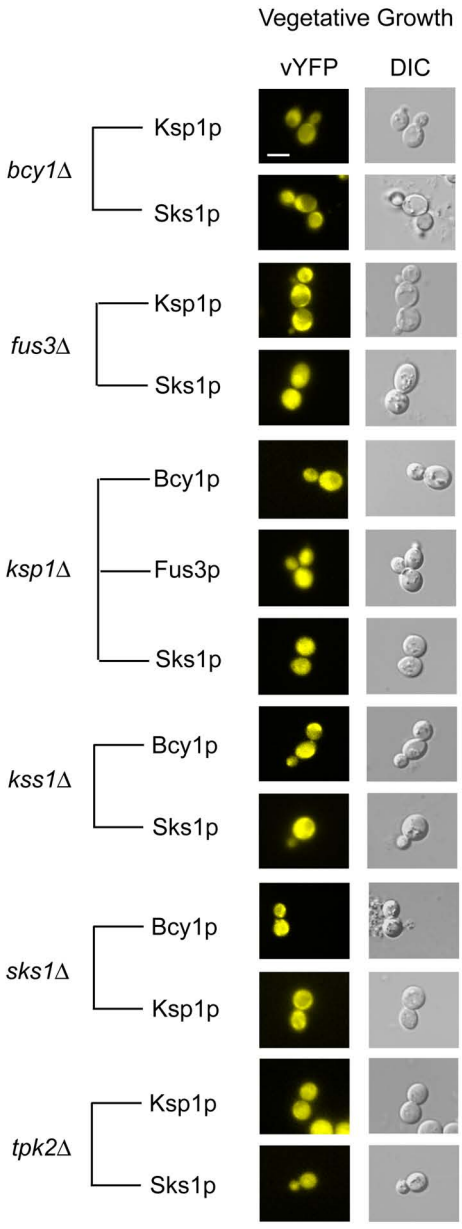
Kinase	GO Cell Component
AKL1	cyto., bud neck
ATG1	PAS
ARK1	actin cortical patch
BCK1	intracellular
BCY1	cyto., nucl., PM
BUB1	nucl., kinetochore
BUD32	cyto., nucl.
CAK1	cyto.
CBK1	nucl., bud neck / tip
CDC5	nucl., SPB, bud neck
CDC7	nucl.
CDC15	bud neck, SPB
CDC28	cyto., nucl.
CHK1	nucl.
CKA1	CK2 complex
CKA2	CK2 complex
CLA4	actin cap
CMK1	cyto.
CMK2	cyto.
CTK1	nucl., CTD complex
CTK2	CTD kinase complex
CTK3	CTD kinase complex
DBF2	bud neck, SPB
DBF4	protein complex
DBF20	cyto.
DUN1	nucl.
ELM1	bud neck
FMP48	mitochondrion
FUS3	cyto., nucl., shmoo tip
GCN2	cyto. ribosome
GIN4	bud neck
HAL5	unknown
HOG1	cyto., nucl.
HRK1	cyto.
HRR25	nucl., PM
HSL1	septin ring, bud neck
IME2	nucl.
IPL1	kinetochore MT, SPB
IRE1	nucl.
ISR1	unknown
KCC4	bud neck
KIC1	cyto.

Kinase	GO Cell Component
KIN1	PM
KIN2	PM
KIN3	unknown
KIN4	bud neck, SPB, cortex
KIN28	TFIIH complex
KIN82	unknown
KKQ8	cyto.
KNS1	unknown
KSP1	nucl.
KSS1	nucl.
MCK1	cyto., nucl.
MEC1	nucl.
MEK1	nucl.
MKK1	bud tip
MKK2	cyto.
MLP1	nucl
MPS1	SPB, kinetochore
MRK1	unknown
NPR1	cyto., Golgi body
PBS2	cyto., bud neck / tip
PHO85	nucl.
PKC1	cyto., nucl.,pol. growth
PKH1	cyto.
PKH2	nucl.
PKH3	unknown
PRR1	cyto.
PRR2	nucl.
PSK1	cyto.
PSK2	cyto., mitochondrion
PTK1	unknown
PTK2	cyto., nucl., PM
RAD53	nucl.
RCK1	unknown
RCK2	cyto.
RIM11	cyto.
RIM15	cyto., nucl.
RIO1	cyto., nucl.
RIO2	cyto., nucl.
SAK1	cyto.
SAT4	unknown
SCH9	cyto., nucl., vacuole
SGV1	nucl.

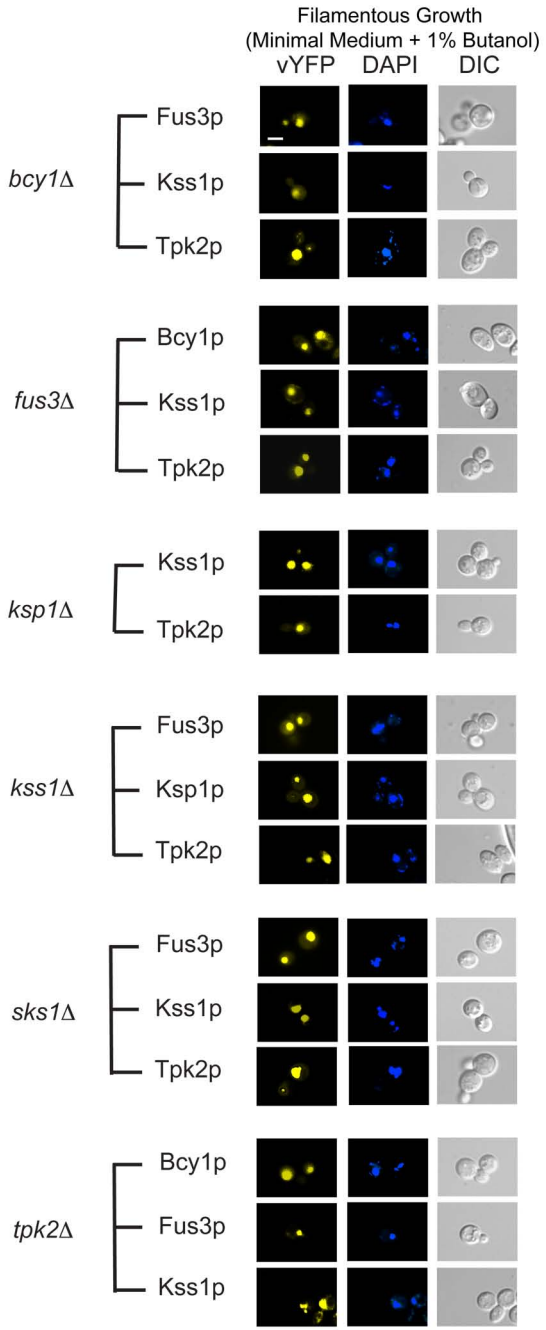
Kinase	GO Cell Component
SKM1	PM
SKS1	cyto.
SKY1	cyto.
SLN1	PM
SLT2	nucl., bud tip
SMK1	mitochondrion
SNF1	cyto., nucl., vacuole
SPS1	cyto., nucl.
SSK2	cyto., bud neck / tip
SSK22	unknown
SSN3	txn factor complex
STE7	cyto., shmoo tip
STE11	cyto.
STE20	incipient bud, shmoo tip
SWE1	nucl., bud neck
TEL1	nucl., mitochondrion
TOR1	Golgi, PM, vacuole mem.
TOR2	PM, vacuole membrane
TOS3	cyto.
TPK1	cyto., nucl.
TPK2	nucl.
TPK3	cyto., nucl.
VHS1	cyto.
VPS15	Golgi body
VPS34	endosome
YAK1	cyto., nucl.
YBR028c	cyto.
YCK1	PM, ER
YCK2	bud neck, PM, shmoo
YCK3	nucl, vacuole mem., PM
YDL025c	unknown
YGK3	unknown
YGL059w	mitochondrion
YKL171w	cyto.
YMR291w	cyto., nucl.
YNR047w	cyto.
YPK1	cyto., PM, bud neck
YPK2	nucl., cyto.
YPL141c	cyto.
YPL150w	unknown
YPL236c	vacuole mem.

Annotated Functions: Filamentous growth Mating (pheromone response) Cell cycle processes and related checkpoints

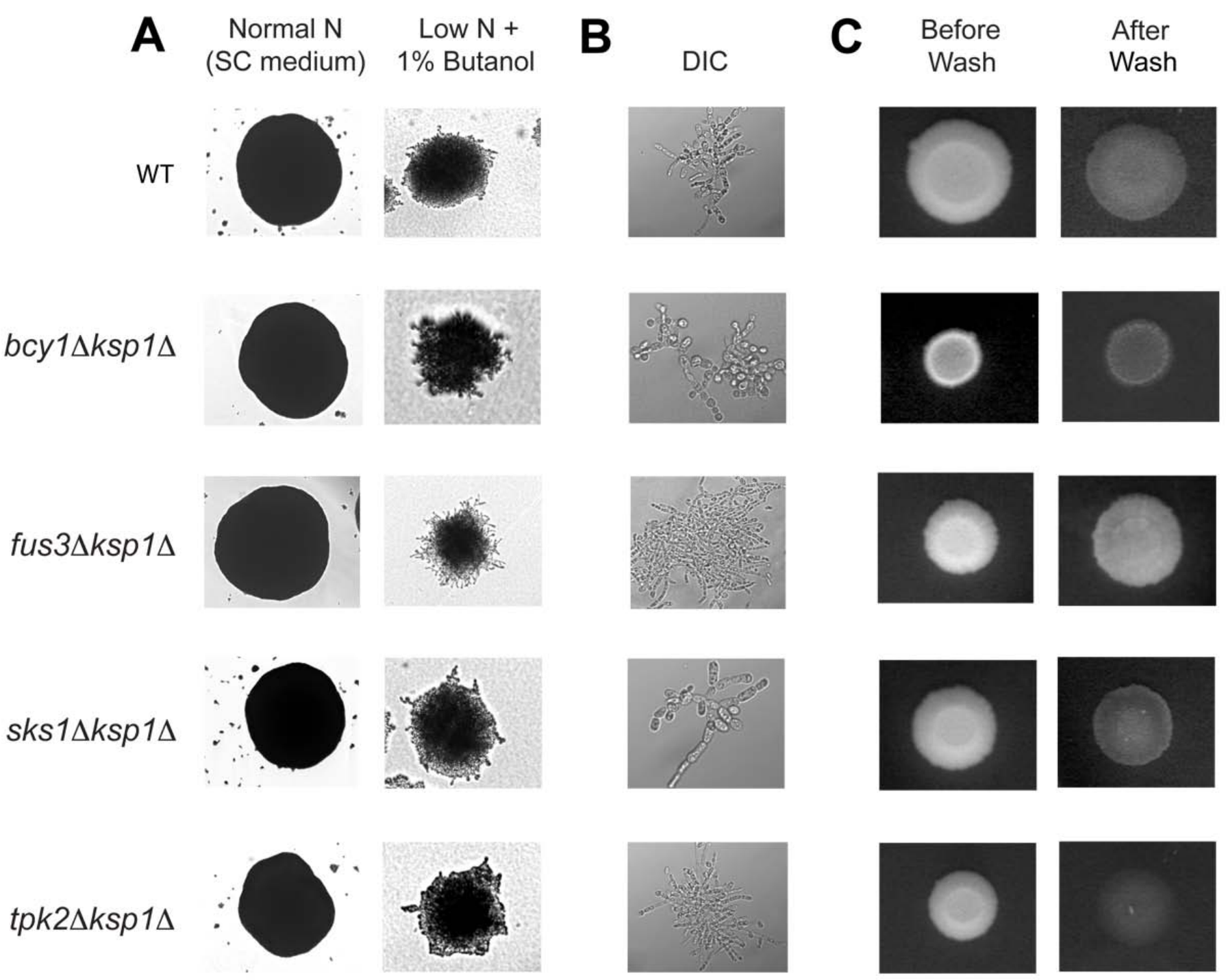
Supplementary Figure SF1. The yeast kinase complement, or kinome, is indicated, along with Gene Ontology terms describing the subcellular compartment to which each kinase has been localized in non-filamentous strains of yeast. Functions related to filamentous growth, mating, and cell cycle progression are color-coded alongside each kinase.



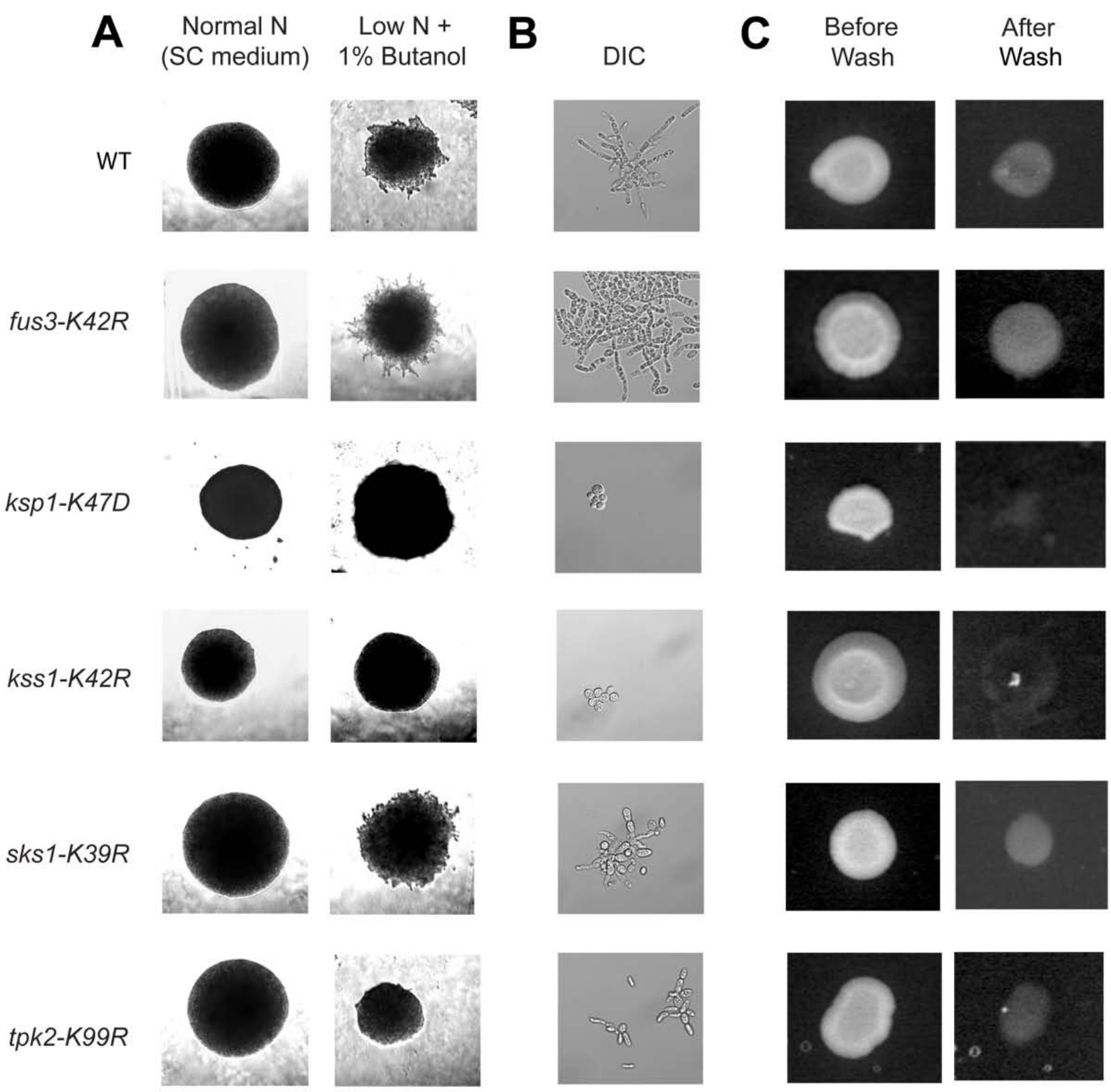
Supplementary Figure SF2. Subcellular distribution of kinase-vYFP chimeras in the indicated kinase deletion mutants under vegetative growth conditions. Yellow fluorescence and DIC images are presented. Scale bar, 3μm.



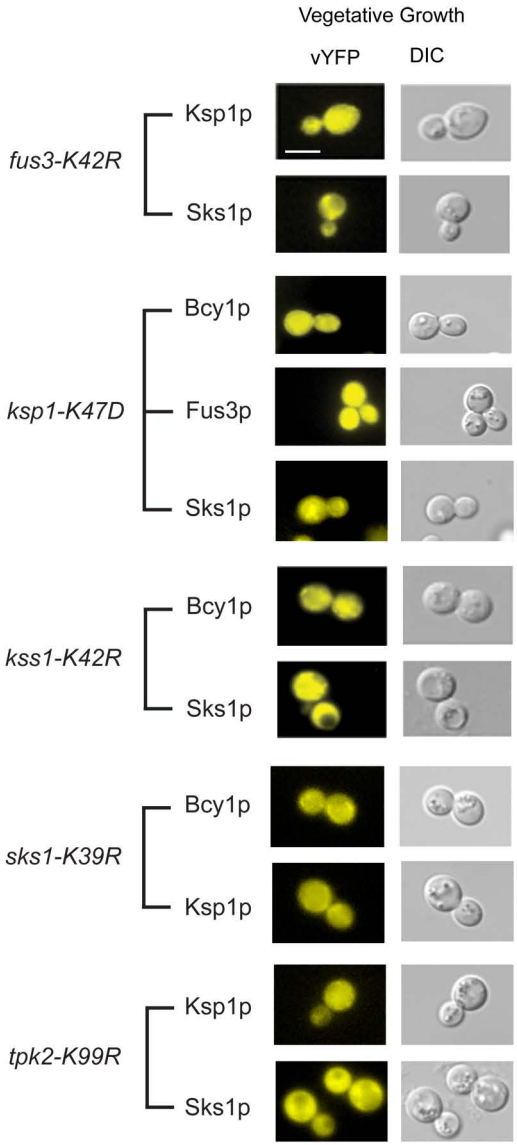
Supplementary Figure SF3. Nuclear-localized kinase-vYFP chimeras in the indicated deletion mutants. The images presented here identify nuclear shifts unaffected by the respective gene deletions. Yellow fluorescence and DIC images are shown. Scale bar, 3 μm.



Supplementary Figure SF4. Filamentous growth phenotypes of the indicated double deletion mutants. Colony morphology was assessed on synthetic complete (SC) medium and on SLAD plates supplemented with 1% butanol. Cells from these colonies were scraped into water for differential interference contrast microscopy. Invasive growth was assayed on YPD medium; plates were washed after 5 days growth.



Supplementary Figure SF5. Filamentous growth phenotypes of kinase-dead mutants. Colony morphology was determined on SC medium (normal nitrogen levels) and on SLAD medium supplemented with 1% butanol. Cells were scraped from colonies for DIC microscopy. Invasive growth was assayed on SC –Ura medium; plates were washed after growth for 5 days.



Supplementary Figure SF6. Subcellular distribution of kinase-vYFP chimeras in haploid yeast strains carrying the indicated kinase-dead alleles under vegetative growth conditions. Yellow fluorescence and DIC images are presented. Scale bar, 3 μm.

Supplementary Table ST1. Kinase localization in haploid filamentous yeast (Y825)

Kinase	**Vegetative Growth**	**Filamentous Growth (1%Butanol)**
AKL1	Cytoplasm	Cytoplasm
ATG1	Cytoplasm	Cytoplasm
ARK1	Punctate	Punctate
BCK1	Cytoplasm	Cytoplasm
BCY1	Cytoplasm	Nucleus
BUB1	Cytoplasm, Nucleus	Cytoplasm, Nucleus
BUD32	Cytoplasm, Nucleus	Cytoplasm, Nucleus
CAK1	Cytoplasm (faint)	Cytoplasm (faint)
CBK1	Cytoplasm	Cytoplasm
CDC15	Cytoplasm	Cytoplasm
CDC28	Cytoplasm	Cytoplasm
CDC5	Cytoplasm (faint)	Cytoplasm (faint)
CDC7	Cytoplasm, Nucleus	Cytoplasm, Nucleus
CHK1	Cytoplasm	Cytoplasm
CKA1	Cytoplasm, Nucleus	Cytoplasm, Nucleus
CKA2	Cytoplasm	Cytoplasm
CLA4	Cytoplasm	Cytoplasm
CMK1	Cytoplasm	Cytoplasm
CMK2	Cytoplasm	Cytoplasm
CTK1	Cytoplasm, Nucleus	Cytoplasm, Nucleus
CTK2	Nucleus	Nucleus
CTK3	Nucleus	Nucleus

Kinase	**Vegetative Growth**	**Filamentous Growth (1%Butanol)**
DBF2	Cytoplasm	Cytoplasm
DBF20	Cytoplasm	Cytoplasm
DBF4	Cytoplasm, Nucleus	Cytoplasm, Nucleus
DUN1	Cytoplasm (faint)	Cytoplasm (faint)
ELM1	Cytoplasm (faint), Bud neck	Cytoplasm (faint), Bud neck
FMP48	Mitochondrion, Cytoplasm (faint)	Mitochondrion, Cytoplasm (faint)
FUS3	Cytoplasm	Nucleus
GCN2	Cytoplasm	Cytoplasm
GIN4	Cytoplasm	Cytoplasm
HAL5	Cytoplasm (faint)	Cytoplasm (faint)
HOG1	Cytoplasm	Cytoplasm
HRK1	Cytoplasm	Cytoplasm
HRR25	Cytoplasm	Cytoplasm
HSL1	Bud neck	Bud neck
IME2	Cytoplasm (faint)	Cytoplasm (faint)
IPL1	Cytoplasm (faint)	Cytoplasm (faint)
IRE1	Cytoplasm (faint)	Cytoplasm (faint)
ISR1	Cytoplasm	Cytoplasm
KCC4	Bud, Cytoplasm	Bud, Cytoplasm
KIC1	Cytoplasm	Cytoplasm
KIN1	Cytoplasm	Cytoplasm
KIN2	Cytoplasm (faint)	Cytoplasm (faint)
KIN28	Nucleus	Nucleus

Kinase	Vegetative Growth	Filamentous Growth (1%Butanol)
KIN3	Cytoplasm	Cytoplasm
KIN4	Cytoplasm	Cytoplasm
KIN82	Cytoplasm	Cytoplasm
KKQ8	Cytoplasm	Cytoplasm
KNS1	Cytoplasm (faint)	Cytoplasm (faint)
KSP1	Cytoplasm	Cytoplasm
KSS1	Cytoplasm	Nucleus
MCK1	Cytoplasm, Nucleus	Cytoplasm, Nucleus
*MEC1**	Cytoplasm	Cytoplasm
MEK1	Cytoplasm (faint)	Cytoplasm (faint)
MKK1	Cytoplasm	Cytoplasm
MKK2	Cytoplasm	Cytoplasm
MLP1	Cytoplasm (faint)	Cytoplasm (faint)
MPS1	Cytoplasm	Cytoplasm
MRK1	Cytoplasm (faint)	Cytoplasm (faint)
NPR1	Cytoplasm	Cytoplasm
PAK1	Cytoplasm	Cytoplasm
PBS2	Cytoplasm	Cytoplasm
PHO85	Cytoplasm	Cytoplasm
PKC1	Cytoplasm	Cytoplasm
PKH1	Cytoplasm	Cytoplasm
PKH2	Cytoplasm	Cytoplasm
PKH3	Cytoplasm (faint)	Cytoplasm (faint)

Kinase	Vegetative Growth	Filamentous Growth (1%Butanol)
PRR1	Cytoplasm	Cytoplasm
PRR2	Cytoplasm	Cytoplasm
PSK1	Cytoplasm	Cytoplasm
PSK2	Cytoplasm	Cytoplasm
PTK1	Cytoplasm (faint)	Cytoplasm (faint)
PTK2	Cytoplasm	Cytoplasm
RAD53	Nucleus	Nucleus
RCK1	Cytoplasm	Cytoplasm
RCK2	Cytoplasm	Cytoplasm
RIM11	Cytoplasm	Cytoplasm
RIM15	Cytoplasm	Cytoplasm
RIO1	Cytoplasm	Cytoplasm
RIO2	Cytoplasm	Cytoplasm
SAT4	Cytoplasm	Cytoplasm
SCH9	Cytoplasm	Cytoplasm
SGV1	Cytoplasm, Nucleus	Cytoplasm, Nucleus
SKM1	Cytoplasm (faint)	Cytoplasm (faint)
SKS1	Cytoplasm	Nucleus
SKY1	Cytoplasm	Cytoplasm
SLN1	Cytoplasm	Cytoplasm
SLT2	Cytoplasm, Nucleus	Cytoplasm, Nucleus
SMK1	Cytoplasm (faint)	Cytoplasm (faint)
SNF1	Cytoplasm, Nucleus	Cytoplasm, Nucleus

Kinase	Vegetative Growth	Filamentous Growth (1%Butanol)
SPS1	Cytoplasm (faint)	Cytoplasm (faint)
SSK2	Cytoplasm	Cytoplasm
SSK22	Cytoplasm (faint)	Cytoplasm (faint)
SSN3	Cytoplasm, Nucleus	Cytoplasm, Nucleus
STE11	Cytoplasm	Cytoplasm
STE20	Cytoplasm	Cytoplasm
STE7	Cytoplasm	Cytoplasm
SWE1	Cytoplasm	Cytoplasm
TEL1	Mitochondrion, Cytoplasm	Mitochondrion, Cytoplasm
TOR1	Cytoplasm (faint)	Cytoplasm (faint)
*TOR2**	Cytoplasm (faint)	Cytoplasm (faint)
TOS3	Cytoplasm	Cytoplasm
TPK1	Cytoplasm	Cytoplasm
TPK2	Cytoplasm	Nucleus
TPK3	Cytoplasm, Nucleus	Cytoplasm, Nucleus
VHS1	Cytoplasm	Cytoplasm
VPS15	Cytoplasm (faint)	Cytoplasm (faint)
VPS34	Cytoplasm (faint)	Cytoplasm (faint)
YAK1	Cytoplasm, Nucleus	Cytoplasm, Nucleus
YBR028C	Cytoplasm	Cytoplasm
YCK1	Cytoplasm, Nucleus	Cytoplasm, Nucleus
YCK2	Cytoplasm	Cytoplasm
YCK3	Vacuole	Vacuole

Kinase	Vegetative Growth	Filamentous Growth (1%Butanol)
YDL025C	Cytoplasm (faint)	Cytoplasm (faint)
YGK3	Cytoplasm (faint)	Cytoplasm (faint)
YGL059W	Cytoplasm (faint)	Cytoplasm (faint)
YKL171W	Cytoplasm, Nucleus	Cytoplasm, Nucleus
YMR291W	Cytoplasm, Nucleus	Cytoplasm, Nucleus
YNR047W	Cytoplasm	Cytoplasm
YPK1	Cytoplasm	Cytoplasm
YPK2	Cytoplasm, Nucleus	Cytoplasm, Nucleus
YPL141C	Cytoplasm	Cytoplasm
YPL150W	Cytoplasm (faint)	Cytoplasm (faint)
YPL236C	Cytoplasm (faint)	Cytoplasm (faint)

* Construct in diploid Y825/6