1Δ</sub>NDT80:HIS3, ADE2/ADE2, TRP1/TRP1</i>
LY4404	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:URA3/+ , ZIP1-GFP/+ , SPC42-mCherry:kanMX/+ , ndt80::kanMX/ ndt80::kanMX, P<sub>NDT80-mse1Δ, mse1Δ</sub>NDT80:HIS3/ P<sub>NDT80-mse1Δ, mse1Δ</sub>NDT80:HIS3, ADE2/ADE2, TRP1/TRP1, pLB227 (2μ)</i>
LY4285	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:URA3/+ , ZIP1-GFP/+ , SPC42-mCherry:kanMX/+ , ndt80::kanMX/ ndt80::kanMX, P<sub>NDT80-mse1Δ, mse1Δ</sub>NDT80:HIS3/ P<sub>NDT80-mse1Δ, mse1Δ</sub>NDT80:HIS3, ADE2/ADE2, TRP1/TRP1, P<sub>NDT80</sub>-NDT80:LEU2 (2μ)</i>
LY5463	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:URA3/+ , ZIP1-GFP/+ , SPC42-mCherry:kanMX/+ , ndt80::kanMX/ ndt80::kanMX, P<sub>NDT80-mse1Δ, mse1Δ</sub>NDT80:HIS3/ P<sub>NDT80-mse1Δ, mse1Δ</sub>NDT80:HIS3, ADE2/ADE2, TRP1/TRP1, P<sub>BCY1</sub>-BCY1:LEU2 (2μ)</i>
LY8715	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:LEU2/ P<sub>TUB1</sub>-GFP-TUB1:LEU2, ZIP1-GFP/+ , SPC42-mCherry:kanMX/+ , bcy1::NAT/+</i>
LY5465	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:URA3/+ , ZIP1-GFP/+ , SPC42-mCherry:kanMX/+ , ndt80::kanMX/ ndt80::kanMX, P<sub>NDT80-mse1Δ, mse1Δ</sub>NDT80:HIS3/ P<sub>NDT80-mse1Δ, mse1Δ</sub>NDT80:HIS3, ADE2/ADE2, TRP1/TRP1, P<sub>IME2</sub>-IME2:LEU2 (2μ)</i>
LY8932	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:URA3/ P<sub>TUB1</sub>-GFP-TUB1:URA3, ZIP1-GFP/+ , SPC42-mCherry:HPH/+ , ime2::HPH/ ime2::HPH, P<sub>IME2</sub>-IME2-myc-TRP1:TRP1/ P<sub>IME2</sub>-IME2-myc-TRP1:TRP1, sum1::kanMX/sum1::NAT</i>
LY5430	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:URA3/ P<sub>TUB1</sub>-GFP-TUB1:URA3, ZIP1-GFP/+ , SPC42-mCherry:kanMX/+ , ime2::HPH/ ime2::HPH, P<sub>IME2</sub>-IME2 T242A-myc-TRP1:TRP1/ P<sub>IME2</sub>-IME2 T242A-myc-TRP1:TRP1</i>
LY5584	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:URA3/+ , ZIP1-GFP/+ , SPC42-mCherry:kanMX/+ , ndt80::kanMX/ ndt80::kanMX, P<sub>NDT80-mse1Δ, mse1Δ</sub>NDT80:HIS3/ P<sub>NDT80-mse1Δ, mse1Δ</sub>NDT80:HIS3, ADE2/ADE2, TRP1/TRP1, P<sub>BMH1</sub>-BMH1:LEU2 (2μ)</i>
LY8279	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:URA3/+ , ZIP1-GFP/+ , SPC42-mCherry:kanMX/+ , ndt80::kanMX/ ndt80::kanMX, P<sub>NDT80-mse1Δ, mse1Δ</sub>NDT80:HIS3/ P<sub>NDT80-mse1Δ, mse1Δ</sub>NDT80:HIS3, ADE2/ADE2, TRP1/TRP1, P<sub>BMH2</sub>-BMH2:LEU2 (2μ)</i>
LY5663	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:LEU2/ P<sub>TUB1</sub>-GFP-TUB1:LEU2, ZIP1-GFP/+ , SPC42-mCherry:kanMX/+ , bmh1::NAT/bmh1::NAT</i>

LY5837	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:LEU2/ P<sub>TUB1</sub>-GFP-TUB1:LEU2, ZIP1-GFP/+ , SPC42-mCherry:kanMX/+ , bmh2::NAT/bmh2::NAT</i>
LY6884	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:LEU2/ P<sub>TUB1</sub>-GFP-TUB1:LEU2, ZIP1-GFP/+ , SPC42-mCherry:hphMX/+ , bmh2::NAT/bmh2::NAT, kanMX:P<sub>CLB2</sub>-BMH1/ kanMX:P<sub>CLB2</sub>-BMH1</i>
LY6948	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:LEU2/ P<sub>TUB1</sub>-GFP-TUB1:LEU2, ZIP1-GFP/+ , SPC42-mCherry:hphMX/+ , bmh2::NAT/bmh2::NAT, kanMX:P<sub>CLB2</sub>-BMH1/ kanMX:P<sub>CLB2</sub>-BMH1, mek1::HIS3/mek1::HIS3</i>
LY6963	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:LEU2/ P<sub>TUB1</sub>-GFP-TUB1:LEU2, ZIP1-GFP/+ , SPC42-mCherry:hphMX/+ , bmh2::NAT/bmh2::NAT, kanMX:P<sub>CLB2</sub>-BMH1/ kanMX:P<sub>CLB2</sub>-BMH1, spo11::HIS3/spo11::HIS3</i>
LY6981	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:LEU2/ P<sub>TUB1</sub>-GFP-TUB1:LEU2, ZIP1-GFP/+ , SPC42-mCherry:hphMX/+ , bmh2::NAT/bmh2::NAT, kanMX:P<sub>CLB2</sub>-BMH1/ kanMX:P<sub>CLB2</sub>-BMH1, mec1::LEU2/mec1::LEU2, sml1Δ/sml1Δ</i>
LY6257	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:URA3/ P<sub>TUB1</sub>-GFP-TUB1:URA3, ZIP1-GFP/+ , SPC42-mCherry:kanMX/+ , cdc20::P<sub>CLB2</sub>-3HA-CDC20::kanMX6/ cdc20::P<sub>CLB2</sub>-3HA-CDC20::kanMX6</i>
LY6250	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:URA3/ P<sub>TUB1</sub>-GFP-TUB1:URA3, ZIP1-GFP/+ , SPC42-mCherry:kanMX/+ , cdc20::P<sub>CLB2</sub>-3HA-CDC20::kanMX6/ cdc20::P<sub>CLB2</sub>-3HA-CDC20::kanMX6, bmh1::HPH/bmh1::HPH</i>
LY6284	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:URA3/ P<sub>TUB1</sub>-GFP-TUB1:URA3, ZIP1-GFP/+ , SPC42-mCherry:kanMX/+ , cdc20::P<sub>CLB2</sub>-3HA-CDC20::kanMX6/ cdc20::P<sub>CLB2</sub>-3HA-CDC20::kanMX6, bmh2::HPH/bmh2::HPH</i>
LY7903	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:LEU2/ P<sub>TUB1</sub>-GFP-TUB1:LEU2, ZIP1-GFP/+ , SPC42-mCherry:kanMX/+ , bmh1::NAT/bmh1::NAT, P<sub>NDT80</sub>-NDT80:URA3 (2μ)</i>
LY7905	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:LEU2/ P<sub>TUB1</sub>-GFP-TUB1:LEU2, ZIP1-GFP/+ , SPC42-mCherry:kanMX/+ , bmh2::NAT/bmh2::NAT, P<sub>NDT80</sub>-NDT80:URA3 (2μ)</i>
LY3273	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:URA3/ P<sub>TUB1</sub>-GFP-TUB1:URA3, ZIP1-GFP/+ , SPC42-mCherry:kanMX/+ , cdc20::P<sub>CLB2</sub>-3HA-CDC20::kanMX6/ cdc20::P<sub>CLB2</sub>-3HA-CDC20::kanMX6</i>
LY2289	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:URA3/ P<sub>TUB1</sub>-GFP-TUB1:URA3, ZIP1-GFP/+ , SPC42-mCherry:kanMX/+ , kanMX:P<sub>CLB2</sub>-CDC5/ kanMX:P<sub>CLB2</sub>-CDC5</i>
LY3515	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:URA3/ P<sub>TUB1</sub>-GFP-TUB1:URA3, ZIP1-GFP/+ , SPC42-mCherry:HPH/+ , cdc5::NAT/+</i>
LY3518	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:URA3/ P<sub>TUB1</sub>-GFP-TUB1:URA3, ZIP1-GFP/+ , SPC42-mCherry:HPH/+ , cdc5L158G:NAT/ cdc5L158G:NAT</i>
LY3639	<i>MATa/α, P<sub>TUB1</sub>-GFP-TUB1:URA3/ P<sub>TUB1</sub>-GFP-TUB1:URA3, ZIP1-GFP/+ , SPC42-mCherry:HPH/+ , cdc5L158G:NAT/ cdc5L158G:NAT, cdc20::P<sub>CLB2</sub>-3HA-CDC20::kanMX6/ cdc20::P<sub>CLB2</sub>-3HA-CDC20::kanMX6</i>

LY8522	SEY6210 MATa, <i>his3Δ200 trp1-90 leu2-3,112 ade2 gal80 lys2::lexA<sub>op</sub>-HIS3::LYS2 ura3::lexA<sub>op</sub>-lacZ::URA3</i>
LY8770	SEY6210 MATa, <i>his3Δ200 trp1-90 leu2-3,112 ade2 gal80 lys2::lexA<sub>op</sub>-HIS3::LYS2 ura3::lexA<sub>op</sub>-lacZ::URA3, GAL4AD-NDT80(284-627)::LEU2 (2μ), lexA:TRP1 (2μ)</i>
LY8772	SEY6210 MATa, <i>his3Δ200 trp1-90 leu2-3,112 ade2 gal80 lys2::lexA<sub>op</sub>-HIS3::LYS2 ura3::lexA<sub>op</sub>-lacZ::URA3, GAL4AD-NDT80(284-627)::LEU2 (2μ), lexA-BMH1:TRP1 (2μ)</i>
LY8767	SEY6210 MATa, <i>his3Δ200 trp1-90 leu2-3,112 ade2 gal80 lys2::lexA<sub>op</sub>-HIS3::LYS2 ura3::lexA<sub>op</sub>-lacZ::URA3, GAL4AD::LEU2 (2μ), lexA:TRP1 (2μ)</i>
LY8768	SEY6210 MATa, <i>his3Δ200 trp1-90 leu2-3,112 ade2 gal80 lys2::lexA<sub>op</sub>-HIS3::LYS2 ura3::lexA<sub>op</sub>-lacZ::URA3, GAL4AD-CDC5::LEU2 (2μ), lexA:TRP1 (2μ)</i>
LY8769	SEY6210 MATa, <i>his3Δ200 trp1-90 leu2-3,112 ade2 gal80 lys2::lexA<sub>op</sub>-HIS3::LYS2 ura3::lexA<sub>op</sub>-lacZ::URA3, GAL4AD::LEU2 (2μ), lexA-BMH1:TRP1 (2μ)</i>
LY8771	SEY6210 MATa, <i>his3Δ200 trp1-90 leu2-3,112 ade2 gal80 lys2::lexA<sub>op</sub>-HIS3::LYS2 ura3::lexA<sub>op</sub>-lacZ::URA3, GAL4AD-CDC5::LEU2 (2μ), lexA-BMH1:TRP1 (2μ)</i>
LY7771	MATa/α, <i>P<sub>TUB1</sub>-GFP-TUB1:LEU2/P<sub>TUB1</sub>-GFP-TUB1:LEU2, ZIP1-GFP/+</i> , SPC42-mCherry:kanMX/+, <i>bmh1::NAT/bmh1::NAT, P<sub>CDC5</sub>-CDC5:URA3 (2μ)</i>
LY7790	MATa/α, <i>P<sub>TUB1</sub>-GFP-TUB1:LEU2/P<sub>TUB1</sub>-GFP-TUB1:LEU2, ZIP1-GFP/+</i> , SPC42-mCherry:kanMX/+, <i>bmh2::NAT/bmh2::NAT, P<sub>CDC5</sub>-CDC5:URA3 (2μ)</i>
LY8780	MATa/α, <i>P<sub>TUB1</sub>-GFP-TUB1:LEU2/P<sub>TUB1</sub>-GFP-TUB1:LEU2, ZIP1-GFP/+</i> , SPC42-mCherry:kanMX/+, <i>bmh1::NAT/bmh1::NAT, P<sub>BMH1</sub>-BMH1 3A:HIS3/P<sub>BMH1</sub>-BMH1 3A:HIS3 (at BMH1 locus)</i>
LY8592	MATa/α, <i>P<sub>TUB1</sub>-GFP-TUB1:LEU2/P<sub>TUB1</sub>-GFP-TUB1:LEU2, ZIP1-GFP/+</i> , SPC42-mCherry:kanMX/+, <i>pes4::NAT/pes4::NAT</i>
LY8934	MATa/α, <i>P<sub>TUB1</sub>-GFP-TUB1:LEU2/P<sub>TUB1</sub>-GFP-TUB1:LEU2, ZIP1-GFP/+</i> , SPC42-mCherry:kanMX/+, <i>bmh1::NAT/bmh1::NAT, P<sub>PES4</sub>-PES4:URA3 (2μ)</i>
LY8489	MATa/α, <i>SPC42-mCherry:HPH/+</i> , <i>BMH1-EGFP:HIS5/BMH1-EGFP:HIS5</i>
LY2906	MATa/α, <i>SPC42-mCherry:kanMX/+</i>
B1421	SK1 MATa <i>ho::LYS2 lys2 ura3 leu2::hisG his3::hisG trp1::hisG</i>
B2424	SK1 MATa <i>ho::LYS2 lys2 ura3 leu2::hisG his3::hisG trp1::hisG</i> <i>CDC5-3V5::G418R</i>
B48	SK1 MATa/α <i>ho::LYS2/ho::LYS2 lys2/lys2 ura3/ura3 leu2::hisG/leu2::hisG his3::hisG/his3::hisG trp1::hisG/trp1::hisG ura3::P<sub>GPD1</sub>-</i>

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*GAL4(848).ER::URA3/ura3::P<sub>GPD1</sub>-GAL4(848).ER::URA3 P<sub>GAL</sub>-NDT80::TRP1/P<sub>GAL</sub>-NDT80::TRP1 CLB3-3HA:KanR/CLB3-3HA:KanR RIM4-3V5::HIS3/RIM4-3V5::HIS3*

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**Supplemental Table S4.** Oligos used in this study.

Oligo number	Sequence	Purpose
LO1677	5' AAGTCTGTCGACGAAGGTTAACGTGGCATTGAC 3'	<i>BMH1</i> cloning
LO1678	5' TCGAATGGATCCGTTGCTTCTCGCTATACCAGAG 3'	<i>BMH1</i> cloning
LO1968	5' TTGTCAGTCGACCTCCACAACCACCTCATCTTCTC 3'	<i>BMH2</i> cloning
LO1969	5' GCTATACCCCGGGCATCCTTCGTTGTATCCCTGTG 3'	<i>BMH2</i> cloning
LO1894	5' CAAAATTGAGAGCGCAAGCAAGTGAGAAGCGTACGC TGCAGGTCG 3'	<i>BMH1</i> deletion
LO1895	5' AATTGCAATAATGAACACTACAAATTATTACACCCCCGTT TCATCGATGAATTGAGCTCG 3'	<i>BMH1</i> deletion
LO1936	5' GCAAAGAACGAGAAAATTGGACAGAAGGTTAATACT CTGACAACGTACGCTGCAGGTCG 3'	<i>BMH2</i> deletion
LO1937	5' GTGGTAAATCTTCATTCCCCTGTATTCTCAGCGC TCTCATCGATGAATTGAGCTCG 3'	<i>BMH2</i> deletion
LO2254	5' AACACCGAAAACAAATCGGCTTTACGTGACAA AAGAAGGTTCGTACGCTGCAGGTCG 3'	Promoter replacement of <i>BMH1</i>
LO2256	5' TCTTCACGACTGGTTGACATTTTATCTTAG TTCTATAAGATCAATGAAGAGAGAGAGG 3'	Promoter replacement of <i>BMH1</i>
LO659	5' CCTTTTATTTGAACACTACGCGCAGTTGAAAGAGGAA GAGATAATCCTATGATTAATCGATGAATTGAGCTCG 3'	<i>MEK1</i> deletion
LO660	5' CGTTCAAATTTATTAAGGACCAATATACAACAGAAA GAAGAAGAGCGGAATCGTACGCTGCAGGTCGAC 3'	<i>MEK1</i> deletion
LO64	5' CTTCACCCCTTAAGATTTACGATTACTAAGTTCACCTCTC ATCGTACGCTGCAGGTCG 3'	<i>SPO11</i> deletion
LO65	5' CTTGAAAAACATTTTATAAAGCAACAGCTCC ATTCTTATTCAAGATATCATCGATGAATTGAGCTCG 3'	<i>SPO11</i> deletion
LO2800	5' CGTATGGATCCTCAAGCCTATCCTCTTCATCTCAGC 3'	<i>CDC5</i> cloning
LO2801	5' TTGTCAGAGCTCGATGAGAAGTTCTGGTACCTTAGTC 3'	<i>CDC5</i> cloning

LO3062	5' acgctagctgggtggcatatggccATGTCGTTGGTCCTCTTAA 3'	<i>CDC5</i> cloning in Y2H plasmid
LO3063	5' tcagtatctacgattcatagatctcGATGAGAAGTTCTGGCT ACCTTAGTC 3'	<i>CDC5</i> cloning in Y2H plasmid
LO3120	5' AATCAGTATCACAAAAAAAATTCAACCTACAAGAGG AAACATGCGTACGCTGCAGGTG 3'	<i>PES4</i> deletion
LO3121	5' ATAAGGAAAACTCTAGCTAAATTAAACAAAGAGAC ATTCATCATCGATGAATTGAGCTCG 3'	<i>PES4</i> deletion
LO3163	5' gtatctatgtcgacGGCGTGCAGTATAAGTTC 3'	<i>PES4</i> cloning
LO3164	5' CTATGGCTgagctcGACGCCGGATGGAAGAGATAGG 3'	<i>PES4</i> cloning
LO1808	5' TATGCAGTCGACAGGACAAAGAAGGCAAAGAACCC 3'	<i>BCY1</i> cloning
LO1809	5' GTCAATGGATCCGGTGATTGTAGAGTTGGAGAGAGT 3'	<i>BCY1</i> cloning
LO3153	5' ACAAGCAGATTATTTCAAAAGACAACAGTAAGAA TAAACGATGCGTACGCTGCAGGTG 3'	<i>BCY1</i> deletion
LO3154	5' AATTCATGTGGATTAAAGATCGCTTCCCCTTTT ACTTATCATCGATGAATTGAGCTCG 3'	<i>BCY1</i> deletion
LO1673	5' TACATCGTCGACCTCTACCATGCATTGAAACATGT 3'	<i>IME2</i> cloning
LO1674	5' AC GTTACCCGGGTAGCCGCCAAGAGCAAGAAA 3'	<i>IME2</i> cloning
LO2976	5' AAAGTTTCATACATAATTAAACAAATTGTTGCGGG GATG CGTACGCTGCAGGTG 3'	<i>SUM1</i> deletion
LO2977	5' ATCTATTCTCGAAACTGCCAACGTACGGACCAGCTTA TCATCGATGAATTGAGCTCG 3'	<i>SUM1</i> deletion
LO2026	5' GTAATTCTCTTGTAGATTATCAGAATACTTATCATCGAT GAATTGAGCTCG 3'	Tagging <i>BMH1</i> C-terminus with EGFP
LO2027	5' ACAGCAGCCACCTGCTGCCGCCGAAGGTGAAG CACCAAAGCGTACGCTGCAGGTG 3'	Tagging <i>BMH1</i> C-terminus with EGFP
LO3089	5' GGATCGTCgaattcATGTCAACCAGTCGTGAAGA 3'	<i>BMH1</i> cloning in Y2H plasmid
LO3090	5' ATCTGGATGTCGACGGTGGAGGAATCAGAAGAGAGA 3'	<i>BMH1</i> cloning in Y2H plasmid

LO686	5' GCATctcgagCAAAGGGAACGAAACCCAG 3'	<i>IME2</i> cloning
LO687	5' ATGCgcggccgcCAGTAGCCGCCAAGAGCAAG 3'	<i>IME2</i> cloning
LO1627	5' TTTCAACATGGCGTGCCAAACCAAAATC 3'	<i>IME2</i> site-directed mutagenesis
LO1629	5' ATAAAAACCCGTATgCGGCCTACGTTCC 3'	<i>IME2</i> site-directed mutagenesis

**Supplemental Table S5.** Plasmids used in this study.

Plasmid number	Genotype/Purpose	Reference
YEplac195	<i>URA3</i> (2 $\mu$ )	Gietz, Sugino 1988
YEplac181	<i>LEU2</i> (2 $\mu$ )	Gietz, Sugino 1988
pBTM116	<i>lexA:TRP1</i> (2 $\mu$ )	Hollingsworth 2018
pACTII	<i>GAL4AD:LEU2</i> (2 $\mu$ )	Hollingsworth 2018
pLB227	Empty vector for the screen	This study
pLB225	<i>P<sub>NDT80</sub>-NDT80:LEU2</i> (2 $\mu$ )	This study
pLB262	<i>P<sub>BMH1</sub>-BMH1:LEU2</i> (2 $\mu$ )	This study
pLB539	<i>P<sub>BMH2</sub>-BMH2:LEU2</i> (2 $\mu$ )	This study
pLB518	<i>lexA-BMH1:TRP1</i> (2 $\mu$ )	This study
pLB491	<i>GAL4AD-CDC5:LEU2</i> (2 $\mu$ )	This study
pLB463	<i>P<sub>CDC5</sub>-CDC5:LEU2</i> (2 $\mu$ )	This study
pLB465	<i>P<sub>CDC5</sub>-CDC5:URA3</i> (2 $\mu$ )	This study
pLB509	<i>P<sub>BMH1</sub>-BMH1:HIS3</i>	This study
pLB519	<i>P<sub>BMH1</sub>-BMH1 3A:HIS3</i>	This study
pLB513	<i>P<sub>PES4</sub>-PES4:URA3</i> (2 $\mu$ )	This study
pLB306	<i>P<sub>BCY1</sub>-BCY1:LEU2</i> (2 $\mu$ )	This study
pLB258	<i>P<sub>IME2</sub>-IME2:LEU2</i> (2 $\mu$ )	This study
pLB268	<i>P<sub>IME2</sub>-IME2-myc-TRP1</i>	This study
pLB285	<i>P<sub>IME2</sub>-IME2 T242A-myc-TRP1</i>	This study
pLB107	<i>P<sub>NDT80</sub>-NDT80:HIS3</i>	This study