

53 100  
P. aeruginosa ---AEHSHQDHDV-ELAPSVVTGVA---QSSPLTI-----VTNPKPRQFPVPASDGADYLKTI PGFAVIRNGGNSGDPVLR  
P. stutzeri AESVDHSEHAHASSA-ELAFMVTIGVA---QSSPLTV-----ATDPKIPRQFPVPASDGADYLQTI PGFSAVRGGGNSD PVFR  
P. putida ---AGPGHEDHVDAP-ELSPVTITAVA---PSSPLTV-----VTNPKDPRQFPVPASDGADYLKTI PGFSAIRAGGTNGDPVLR  
P. syringae -AQFQDDETDQPTL-GLSPLVITAVQ---QSSPLTV-----VTNPKDARQFPVPASDGADYLKTI PGFSSIRSGGSGEPVLR  
A. baumannii ---ESEKND AETNTHLSLAPIVVTAAQGG-NDANGLIV-----HADPKQPIQFPVATDGDADYLSQIMGFNSIQSGGTNGDVTFR  
S. enterica ---ATVKNQNTAKTDADVITVTAP---VTSPLIEI-----ITSPKPRQFPVPASDGADYLKTI PGFSQIRAGGTNGDPVFR  
K. Pneumoniae ---ARESHDYATMEDDSVMVVTAP---ASSPLEV-----VTSPKRPRQFPVPASDGADYLKTI PGFSQIRAGGTNGDPVFR  
S. marcescens ---HQHPTDAQVNDGDVITVTAP---LYSPLTI-----VTSPKTTPRQFPVPASDGADYLKTI PGFSQIRAGGTNGDPVFR  
E. cloacae ---QESHDHATMEDDSVMVVTAP---ALSPLEV-----VTSPKRPRQFPVPASDGADYLKTI PGFSQIRAGGTNGDPVFR  
ZnuD -----HETEQSVLDELTVSVVVGKSRPRATSGLLHTSTASDKIISGDTL--RQKAVNLGDALDGVPGIHSQYGGGASAPVIR  
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150 200  
P. aeruginosa GMFGSRNLNLTNGGMLGACPNRNDAPTSYISPEYDKLTVIKGPQTVLWGPASAGTILFER--EPEFRG-ELGSRVNASLLAGS  
P. stutzeri GMFGSRNLKLLANGAEMLGACPSRNDSPSSYITPENYDALTVIKGPQTVLWGPNSAATILFER--DPEDFS-ELGGRIDASFVLSG  
P. putida GMFGSRNLNLTNGGMLGACPNRNDAPTSYISPEYDRLTVIKGPQSVIWIWGGASAGTILFER--EPEKFG-TLGSRVNASLLAGS  
P. syringae GMFGSRNLNLTNGGMLGACPNRNDAPSSYIAPETFDKLTIVVKGQPTVQWGPASAGTVLFER--EPEHFG-ELGSRNLSVLSG  
A. baumannii GMFGSRKILITDGTENLGACPNRNDAPTSYISPEYDRISVIKGPQTVQYANTGSAATVLFER--QPEKLTSEKPYRQASVLLGS  
S. enterica GMFGSRKILITDGAEMLGACPSRNDAPTSYIAPEDFLLSLIKGPETVLWGPNSAGTIRFDR--ETPSFE-TNAVKTASVLAGS  
K. Pneumoniae GMFGSRRLRILTNNGEMLGACPARNDAPSSYISPEFDLLTLTKGPQTVLWGPNSAGTIRFDR--EQPRFN-KPGVQGNASLLAAS  
S. marcescens GMFGSRKILITDGSSEMLGACPSRNDAPTSYISPEFDLLTLTKGPQTVLWGPNSAGTIRFDR--ERPRFD-KPGIKGSASVLTGS  
E. cloacae GMFGSRRLRILTNNGEMLGACPARNDAPSSYISPEFDLLTLTKGPQTVLWGPNSAGTIRFDR--EQPRFD-KPGVQGNASLLAAS  
ZnuD GQVGRRLKVLNHHGETGDMADFS PDH-AIMVDTALSQQVEILRGPVTLTSSGNVAGLVVDADGKIPEKMP-ENGVSSELGLRLS-  
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250  
P. aeruginosa NGRFDKVLDA--AAGNRLGYL-RFTGNHAQSDDYEDGAG--NTV-PSRWKKNWGDVAVGWTPEDETLIELTAGKGDGEARYAGRG  
P. stutzeri DGRFDRNIDA--AAGGQGYI-RLLANRSDSDYQDNG--DDV-HSRWDKWS TDLVLGWTPEDETLIELTVGRGDGEARYAGRM  
P. putida NGRFDKVLDA--AAGNSQGYA-RFVGNQSRSDYHDGNK--DTV-PSRWEKWNQDVALGWTPEDETLIELTAGKGDGEARYAGRG  
P. syringae NGRFDKVLDA--AVGDEKYYI-RLNANRSESNYSQDGG--NTV-PSAWKKNWVDVALGFTPEDETWVEITGGKSDGASVLAGS  
A. baumannii YGRIDHNEIA--AVGDEKYYI-RLNANRSESNYSQDGG--NTV-PSAWKKNWVDVALGFTPEDETWVEITGGKSDGASVLAGS  
S. enterica RDRYDGNADI--SLGSEKGYL-RLTGNKSRSDYQDNG--KNV-HSGWDKWNSDITVGTPEADRIEFSAGTGNAGQYVLAGRA  
K. Pneumoniae NNRWDEENADI--SLGSEKGYL-RLMGNKSRSDYQDNG--DRV-PSKWDKWNQDVALGWTPEDETLIELTAGKGDGESRYAGRS  
S. marcescens NGRWDEENIDA--SLGAEQGYL-RVMANKSRSDYQDGTN--TRV-PSRWKKNWGDVALGWTPEDETLIELTVGRGNGEARYAGRS  
E. cloacae KNRWDEENADI--SLGSEKGYL-RLMGNKSRSDYQDNG--DRV-PSKWDKWNQDVALGWTPEDETLIELTAGKGDGESRYAGRS  
ZnuD SGNLEKLTSGGINIGLGNFVLTHTGLYRKSQDVAVPRYRNLKRLPDSHADSSQTSIGLSVWGEKGFIVGAVS---DRRDQYQ-LP  
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300  
P. aeruginosa MDGSQFKRESLGLRFVKSNDVLEKVEAQVYNYADHIMDNFRLRTPDPS-----  
P. stutzeri MDGSQFERESVALRFEKTNLGNLKKIEARVYNYADHVMNDNYSRLTPPM-----  
P. putida MDGSQFKRESLGLRFKSNLGEVLDKVEAQVYNYADHVMNDNYSRLTPSGS-----  
P. syringae MDSSQLERESLGLKFEKRNLDKLEAQVYNYADHIMDNFRLRTPDPA-----  
A. baumannii MDGSQFKRESLGLRFKKNITDVIKKEGQVYNYADHVMNDNYSRLREFNPQ-----  
S. enterica MDGETFKRQSLGMHFVFDLGSVDFKFEQINYNYARHVMNDNYSRLQPLQPN-TGDHGMH-MM-----  
K. Pneumoniae MDGSQFRRESLGARFEKSNIGEVFQKFEANVYNYADHIMDNYSRLSPDGGMSGMSEG-MT-----  
S. marcescens MDGSQFKRESLGMRVKSNIGEVLDKLEAQVYNYADHVMNDNYSRLSPGSGMGGHGGH-G-----  
E. cloacae MDGSQFSRESLGARFGKSNIGEVFQKFEANVYNYADHIMDNYSRLSPGSGMGGMSEG-MA-----  
ZnuD AHSHEYDDCHADIIWQKSLINK-----RYLQLYPHLLTEEDIDYDNPGLSCGFHDDDNAHAHTHSGRPWIDLRNKRYELRAEW  
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350  
P. aeruginosa -----SMP-----MPASQVDRRTLGRLAATWRWDDFKLVGTVDAMRNEHRARGSKYDMDTD  
P. stutzeri -----QMA TNVDRTLGGRMAATWQLDEYELVTGVAQTNEHRRRGV-----  
P. putida -----GNG-----MPVSNVDRRTMGARIKATWRWADVQLISGIDAQTNEHRQGGMV-----  
P. syringae -----SMA-----MPASQVDRRTVGGVVAATWQVDELVTGVDALRESHERNSTYDMDTD  
A. baumannii -----DGS-----MPASNVARTLNARLAMTNEWSQWFI SGVDTQNNKHSRSRSMRS-----  
S. enterica -----HAD-SGSMH-MQGMKMG-----GKIMIPYDRRTVSGRLMGTWEDVKLEAGTQMYTHRSVKMYP-----  
K. Pneumoniae -----DSGMDSMDA-GMSMDN-----MPAMEVDRRTVGGRMGTWEWADVELKSGADTQLNTHRKN-----  
S. marcescens -----AMSMG-G-HGGHMS-----SGMTQLDRRTVGGRMGTWQWQVVKLESGLDQTNTHRSM-----  
E. cloacae -----ESGMDSMDA-GMSMDN-----MPAMEVDRRTVGGRMGTWEWADVELKSGADTQLNTHRKN-----  
ZnuD KQFPFGFEALRVHLNRNDYRHEKAGDAVENFNNQNTQNARIELRHQPIGRLKGSWGVYLLQKSSALSAI-----  
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400 450  
P. aeruginosa YYTDADQFPWSKDAVFHNYGAFGELTWF AERDRILGGLRLDRASVKD-YRQTLKSG--HGHANANTANDTRADTLPSGFVRYE  
P. stutzeri ---DYKSKPWEKDADFHNHYGLFELTRTLNDDSRVIGGARLDHATAKD-YRSTG-----PSAGDSRSDNLPSPGFRLYE  
P. putida ---DAHKGKAWTKDADFHNHYGAFSELTWYVSGEDRLITGARLDASARD-FRTTS-----ATEGTRADTLPSGFIRYS  
P. syringae IYTDADFASKDAVEHNYGAF AEMTWYA AERSRIVSGARLDASAKD-YRQAITSM---SMSVPNPATNEATRADTLPSGFARYE  
A. baumannii ---NYLQNPRTVDMIFHSYGAFGELGQWDFNKLVTGVRDLDRVTVED-ERAKSKDF-----NTKLEKTLPSAFVRWE  
S. enterica ---DTSGAGPNWKDARFHDYGI FAQTWNINNDYDLITGARLDHAKMS-FKKA-----ERKRDAYLPAGFVRTE  
K. Pneumoniae ---MENSVVKDARFHDYGLFSELTWNTSDSSKLVGGARLDRLVDN-FSGKG-----SSERTDLPAGFVRFE  
S. marcescens ---SRGSWEKDAQFNYSYGAFFSELTWSTSEQLIGGARLDRLTVEN-FRSGS-----DGRSDTLPSGFMRLE  
E. cloacae ---MDNSVVKDARFHDYGLFSELTWNTSDSSKLVGGARLDRLVDN-FSGKG-----SSERTDLPAGFVRFE  
ZnuD ---SEAVQKPMMLDNKVQHSYFFGVQANWDN-FTLEGGVVEKQKASIQYDKALIDRENYNHPLPDL--GAHRQT--ARSFALSG  
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500 550  
P. aeruginosa HDLADSPPTLYAGLGHAEERFPDYWELFSPKRGPNGSVNAFD---KIKPEKTTQLDFGLQYNGDKLQAWASGYVGVQDFILFSYR  
P. stutzeri HDLQSLPATAYVGLGHTQRFPDYWELFSGG---ADAFE---KLDPEKTTQLDFGLQYKSGPLDAWASAYVGVQDRDYILFSYS  
P. putida HDLAAIPATTYIGLGHAEERFPDYWELFSPKLPAPPAAAFD---GIKPEKTTQLDFGIQYRTERLEAWASGYVGVQIRDYILFDYR  
P. syringae YDLADSPPTLYAGIGHVQRFPDYWELFSGGSGPAGSRNAFE---GVKPEKTTQLDFGAQFNGEDLQAWASGYVGVQDRDYILFDYS  
A. baumannii NQHPHEHLKSYIGLYVERMPDYWELFSPHGNAGSTNTFN---GVNPEKTLQDMGFQOQHGLASTWASAYAGLVDDYILMSYH  
S. enterica HTFSDKGMGYAGLYVYKRFDPDYWELFSSNTSNKYGLBDAFT---SVRPEETQLDGTQYINIGDVTTSWASAYVGVQDRDYILFRYD  
K. Pneumoniae HTLAEMPLMLYAGLYTERFPDYWELFSPYGPDPGLDAFD---KVTEKTTQLDIGAQYSGKRTNAWASAYVGRVNDLILFRYD  
S. marcescens HTLADLPLMLYAGVGYTERFPDYWELFSPKLPNGSKDPFS---SVKSEKTTQLDIGAQYNGKRFNGWASAYVGRVNDLILFRYD  
E. cloacae HTLAEMQLMLYAGLYTERFPDYWELFSPFGPDGTSADF---KVTEKTTQLDIGAQYSGKRTNAWASAYVGRVNDLILFRYD  
ZnuD NWFYTPQHKLSTASHQERLPSTQELYAHGKH--VATNTFEVGNKHLNKERSNINELALGYEGDRWQYNLALYRNRFGNYIYAQTL  
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600  
P. aeruginosa EG-----GSSST-QATNV DARIMGGELGASQYLTGNWKT DASLAYAWGKNSDDRALPQIPPLEARFG-----  
P. stutzeri PS-----KYSENIDARIMGGELGAYRLTSNWKT DASLAYAWGKNSDGEALPQMPPLEGRLG-----  
P. putida TGM-----GMSSTQAQNI DARIMGGELGAYQLTGNWKT DASLAYAWGKNSDGEALPQMPPLEARFG-----  
P. syringae TD-----GMSSTRTENV DARIMGGELGFAYRLSPNWKTDATLAYAWGKNSDGEALPQIPPLEGLK-----

*A. baumannii* HHPSMGMDGHGMSHGITAGAKNVDATIAGAEAGIGYQFTDHIQADLSAMYAWGKNTTDDKPLPQISPLEGRLN-----  
*S. enterica* PSD-----KKGKTSKAYNVRARLTGAEAGLSWQFIPDWKFDTSLAWSWGQNTEDQPLPQMPPLEGRFA-----  
*K. Pneumoniae* PND-----AY--ISQVDNINATIMGGEAGVSYKLTDSWKTDSLAYSWGRNTEGKPLPQMPPLEARLG-----  
*S. marcescens* PHN-----AR--LSQADNVNANIMGGEMGMGYQLSEHWKTDASLAYSWGKNTSDGRPLPQIPPLEARLG-----  
*E. cloacae* PND-----AY--ISQVDNINATIMGGEAGVSYKLTDSWKTDSLAYSWGRNTEGKPLPQMPPLEARLG-----  
ZnuD NDGRGPKSIEDDSEMKLVRYNQSGADFYGAEGEYFKFTPRYRIGVSGDYVRGRL---KNLPSLPGREDAYGNRPFIAQDDQNA  
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| | | 650 | |  
*P. aeruginosa* -----LTYE--E-GDWSAGSLWRVVAQNRIARDQGNVVGKDFDKSAGFGVFSLNGAYRVTRNV---KLSAGVDNLFDKDYTE  
*P. stutzeri* -----LTYE--Q-GDWSAAGLWRVVAQNRIAEQGNVTSKDFDESSGFGVFSLNGAYRVNQNF---KLSTGIDNLFDKAYSE  
*P. putida* -----LTYS--R-DVWSVGCALWRLVAAQNRIAEQGNVVGKDYDKSAGFGVFSLNGAYKVNNNL---KLSAGVDNLFDKTYAE  
*P. syringae* -----LTYE--Q-DTWSAGALWRVVAQSRVAEKGKGNVVGQDFGTSAGFGVFSINGSYKLSKQL---KVSAGVDNLLDKNYAE  
*A. baumannii* -----IRYV--A-DKYNFGLLWRAVAEQNRVSLHQGNIVGYDLKPSKGFSTLSLNGSYNLRKDI---DVSVDNLDKTYTE  
*S. enterica* -----LTWD--K-NDWSTTVLWRVVSQNRRIALNEGNVVGKDIKSPGFTVLSANAAYKFTKDI---KLSIGADNLLNKSAYE  
*K. Pneumoniae* -----LSWE--S-GNWSSTGLVRLASSQHRVAINEGNVVGKDFDSSAGFAVFSASAAAYRVNKYF---KVSAGVDNLLDKDYSE  
*S. marcescens* -----LTYE--Y-GDWSGTGLWRLVSSQHRVAINEGNVVGKDFAESAGFGVLSANAAYKVNKNV---KLSAGLDNLLNKTYSE  
*E. cloacae* -----LSWE--S-GNWSSTGLIRLVSSQHRVAINEGNVVGKDFDSSAGFAVVSANAAYRVNKYF---KVSAGVDNLLDKDYSE  
ZnuD RVPAARLGFHLKASLTDRIDANLDYYRVFAQNKLARYE-----TRTPGHMLNLGANYRRNTRYGEWNWYVKADNLLNQSVYA  
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700 | 723  
*P. aeruginosa* HLNKAGDAGFGFSANE--TVPEPGRTFWTKVDFSF  
*P. stutzeri* HLNQAGNAGIGLSADE--RINEPGRTWWARVDMSF  
*P. putida* HLNLAGNAGFGYPATDPPVNEPGRTFWTKVDFSF  
*P. syringae* HLNLAGDAGFGFAGDK--ALNEPGRTLWTKVDFSF  
*A. baumannii* HLNKAGSAGFGFASEE--QFNNGIRNYVVRMSMKF  
*S. enterica* HLNLAGNSGFGYSTDT--IFNEPGRTYWAKLNVSF  
*K. Pneumoniae* HLNLAGNSSPFGYSANT--SVNEPGRTFWGKINVSF  
*S. marcescens* HLNLAGNSAFGYSANS--AVNEPGRTLWAKVNVTF  
*E. cloacae* HLNLAGNSSPFGYSANT--SVNEPGRTFWGKINVSF  
ZnuD HSS-----FLSD---TPQMGRSFTGGVNVKF  
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