**Journal name:** Applied Microbiology and Biotechnology

**Title:** Knocking out Analysis of the *CpxP* gene using Crispr/Cas9 in *Escherichia coli* MG1655

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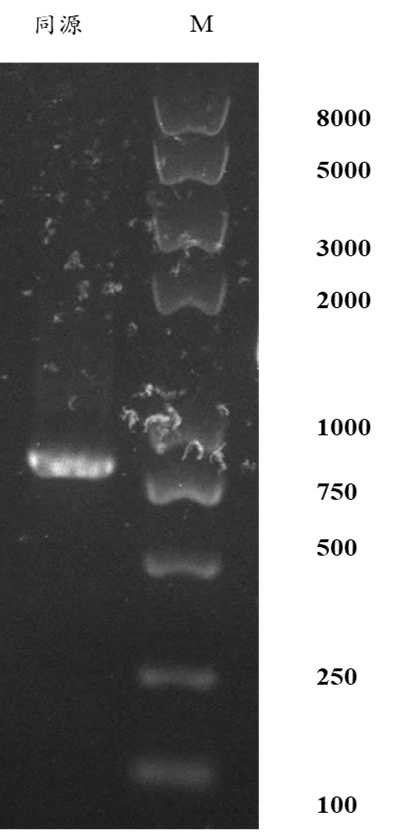
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M 1 2 3 4 M

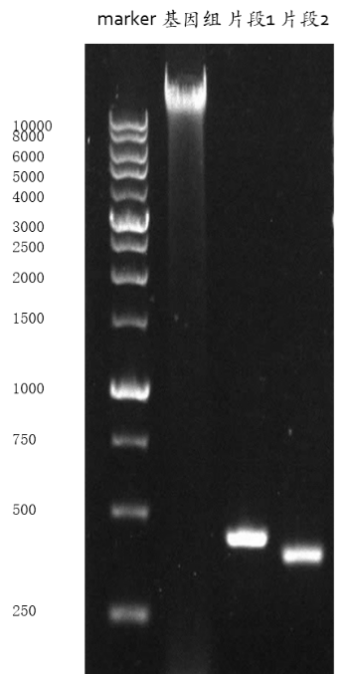
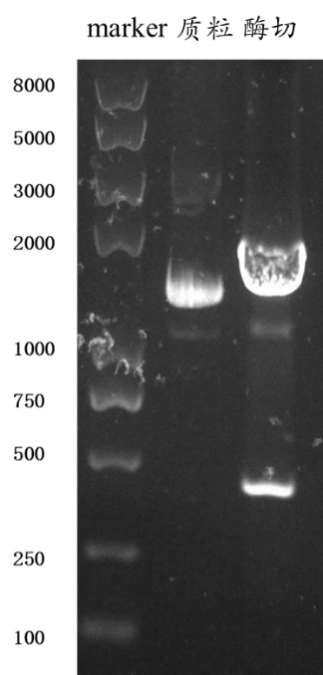


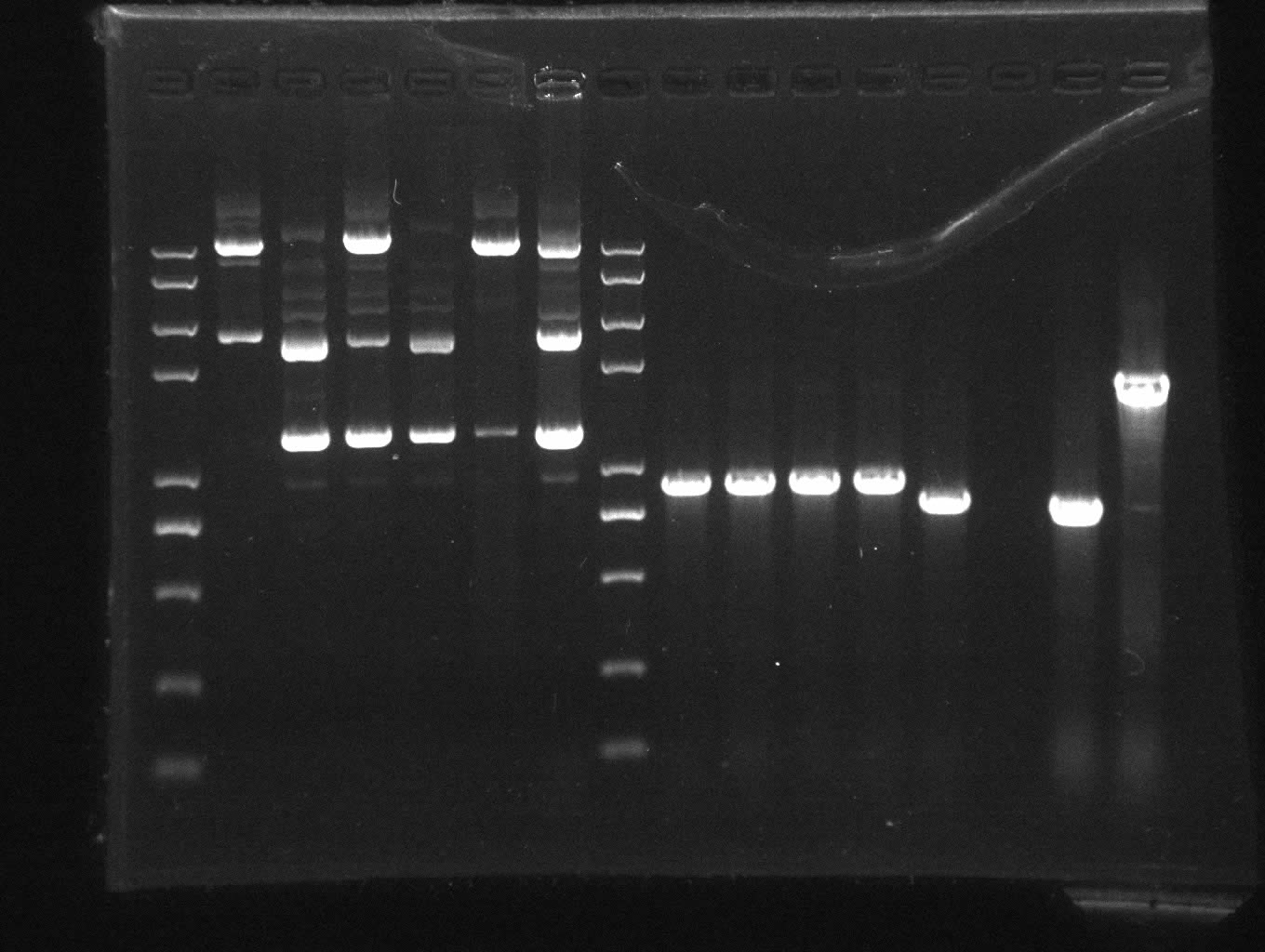
Figure S1 Cloning and identification of the *cpxP* gene fragments in *Escherichia coil* MG1655. (1) Genomic DNA of *Escherichia coil* MG1655. (2) PCR products MG-HR-S. (3) PCR products MG-HR-X. (4) MG-HR(MG-HR-S and MG-HR-X). M: marker.



M 1 2

Figure S2 Construction and identify of pGL3-MGP-sgRNA plasmid. (1) pGL3-MGP-sgRNA plasmid. (2) Restriction enzyme identify with pGL3-MGP-sgRNA plasmid (*Kpn* I and *BamH* I). M: marker.

A M 1 2 3 4 5



B

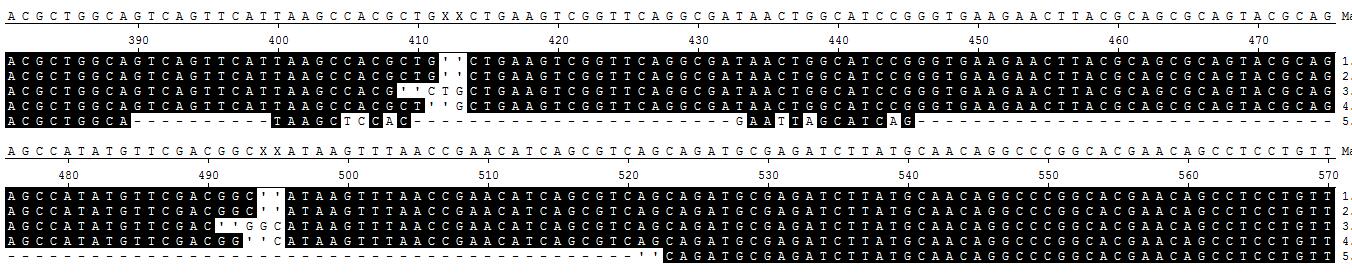
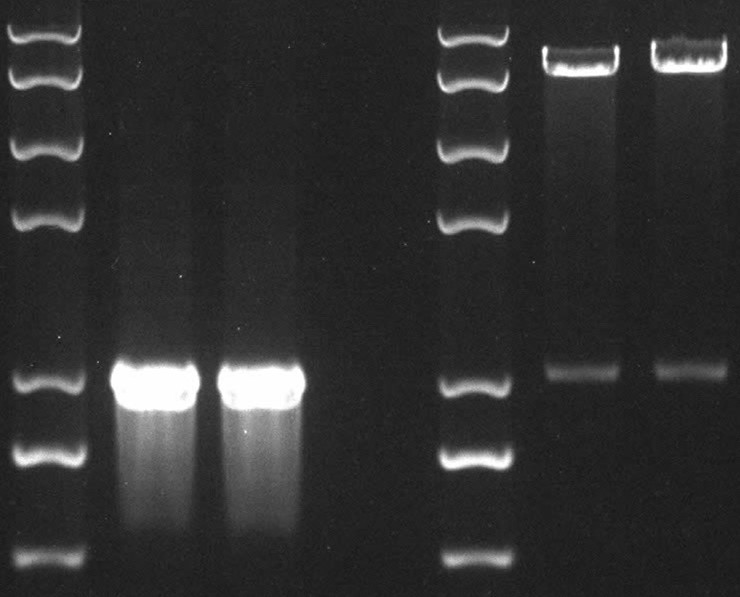


Figure S3 A. Identification of the knockout of *cpxP* gene. (1) PCR products of MG1655 (pCas9) with 400 μg pGL3-U6-sgRNA-PGK-puromycin. (2) PCR products of MG1655 (pCas9) with 400 μg pGL3-U6-sgRNA-PGK-puromycin. (3) PCR products of MG1655 (pCas9) with 400 μg pGL3-MGP-RNA. (4). PCR products of MG1655 (pCas9) with 400 μg pGL3-MGP-RNA. (5). PCR products of MG1655 (pCas9) with 400 μg pGL3-MGP-RNA and 1.6 μg MG-HR. M: marker. B. The sequences of PCR products. (1) The sequences of PCR products of MG1655 (pCas9) with 400 μg pGL3-U6-sgRNA-PGK-puromycin. (2) The sequences of PCR products of MG1655 (pCas9) with 400 μg pGL3-U6-sgRNA-PGK-puromycin. (3) The sequences of PCR products of MG1655 (pCas9) with 400 μg pGL3-MGP-RNA. (4). The sequences of PCR products of MG1655 (pCas9) with 400 μg pGL3-MGP-RNA. (5). The sequences of PCR products of MG1655 (pCas9) with 400 μg pGL3-MGP-RNA and 1.6 μg MG-HR.



M

1

2

M

3

4

8000bp

5000bp

3000bp

2000bp

1000bp

750bp

500bp

Figure S4 Construction and identify of pBBR-*cpxP* plasmid. (1) PCR products of the *cpxP* gene expression cassette.(2) Restriction enzyme identify with the *cpxP* gene expression cassette (*BamH* I and *Hind* III). (3) Restriction enzyme identify with pBBR-*cpxP* plasmid (*BamH* I and *Hind* III) of the overexpression transformants. (4) Restriction enzyme identify with pBBR-*cpxP* plasmid (*BamH* I and *Hind* III) of the revertant. M: marker.

 Table S1

>CDO16367.1 cpxP [Klebsiella pneumoniae]

MRNVIAAVMASTLALSAYSQAAEVVTSVNWLPGDDGGQRGSQSHMFDGISLTEQQRQQLRDLMQRARHDRLPVNVSEMETMHRLVTAENFDENAVRAQAEKMAQEQVARQVEMAKVRNQMYHLLTPEQQAVLNAKHQQRMDQLREVARMQKGSAMMLSSSSNTLQPQ

>ADD79040.1 CpxP [Pantoea ananatis LMG 20103]

MRKLTAVVIASAMVLCNASARAAEPMAPDDVHHGEFTTGSMTQNSQSHMFDGIELTEHQRQQMRDLMQQARHDRPATNIDDIAAMHDLVTADNFNEAAIRSKAEAIARVQVEQQVEMARVRNQMYHLLTPEQQAALQKNY

ERRINSLRKLSNLQPASSLQPVSRTSSNQ

>BAJ45639.1 cpxP [Escherichia coli DH1]

MRIVTAAVMASTLAVSSLSHAAEVGSGDNWHPGEELTQRSTQSHMFDGISLTEHQRQQMRDLMQQARHEQ

PPVNVSELETMHRLVTAENFDENAVRAQAEKMANEQIARQVEMAKVRNQMYRLLTPEQQAVLNEKHQQRMEQLRDVTQWQKSSSLKLLSSSNSRSQ

>CDG23226.1 CpxP [Xenorhabdus poinarii G6]

MRNIAILAVASMFVLETTETLANTADADHVPEAHSSPSCMQGDYKRNFSYYRGNQYNYSYIFGGIVLTEQ

QREQILRLAREQGGYEQPLADMQDAHFKLDDLLTEEDFDETEVRSLLEKIAEKHVLLGIEVARFNNQVYQ

LLTAEQKALLKKRKTSKCLTQNVN

>ABO77645.1 CpxP [Xenorhabdus nematophila]

MRNIAILALASMVVLRSTLALADTADTDDTPEAANPSPYCLSYEHKRDSGYYRSDEHNYNYSYVFGGITL

TEQQRQQMWDLVKKQHLHEQSIIDMRVERQKMYHLLIEREFDEAAVRLQLEKIAEKNIDLGVEIARIRNQ

MYQLLTPEQKERLYKRYEGQTAQEMH

>SUP40335.1 CpxP [Vibrio harveyi]

MKRYLLSTILLLSSANVFAEAAPTQPAAPKPFGLESITADQQAKIEEIQINLSSKLAGQQDPKAVQESAK

QFEKLVKASSFDEAKAKQLIQQAHAKQLDTQLAQLKAQHDIYNVLTAEQKSTLEKRQQEQLKKLEAMKQQ

QAQ

>KGR37247.1 CpxP [Vibrio campbellii]

MKRYLLSTILLLSSANVFAESAPAQPAAPKPFGLESITTEQQAKIEEIQIKLSSELAGNQDPKAVQESAK

QFEKLVKASSFDEVKATKLIKQAHAKQLDTQLAQLKAQHDIYNVLTAEQKATLEKRQQEQLKKFEALQKD

AQ

>AEH32085.1 CpxP [Vibrio anguillarum 775]

MMKMAKKIVLAAVILPLTLSTASVFAFGGKDQHKGPNDECGGFDRGMMQQLDLTSDQQAKLKGMREANRE

AMKGEHKGQRQAKMKAHHDKVQALVLAESFDAAAANELAKEMVDQQVAHRVKMLEKRHDMMSVLTPEQKAKLQTLQQDRMQKCMENGPKHMKKNS

>WP\_136196533.1 cell-envelope stress modulator CpxP [Pantoea allii]

MRKLTAVVLASAMALSVASADAKDATTIDEMHHGGLPTGSMTQNPQSHMFDGIELTEEQRQQMRDLMQQARHDRPVVHIDDIAALHELVTADQFNEAAIRQKAEVIARVQVEQQVEMARVQNQMFQLLTPAQQSTLQKNY

QRRLNELRQFSNLQSASSLQAVSSTSSNQ

>WP\_133562477.1 CpxP family protein [Marinomonas communis]

MNLSKKLMMVTLALPLAFGTASSFAAGDQHERGGKGGRGHGEHQVCSGTAGLIYKLDLSDAQKEQLKELR

SVRHAQAKANAEKDIEQKRADRAQAHATMQKIVMADKFDTAAAKQFAGGMASKRAERNVMKMEAEHEMFSVLTAAQKEQFLELQKTAGDDCKAKKKGKDGKRRHHEKAEQK

>WP\_119464546.1 stress adaptor protein CpxP [Vibrio sp. PID23\_8]

MKRLKSRTIEMLILPLVFASTSAIADSHEQEYDEKFHDKCGISMNLDRGMVHQLDLTDEQKAKLKSIREA

HKQEKKQTNVNRKVEQKERHQRMQAIVLESEFNHAKANGFAQEVAAIQAERSVQMMKNKHEMLSVLTTEQ

KAKFVQLQDDRQKECSNKRHQRNDSKMTE

>WP\_117028660.1 stress adaptor protein CpxP, partial [Klebsiella pneumoniae]

SLTEHQRQQMRDLMQQARHEQPPVNVSELETMHRLVTAENFDENAVRAQAEKMANEQIARQVEMAKVRNQMYRLLTPEQQAVLNEKHQQRMEQLRDVTQWQKSSSLKLLSSSNSRSQ

>GES56433.1 periplasmic repressor CpxP [Desulfuromonas sp. AOP6]

MKKRLIALTLLATALGGFVVAPTLALAADQNPAAETNQEERRCGKRGSCNGPFEGRMAAKLNLTSEQQAQ

IKAIVEAERERIAPLREQQREQRAQLQAAMKAQPFDENTVRQLAASQADARTEMIVHRARVQNQINAVLT

EEQREQAEQMRASKKDRRCNKGHRGFGFGFDQQNS

>WP\_152321591.1 cell-envelope stress modulator CpxP [Erwinia endophytica]

MRKVTAVVVVPTLILSFSTAWATEVTTTDEMHQDNAVPRSMAQIPQSHMFDGISLTEQQRQQMRDLMQQA

RHERSPISISDLEQLHDMIIADKFDETAYRARLDKIAQAEVARQVEIAHVRNQMYHLLTPAQQDVLNQKH

QQRMDEMRKLASMPQASSLQAVSSTQQ

>WP\_152196962.1 cell-envelope stress modulator CpxP [Rouxiella sp. S1S-2]

MCKVAAMIMASMLALSSSVALAESAKFMPADTLAHDGNMLDRRNTMFDGINLTEQQRQQMRDLMHQARRDSPQINLKQMETMHELVTAENFDQAAVRAQAEKIAQEQVDRQVEMARIRNLMFNLLTPQQKEILNQKHEQRMQVLAAQISGLQPTSTQKPVISTQ

>WP\_151406482.1 cell-envelope stress modulator CpxP [Enterobacter hormaechei]

MTLRCFTPLTHVCSLNRRLSLVESRHERFWEQVMRKVTAAVMASTLAFSAFSRAAVAIISDNGSSAEGAT

QHSSQSHMFDGISLTEHQRQQMRDLMQRARHDQPLLMLAKWRQCIALSPQKILTKALYALRPKKWRRNRL

PAVEMAKVRNQMFHLLTPEQQAVLNTKHQQRMNQLREVARMQRSSDMTLFSSNSSTRSNQ

>WP\_151258205.1 cell-envelope stress modulator CpxP [Salmonella enterica]

MRKVTAAVMASTLAFSFLSHAAEVVTSDNWHPGDGATQRSAQNHMFDGISLTEHQRQQMRDLMQQARHEQPPVNVSEMETMHRLVTAEKFDESAVRAQAEKMAQEQVVTAEKFDESAVRAQAEKMAQEQVARQVEMARVRNQMYRLLTPEQQAVLNEKHQQRMEQLRDVAQWQKSSSLKLLSSSNSRSQ

>AVL37048.1 stress adaptor protein CpxP [Yersinia intermedia]

MRKVTKVTTLIMASMLVLGSQAAFAADKTGATDDWCHGDGTMMNKKDGRGHHNMFDGVNLTEQQRQQMRDLMRQSRQGQPRLDMADRDAMHKLVTADKFDEAAVRAQAEKMSKDQVERQVEMAKVRNQMFNLLTPEQKAVLNQKHQQRIEKMQQAPAAQPSSAQK

>ATM97744.1 stress adaptor protein CpxP [Yersinia frederiksenii]

MRKVTKVSTLIMASMLVLGSQAAFAVDKTGPNDGWCHGDGMMMNKKDGRGHHNMFDGVNLTEQQRQQMRDLMRQSRQGQPRMDIADREAMHKLITADKFDEAAVRAQAEKMSKDQVDRQVEMAKVRNQMFNLLTPEQKAALNQKHQQRIEKMRQVPAPAAQPASAQK

>ATM76298.1 stress adaptor protein CpxP [Serratia fonticola]

MVKVTAVVMASILALGSTAAFAADTTPETVQPPANDALLRALGQNHMFDGVRLTEQQRQQMRDLMRQARY

DLPGVNVDEVETMHKLVTADKFDEAAVQAQAEKMAQEQVKRQVEMARVRNQMYNLLTPEQKSVLDQKHQQRVQLMKQQISGLQQTSAQKLSMTE

>ASE76160.1 stress adaptor protein CpxP [Salmonella enterica]

MRKVTAAVMASTLAFSFLSHAAEVVTSDNWHPGDGATQRSAQNHMFDGISLTEHQRQQMRDLMQQARHEQPPVNVSEMETMHRLVTAEKFDESAVRAQAEKMAQEQVARQVEMARVRNQMYRLLTPEQQAVLNEKHQQRMEQLRDVAQWQKSSSLKLLSSSNSRSQ

>ARB82305.1 stress adaptor protein CpxP [Vibrio cholerae]

MKLAKKMILAAAVLPLTLGTTAALAYGGHGWDKEGDGHCGDRGERGIWKQLDLTAEQQAQLKEMREAGRE

EMRANRGQSHDAMKALHAQERALVLAADFDQAAAENLAKQMVDQQVTHRVKMMEKRHQMMSILTAEQKAKLQTLQQEKMAECMQDGQHGKGKKHASQ

>AVH33162.1 stress adaptor protein CpxP [Vibrio fluvialis]

MKTAKKLMLAAVVLPIVLGSASALAAGGKNKGPDGEMCGPDGERGIFKQLNLTAEQHAKLRQMREEGREQ

MQQKRQAGPSEQMKAMRDKERALMLAPNFDKAQATELAKQMVDMQVERRVQMMEKRHQMLNVLTPEQKTQFQNLQQERMAKCWENGPREGHHGDKGPKGQNMMPPAPPVGE

>AVG07722.1 stress adaptor protein CpxP [Klebsiella pneumoniae]

MRNVIAAVMASTLALSAYSQAAEVVTSVNWLPGDEGGQRGSQSHMFDGISLTEQQRQQLRDLMQRARHDR

LPVNVSEMETMHRLVTAENFDENAVRAQAEKMAQEQVARQVEMAKVRNQMYHLLTPEQQAVLNAKHQQRMDQLREVARMQKGSAMMLSSSSNTLQPQ

>AVF96377.1 stress adaptor protein CpxP [Vibrio diabolicus]

MKSAKKLVLAAVVLPLTLGAASAFAYGGKNHHQGPRDECGMGMDRGIMRDLNLTDAQKDQLKSFREANRA

QMKGKYSENREARMAERQAHHAKMQSLLLADSFDEAQATALAKEMVERQTEHRVQMLERKHQMLSVLTPE

QKAEFVKLQNERMQECGDRMHKRMEKYRNN

>AVF75712.1 stress adaptor protein CpxP [Vibrio alginolyticus]

MKSAKKLVLAAVVLPLTLGAASAFAYGGKNHHKGPRDECGMGMDRGVMRQLDLTDAQKDQLKEMREANKA

EMKAKFADGKEARMAERQAHHAKVQSLLLADNFDEAQASELAKEMVERQTERRVQMLERKHQMLSVLTPE

QKAKFVELQNERMQECGDRMHKRMEKSRNN

>AVF58470.1 stress adaptor protein CpxP [Vibrio diabolicus]

MKSAKKLVLAAVVLPLTLGAASAFAYGGKNHHQGPRDECGMGMDRGIMRDLNLTDAQKDQLKSFREANRA

QMKGKYSENREARMAERQAHHAKMQSLLLADSFDEAQATALAKEMVERQTEHRVQMLERKHQMLSVLTPE

QKAEFVKLQNERMQECGDRMHKRMEKYRNN

>ATM89274.1 stress adaptor protein CpxP [Klebsiella aerogenes]

MRNVIAAVMASTLALSATSQAAEVVTGVNWLHGEEGAQRSGQSHMFDGISLTEQQRQQLRDLMQRARHDR

LPVNVSELETMHSLVTADKFDESAVRAQAEKMAQEQVARQVEMAKVRNQMYHLLTPEQQAVLNAKHQQRMDQLREVARMQKGSAMMLSSSSSTVQPK

>ATM14939.1 stress adaptor protein CpxP [Raoultella planticola]

MRNVIAAVMASTLALSAYSQAAEVVTSVNWLPGDDGAQRTSQSHMFDGISLTEQQRQQLRDLMQRARHDR

QPINVSEMETMHRLVTAENFDENAVRAQANKMAQEQVTRQIEMAKVRNQMYHLLTPEQQAVLNAKHQQRMDQLREVARMQKGSATMLSSSSNTVQPQ

>ATF69321.1 stress adaptor protein CpxP [Salmonella enterica subsp. enterica serovar Saintpaul]

MRKVTAAVMASTLAFSFLSHAAEVVTSDNWHPGDGATQRSAQNHMFDGISLTEHQRQQMRDLMQQARHEQPPVNVSEMETMHRLVTAEKFDESAVRAQAEKMAQEQVARQVEMARVRNQMYRLLTPEQQAVLNEKHQQRMEQLRDMAQWQKSSSLKLLSSSNSRSQ

>ATF55227.1 stress adaptor protein CpxP [Morganella morganii]

MGKIATITLASMFVMQSAPGLAQDSESDSCVTPVQSHSQYKGITTSGGDGYTSMLTGIRLTEEQRMQLRD

LMHNYRDQLRNVRNLAEDDIALYELVKAEKFDETAVRNQLEKEMRKRLDYQVEMIRVHHQMYQLLNPEQK

MQLDANFEPESIHTSSASSAQNMPE

>ATF51432.1 stress adaptor protein CpxP [Citrobacter werkmanii]

MGKVTAAVMASTLALSTFSHAAEVVTSDHWHLGESSSQRNAQSHMFDGISLTEHQRQQMRDLMQQARHEQPPVNVSEMETMHRLVTAENFDESAVRAQAEKMAQQQVARQVEIAKVRNQMYRLLTPEQQAVLNEKHEQRMEQLRDVAQWQKSSSLNLLSSSNSRSQ

>AMG56851.1 stress adaptor protein CpxP [Pantoea vagans]

MRKLTAVVLASAMALSVASAGAKDATTIDEMHHDGGLPTGSMTQNPQSHMFDGIELTEEQRQQMRDLMQQARHERPVVHIDDIAALHDLVTADQFNEAAIRVKAEVIARVQVEQQVEMARVQNQMFQLLTPDQQATLQKN

YQRRLNELRQFSNLQSASSLQAVSSTSSNQ

>AMG13374.1 stress adaptor protein CpxP [Vibrio vulnificus]

MSKELIMKLAKKMVLAAVVLPLTLGTASAFAFGGGKGHHKGPDGECGMGMERGMMRQLDLTDAQKEQLDA

MRGSNRAQMKEMHQGNFAANQAERQAQHAKVQALLLADNFDQATANELAKQMAEKQAERRVKMLEKQHQMLSILTPEQKAKFVELQNERMQECGDKMQKRMEKHAKN

>AMG03049.1 stress adaptor protein CpxP [Vibrio mimicus]

MKLAKKMTLAAAILPLTLGTTAAFAYGGHGWDKEGDGPCGGHGERGIWKQLDLTAEQQTQLKEMRDANRE

EMRANRGQNRDAMKALHTQERALVLAADFDQAAAENLAKQMVDQQVAHRVKMMEKRHQMMSILTAEQKTKLQSLQQAQMDRCMMDGEHGKGKPRHQ

>AMF97732.1 stress adaptor protein CpxP [Vibrio harveyi]

MKTAKKLVLAAVVLPLTLGTASAFAFGGKDHKGHRGECGMGMDRGIMRQLDLTDAQKDQLKEMREANKAE

MKAKFADGKEARMAERQAHHEKVQALLLADNFDAAAANDLAKEMVEKQTERRVKMMEKKHQMLSVLTPEQKTKFVELQKERQQKCGEKMQKRMEKHHNS

>AMF95918.1 stress adaptor protein CpxP [Vibrio fluvialis]

MKTAKKLMLAAVVLPIVLGSASALAAGGKNKGPDGEMCGPDGERGIFKQLNLTAEQHAKLRQMREEGREQ

MQQKRQAGPSEQMKAMRDKERALMLAPNFDKAQATELAKQMVDMQVERRVQMMEKRHQMLSVLTPEQKTQFQNLQQERMAKCWENGPREGHHGGKGSKGQNMMPPAPPAGE

>WP\_150436052.1 cell-envelope stress modulator CpxP [Brenneria sp. L3-3HA]

MRQVSALSLVSLLVLGSSAAASETDNASKGIWSHDETATVTVSGHQGMFDGVRLTELQRQQMRDLMQLAR

QELPELNTNDVEVMHRLIIAEKFDEAAVRAQAEKMAQRQVVRQVEMAKVRNQMYNLLTSEQKQILAQKHQ

QRMESMRQQMDRVNQASARKQ

>AVR01871.1 stress adaptor protein CpxP [Pluralibacter gergoviae]

MRNVFAAVMASTLALSAHSQAAEVVNSVNWHPNEGVAQTSSQGHMFDGISLTEHQRQQMRDLMQQAMRKQPPVNVSEIETMHKLVTAEKFDETAVRAQAEKMAQEQVARQVEMAKVRNQMYHLLTPEQQAVLNQKHQQRMDQLREVARMQQGAMPMLYSSNRSHQ

>AVL80131.1 stress adaptor protein CpxP [Klebsiella oxytoca]

MRNVIAAVMASTLALSAYSQAAEVVTSVNWLPGDEGVQRSSQSHMFDGISLTEHQRQQLRDLMQRARHER

PPVNVSEMETMHRLVTAENFDENAVRAQADKMAQEQVARQVEMAKVRNQMYHLLTPEQQAVLNAKHQQRMNQLREVARMQKGSAMMLSSSSNTLQPQ

>AVL80131.1 stress adaptor protein CpxP [Klebsiella oxytoca]

MRNVIAAVMASTLALSAYSQAAEVVTSVNWLPGDEGVQRSSQSHMFDGISLTEHQRQQLRDLMQRARHER

PPVNVSEMETMHRLVTAENFDENAVRAQADKMAQEQVARQVEMAKVRNQMYHLLTPEQQAVLNAKHQQRMNQLREVARMQKGSAMMLSSSSNTLQPQ

>ASE43848.1 stress adaptor protein CpxP [Citrobacter braakii]

MGKVTAAVMASTLALSTLSHAAEVVTGDHWHLGEGSAQRSVQSHMFDGISLTEHQRQQMRDLMQQARHEQPPVNVSEMETMHRLVTAEKFDERAVRAQAERMAQEQVARQVEIAKVRNQMYRLLTPEQQAVLNERHEQRMEQLRDVAHWKKSSSLNLLSSSNSRSQ

>AMH12739.1 stress adaptor protein CpxP [Citrobacter sp. FDAARGOS\_156]

MGKVTAAVMASTLALSTLSHAAEVVTGDHWHLGEGSSQRSVQSHMFDGISLTEHQRQQMRDLMQQARHEQPPVNVSEMETMHRLVTAEKFDESAVRAQAEKMAQEQVARQVEIARVRNQMYRLLTPEQQAVLNEKHEQRMEQLRDVAHWKQSSSLNLLSSSNSRSQ

>AMH10246.1 stress adaptor protein CpxP [Klebsiella aerogenes]

MRNVIAAVMASTLALSATSQAAEVVTGVNWLHGEEGAQRSGQSHMFDGISLTEQQRQQLRDLMQRARHDR

LPVNVSELETMHSLVTADKFDESAVRAQAEKMAQEQVARQVEMAKVRNQMYHLLTPEQQAVLNAKHQQRMDQLREVARMQKGSAMMLSSSSSTVQPK

>AMG95152.1 stress adaptor protein CpxP [Citrobacter amalonaticus]

MRKVTAAVMASTLALSTVSHAAEVVTGDNWHPGESPAPRTVQSHMFDGISLTEHQRQQMRDLMQQARHEQAPVNVSEMETMHRLITAENFDETAVRAQAEKMAQAQVSRQVEMARVRNQMYRLLTPEQQAVLNEKHQQRMEQLRDVTQWQKSSSLKLLSSSNSRSQ

>AMG71767.1 stress adaptor protein CpxP [Morganella morganii]

MGKIATITLASMFVMQSAPGLAQDSESDSCVTPVQSHSQYKGITTSGGDGYTSMLTGIRLTEEQRMQLRD

LMHNYRDQLRNVRNLAEDDIALYELVKAEKFDETAVRNQLEKEMRKRLDYQVEMIRVHHQMYQLLNPEQK

MQLDANFEPESIHTSSASSAQNMPE

>AMG55948.1 stress adaptor protein CpxP [Citrobacter amalonaticus]

MRKVTAAVMASTLALSTVSHAAEVVTGDNWHPGESSAPRTVQSHMFDGISLTEHQRQQMRDLMQQARHEQPPVNVSEMETMHRLITAENFDETAVRAQAEKMAQAQVARQVEMARVRNQMYRLLTPEQQAVLNEKHQQRMEQLRDVTHWQKSSSLKLLSSSNSRSQ

>AMG18626.1 periplasmic protein CpxP [Shigella sonnei]

MRIVTAAVMASTLAVSSLSHAAEVGSGDNWHPGEELTQRSTQSHMFDGISLTEHQRQQMRDLMQQARHEQ

PPVNVSELETMHRLVTAENFDENAVRAQAEKMANEQIARQVEMAKVRNQMYRLLTPEQQAVLNEKHQQRM

>WP\_150046527.1 cell-envelope stress modulator CpxP, partial [Klebsiella pneumoniae]

HMFDGISLTEQQRQQLRDLMQRARHDRLPVNVSEMETMHRLVTAENFDENAVRAQAEKMAQEQVARQVEMAKVRNQMYHLLTPEQQAVLNAKHQQRMDQLREVARMQKGSAMMLSSSSNTLQPQ

>AVH27662.1 stress adaptor protein CpxP [Vibrio diabolicus]

MKSAKKLVLAAVVLPLTLGAASAFAYGGKNHHQGPRDECGMGMDRGIMRDLNLTDAQKDQLKSFREANRA

QMKGKYSENREARMAERQAHHAKMQSLLLADSFDEAQATALAKEMVERQTEHRVQMLERKHQMLSVLTPE

QKAEFVKLQNERMQECGDRMHKRMEKYRNN

>AVG32119.1 stress adaptor protein CpxP [Salmonella enterica subsp. enterica serovar Heidelberg]

MRKVTAAVMASTLAFSFLSHAAEVVTSDNWHPGDGATQRSAQNHMFDGISLTEHQRQQMRDLMQQARHEQPPVNVSEMETMHRLVTAEKFDESAVRAQAEKMAQEQVARQVEMARVRNQMYRLLTPEQQAVLNEKHQQRMEQLRDVAQWQKSSSLKLLSSSNSRSQ

>AVF87129.1 stress adaptor protein CpxP [Klebsiella quasipneumoniae]

MRNVIAAVMASTLALSAISQAAEVVTSVNWLPGDEGGQRGSQSHMFDGISLTEQQRQQLRDLMQRARHDR

LPVNVSEMETMHRLVTAENFDENAVRAQAEKMAQEQVARQVEMAKVRNQMYHLLTPEQQAVLNAKHQQRMDQLREVARMQKGSAMMLSSSSNTLQPQ

>AMG25549.1 stress adaptor protein CpxP [Salmonella enterica]

MRKVTAAVMASTLAFSFLSHAAEVVTSDNWHPGDGATQRSAQNHMFDGISLTEHQRQQMRDLMQQARHEQPPVNVSEMETMHRLVTAEKFDESAVRAQAEKMAQEQVARQVEMARVRNQMYRLLTPEQQAVLNEKHQQRMEQLRDVAQWQKSSSLKLLSSSNSRSQ

>AMG06313.1 stress adaptor protein CpxP [Vibrio parahaemolyticus]

MKSAKKLVLAAVVLPLTLGTASAFAFGGKDHHKGPRDECGMGMDRGIMRDLNLTDAQKDQLQSFRDANRA

EMKGKYSQNREARMAERQAHHAKMQSLLLADTFDEAQATALAKEMVERQTEHRVKMLERKHQMLSVLTPE

QKAEFVKLQNERMQECGDQMQQRMGKHRNN

>AVG35842.1 stress adaptor protein CpxP [Enterobacter cloacae complex sp.]

MRKVTAAVMASTLAFSAFSQAAEAIISDNSPLQEGATQNSSQSHMFDGISLTEHQRQQMRDLMQRARHDQ

PPVNVSEMETMHRLVTAENFDESAVRAQAEKMAQEQVARQVEMAKVRNQMFHLLTPEQQAVLNTKHQQRMDQLREVARMQRSSETSFFSSNSSTRSNQ

>AUU33472.1 periplasmic protein CpxP [Shigella flexneri]

MRIVTAAVMASTLAVSSLSHAAEVGSGDNWHPGEELTQRSTQSHMFDGISLTEHQRQQMRDLMQQARHEQ

PPVNVSELETMHRLVTAENFDENAVRAQAEKMANEQIARQVEMAKVRNQMYRLLTPEQQAVLNEKHQQRMEQLRDVTQWQKSSSLKLLSSSNSRSQ

>AUU28617.1 stress adaptor protein CpxP [Citrobacter freundii]

MGKVTAAVMASTLALSTFSHAAEVVTGDHWHLGEGSSQRSVQSHMFDGISLTEHQRQQMRDLMQQARHEQPPVNVSEMETMHRLVTAEKFDESAVRAQAERMAQEQVARQVEIARIRNQMYRLLTPEQQAVLNEKHEQRMVQLRDVAHWKKSSSLNLLSSSNSRSQEQLRDVTQWQKSSSLKLLSSSNSRSQ

>AUU03977.1 stress adaptor protein CpxP [Raoultella planticola]

MRNVIAAVMASTLALSAYSQAAEVVTSVNWLPGDDGAQRTSQSHMFDGISLTEQQRQQLRDLMQRARHDR

QPINVSEMETMHRLVTAENFDENAVRAQANKMAQEQVTRQIEMAKVRNQMYHLLTPEQQAVLNAKHQQRMDQLREVARMQKGSATMLSSSSNTVQPQ

>AUT86032.1 stress adaptor protein CpxP [Vibrio parahaemolyticus]

MKSAKKLVLAAVVLPLTLGTASAFAFGGKDHHKGPRDECGMGMDRGIMRDLNLTDAQKDQLQSFRDANRA

EMKGKYSQNREARMAERQAHHAKMQSLLLADTFDEAQATALAKEMVERQTEHRVKMLERKHQMLSVLTPE

QKAEFVKLQNERMQECGDQMQQRMGKHRNN

>AUU10389.1 stress adaptor protein CpxP [Serratia marcescens]

MRKVTALVMASLLAIGSTAAFAADTIPDTAQPPGNDAMTRIPGQHHMFDGVSLSEQQRQQMRDLMRQARH

DLPGVNVAEMEAMHKLVTAEKFDEAAVYAQAEKMAQQQVKRQVEMARVRNQMYNLLTPEQKSVLDQKHQQRMQQMEQQISGLQQASAQK

>AUT94661.1 stress adaptor protein CpxP [Citrobacter freundii]

MGKVTAAVMASTLAFSTLSHAAEVVTGDHWHLGEGSAQRSVQSHMFDGISLTEHQRQQMRDLMQQARHEQPPVNVSEMETMHRLVTAEKFDESAVRAQAERMAQEQVARQVEIAKVRNQMYRLLTPEQQAVLNEKHEQRMEQLRDVAHWKKSSSLNLLSSSNSRSQ

>AUT99711.1 stress adaptor protein CpxP [Morganella morganii]

MGKIATITLASMFVMQSAPGLAQDSESDGCVTPVQSHSQYKGITTSGGDGYTSMLTGIRLTEEQRMQLRD

LMHNYRDQLRNVRNLAEDDIALYELVKAEKFDETAVRNQLEKEMRKRLDYQVEMIRVHHQMYQLLNPEQK

MQLDANFEPESIHTSSASSAQNMPE

>WP\_147200347.1 cell-envelope stress modulator CpxP [Pantoea sp. CCBC3-3-1]

MRKVTAVVVVPALILSFSAAWAAEVTTNDEMHQDGAALRSMTQIPQSHMFDGINLTEQQRQQMRDLMQQARHERSSISINDLEQLHEMIIADKFNETDYKARLDRIAKEEVTRQVEMARVRNQMYHLLTPAQQDVLKQKH

QQRMSEMRKLAQMQQAVSLQAVSSPESKQ

>WP\_145890108.1 cell-envelope stress modulator CpxP [Pantoea dispersa]

MRYLTAVVIASAMVLSQASAEAADTTTIDEMHQNGGLTSGSMTQNPQSHMFDGIELTEQQRQQMRDLMQQARHERPVVSVQDIETLHDLETADQFNENAVRQQAEKQAKAQVELQVEMARVRNQMYHLLSPSQQATLQKNFERRLKEARRVAGLQPSSPLHAVSSTSSNQ

>APF15574.1 stress adaptor protein CpxP [Salmonella enterica subsp. enterica serovar Typhimurium]

MRKVTAAVMASTLAFSFLSHAAEVVTSDNWHPGDGATQRSAQNHMFDGISLTEHQRQQMRDLMQQARHEQPPVNVSEMETMHRLVTAEKFDESAVRAQAEKMAQEQVARQVEMARVRNQMYRLLTPEQQAVLNEKHQQRMEQLRDVAQWQKSSSLKLLSSSNSRSQ

>AMR13757.1 stress adaptor protein CpxP [Klebsiella quasipneumoniae]

MRNVIAAVMASTLALSAISQAAEVVTSVNWLPGDEGGQRGSQSHMFDGISLTEQQRQQLRDLMQRARHDR

LPVNVSEMETMHRLVTAENFDENAVRAQAEKMAQEQVARQVEMAKVRNQMYHLLTPEQQAVLNAKHQQRMDQLREVARMQKGSAMMLSSSSNTLQPQ

>AUX74271.1 stress adaptor protein CpxP [Erwinia pyrifoliae]

MRKVTAVVVVPALIITFFVAWSANAATTGEMHQDDGTNRTLRQVPQSNMFDGISLTEQQRQEMRDLMQQA

RYDRSPISISDLDQLHELIIADKFDKAAYEAQAKKIAHAEVARQVEMGRVRNQMYHLLTPQQQSILQQKH

QQRLGELRRLTNMQLSSPLQAASSTDSTP

>KZT49226.1 repressor CpxP [Klebsiella michiganensis M5al]

MRNVIAAVMASTLALSAYSQAAEVVTSVNWLPGDESVQRSSQSHMFDGISLTEQQRQQLRDLMQRARHDR

PPVNVSEMETMHRLVTAENFDENAVRAQADKMAQEQVARQVEMAKVRNQMYHLLTPEQQAVLNAKHQQRMDQLREVARMQKGSAMMLSSSSNTLQPQ

>KVK39538.1 repressor CpxP [Enterobacter chengduensis]

MRKVTAAVMASTLAFSAFSQAAVAINGDNGPSPEGATQLSSQSHMFDGISLTEHQRQQMRDLMQRARHDQ

PPVNVSEMETMHRLVTAENFDESAVRAQAEKMAQEQVARQVEMAKVRNQMFHLLTPEQQAVLNTRHQQRMDQLREVARMQRSSEATFFSSNSSTRSNQ

>KLU45240.1 periplasmic repressor CpxP [Klebsiella michiganensis]

MRNVIAAVMASTLALSAYSQAAEVVTSVNWLPGDEGVQRSSQSHMFDGISLTEHQRQQLRDLMQRARHDR

PPVNVSEMETMHRLVTAENFDENAVRAQADKMAQEQVARQVEMAKVRNQMYHLLTPEQQAVLNAKHQQRMDQLREVARMQKGSAMMLSSSSNTLQPQ

>KLG19547.1 periplasmic repressor CpxP [Enterobacter roggenkampii]

MRKVTAAVMASTLAFSAFSQAAVAIISDNGSSQEDTTQHSSQSHMFDGISLTEHQRQQMRDLMQRARHDQ

PPVNVSEMETMHRLVTAENFDESAVRAQAEKMAQEQVARQVEMAKVRNQMFHLLTPEQQAVLNTKHQQRMDQLREVARMQRSSETSFFSSNSSTRSNQ

>PNP30777.1 stress adaptor protein CpxP [Vibrio cholerae]

MKLAKKMILAAAVLPLTLGTTAALAYGGHGWDKEGDGHCGDRGERGIWKQLDLTAEQQAQLKEMREAGRE

EMRANRGQSHDAMKALHAQERALVLAADFDQAAAENLAKQMVDQQVTHRVKMMEKRHQMMSILTAEQKAKLQTLQQEKMAECMQDGQHGKGKKHASQ

>PNP23458.1 stress adaptor protein CpxP [Vibrio alginolyticus]

MKSAKKLVLAAVVLPLTLGAASAFAYGGKNHHKGPRDECGMGMDRGVMRQLDLTDAQKDQLKEMREANKA

EMKAKFADGKEARMAERQAHHAKVQSLLLADNFDEAQASELAKEMVERQTERRVQMLERKHQMLSVLTPE

QKAKFVELQNERMQECGDRMHKRMEKSRNN

>WP\_140034292.1 cell-envelope stress modulator CpxP [Pantoea vagans]

MRKLTAVVLASVMALSVASADAKDATTIDEMHHGGLPTGSMTQNPQSHMFDGIELTEEQRQQMRDLMQQARHDRPVVHIDDIAALHELVTADQFNEAAIRQKAEVIARVQVEQQVEMARVQNQMFQLLTPAQQSALQKNY

QRRLNELRQFSNLQSASSLQAVSSTSSNQ

>WP\_141177532.1 cell-envelope stress modulator CpxP [Mixta sp. BIT-26]

MRKVTAAVLASASVVLSYSSAWAADVNTVSVMQQPGEAMFGSIAQNLQSHMFDGIKLSEQQRQQMRDLMQQTQYARPLVNVKEIETLHNLIIADEFNEAAVRAQAEKLAQAQVVRQVEMSRIRNQMYHLLTPQQQAVLQT

RHEQRMNELRRLTNQQQVPSLHEASSTGSNQ

>KHS91973.1 periplasmic stress adaptor protein CpxP [Pectobacterium polaris]

MQRFATLSLASLLMLGTFTAFAAESGDASASGWHIDDSATKGAPGQQGMFDGVRLTEQQRQQMRDLMHQS

RQDKPAFNAEDVKAMHQLVTAETFDEAAVRAQITRMMSVQLERQIQMTRVRNQMYNLLTPAQKEILELKH

KQRMKEMQQQISMFNQMAAPSPGMTSQTETNNPE

>OIN15415.1 stress adaptor protein CpxP [Salmonella enterica subsp. enterica]

MRKVTAAVMASTLAFSFLSHAAEVVTSDNWHPGDGATQRSAQNHMFDGISLTEHQRQQMRDLMQQARHEQPPVNVSEMETMHRLVTAEKFDESAVRAQAEKMAQEQVARQVEMARVRNQMYRLLTPEQQAVLNEKHQQRMEQLRDVAQWQKSSSLKLLSSSNSRSQ

>THE36897.1 stress adaptor protein CpxP [Raoultella ornithinolytica]

MRNVIAAVMASTLALSAYSQAAEVVTSVNWLPGDDGAQRTSQSHMFDGISLTEQQRQQLRDLMQRARHDR

QPINVSEMETMHRLVTAENFDENAVRAQANKMAQEQVTRQIEMAKVRNQMYHLLTPEQQAVLNAKHQQRMDQLREVARMQKGSATMLSSSSNTVQPQ

>THE35073.1 stress adaptor protein CpxP [Citrobacter murliniae]

MGKVTAAVMASTLALSTLSHAAEVVTGDHWHLGESGSQRNAQSHMFDGISLTEHQRQQMRDLMQQARHEQPPVNVSEMETMHRLVTAEKFDESAVRAQAEKMAQEQVARQVEIAKVRNQMYRLLTPEQQAVLNEKHEQRMEQLRDMAQWQKSSSLNLLSSSNSRSQ

>THB85824.1 stress adaptor protein CpxP [Pantoea allii]

MRKLTAVVLASAMALSVASADAKDATTIDEMHHGGLPTGSMTQNPQSHMFDGIELTEEQRQQMRDLMQQARHDRPVVHIDDIAALHELVTADQFNEAAIRQKAEVIARVQVEQQVEMARVQNQMFQLLTPAQQSTLQKNY

QRRLNELRQFSNLQSASSLQAVSSTSSNQ

>TGX88648.1 cell-envelope stress modulator CpxP [Pantoea agglomerans]

MRKLTAVVLASAMALSVASAGAKDATTIDEMHHGGLPTGSMTQNPQSHMFDGIELTEEQRQQMRDLMQQARHERPVVHIDDIAALHELVTADQFNEAAIREKAEVIARVQVEQQVEMARVQNQMFQLLTPAQQSALQQNY

QRRLNELRQFSNLQSASSLQAVSSTSSNQ

>AUU28617.1 stress adaptor protein CpxP [Citrobacter freundii]

MGKVTAAVMASTLALSTFSHAAEVVTGDHWHLGEGSSQRSVQSHMFDGISLTEHQRQQMRDLMQQARHEQPPVNVSEMETMHRLVTAEKFDESAVRAQAERMAQEQVARQVEIARIRNQMYRLLTPEQQAVLNEKHEQRMVQLRDVAHWKKSSSLNLLSSSNSRSQ