

Supplement B

Publication	experiment name	Experimental procedure			Modeling experimental procedure		Data transformation
		Environmental changes	genetic perturbation	reference strain and environment	Environmental changes	Genetic perturbation	
1	WT_0.5MKCl_0	YPD	WT		Turgor pressure=0		
1	WT_0.5MKCl_020	0.5M KCL	WT		Turgor pressure=4		
1	WT_0.5MKCl_030	0.5M KCL	WT		Turgor pressure=4		
1	WT_0.5MKCl_040	0.5M KCL	WT		Turgor pressure=4		
1	hog1_0.5MKCl_0	YPD	hog1Δ		Turgor pressure=0	hog1=0	
1	hog1_0.5MKCl_020	0.5M KCL	hog1Δ		Turgor pressure=4	hog1=0	
1	hog1_0.5MKCl_030	0.5M KCL	hog1Δ		Turgor pressure=4	hog1=0	
1	hog1_0.5MKCl_040	0.5M KCL	hog1Δ		Turgor pressure=4	hog1=0	
1	pbs2_0.5MKCl_0	YPD	pbs2Δ		Turgor pressure=0	pbs2=0, pbs2Scaffold=0	
1	pbs2_0.5MKCl_020	0.5M KCL	pbs2Δ		Turgor pressure=4	pbs2=0, pbs2Scaffold=0	
1	pbs2_0.5MKCl_030	0.5M KCL	pbs2Δ		Turgor pressure=4	pbs2=0, pbs2Scaffold=0	
1	pbs2_0.5MKCl_040	0.5M KCL	pbs2Δ		Turgor pressure=4	pbs2=0, pbs2Scaffold=0	
1	ssk1ste11_0.5MKCl_0	YPD	Ssk1ΔSte11Δ		Turgor pressure=0	Ssk1=0, Ste11=0,Ste11M=0	
1	ssk1ste11_0.5MKCl_020	0.5M KCL	Ssk1ΔSte11Δ		Turgor pressure=4	Ssk1=0, Ste11=0,Ste11M=0	
1	ssk1ste11_0.5MKCl_030	0.5M KCL	Ssk1ΔSte11Δ		Turgor pressure=4	Ssk1=0, Ste11=0,Ste11M=0	
1	ssk1ste11_0.5MKCl_040	0.5M KCL	Ssk1ΔSte11Δ		Turgor pressure=4	Ssk1=0, Ste11=0,Ste11M=0	
1	ssk1sho1_0.5MKCl_0	YPD	Ssk1ΔSho1Δ		Turgor pressure=0	Ssk1=0,Sho1=0	
1	ssk1sho1_0.5MKCl_020	0.5M KCL	Ssk1ΔSho1Δ		Turgor pressure=4	Ssk1=0,Sho1=0	
1	ssk1sho1_0.5MKCl_030	0.5M KCL	Ssk1ΔSho1Δ		Turgor pressure=4	Ssk1=0,Sho1=0	
1	ssk1sho1_0.5MKCl_040	0.5M KCL	Ssk1ΔSho1Δ		Turgor pressure=4	Ssk1=0,Sho1=0	
1	ste11_0.5MKCl_0	YPD	Ste11Δ		Turgor pressure=0	Ste11=0,Ste11M=0	
1	ste11_0.5MKCl_020	0.5M KCL	Ste11Δ		Turgor pressure=4	Ste11=0,Ste11M=0	
1	ste11_0.5MKCl_030	0.5M KCL	Ste11Δ		Turgor pressure=4	Ste11=0,Ste11M=0	
1	ste11_0.5MKCl_040	0.5M KCL	Ste11Δ		Turgor pressure=4	Ste11=0,Ste11M=0	
1	ssk1_0.5MKCl_0	YPD	Ssk1Δ		Turgor pressure=0	Ssk1=0	
1	ssk1_0.5MKCl_020	0.5M KCL	Ssk1Δ		Turgor pressure=4	Ssk1=0	
1	ssk1_0.5MKCl_030	0.5M KCL	Ssk1Δ		Turgor pressure=4	Ssk1=0	
1	ssk1_0.5MKCl_040	0.5M KCL	Ssk1Δ		Turgor pressure=4	Ssk1=0	
1	sho1_0.5MKCl_0	YPD	Sho1Δ		Turgor pressure=0	Sho1=0	
1	sho1_0.5MKCl_010	0.5M KCL	Sho1Δ		Turgor pressure=4	Sho1=0	
1	sho1_0.5MKCl_020	0.5M KCL	Sho1Δ		Turgor pressure=4	Sho1=0	
1	sho1_0.5MKCl_030	0.5M KCL	Sho1Δ		Turgor pressure=4	Sho1=0	

1	sho1_0.5MKCl_040	0.5M KCL	Sho1Δ
1	WT_1MKCL_0	YPD	WT
1	WT_1MKCL_060	1M KCL	WT
1	WT_1MKCL_090	1M KCL	WT
1	WT_1MKCL_120	1M KCL	WT
1	ssk1ste11_1MKCL_0	YPD	Ssk1ΔSte11Δ
1	ssk1ste11_1MKCL_060	1M KCL	Ssk1ΔSte11Δ
1	ssk1ste11_1MKCL_120	1M KCL	Ssk1ΔSte11Δ
1	WT_0.25MKCL_0	YPD	WT
1	WT_0.25MKCL_010	0.25M KCL	WT
1	WT_0.25MKCL_020	0.25M KCL	WT
1	WT_0.25MKCL_030	0.25M KCL	WT
1	ssk1ste11_0.25MKCL_0	YPD	Ssk1ΔSte11Δ
1	ssk1ste11_0.25MKCL_010	0.25M KCL	Ssk1ΔSte11Δ
1	ssk1ste11_0.25MKCL_020	0.25M KCL	Ssk1ΔSte11Δ
1	ssk1ste11_0.25MKCL_030	0.25M KCL	Ssk1ΔSte11Δ
1	WT_0.125MKCL_0	YPD	WT
1	WT_0.125MKCL_005	0.125M KCL	WT
1	WT_0.125MKCL_010	0.125M KCL	WT
1	WT_0.125MKCL_020	0.125M KCL	WT
1	WT_0.125MKCL_030	0.125M KCL	WT
1	ssk1ste11_0.125MKCl_0	YPD	Ssk1ΔSte11Δ
1	ssk1ste11_0.125MKCl_005	0.125M KCL	Ssk1ΔSte11Δ
1	ssk1ste11_0.125MKCl_010	0.125M KCL	Ssk1ΔSte11Δ
1	ssk1ste11_0.125MKCl_020	0.125M KCL	Ssk1ΔSte11Δ
1	ssk1ste11_0.125MKCl_030	0.125M KCL	Ssk1ΔSte11Δ
1	ssk1_0.125MKCl_0	YPD	Ssk1Δ
1	ssk1_0.125MKCl_005	0.125M KCL	Ssk1Δ
1	ssk1_0.125MKCl_010	0.125M KCL	Ssk1Δ
1	ssk1_0.125MKCl_020	0.125M KCL	Ssk1Δ
1	ssk1_0.125MKCl_030	0.125M KCL	Ssk1Δ
1	ste11_0.125MKCl_0	YPD	Ste11Δ
1	ste11_0.125MKCl_005	0.125M KCL	Ste11Δ
1	ste11_0.125MKCl_010	0.125M KCL	Ste11Δ
1	ste11_0.125MKCl_020	0.125M KCL	Ste11Δ
1	ste11_0.125MKCl_030	0.125M KCL	Ste11Δ
1	hog1_0.125MKCl_0	YPD	hog1Δ

WT in YPD

Turgor pressure=4	Sho1=0
Turgor pressure=0	
Turgor pressure=4	
Turgor pressure=4	
Turgor pressure=4	
Turgor pressure=0	Ssk1=0, Ste11=0,Ste11M=0
Turgor pressure=4	Ssk1=0, Ste11=0,Ste11M=0
Turgor pressure=4	Ssk1=0, Ste11=0,Ste11M=0
Turgor pressure=0	
Turgor pressure=3	
Turgor pressure=3	
Turgor pressure=3	
Turgor pressure=0	Ssk1=0, Ste11=0,Ste11M=0
Turgor pressure=3	Ssk1=0, Ste11=0,Ste11M=0
Turgor pressure=3	Ssk1=0, Ste11=0,Ste11M=0
Turgor pressure=3	Ssk1=0, Ste11=0,Ste11M=0
Turgor pressure=0	
Turgor pressure=2	
Turgor pressure=2	
Turgor pressure=2	
Turgor pressure=2	
Turgor pressure=0	Ssk1=0, Ste11=0,Ste11M=0
Turgor pressure=2	Ssk1=0, Ste11=0,Ste11M=0
Turgor pressure=2	Ssk1=0, Ste11=0,Ste11M=0
Turgor pressure=2	Ssk1=0, Ste11=0,Ste11M=0
Turgor pressure=2	Ssk1=0, Ste11=0,Ste11M=0
Turgor pressure=2	Ssk1=0, Ste11=0,Ste11M=0
Turgor pressure=0	Ssk1=0
Turgor pressure=2	Ssk1=0
Turgor pressure=2	Ssk1=0
Turgor pressure=2	Ssk1=0
Turgor pressure=2	Ssk1=0
Turgor pressure=0	Ste11=0,Ste11M=0
Turgor pressure=2	Ste11=0,Ste11M=0
Turgor pressure=2	Ste11=0,Ste11M=0
Turgor pressure=2	Ste11=0,Ste11M=0
Turgor pressure=2	Ste11=0,Ste11M=0
Turgor pressure=0	hog1=0

Log₂

1	hog1_0.125MKCl_005	0.125M KCL	hog1Δ		Turgor pressure=2	hog1=0	
1	hog1_0.125MKCl_010	0.125M KCL	hog1Δ		Turgor pressure=2	hog1=0	
1	hog1_0.125MKCl_020	0.125M KCL	hog1Δ		Turgor pressure=2	hog1=0	
1	hog1_0.125MKCl_030	0.125M KCL	hog1Δ		Turgor pressure=2	hog1=0	
1	WT_0.0625MKCl_0	YPD	WT		Turgor pressure=0		
1	WT_0.0625MKCl_002.5	0.0625M KCL	WT		Turgor pressure=1		
1	WT_0.0625MKCl_005	0.0625M KCL	WT		Turgor pressure=1		
1	WT_0.0625MKCl_010	0.0625M KCL	WT		Turgor pressure=1		
1	WT_0.0625MKCl_015	0.0625M KCL	WT		Turgor pressure=1		
1	ssk1ste11_0.0625MKCl_0	YPD	Ssk1ΔSte11Δ		Turgor pressure=0	Ssk1=0, Ste11=0,Ste11M=0	
1	ssk1ste11_0.0625MKCl_002.5	0.0625M KCL	Ssk1ΔSte11Δ		Turgor pressure=1	Ssk1=0, Ste11=0,Ste11M=0	
1	ssk1ste11_0.0625MKCl_005	0.0625M KCL	Ssk1ΔSte11Δ		Turgor pressure=1	Ssk1=0, Ste11=0,Ste11M=0	
1	ssk1ste11_0.0625MKCl_010	0.0625M KCL	Ssk1ΔSte11Δ		Turgor pressure=1	Ssk1=0, Ste11=0,Ste11M=0	
1	ssk1ste11_0.0625MKCl_015	0.0625M KCL	Ssk1ΔSte11Δ		Turgor pressure=1	Ssk1=0, Ste11=0,Ste11M=0	
1	ssk1_0.0625MKCl_0	YPD	Ssk1Δ		Turgor pressure=0	Ssk1=0	
1	ssk1_0.0625MKCl_002.5	0.0625M KCL	Ssk1Δ		Turgor pressure=1	Ssk1=0	
1	ssk1_0.0625MKCl_005	0.0625M KCL	Ssk1Δ		Turgor pressure=1	Ssk1=0	
1	ssk1_0.0625MKCl_010	0.0625M KCL	Ssk1Δ		Turgor pressure=1	Ssk1=0	
1	ssk1_0.0625MKCl_015	0.0625M KCL	Ssk1Δ		Turgor pressure=1	Ssk1=0	
1	ste11_0.0625MKCl_0	YPD	Ste11Δ		Turgor pressure=0	Ste11=0,Ste11M=0	
1	ste11_0.0625MKCl_002.5	0.0625M KCL	Ste11Δ		Turgor pressure=1	Ste11=0,Ste11M=0	
1	ste11_0.0625MKCl_005	0.0625M KCL	Ste11Δ		Turgor pressure=1	Ste11=0,Ste11M=0	
1	ste11_0.0625MKCl_010	0.0625M KCL	Ste11Δ		Turgor pressure=1	Ste11=0,Ste11M=0	
1	ste11_0.0625MKCl_015	0.0625M KCL	Ste11Δ		Turgor pressure=1	Ste11=0,Ste11M=0	
2	Ste11DN_Pbs2_30	YPD	active Ste11		Turgor pressure=0	Ste11=2	
2	Ste11DN_Ste7_60	YPD	active Ste11M		Turgor pressure=0	Ste11M=2	
3	Msn4_overexpression	YPD	high Msn4		Turgor pressure=0	Msn4=2	
3	Msn2_overexpression	YPD	high Msn2		Turgor pressure=0	Msn2=2	
4	Ca_5	Ca ²⁺ 200 μM	WT		Ca Signal = 2		
4	Ca_15	Ca ²⁺ 200 μM	WT		Ca Signal = 2		
4	Ca_30	Ca ²⁺ 200 μM	WT		Ca Signal = 2		
4	CaFK_5	Ca ²⁺ 200 μM	CaFK	WT exposed to 200 μM Ca ²⁺	Ca Signal = 2	calcineurin =0	Transform experiments * into absolute mRNA levels
4	CaFK_15	Ca ²⁺ 200 μM	CaFK		Ca Signal = 2	calcineurin =0	
4	CaFK_30	Ca ²⁺ 200 μM	CaFK		Ca Signal = 2	calcineurin =0	
4	crz1Ca_15	Ca ²⁺ 200 μM	Crz1Δ		Ca Signal = 2	Crz1=0	
4	crz1Ca_30	Ca ²⁺ 200 μM	Crz1Δ		Ca Signal = 2	Crz1=0	

publication	
1	O'rourke and Herskowitz 2004
2	Harris <i>et al.</i> 2001
3	Gasch <i>et al.</i> 2000
4	Yoshimoto <i>et al.</i> 2002

comment *

If the reference is WT in YPD, we assume that the differential expression approximates the absolute levels of the variables. Here, since the reference condition is Ca 200 μ M, we transform the data by adding the effect of the 200 μ M Ca at the same time point (see Gat-Viks et al. 2005 for details). For

$$\text{Transformed_CaFK_T} = \log_2(\text{CaFK_T} / \text{Ca_T}) + \log_2(\text{Ca_T} / \text{WT_YPD_T}) = \log_2(\text{CaFK_T}) - \log_2(\text{Ca_T}) + \log_2(\text{Ca_T}) - \log_2(\text{WT_YPD_T}) = \log_2(\text{CaFK_T} / \text{WT_YPD_T})$$