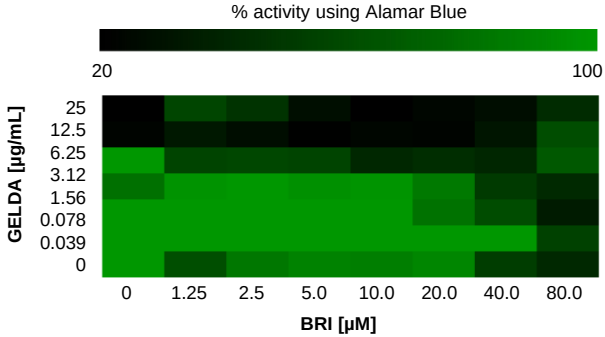
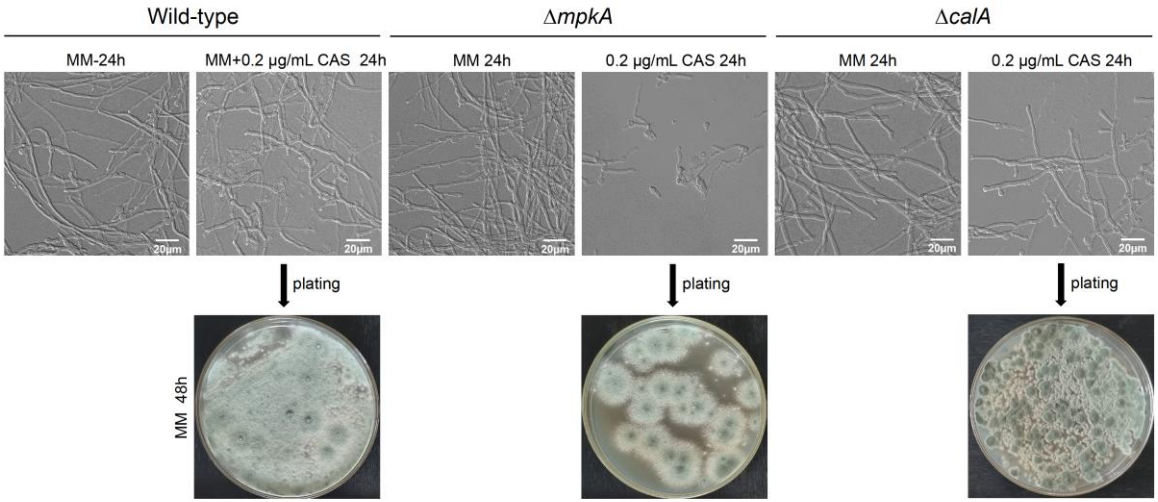
Supplementary Figure S1 – BRI and GELDA display na aditive effect Against *A. fumigatus*



FIC value: 0.6406
additive effect

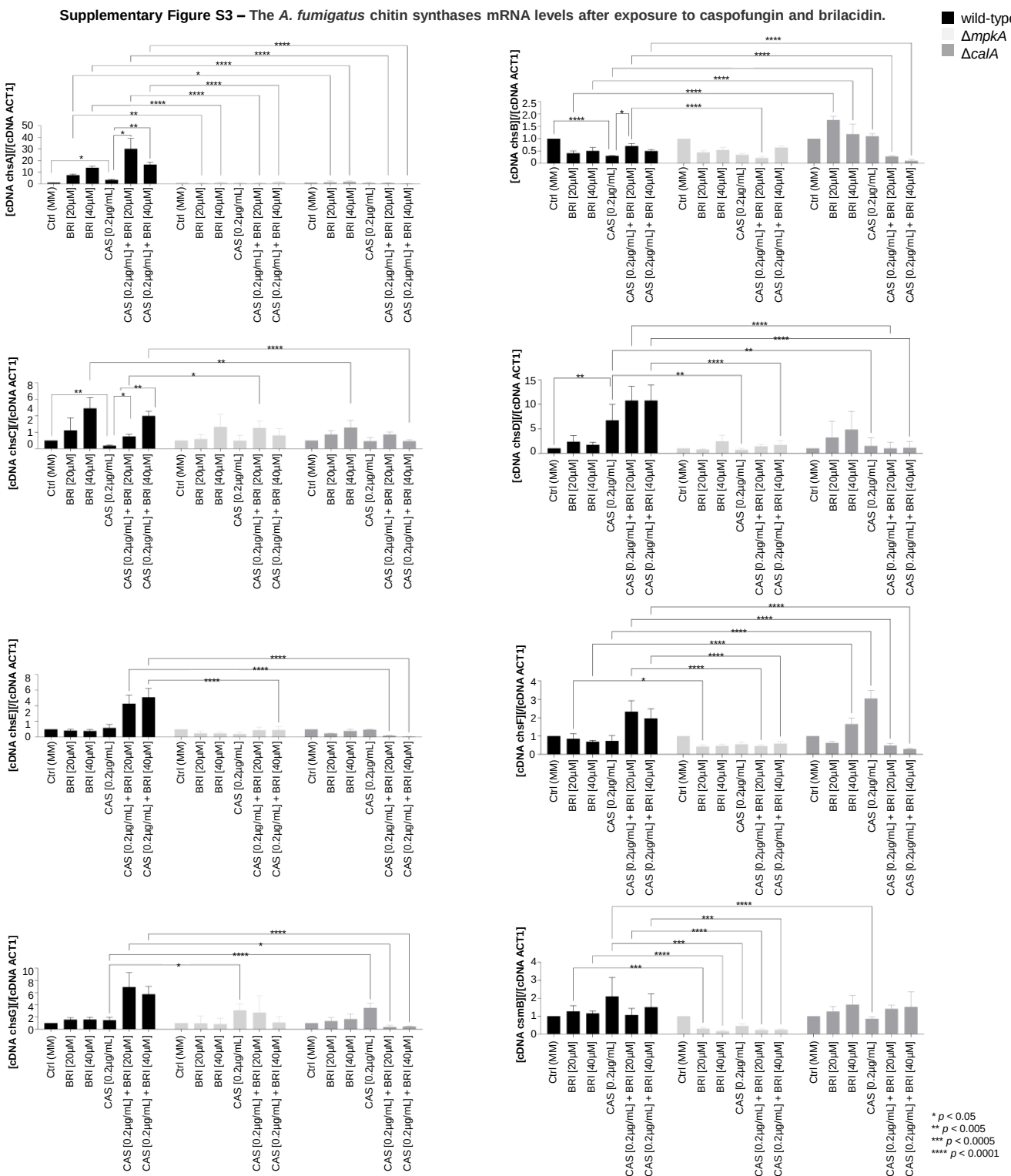
Supplementary Figure S1- The Fractional Inhibitory Concentration (FIC) index for BRI+GELDA. The heat map was generated by measurement of the metabolic activity using Alamar blue. The % of activity is based on *A. fumigatus* grown for 48 h at 37°C in the absence of BRI (ranging from 0-80µM) and GELDA (ranging from 0-25µg/mLResults show the average of three independent experiments.

Supplementary Figure S2 - Caspofungin displays a fungistatic activity against the wild-type, Δ*mpkA*, and Δ*calA* strains



Supplementary Figure S2 – Caspofungin displays a fungistatic activity against the wild-type, Δ*mpkA*, and Δ*calA* strains. The wild-type, Δ*mpkA*, and Δ*calA* (2 x 10^3 conidia) were grown for 24 h in 200 µl liquid minimal medium (MM) supplemented or not with caspofungin 0.2 µg/ml for 24 h at 37°C. The 200 µl were plated on solid MM and Incubated for 48 hs at 37°C. The experiment was repeated independently 3 times and presented similar results.

Supplementary Figure S3 – The *A. fumigatus* chitin synthases mRNA levels after exposure to caspofungin and brilacidin.



Supplementary Figure S3 – The *A. fumigatus* chitin synthases mRNA levels after exposure to caspofungin and brilacidin. The chitin synthase gene mRNA accumulation under exposure to caspofungin and brilacidin was measured in the wild-type, Δ*mpkA* and Δ*calA* strains. After 24h of growth at 37°C in MM, the mycelia were transferred to minimal medium (MM) containing (or not) CAS, BRI or combination of both drugs for 60 min. The results are expressed as the average fold increase ±SD of the control cDNA (MM without drug) for a specific gene from three independent biological experiments with 3 technical repetitions each (n=3; 2way ANOVA, Tukey´s post-test; * $p < 0.05$, ** $p < 0.005$, ***, $p < 0.0005$, and ****, $p < 0.0001$).

Supplementary Table S1 - BRI+VOR cannot overcome *A. fumigatus* VOR-resistance

				VOR [µg/ml]		BRI [µM]	0.5 µg/ml VOR		2 µg/ml VOR	
Strain	**Mechanism of VOR^R**	**MIC VOR [µg/ml]**	**MIC BRI [µM]**	**0.5**	**2**	**20**	**20 µM BRI**	**40 µM BRI**	**20 µM BRI**	**40 µM BRI**
WT	WT	2	>80	---	---	+	---	---	---	---
CYP-15-184	TR34/L98H	8	>80	+	+	+	+	+	+	+
CYP-15-190	TR34/L98H	8	>80	+	+	+	+	+	+	+
CYP-15-192	TR34/L98H	4	>80	+	+	+	+	+	+	+
CYP-15-195	TR34/L98H	8	>80	+	+	+	+	+	+	+
CYP-15-202	TR34/L98H	8	>80	+	+	+	+	+	+	+
CYP-15-212	TR34/L98H	8	>80	+	+	+	+	+	+	+
CYP-15-213	TR34/L98H	4	>80	+	+	-	+	+	+	+
CYP-15-215	Unknown	8	>80	+	+	-	+	+	+	+
CYP-15-220	TR34/L98H	4	>80	+	+	+	+	+	+	+
CYP-15-221	TR34/L98H	8	>80	+	+	+	+	+	+	+
CYP-15-222	TR34/L98H	4	>80	+	+	+	+	+	+	+
CYP-15-224	Unknown	8	>80	+	+	+	+	+	+	+
CYP-15-225	Unknown	8	>80	+	+	+	+	+	+	+
CYP-15-226	TR34/L98H	4	>80	+	+	+	+	+	+	+
CYP-15-228	TR34/L98H	4	>80	+	+	+	+	+	+	+
CYP-15-229	TR34/L98H	8	>80	+	+	+	+	+	+	+
CYP-15-230	TR34/L98H	8	>80	+	+	+	+	+	+	+
CYP-15-231	TR34/L98H	4	>80	+	+	+	+	+	+	+
CYP-15-75	Unknown	8	>80	+	+	+	+	+	+	+
CYP-15-108	Unknown	8	>80	+	+	+	+	+	+	+
CYP-15-109	Unknown	>8	>80	---	---	+	---	---	---	---
CYP-15-147	Unknown	8	>80	+	+	+	-	-	+	+
F14946	Unknown	8	>80	+	+	+	+	+	+	+
20089320	Unknown	8	>80	+	+	+	+	+	+	+

Obs.: 1) VOR=voriconazole; BRI=Brilacidin. (+): no inhibition; (-): partial inhibition; and (---) total inhibition;

2) In the experiment, one strain (CYP15-15-109) was totally inhibited by VOR, showing Wild Type response; also, one strain (CYP15-15-147) was partially inhibited by VOR 0.5 µg/ml+BRI but the inhibition was not seen at VOR 2.0 µg/ml+BRI.

Supplementary Table S2. Protein kinase inhibitors analysed in this study

COMPOUND NAME	TARGET KINASE	PKI [20 µM]	PKI [20 µM] + BRI [20 µM]	SMILES	molecular weight (MW)
PF +3758309	PAK3	++	++	CC1=NC2=C(SC=C2)C(NC3=NNC4=C3CN(C(N[C@@H](C5=CC=CC=C5)CN(C)C)=O)C4(C)C)=N1	490.634
FRAX597		++	++	CCN1C2=NC(=NC=C2C=C(C1=O)C3=C(C=C(C=C3)C4=CN=CS4)Cl)NC5=CC=C(C=C5)N6CCN(CC6)C	558.108
FRAX486		++	+	ClC1=CC(Cl)=C(C2=CC3=CN=C(NC4=CC(F)=C(N5CCNCC5)C=C4)N=C3N(CC)C2=O)C=C1	513.403
G5555		++	++	CNC1=NC=C2C=C(C3=C(C=C(C4=CC=CC(C)=N4)C=C3)Cl)C(N(C2=N1)C[C@H]5OC[C@@H](CO5)N)=O	492.966
GW300660X	PRKAA1	++	++	NS(=O)(=O)c1ccc(N\N=C2/C(=O)Nc3ccc(cc23)C(=O)NCCc2c[nH]cn2)cc1	453.482
GW296115X		++	++	COc1ccc2[nH]c3c4[nH]c5ccc(OC)cc5c4c4C(=O)NC(=O)c4c3c2c1	385.378
GW416981X		++	++	CC(C)COC(=O)c1ccc2NC(=O)\C(=C/Nc3ccc(cc3)S(N)(=O)=O)c2c1	415.469
GW290597X		++	++	NS(=O)(=O)c1ccc(N\N=C2/C(=O)Nc3ccc(cc23)C(=O)NCCCn2ccnc2)cc1	467.509
CHIR +99021	GSK3A	++	++	N#CC(C=N1)=CC=C1NCCNC2=NC=C(C3=NC(C)=CN3)C(C4=CC=C(Cl)C=C4Cl)=N2	465.347
SB 216763		++	++	Clc1ccc(c(Cl)c1)C1=C(C(=O)NC1=O)c1cn(C)c2ccccc12	371.222
LY2090314		++	++	O=C(N1)C(C2=CN=C3N2C=CC=C3)=C(C4=CN5C6=C4C=C(F)C=C6CN(C(N7CCCCC7)=O)CC5)C1=O	512.543
AZD1080		++	++	OC(NC1=C2C=C(C#N)C=C1)=C2C3=NC=C(CN4CCOCC4)C=C3	334.378
AZD +8055	MTOR	++	++	C[C@H]1COCCN1C2=NC(=NC3=C2C=CC(=N3)C4=CC(=C(C=C4)OC)CO)N5CCOC[C@@H]5C	465.552
vistusertib		++	++	C[C@H]1COCCN1C2=NC(=NC3=C2C=CC(=N3)C4=CC(=CC=C4)C(=O)NC)N5CCOC[C@@H]5C	462.552
Torin 2		++	++	C1=CC(=CC(=C1)N2C(=O)C=CC3=CN=C4C=CC(=CC4=C32)C5=CN=C(C=C5)N)C(F)(F)F	432.404
CC +115		++	++	CCN1C(=O)CNC2=NC=C(N=C21)C3=C(N=C(C=C3)C4=NC=NN4)C	336.358
D4476	CSNK1G2	++	++	C1COC2=C(O1)C=CC(=C2)C3=C(NC(=N3)C4=CC=C(C=C4)C(=O)N)C5=CC=CC=N5	398.421
NK +258		++	++	CN(C)C(C=C1)=NN2C1=NC=C2C3=CC=CC(OC(F)(F)F)=C3	322.289
PP121	STK25	++	+	C1CCC(C1)N2C3=C(C(=N2)C4=CN=C5C(=C4)C=CN5)C(=NC=N3)N	319.371
BX +795		++	++	O=C(NCCCNC1=C(C=NC(NC2=CC=CC(NC(N3CCCC3)=O)=C2)=N1)I)C4=CC=CS4	591.472
SCH772984	MAPK3 (ERK1)	++	++	C1CN(CC1C(=O)NC2=CC3=C(C=C2)NN=C3C4=CC=NC=C4)CC(=O)N5CCN(CC5)C6=CC=C(C=C6)C7=NC=CC=N7	587.686
GW305074X		++	++	Oc1c(Br)cc(C=C2C(=O)Nc3ccc(I)cc23)cc1Br	520.942
XMD8 +92		++	++	CCOC1=C(C=CC(=C1)N2CCC(CC2)O)NC3=NC=C4C(=N3)N(C5=CC=CC=C5C(=O)N4C)C	474.563
GW300657X		++	++	NS(=O)(=O)c1ccc(N\N=C2/C(=O)Nc3ccc(cc23)C(=O)NCc2ccncc2)cc1	450.478
PF +4708671	RPS6KB2	++	++	CCC1=CN=CN=C1N2CCN(CC2)CC3=NC4=C(N3)C=C(C=C4)C(F)(F)F	390.412
LY +2584702		++	++	CC1=CC=C(C=C1)S(=O)(=O)O.CN1C=C(N=C1C2CCN(CC2)C3=NC=NC4=C3C=NN4)C5=CC(=C(C=C5)F)C(F)(F)F	617.626
AT7867		++	++	C1CNCCC1(C2=CC=C(C=C2)C3=CNN=C3)C4=CC=C(C=C4)Cl.Cl.Cl	410.775
VX +745	MAPK11	++	++	C1=CC(=C(C(=C1)Cl)C2=C3C=CC(=NN3C=NC2=O)SC4=C(C=C(C=C4)F)F)Cl	436.268
AKI00000001a		++	++	FC(C=C1)=CC(F)=C1C2=C(C(C=C3)=NN4C3=NN=C4C(O)(C)C)N(CCC5)C5=N2	396.4
AKI00000067a		++	++	FC(C=C1)=CC(F)=C1C2=C(C(C=C3)=CN4C3=NN=C4C(C)C)N(C=CO5)C5=N2	379.369
GSK223810A		++	++	COc1cc2c(Nc3cccc(NC(=O)c4ccccc4)c3)ncnc2cc1OCCCN1CCOCC1	513.596

ralimetinib		++	++	CC(C)(C)CN1C2=C(C=CC(=N2)C3=C(N=C(N3)C(C)(C)C)C4=CC=C(C=C4)F)N=C1N.CS(=O)(=O)O.CS(=O)(=O)O	612.746
TAK +715	CSNK1E	++	++	CCC1=NC(=C(S1)C2=CC(=NC=C2)NC(=O)C3=CC=CC=C3)C4=CC=CC(=C4)C	399.517
PF +670462		++	++	C1CCC(CC1)N2C=NC(=C2C3=NC(=NC=C3)N)C4=CC=C(C=C4)F.Cl.Cl	410.323
CK1 +IN +1		++	++	C1=CC=C2C(=C1)C=CC(=C2F)C3=NC(=C(N3)C4=CC=NC=C4)C5=CC=C(C=C5)F	383.4
PF +5006739		++	++	C1CN(CCC1N2C=NC(=C2C3=NC(=NC=C3)N)C4=CC=C(C=C4)F)CC5=NOC=C5	419.463
MK +8353	MAPK1	++	++	CC(C)OC1=NC=C(C=C1)C2=NNC3=C2C=C(C=C3)NC(=O)[C@@]4(CCN(C4)CC(=O)N5CCC(=CC5)C6=CC=C(C=C6)C7=NN(C=N7)C)SC	691.859
PHA +767491	CDC7	++	++	C1CNC(=O)C2=C1NC(=C2)C3=CC=NC=C3	213.239
XL413		++	++	C1C[C@H](NC1)C2=NC3=C(C(=O)N2)OC4=C3C=C(C=C4)Cl	289.721
LY3177833		++	++	C[C@@]1(C2=C(C=C(C=C2)C3=CNN=C3)C(=O)N1)C4=NC=NC=C4F	309.303
refametinib	MAP2K2	++	++	COC1=CC(=C(C(=C1NS(=O)(=O)C2(CC2)C[C@@H](CO)O)NC3=C(C=C(C=C3)I)F)F)F	572.337
selumetinib		++	++	CN1C=NC2=C1C=C(C(=C2F)NC3=C(C=C(C=C3)Br)Cl)C(=O)NOCCO	457.686
SR +3677	CAMK1G	++	++	O=C(C3COC(C=CC=C4)=C4O3)NC1=CC=C(C2=CNN=C2)C=C1OCCN(C)C.Cl.Cl	481.378
CX +4945	CSNK2A2	++	++	C1=CC(=CC(=C1)Cl)NC2=NC3=C(C=CC(=C3)C(=O)O)C4=C2C=CN=C4	349.776
SGC +CK2 +1	CSNK2A2	++	++	CC1=CC=C(NC2=NC3=C(C#N)C=NN3C(NC4CC4)=C2)C=C1NC(CC)=O	375.435
TTP 22		++	++	CC(C=C1)=CC=C1C2=CSC3=NC=NC(SCCC(O)=O)=C32	330.4
Sorafenib	MAPK13	++	++	CNC(=O)C1=NC=CC(=C1)OC2=CC=C(C=C2)NC(=O)NC3=CC(=C(C=C3)Cl)C(F)(F)F	464.83
5 +iodo tubercidin	MAP2K3	+	++	O[C@H]1[C@H](N2C=C(I)C3=C(N)N=CN=C32)O[C@H](CO)[C@H]1O	392.148
SB +216385		++	++	Nc1nccc(n1) +c1c(ncn1CCCN1CCOCC1) +c1ccc(F)cc1	382.442
SB +203580	PRKCA	++	++	CS(=O)C1=CC=C(C=C1)C2=NC(=C(N2)C3=CC=NC=C3)C4=CC=C(C=C4)F	377.442
enzastaurin		++	++	CN1C=C(C2=CC=CC=C21)C3=C(C(=O)NC3=O)C4=CN(C5=CC=CC=C54)C6CCN(CC6)CC7=CC=CC=N7	515.615
darovasertib		++	++	CC1(CCN(CC1)C2=C(N=CC=C2)NC(=O)C3=NC(=CN=C3N)C4=C(C=CC=N4)C(F)(F)F)N	472.474
GW461487A		++	++	Cl.Cc1cccc2c(c(nn12) +c1ccc(F)cc1) +c1ccncc1	339.8
UNC +ALM +33		++	++	CC1=CC2=NC(C3=CC=C(F)C=C3)=C(C4=CC=NC=C4)N2C=C1	303.339
UNC +ALM +39		+	++	CC(C=N1)=CN2C1=C(C3=CC=NC=C3)C(C4=CC=C(F)C=C4)=N2	304.327
UNC +ALM +16		+	++	CC(C=C1)=NN2C1=C(C3=CC=NC=C3)C(C4=CC=C(F)C=C4)=N2	304.327
UNC +ALM +87		++	++	FC1=CC=C(C2=C(C3=CC=NC=C3)N4C(SC(C)=C4)=N2)C=C1	309.367
GW434756X		++	++	Fc1ccc(cc1) +c1nn2ccccc2c1 +c1ccncc1	289.31

++: growth ≥ 80% compared to no treatment

+: growth ≤ 60% compared to no treatment

Supplementary Table S3. Susceptibility of phosphatase and kinase mutants to brilacidin

Strain	CAS [0.25 µg/mL]	BRI [20 µM]
Reference strains		
CEA17 (wild-type; A1160)	+	+
Afs35 (wild-type; A1159)	+	+
phosphatase null mutants		
Δ*pphA (Afu5g12010)*	+	+
Δ*sitA (Afu6g11470)*	+	+
Δ*ppzA (Afu2g03950)*	+	+
Δ*pptA (Afu5g06700)*	+	+
Δ*ptcA (Afu1g15800)*	+	+
Δ*ptcB (Afu1g09280)*	+	+
Δ*ppmA (Afu8g04580)*	+	+
Δ*ptcD (Afu5g13740)*	+	+
Δ*ptcE (Afu2g03890)*	+	+
Δ*ptcF (Afu1g06860)*	+	+
Δ*ptcG (Afu5g13340)*	+	+
Δ*ptcH (Afu4g00720)*	+	+
Δ*nemA (Afu1g09460)*	+	+
Δ*psrA (Afu1g04790)*	+	+
Δ*ppsA (Afu5g11690)*	+	+
Δ*dspD (Afu2g02760)*	+	+
Δ*cdcA (Afu3g12250)*	+	+
Δ*dspA (Afu1g13040)*	+	+
Δ*dspB (Afu1g03540)*	+	+
Δ*ptpB (Afu3g10970)*	+	+
Δ*pypA (Afu4g04710)*	+	+
Δ*ltpA (Afu2g01880)*	+	+
Δ*yphA (Afu4g07000)*	+	+
Δ*ptyA (Afu6g06650)*	+	+
Δ*calA (Afu5g09360)*	+	-
kinases null mutants		
Δ*mpkA*	-	-
Δ*mpkB*	+	+
Δ*mpkC*	+	+
Δ*sakA*	+	+
Δ*sakA; ΔmpkC*	+	+

+: sensitivity similar to wild-type

-: more sensitive than the wild-type

Supplementary Table S4. Strains used in this work		
***Aspergillus fumigatus* strains**	**Genotype**	**Reference**
CEA17 (A1160)	akuB (KU80)Δ;pyrG1 MAT1-1	1
Af293	wild-type	2
ΔpphA	ΔpphA::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔsitA	ΔsitA::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔppzA	ΔppzA::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔpptA	ΔpptA::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔptcA	ΔptcA::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔptcB	ΔptcB::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔppmA	ΔppmA::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔptcD	ΔptcD::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔptcE	ΔptcE::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔptcF	ΔptcF::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔptcG	ΔptcG::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔptcH	ΔptcH::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔnemA	ΔnemA::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔpsrA	ΔpsrA::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔppsA	ΔppsA::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔdspD	ΔdspD::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔcdcA	ΔcdcA::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔdspA	ΔdspA::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔdspB	ΔdspB::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔptpB	ΔptpB::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔpypA	ΔpypA::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔltpA	ΔltpA::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔyphA	ΔyphA::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔptyA	ΔptyA::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔcalA	ΔcalA::pyrG, akuB (KU80)Δ, MAT1-1	3
ΔmpkC	Δ*mpkC::prtA*	4
ΔsakA	Δ*sakA::hph*	4
ΔmpkA	Δ*mpkA::hph*	5
ΔmpkB	ΔakuBmpkB::ptrA; prtA+	6
ΔsakA; ΔmpkC	Δ*mpkC::prtA* Δ*sakA::hph*	7
Afs35 (A1159)	akuA::loxP	8
CYP-15-75	clinical isolate	9
CYP-15-108	clinical isolate	9
CYP-15-109	clinical isolate	9
CYP-15-147	clinical isolate	9
20089320	clinical isolate	9
CYP-15-184	clinical isolate	Katrien Lagrou lab
CYP-15-190	clinical isolate	Katrien Lagrou lab
CYP-15-192	clinical isolate	Katrien Lagrou lab
CYP-15-195	clinical isolate	Katrien Lagrou lab
CYP-15-202	clinical isolate	Katrien Lagrou lab
CYP-15-212	clinical isolate	Katrien Lagrou lab
CYP-15-213	clinical isolate	Katrien Lagrou lab
CYP-15-215	clinical isolate	Katrien Lagrou lab
CYP-15-220	clinical isolate	Katrien Lagrou lab
CYP-15-221	clinical isolate	Katrien Lagrou lab
CYP-15-222	clinical isolate	Katrien Lagrou lab

CYP-15-224	clinical isolate	Katrien Lagrou lab
CYP-15-225	clinical isolate	Katrien Lagrou lab
CYP-15-226	clinical isolate	Katrien Lagrou lab
CYP-15-228	clinical isolate	Katrien Lagrou lab
CYP-15-229	clinical isolate	Katrien Lagrou lab
CYP-15-230	clinical isolate	Katrien Lagrou lab
CYP-15-231	clinical isolate	Katrien Lagrou lab
F14946	clinical isolate	Gustavo Goldman lab
CM7555	clinical isolate	Gustavo Goldman lab
DPL1033	clinical isolate	David Perlin lab
MD24053	clinical isolate	David Perlin lab
***Candida spp.* strains**	**Genotype**	**Reference**
C. auris 467/2015	clinical isolate	Arnaldo Colombo lab
C. auris 468/2015	clinical isolate	Arnaldo Colombo lab
C. auris 469/2015	clinical isolate	Arnaldo Colombo lab
C. auris 470/2015	clinical isolate	Arnaldo Colombo lab
C. auris 474/2015	clinical isolate	Arnaldo Colombo lab
C. albicans DPL1006	clinical isolate; CAS^R	David Perlin lab
C. albicans DPL1007	clinical isolate; CAS^R	David Perlin lab
C. albicans DPL1009	clinical isolate; CAS^R	David Perlin lab
C. albicans DPL1010	clinical isolate; CAS^R	David Perlin lab
C. albicans DPL1011	clinical isolate; CAS^R	David Perlin lab
Cryptococcus neoformans	**Genotype**	**Reference**
H99 (ATCC 208821)	wild-type	ATCC database
Mucorales fungi		
R. oryzae 99-892	Lung isolate	Fungus Testing Laboratory at the University of Texas Health Sciences Center at San Antonio (UTHSCSA)
R. delemar 99-880	Brain isolate	Fungus Testing Laboratory at the University of Texas Health Sciences Center at San Antonio (UTHSCSA)
L. corymbifera	clinical isolate from DEFEAT Mucor	Ibrahim laboratory
M. circinelloides *f. jenssenii* UTHSCSA DI15-131	clinical isolate	Fungus Testing Laboratory at the University of Texas Health Sciences Center at San Antonio (UTHSCSA)

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Supplementary Table S5 – Primers used in this work

Primer	Sequences	Gene	ID
chsA FW	5’-CTGGAGTGTGGCTGGTCTCT-3’	*chsA*	AFUB_018960
cshA REV	5’-GCGTGTGAAAGCAGTATGGA-3’	*chsA*	AFUB_018960
chsB FW	5’-GCTCTCCACTGTCGGTCTCT-3’	*chsB*	AFUB_098840
chsB REV	5’-GGTCGTTGTTGATGGTGTTG-3’	*chsB*	AFUB_098840
chsC FW	5’-TTGCTGCGAGTTTGTATTCC-3’	*chsC*	AFUB_049230
chsC REV	5’-GCCAGTAGGATGCCAAAGAG-3’	*chsC*	AFUB_049230
chsD FW	5’-CAGAACACGATCCGAACAAC-3’	*chsD*	AFUB_012070
chsD REV	5’-GCTTCGCACCCAAGTAGAAC-3’	*chsD*	AFUB_012070
chsE FW	5’-TGGTGTTCGTTGACTTGCTC-3’	*chsE*	AFUB_029080
chsE REV	5’-TCATCCATCCAACCATTTCC-3’	*chsE*	AFUB_029080
chsF FW	5’-AACCTGCTTCTTCTGGGTGA-3’	*chsF*	AFUB_081920
chsF REV	5’-GAGCACGAGTTCCATGAGGT-3’	*chsF*	AFUB_081920
chsG FW	5’-AGGATGAGGGCAAAGAGGTT-3’	*chsG*	AFUB_034810
chsG REV	5’-AAGGCGTTGCTAAAGATCCA-3’	*chsG*	AFUB_034810
csmB FW	5’-ACAATACGCGGCGAATCC-3’	*csmB*	AFUB_029070
csmB REV	5’-GTTATCCCGACTGCCCAAAA-3’	*csmB*	AFUB_029070