# 耐镉菌株 LXY 的分离鉴定、全基因组测序及功能特性分析

甘雨轩　郭治康　李晓云　邬京娥　吴雅丽娟　彭木*

（湖北民族大学生物与食品工程学院，恩施 445000）

DOI:10.13560/j.cnki.biotech.bull.1985.2026-0981

附表 1 LXY 菌株潜在 Cd 耐受及氧化胁迫响应相关基因

Table S1 Potential genes related to Cd-tolerance and oxidative stress response in strain LXY

| 基因编号 Gene ID | 基因名 Gene name | 产物 Product |
|---|---|---|
| gene0484; gene0627 | *zntA* | $Zn^{2+}$/$Cd^{2+}$-exporting ATPase |
| gene0626; gene3370 | *cadC* | ArsR family transcriptional regulator, lead/cadmium/zinc/bismuth-responsive transcriptional repressor |
| gene1743 | *czcD* | Cobalt-zinc-cadmium efflux system protein |
| gene1842 | *mntH* | Divalent metal cation transporter MntH |
| gene2230; gene4295 | *fieF* | Divalent metal cation (Fe/Co/Zn/Cd) efflux pump |
| gene1500; gene4163; gene5293 | *SOD2* | Superoxide dismutase, Fe-Mn family |
| gene0887; gene1203; gene2945 | *katE* | Catalase |
| gene0405 | *ahpF* | NADH-dependent peroxiredoxin subunit F |
| gene0406 | *ahpC* | NADH-dependent peroxiredoxin subunit C |
| gene0456; gene0803; gene2231; gene4393; gene4862 | *trxA* | Thioredoxin |
| gene5002 | *trxB* | Thioredoxin reductase (NADPH) |
| gene2082 | *btuE* | Glutathione peroxidase |
| gene0548 | *perR* | Fur family transcriptional regulator, peroxide stress response regulator |
| gene1977; gene4920 | *dps* | Starvation-inducible DNA-binding protein / oxidative damage protectant |

附表 2 LXY 菌株潜在植物促生相关基因

Table S2 Potential plant growth-promoting genes in strain LXY

| 功能 Function | 基因编号 Gene ID | 基因名 Gene name | 产物 Product |
|---|---|---|---|
| **IAA/吲哚类代谢** | gene2401 | *ipdC* | Indole-3-pyruvate decarboxylase |
| **铁载体合成** | gene1943; gene1944; gene1945; gene1946; | *asbA; asbB; asbC;* | Petrobactin biosynthesis proteins |
| | gene1947; gene1948 | *asbD; asbE; asbF* | |
| | gene2271; gene2272; gene2273; gene2274; | *dhbA; dhbC; dhbE;* | Bacillibactin biosynthesis proteins |
| | gene2275 | *dhbB; dhbF* | |
| **磷获取与利用** | gene2921; gene4233 | *phoA* | Alkaline phosphatase |
| | gene0743; gene4160 | *pstS* | Phosphate transport system substrate-binding protein |
| | gene0744; gene4159 | *pstC* | Phosphate transport system permease protein |
| | gene0745; gene4158 | *pstA* | Phosphate transport system permease protein |
| | gene4157 | *pstB* | Phosphate transport system ATP-binding protein |
| | gene3570; gene3571 | *phnE* | Phosphonate transport system permease protein |
| | gene3572 | *phnC* | Phosphonate transport system ATP-binding protein |
| | gene3573 | *phnD* | Phosphonate transport system substrate-binding protein |
| **氮素代谢** | gene1204 | *nrgA* | Ammonium transporter |
| | gene3592 | *glnA* | Glutamine synthetase |
| | gene2086; gene2087; gene2088; gene2089 | *narG; narH; narJ; narI* | Nitrate reductase system proteins |
| | gene1458 | *nirA* | Ferredoxin-nitrite reductase |
| **生物膜形成/定殖** | gene1313 | *sipW* | Signal peptidase I W |
| | gene1314; gene1316 | *tasA* | Major biofilm matrix component |
| | gene1317 | *sinR* | Master regulator for biofilm formation |
| | gene1318 | *sinI* | Antagonist of SinR |