Table S1. Strains and plasmids used in this study.

| Strains/Plasmids | Properties | Reference |
|------------------|------------|-----------|
| **Escherichia coli** | | |
| DH5a | F·Φ80lacZaM15Δ(lacZYA-argF)U169 endA1 recA1 hsdR17 (N7, mcrA) supE44 thi-1 gyrA96 relA1 phoA | GenStar |
| BL21 (DE3) | F·lon ompT hsdSB(rB, mB) dcm gal mel131(DE3) | GenStar |
| Rosetta (DE3) | F·ompT hsdSB(rB-, mB-) gal dcm lacY1(DE3) pRARE (argU, argW, ileX, glyT, leuW, proK), Cam' | Zomanbio |
| K12 | F·, λ·, rph-1' | This work |
| **Sinorhizobium strains** | | |
| SF45436 | S. fredii CCBAU45436 wild type, Tmp', NA' | (1) |
| Δc17580 | S. fredii CCBAU45436Δc17580, Tmp', NA' | This work |
| Δb52570 | S. fredii CCBAU45436Δb52570, Tmp', NA' | This work |
| Δc17580Δb52570 | S. fredii CCBAU45436Δc17580Δb52570, Tmp', NA' | This work |
| Δc33230 | S. fredii CCBAU45436Δc33230, Tmp', NA' | This work |
| Δc17580.c | SF45436Δc17580 strain complemented with SFc17580, Tmp', NA' | This work |
| Δb52570.c | SF45436Δb52570 strain complemented with SFb52570, Tmp', NA' | This work |
| Pnon-DGC | S. fredii CCBAU45436 carrying DGC (SFc17580) driven by the nifH (SFa46030) promoter Pnon, Tmp', NA' | This work |
| Pnon-PDE | S. fredii CCBAU45436 carrying PDE (SFc33230) driven by the nifH (SFa46030) promoter Pnon, Tmp', NA' | This work |
| ΔmucR1-Gm | S. fredii CCBAU45436ΔmucR1::Gm, Tmp', Gen' | (2) |
| ΔmucR1 | S. fredii CCBAU45436ΔmucR1, Tmp', NA' | This work |
| SF83666 | S. fredii CCBAU83666 wild type, Tmp', NA' | (1) |
| SJ05684 | S. sojae CCBAU05684 wild type, Tmp', NA' | (1) |
| SS05631 | S. sp. CCBAU05631 wild type, Tmp', NA' | (1) |
| **Plasmids** | | |
| pET-28a (+) | Bacterial expression vector with T7 promoter, Km' | Novagen |
| pET-30a-SUMO | Bacterial expression vector with T7 promoter, Km' | Novagen |
| pCM157 | IncP plasmid providing expression of the Cre recombinase, Tc' | (3) |
| pJQ200SK | suicide plasmid with sacB selectable marker, Gm' | (4) |
| pRK2013 | ColE1, Tra', Km' | (5) |
| pTOPO-T | Cloning vector, Amp', Ch' | GenStar |
| pBMRMCS-3 | Broad-host-range vector, Tc' | (6) |
| **Plasmids for gene overexpression** | | |
| pEYeH | pET28a (+) overexpressing ydeH, Km' | This work |
| pET-SFb59510 | pET28a (+) overexpressing SFb59510, Km' | This work |
| pET-SFcc21220 | pET28a (+) overexpressing SFc21220, Km' | This work |
| pET-SFcc17580 | pET28a (+) overexpressing SFc17580, Km' | This work |
| pET-SFcc15850 | pET28a (+) overexpressing SFc15850, Km' | This work |
| pET-SFb54690 | pET28a (+) overexpressing SFb54690, Km' | This work |
| pET-SFcc31480 | pET28a (+) overexpressing SFc31480, Km' | This work |
| pET-SFcc19200 | pET28a (+) overexpressing SFc19200, Km' | This work |
| pET-SFcc10480 | pET28a (+) overexpressing SFc10480, Km' | This work |
| Strains/Plasmids       | Properties                           | Reference    |
|------------------------|--------------------------------------|--------------|
| pET-SFc31640          | pET28a (+) overexpressing SFc31640, Km' | This work    |
| pET-SFb52570          | pET28a (+) overexpressing SFb52570, Km' | This work    |
| pET-SFb47500          | pET28a (+) overexpressing SFb47500, Km' | This work    |
| pET-SFc04750          | pET28a (+) overexpressing SFc04750, Km' | This work    |
| pET-SFb61040          | pET28a (+) overexpressing SFb61040, Km' | This work    |
| pET-SFc33230          | pET28a (+) overexpressing SFc33230, Km' | This work    |
| pET-SFc32250          | pET28a (+) overexpressing SFc32250, Km' | This work    |
| pET-SFc11920          | pET28a (+) overexpressing SFc11920, Km' | This work    |
| pET-SFc06410          | pET28a (+) overexpressing SFc06410, Km' | This work    |
| pET-SFc05240          | pET28a (+) overexpressing SFc05240, Km' | This work    |
| pET-SFb47640          | pET28a (+) overexpressing SFb47640, Km' | This work    |
| pET-SFc23720          | pET28a (+) overexpressing SFc23720, Km' | This work    |
| pET-SFc32790          | pET28a (+) overexpressing SFc32790, Km' | This work    |
| pET-SFc24810          | pET28a (+) overexpressing SFc24810, Km' | This work    |
| pET-SFc05880          | pET28a (+) overexpressing SFc05880, Km' | This work    |
| pET-SFc04470          | pET28a (+) overexpressing SFc04470, Km' | This work    |
| pET-SFb61040_GGDEF    | pET28a (+) overexpressing SFb61040_GGDEF | This work    |
| pET-SFb54690_GGDEF    | pET28a (+) overexpressing SFb54690_GGDEF | This work    |
| pET-SFb52570_GGDEF    | pET28a (+) overexpressing SFb52570_GGDEF | This work    |
| pET-SFb47640_GGDEF    | pET28a (+) overexpressing SFb47640_GGDEF | This work    |
| pET-SFb47500_GGDEF    | pET28a (+) overexpressing SFb47500_GGDEF | This work    |
| pET-SFc33230_GGDEF    | pET28a (+) overexpressing SFc33230_GGDEF | This work    |
| pET-SFc32790_GGDEF    | pET28a (+) overexpressing SFc32790_GGDEF | This work    |
| pET-SFc32250_GGDEF    | pET28a (+) overexpressing SFc32250_GGDEF | This work    |
| pET-SFc31640_GGDEF    | pET28a (+) overexpressing SFc31640_GGDEF | This work    |
| pET-SFc31480_GGDEF    | pET28a (+) overexpressing SFc31480_GGDEF | This work    |
| pET-SFc23720_GGDEF    | pET28a (+) overexpressing SFc23720_GGDEF | This work    |
| pET-SFc24810_GGDEF    | pET28a (+) overexpressing SFc24810_GGDEF | This work    |
| pET-SFc19200_GGDEF    | pET28a (+) overexpressing SFc19200_GGDEF | This work    |
| pET-SFc11920_GGDEF    | pET28a (+) overexpressing SFc11920_GGDEF | This work    |
| pET-SFc10480_GGDEF    | pET28a (+) overexpressing SFc10480_GGDEF | This work    |
| pET-SFc05880_GGDEF    | pET28a (+) overexpressing SFc05880_GGDEF | This work    |
| pET-SFc06410_GGDEF    | pET28a (+) overexpressing SFc06410_GGDEF | This work    |
| pET-SFc04750_GGDEF    | pET28a (+) overexpressing SFc04750_GGDEF | This work    |
| pET-SFc05240_GGDEF    | pET28a (+) overexpressing SFc05240_GGDEF | This work    |
| pET-SFc17580          | pET30a-SUMO overexpressing SFc17580  | This work    |
| pET-SFc19200          | pET30a-SUMO overexpressing SFc19200  | This work    |
| pET-SFc19200          | pET30a-SUMO overexpressing SFc19200  | This work    |
| pET-SFc21220          | pET30a-SUMO overexpressing SFc21220  | This work    |
| pET-SFc24810          | pET30a-SUMO overexpressing SFc24810  | This work    |
| pET-SFc05240          | pET30a-SUMO overexpressing SFc05240  | This work    |
| pET-SFc33230_EAL      | pET28a (+) overexpressing EAL domain of SFc33230 | This work    |
Strains/Plasmids | Properties | Reference
---|---|---
pET-Sfbs52570::al | pET28a (+) overexpressing EAL domain of SFb52570 | This work
pSumo-MucR1 | pET30a-SUMO overexpressing SF52570 | (7)

Plasmids for deletion and complementation

pJQ200SK-c32320 | pJQ200SK carrying internal fragment of SFc32320, Gm<sup>r</sup> | This work
pJQ200SK-c17580 | pJQ200SK carrying internal fragment of SFc17580, Gm<sup>r</sup> | This work
pJQ200SK-b52570 | pJQ200SK carrying internal fragment of SFb52570, Gm<sup>r</sup> | This work
pJQ200SK-c17580.c | pJQ200SK carrying SFc17580 for <i>in situ</i> complementation, Gm<sup>r</sup> | This work
pJQ200SK-b52570.c | pJQ200SK carrying SFb52570 for <i>in situ</i> complementation, Gm<sup>r</sup> | This work

Promoter fusion plasmids

pJQ-P<sub>mut</sub>-c17580 | pJQ200SK carrying the upstream and downstream fragments of intergenic region of SFc17580 and SFc17580, Gm<sup>r</sup> | This work
pJQ-P<sub>mut</sub>-c32320 AAL | pJQ200SK carrying the upstream and downstream fragments of intergenic region of SFc32320 and SFc32320, Gm<sup>r</sup> | This work

Plasmids for amplification of intergenic region for EMSA

pTO-e17580 | pTOPO-T carrying intergenic region of SFb17570 and SFc17580, Cb<sup>r</sup> |
pTO-c19200 | pTOPO-T carrying intergenic region of SFc19200 and SFc19210, Cb<sup>r</sup> |
pTO-c23720 | pTOPO-T carrying intergenic region of SFc23710 and SFc23720, Cb<sup>r</sup> |
pTO-c31640 | pTOPO-T carrying intergenic region of SFc31640 and SFc31650, Cb<sup>r</sup> |
pTO-c33230 | pTOPO-T carrying intergenic region of SFc33220 and SFc33230, Cb<sup>r</sup> |
pTO-b47640 | pTOPO-T carrying intergenic region of SFb47640 and SFb47650, Cb<sup>r</sup> |
pTO-b52570 | pTOPO-T carrying intergenic region of SFb52570 and SFb52580, Cb<sup>r</sup> |
pTO-c15850 | pTOPO-T carrying intergenic region of SFc15840 and SFc15850, Cb<sup>r</sup> |
pTO-c11920 | pTOPO-T carrying intergenic region of SFc11910 and SFc11920, Cb<sup>r</sup> |
pTO-c06410 | pTOPO-T carrying intergenic region of SFc06400 and SFc06410, Cb<sup>r</sup> |
pTO-c31480 | pTOPO-T carrying intergenic region of SFc31480 and SFc31490, Cb<sup>r</sup> |

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