SUPPLEMENTARY INFORMATION

Engineering microbial hosts for production of bacterial natural products

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Supplementary Information Content

Supplementary Tables

Supplementary Table S1. Summary and references of native host engineering studies used for Figure 3B.

Supplementary References

Supplementary Table S1. Summary and references of native host engineering studies used for Figure 3B. The native hosts, natural product of interest and titer values used to plot the chart in Figure 3B are indicated and color coded with respect to the host engineering strategy used. For titer values that are not explicitly stated in the publication cited, the values are approximated from the figures. For studies that have multiple engineered strains, the best performing strain was selected. Only studies with final titers of >0.01 g/L are included in this table. Values obtained from literature reviews are indicated in the reference column.

Reference	Native host	Natural product	Native host engineering strategy	Fold change = engineered titer/parent titer	Titer (g/L)
Damein 2006[1] (review)	*P. chrysogenum*	penicillin	conventional strain improvement	1000	70
Paradkhar 2013[2] (review)	*S. clavuligerus*	clavulanic acid	conventional strain improvement	30	3
Katz 2007[3] (review)	*S. erythraea*	erythromycin A	conventional strain improvement	100	10
Wang et al 2008[4]	*S. coelicolor*	actinorhodin	engineering of transcriptional/translational machineries	180	1.63
Wang et al 2012[5]	*S. roseosporus*	daptomycin	engineering of transcriptional/translational machineries	2.2	0.12
Tanaka et al 2009[6]	*S. antiboticus*	actinomycin	engineering of transcriptional/translational machineries	8.6	0.047
Tanaka et al 2009[6]	*S. parvulus*	actinomycin	engineering of transcriptional/translational machineries	3.4	0.021
Tanaka et al 2009[6]	*S. coelicolor*	actinorhodin	engineering of transcriptional/translational machineries	74	0.133
Tanaka et al 2013[7]	*S. griseus*	streptomycin	engineering of transcriptional/translational machineries	3.7	0.178
Tanaka et al 2013[7]	*S. erythraea*	erythromycin	engineering of transcriptional/translational machineries	2	0.163
Tanaka et al 2013[7]	*S. antiboticus*	actinomycin	engineering of transcriptional/translational machineries	7.8	0.086
Tanaka et al 2013[7]	*S. lavendulae*	formycin	engineering of transcriptional/translational machineries	3.4	0.055
Tanaka et al 2013[7]	*A. orientalis*	vancomycin	engineering of transcriptional/translational machineries	3	0.27
Baltz 2011[8] (review)	*S. coelicolor*	actinorhodin	engineering of transcriptional/translational machineries	35	0.068
Baltz 2011[8] (review)	*S. antiboticus*	actinomycin	engineering of transcriptional/translational machineries	5	0.028
Baltz 2011[8] (review)	*S. avermitilis*	oligomycin	engineering of transcriptional/translational machineries	70	0.7
Baltz 2011[8] (review)	*S. albus*	salinomycin	engineering of transcriptional/translational machineries	1.5	15
Baltz 2011[8] (review)	*S. fridae*	A54145	engineering of transcriptional/translational machineries	1.11	0.472
Liao et al 2010[9]	*S. ansochromogenes*	nikkomycin	overexpression of structural genes (amplification)	3.2	1.1
Jiang et al 2013[10]	*S. graminearus*	gougerotin	overexpression of structural genes (amplification)	2.5	1.4

Murakami et al 2011[11]	*S. coelicolor*	actinorhodin	overexpression of structural genes (amplification)	20	0.4
Zhou et al 2014[12]	*S. hygroscopicus*	validomycin	overexpression of structural genes (amplification)	1.34	20
Yu et al 2012[13]	*S. rimosus*	oxytetracycline	overexpression of structural genes (duplication)	1.33	1.3
Zhu et al 2013[14]	*S. aureofaciens*	chlortetracycline	overexpression of structural genes (duplication)	1.73	25.9
Wang et al 2013[15]	*S. coelicolor*	actinorhodin	pathway specific - activator SARP overexpression	95 (Parent titer obtained from Tanaka et al 2009[6])	0.19
Goranovic et al 2012[16]	*S. tsukubaensis*	FK506	pathway specific - activator LAL overexpression	1.55	0.05
Kuscer et al 2007[17]	*S. hygroscopicus*	rapamycin	pathway specific - activator LAL overexpression	1.8	0.2
Santos-Aberturas et al 2011[18]	*S. nodosus*	amphotericin	pathway specific - activator LuxR overexpression	1.6	0.7
Anton et al 2007[19]	*S. natalensis*	pimaricin	pathway specific - activator LuxR overexpression	2.4	1.48
Wu et al 2014[20]	*S. lydicus*	pimaricin	pathway specific - activator LuxR overexpression	2.1	5.3
Liu et al 2005[21]	*S. ansochromogenes*	nikkomycin	pathway specific - activator SARP overexpression	4	1.3
Chen et al 2008[22]	*S. griseus*	fredericamycin	pathway specific - activator SARP overexpression	5.6	1.36
Smanski et al 2009[23]	*S. platensis*	platensimycin, platencin	pathway specific - repressor deletion	100	0.03
Tan et al 2015[24]	*S. hygroscopicus*	validomycin	pleiotropic – GBL receptor deletion	1.26	24
Zhuo et al 2010[25]	*S. avermitilis*	avermectin	pleiotropic - sigma factor	1.5	6.38
Liu et al 2015[26]	*S. chattanoogensis*	pimaricin	pleiotropic - sigma factor	1.26	2.6
Butler et al 2002[27]	*S. lividans*	undecylprodigiosin	precursor engineering	2	0.18
Li et al 2006[28]	*S. clavuligerus*	clavulanic acid	precursor engineering	3	0.42
Zabala et al 2013[29]	*S. argillaceus*	mithramycin	precursor engineering	3.74	0.498
Reeves et al 2007[30]	*S.erythraea*	erythromycin	precursor engineering	1.5	1.2
Ryu et al 2006[31]	*S. coelicolor*	actinorhodin	precursor engineering	3.3	0.031

Supplementary References

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