Electronic Supplementary Material (ESI) for Green Chemistry.
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Supplementary Table S3 All plasmids used in this study

Plasmid	Description	Origin
pBARGPE1 series of overexpression plasmids		
pBARGPE1	pBARGPE1 is a broad host shuttle plasmid and fungal expression plasmid. The strong promoter *gpdA* from *Aspergillus nidulans* can be used to initiate the expression of exogenous genes. Bacteria can be screened with *AmpR*, and glufosinate-ammonium (*Bar*) can be screened when transformed into filamentous fungi.	J. Yang, W. W. Yang, J. Feng, J. Chen, M. Jiang and X. Zou, *J. Biotechnol*., 2018, 275, 24-30.
pBARGPE1-*gpdA-adh-trapC*	*adh* overexpression plasmid, used to amplify *adh* expression cassette	This study
pBARGPE1-*gpdA-acs-trapC*	*acs*overexpression plasmid, used to amplify *acs* expression cassette	This study
pBARGPE1-*gpdA-adh-acs-trapC*	*adh-acs* fusion overexpression plasmid, used to amplify *adh-acs* fusion protein expression cassette	This study
pBARGPE1-*gpdA-eGFP-icl1-trapC*	*eGFP-icl1* fusion overexpression plasmid, used to amplify *eGFP-icl1* fusion protein expression cassette	This study
pBARGPE1-*gpdA-eGFP-icl2-trapC*	*eGFP-icl2* fusion overexpression plasmid, used to amplify *eGFP-icl2* fusion protein expression cassette	This study
pBARGPE1-*gpdA-eGFP-mls-trapC*	*eGFP-mls* fusion overexpression plasmid, used to amplify *eGFP-mls* fusion protein expression cassette	This study
pBARGPE1-*gpdA-icl1-mls-trapC*	*icl1-mls* fusion overexpression plasmid, used to amplify *icl1-mls* fusion protein expression cassette	This study
pBARGPE1-*gpdA-cat8-trapC*	*cat8* overexpression plasmid, used to amplify *cat8* expression cassette	This study
pBARGPE1-*gpdA-cat8-myc*^{13}*-trapC*	*cat8-myc*^{13} fusion overexpression plasmid, used to amplify *cat8-myc*^{13} fusion protein expression cassette	This study
pBARGPE1-*gpdA-pck-trapC*	*pck*overexpression plasmid, used to amplify *pck* expression cassette	This study
pBARGPE1-*gpdA-Asp. PGK-hyg-trapC*	*Asp. PGK-hyg* fusion overexpression plasmid, used to amplify *Asp. PGK-hyg* fusion protein expression cassette	This study

pBARGPE1-*gpdA-Asp. FBA-hyg-trapC*	*Asp. FBA-hyg* fusion overexpression plasmid, used to amplify *Asp. FBA-hyg* fusion protein expression cassette	This study
pBARGPE1-*gpdA-Asp. PGI-hyg-trapC*	*Asp. PGI-hyg* fusion overexpression plasmid, used to amplify *Asp. PGI-hyg* fusion protein expression cassette	This study
pBARGPE1-*gpdA-Rt. FBA-hyg-trapC*	*Rt. FBA-hyg* fusion overexpression plasmid, used to amplify *Rt. FBA-hygA* fusion protein expression cassette	This study
pBARGPE1-*gpdA-Rt. PGI-hyg-trapC*	*Rt. PGI-hyg* fusion overexpression plasmid, used to amplify *Rt. PGI-hyg* fusion protein expression cassette	This study
pK2 series shuttle plasmids		
pK2-p*trpc-hyg-trpC*t	It has the replication function of pK2 plasmid and can replicate in *E. coli* and *Agrobacterium tumefaciens*. With Ti plasmid on the left and right sides of the marginal region sequence, so that the DNA can be integrated into the genome of the infected cell. *Kan* is used as a screening label for bacterial transformants, and *hyg* is used as a screening label for infecting cell transformants.	J. Yang, W. W. Yang, J. Feng, J. Chen, M. Jiang and X. Zou, *J. Biotechnol*., 2018, 275, 24-30.
pK2-p*trpc-neoR-trpC*t	It has the replication function of pK2 plasmid and can replicate in *E. coli* and *Agrobacterium tumefaciens*. With Ti plasmid on the left and right sides of the marginal region sequence, so that the DNA can be integrated into the genome of the infected cell. *Kan* is used as a screening label for bacterial transformants, and *neoR* is used as a screening label for infecting cell transformants.	This study
pK2-p*trpc-nat-trpC*t	It has the replication function of pK2 plasmid and can replicate in *E. coli* and *Agrobacterium tumefaciens*. With Ti plasmid on the left and right sides of the marginal region sequence, so that the DNA can be integrated into the genome of the infected cell. *Kan* is used as a screening label for bacterial transformants, and *nat* is used as a screening label for infecting cell transformants.	This study
pK2-p*trpc-bar-gus-trpC*t	It has the replication function of pK2 plasmid and can replicate in *E. coli* and *Agrobacterium tumefaciens*. With Ti plasmid on the left and right sides of the marginal region sequence, so that the DNA can be integrated into the genome of the infected cell. *Kan* is used as a screening label for bacterial transformants, and *bar* is used as a screening label for infecting cell transformants.	This study
pK2-*gpdA-adh-acs-trap*C-p*trpc-hyg-trpC*t	The plasmid inserted into the *adh-acs* fusion expression cassette for Agrobacterium-mediated	This study

	transformation	
pK2-*gpdA-cat8-trapC*-p*trpc-neoR-trpC*t	The plasmid inserted into the *cat8* expression cassette for Agrobacterium-mediated transformation	This study
pK2-*gpdA-icl1-mls-trapC*-p*trpc-bar-gus-trpC*t	The plasmid inserted into the *icl1-mls* fusion expression cassette for Agrobacterium-mediated transformation	This study
pK2-*gpdA-pck-trapC*-p*trpc-nat-trpC*t	The plasmid inserted into the *pck* expression cassette for Agrobacterium-mediated transformation	This study
pK2-*gpdA-eGFP-icl1-trap*C-p*trpc-hyg-trpC*t	The plasmid inserted into the *eGFP-icl1* fusion expression cassette for Agrobacterium-mediated transformation	This study
pK2-*gpdA-eGFP-icl2-trap*C-p*trpc-hyg-trpC*t	The plasmid inserted into the *eGFP-icl2* fusion expression cassette for Agrobacterium-mediated transformation	This study
pK2-*gpdA-eGFP-mls-trap*C-p*trpc-hyg-trpC*t	The plasmid inserted into the *eGFP-mls* fusion expression cassette for Agrobacterium-mediated transformation	This study
pK2-*gpdA-cat8-myc*^{13}*-trap*C-p*trpc-hyg-trpC*t	The plasmid inserted into the *cat8-myc*^{13} fusion expression cassette for Agrobacterium-mediated transformation	This study
pK2-*gpdA-Asp. PGK-hyg-trap*C-p*trpc-hyg-trpC*t	The plasmid inserted into the *Asp. PGK-hyg* fusion expression cassette for Agrobacterium-mediated transformation	This study
pK2-*gpdA-Asp. FBA-hyg-trap*C-p*trpc-hyg-trpC*t	The plasmid inserted into the *Asp. FBA-hyg* fusion expression cassette for Agrobacterium-mediated transformation	This study
pK2-*gpdA-Asp. PGI-hyg-trap*C-p*trpc-hyg-trpC*t	The plasmid inserted into the *Asp. PGI-hyg* fusion expression cassette for Agrobacterium-mediated transformation	This study
pK2-*gpdA-Rt. FBA-hyg-trap*C-p*trpc-hyg-trpC*t	The plasmid inserted into the *Rt. FBA-hyg* fusion expression cassette for Agrobacterium-mediated transformation	This study
pK2-*gpdA-Rt. PGI-hyg-trap*C-p*trpc-hyg-trpC*t	The plasmid inserted into the *Rt. PGI-hyg* fusion expression cassette for Agrobacterium-mediated transformation	This study
Knockout plasmids		
p426-loxp-*gRNA*-Cas9-2Sac Ⅱ	Contains Cas protein and *gRNA* amplification template. *AmpR* serves as a screening tag for bacterial transformants.	Y. Zhang, J. Feng, P. Wang, J. Xia, X. R. Li and X. Zou, *Gene*, 2019, 709, 8-

		16.
PCB004	Bacterial expression plasmid, *AmpR* as a selection label	This study
p426-loxp-*gRNA*(*cat8*)-Cas9-2Sac Ⅱ	*cat8* knockout plasmid	This study
PCB004-*cat8*-up-donor	*cat*8 knockout split marker upstream donor amplification template	This study
PCB004-*cat8*-down-donor	*cat*8 knockout split marker downstream donor amplification template	This study
Promoter engineering adaptation plasmids		
pUC19-*Rt. FBA*	*Rhodosporidium toruloides* promoter *Rt. FBA* amplification template	This study
pUC19-*Rt. PGI*	*Rhodosporidium toruloides* promoter *Rt. PGI* amplification template	This study
PCB004-*Asp. PGK-CYC1*	*Asp. PGK*-driven template plasmid for the construction of expression cassettes, *AmpR* as a screening label for bacterial transformants	This study
PCB004-*Asp. FBA-CYC1*	*Asp. FBA*-driven template plasmid for the construction of expression cassettes, *AmpR* as a screening label for bacterial transformants	This study
PCB004-*Asp. PGI-CYC1*	*Asp. PGI*-driven template plasmid for the construction of expression cassettes, *AmpR* as a screening label for bacterial transformants	This study
PCB004-*Rt. FBA-CYC1*	*Rt. FBA*-driven template plasmid for the construction of expression cassettes, *AmpR* as a screening label for bacterial transformants	This study
PCB004-*Rt. PGI-CYC1*	*Rt. PGI*-driven template plasmid for the construction of expression cassettes, *AmpR* as a screening label for bacterial transformants	This study
PCB004-*Asp. PGK-adh-acs-CYC1*	*Asp. PGK*-driven *adh-acs* fusion expression cassette amplification template	This study
PCB004-*Asp. FBA-adh-acs-CYC1*	*Asp. FBA*-driven *adh-acs* fusion expression cassette amplification template	This study
PCB004-*Asp. PGI-adh-acs-CYC1*	*Asp. PGI*-driven *adh-acs* fusion expression cassette amplification template	This study
PCB004-*Rt. FBA-adh-acs-CYC1*	*Rt. FBA*-driven *adh-acs* fusion expression cassette amplification template	This study
PCB004-*Rt. PGI-adh-acs-CYC1*	*Rt. PGI*-driven *adh-acs* fusion expression cassette amplification template	This study
PCB004-*Asp. PGK-cat8-CYC1*	*Asp. PGK*-driven *cat8* expression cassette amplification template	This study
PCB004-*Asp. FBA-cat8-CYC1*	*Asp. FBA*-driven *cat8* expression cassette amplification template	This study
PCB004-*Asp. PGI-cat8-CYC1*	*Asp. PGI*-driven *cat8* expression cassette amplification template	This study

PCB004-*Rt. FBA-cat8-CYC1*	*Rt. FBA*-driven *cat8* expression cassette amplification template	This study
PCB004-*Rt. PGI-cat8-CYC1*	*Rt. PGI*-driven *cat8* expression cassette amplification template	This study
PCB004-*Asp. PGK-pck-CYC1*	*Asp. PGK*-driven *pck* expression cassette amplification template	This study
PCB004-*Asp. FBA-pck-CYC1*	*Asp. FBA*-driven *pck* expression cassette amplification template	This study
PCB004-*Asp. PGI-pck-CYC1*	*Asp. PGI*-driven *pck* expression cassette amplification template	This study
PCB004-*Rt. FBA-pck-CYC1*	*Rt. FBA*-driven *pck* expression cassette amplification template	This study
PCB004-*Rt. PGI-pck-CYC1*	*Rt. PGI*-driven *pck* expression cassette amplification template	This study
pK2-*Asp. PGK-adh-acs-trap*C-p*trpc-hyg-trpC*t	The plasmid inserted into the *Asp. PGK*-driven *adh-acs* fusion expression cassette for Agrobacterium-mediated transformation	This study
pK2-*Asp. FBA-adh-acs-trap*C-p*trpc-hyg-trpC*t	The plasmid inserted into the *Asp. FBA*-driven *adh-acs* fusion expression cassette for Agrobacterium-mediated transformation	This study
pK2-*Asp. PGI-adh-acs-trap*C-p*trpc-hyg-trpC*t	The plasmid inserted into the *Asp. PGI*-driven *adh-acs* fusion expression cassette for Agrobacterium-mediated transformation	This study
pK2-*Rt. FBA-adh-acs-trap*C-p*trpc-hyg-trpC*t	The plasmid inserted into the *Rt. FBA*-driven *adh-acs* fusion expression cassette for Agrobacterium-mediated transformation	This study
pK2-*Rt. PGI-adh-acs-trap*C-p*trpc-hyg-trpC*t	The plasmid inserted into the *Rt. PGI*-driven *adh-acs* fusion expression cassette for Agrobacterium-mediated transformation	This study
pK2-*Asp. PGK-cat8-trapC*-p*trpc-neoR-trpC*t	The plasmid inserted into the *Asp. PGK*-driven *cat8* expression cassette for Agrobacterium-mediated transformation	This study
pK2-*Asp. FBA-cat8-trapC*-p*trpc-neoR-trpC*t	The plasmid inserted into the *Asp. FBA*-driven *cat8* expression cassette for Agrobacterium-mediated transformation	This study
pK2-*Asp. PGI-cat8-trapC*-p*trpc-neoR-trpC*t	The plasmid inserted into the *Asp. PGI*-driven *cat8* expression cassette for Agrobacterium-mediated transformation	This study
pK2-*Rt. FBA-cat8-trapC*-p*trpc-neoR-trpC*t	The plasmid inserted into the *Rt. FBA*-driven *cat8* expression cassette for Agrobacterium-mediated transformation	This study
pK2-*Rt. PGI-cat8-trapC*-p*trpc-neoR-trpC*t	The plasmid inserted into the *Rt. PGI*-driven *cat8* expression cassette for Agrobacterium-mediated	This study

	transformation	
pK2-*Asp. PGK-pck-trapC*-p*trpc-nat-trpC*t	The plasmid inserted into the *Asp. PGK*-driven *pck* expression cassette for Agrobacterium-mediated transformation	This study
pK2-*Asp. FBA-pck-trapC*-p*trpc-nat-trpC*t	The plasmid inserted into the *Asp. FBA*-driven *pck* expression cassette for Agrobacterium-mediated transformation	This study
pK2-*Asp. PGI-pck-trapC*-p*trpc-nat-trpC*t	The plasmid inserted into the *Asp. PGI*-driven *pck* expression cassette for Agrobacterium-mediated transformation	This study
pK2-*Rt. FBA-pck-trapC*-p*trpc-nat-trpC*t	The plasmid inserted into the *Rt. FBA*-driven *pck* expression cassette for Agrobacterium-mediated transformation	This study
pK2-*Rt. PGI-pck-trapC*-p*trpc-nat-trpC*t	The plasmid inserted into the *Rt. PGI*-driven *pck* expression cassette for Agrobacterium-mediated transformation	This study