**Table S4. List of primers, strains and plasmids**

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| **Description**  | **Remark/source** |
| **Primers Pairs** |  |  |
| 06526-F | ATATATGGAGTAAGCAATGATTACGGGAATATTTTTTCTATTTTTTG | For amplification of gene ZMO-06525 |
| 06525-R | TCTAAGTTTATTTAAAAACTACATCCCAAATATGTGATGAAGTTTAT |
| Ppdc-06526-F | TTCAAGGTGTCCCGTTCCTTTTTCCCCT | For amplification of 300bp of *pdc* promoter |
| Ppdc-06526-R | ATATTCCCGTAATCATTGCTTACTCCATATATTCAAAACACTATG |
| Tpdc-06526-F | CATCACATATTTGGGATGTAGTTTTTAAATAAACTTAGAGCTTAAGGCG | For amplification of 300bp of *Tpdc* promoter |
| Tpdc-06526-R | gccgctactagtaGCACTGACTTCAATAATTCAGCCCTTACG |
| pEZ15 asp-F | AATTATTGAAGTCAGTGCtactagtagcggccgctgcagGTCACACTGGC | For amplification of backbone |
| pEZ15asp-R | AGGAACGGGACACCTTGAAGTCGACGGATCCCCGGGTACCGAG |
| Confirmation P and 06526-F1 | ATCCGTCGACTTCAAGGTGT | For verification |
| Confirmation p and 06526-R1 | CCAGATTTTTTGCCACTGGAC |
| Confirmation T and 06526-F2 | ATCTGGATAGCTTTTGCGAT | For verification |
| Confirmation T and 06526-R2 | cgctactagtaGCACTGACT |
| Ppdc-02740-F | TTCAAGGTGTCCCGTTCCTTTTTCCCCT | For amplification of 300bp of *pdc* promoter |
| Ppdc-02740-R | TTGAATAGAAATCCACACATTGCTTACTCCATATATTCAAAACACTATGTCT |
| Tpdc-02740-F | GTATCTTCTGACGTCAGTTAGTTTTTAAATAAACTTAGAGCTTAAGGCG | For amplification of 300bp of *Tpdc* promoter |
| Tpdc-02740-R | gccgctactagtaGCACTGACTTCAATAATTCAGCCCTTACG |
| ZMO-RS02740-F | GTTTTGAATATATGGAGTAAGCAATGTGTGGATTTCTATTCAAAAGC | For amplification of gene ZMO-02740 |
| ZMO-RS02740-R | CTTAAGCTCTAAGTTTATTTAAAAACTAACTGACGTCAGAAGATACAT |
| Confirmation P and 02740-F3 | GATCCGTCGACTTCAAGGTG | For verification |
| Confirmation P and 02740-R3 | AGCAAAGCGGCAACTATCG |
| Confirmation T and 02740-F4 | GCTTTGCTTTGCCGGATGC | For verification |
| Confirmation T and 02740-R4 | ctactagtaGCACTGACTTCA |
| Control-06525-F | CCGGGGATCCGTCGACATGATTACGGGAATATTT | For amplification of 1588bp fragment of ZMO-06525  |
| Control-06525-R | agcggccgctactagtaCTACATCCCAAATATG |
| Control-b.b-06525-F | ATCACATATTTGGGATGTAGtactagtagcggccgctgc | For backbone amplification |
| Control- b.b-06525-R | AAATATTCCCGTAATCATGTCGACGGATCCCCGGGTAC |
| Control Chk-P-g-06525-F | GGAAATTCGTTGAATCCTGC | For confirmation |
| Control Chk-P-g-06525-R | TAGTATATAAACGCAGAAAGGCC |
| Control-02740-F | ATGTGTGGATTTCTATTCAAAAGC | For amplification of 215bp fragment of ZMO-02740 |
| Control-02740-R | cagcggccgctactagtaCTAACTGACGTCAGAAGATAC |
| Control Chk-P-g-02740-F | CATagatctcGAGCTCGGTA | For confirmation |
| Control Chk-P-g-02740-R | cgctgcagGTCACACTGGCT |
| Control.b.b.02740-F | ATCTTCTGACGTCAGTTAGtactagtagcggccgctg | For backbone amplification |
| Control.b.b.02740-R | GAATAGAAATCCACACATGTCGACGGATCCCCGGGT |
| **Strains** |  |  |
| ZM4 | ATCC31821 |  |
| ZM532 |  | In this study |
| *ZM4∆ZMO\_RS02740* | Carrying plasmid pmini-T | In this study |
| *ZM4∆ZMO\_RS06525* | Carrying plasmid pmini-T | In this study |
| *ZM532∆ZMO\_RS06525* | Carrying plasmid pmini-T | In this study |
| *ZM532∆ZMO\_RS02740* | Carrying plasmid pmini-T | In this study |
| **Plasmids** |  |  |
| pEZ15Asp | Spectinomycin resistance marker | In this study  |
| pEZ15Asp- AF1 | pEZ15Asp plasmid carrying *ZM4* gene *ZMO\_RS02740* with P*pdc*promoter and T*pdc* terminator | In this study |
| pEZ15Asp- AF2 | pEZ15Asp plasmid carrying *ZM4* gene *ZMO\_RS06525* with P*pdc*promoter and T*pdc* terminator | In this study |
| pEZ15Asp- AF3pEZ15Asp- AF4 | pEZ15Asp plasmid carrying *ZM532* gene *ZMO\_RS02740* with P*pdc*promoter and T*pdc* terminatorpEZ15Asp plasmid carrying *ZM532* gene *ZMO\_RS06525* with P*pdc*promoter and T*pdc* terminator | In this studyIn this study |
| pEZ15Asp- AF6 | pEZ15Asp plasmid carrying *ZM4* gene *ZMO\_RS02740* without P*pdc*promoter and T*pdc* terminator | In this study |
| pEZ15Asp- AF6 | pEZ15Asp plasmid carrying *ZM4* gene *ZMO\_RS06525* without P*pdc*promoter and T*pdc* terminator | In this study |
| pEZ15Asp- AF7 | pEZ15Asp plasmid carrying *ZM532* gene *ZMO\_RS02740* without P*pdc*promoter and T*pdc* terminator | In this study |
| pEZ15Asp- AF8 | pEZ15Asp plasmid carrying *ZM532* gene *ZMO\_RS06525* without P*pdc*promoter and T*pdc* terminator | In this study |