Supplemental Materials:

Supplemental materials for "Computationally Designed AMPs with Antibacterial and Antibiofilm Activity against MDR Acinetobacter baumannii" By Fahad M. Alsaab, Scott N. Dean, Shravani Bobde, Gabriel G. Ascoli and Monique L. van Hoek

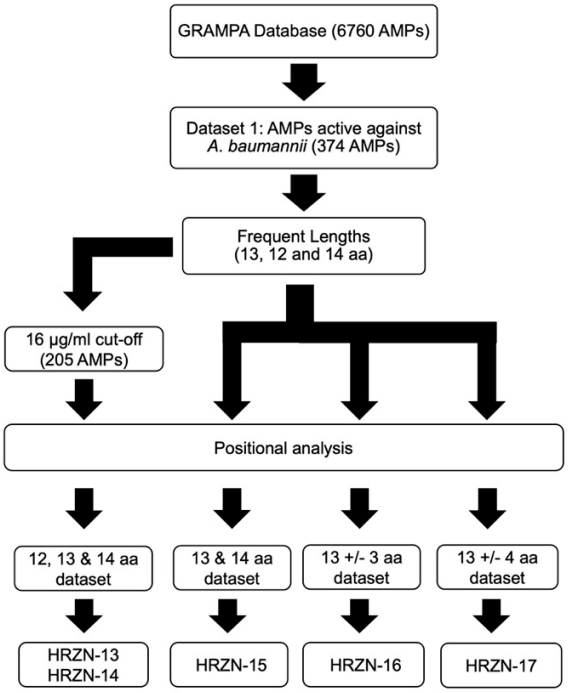


**Figure S1**. Flowchart of DFT plus positional analysis (PA) method used to design HRZN peptides.

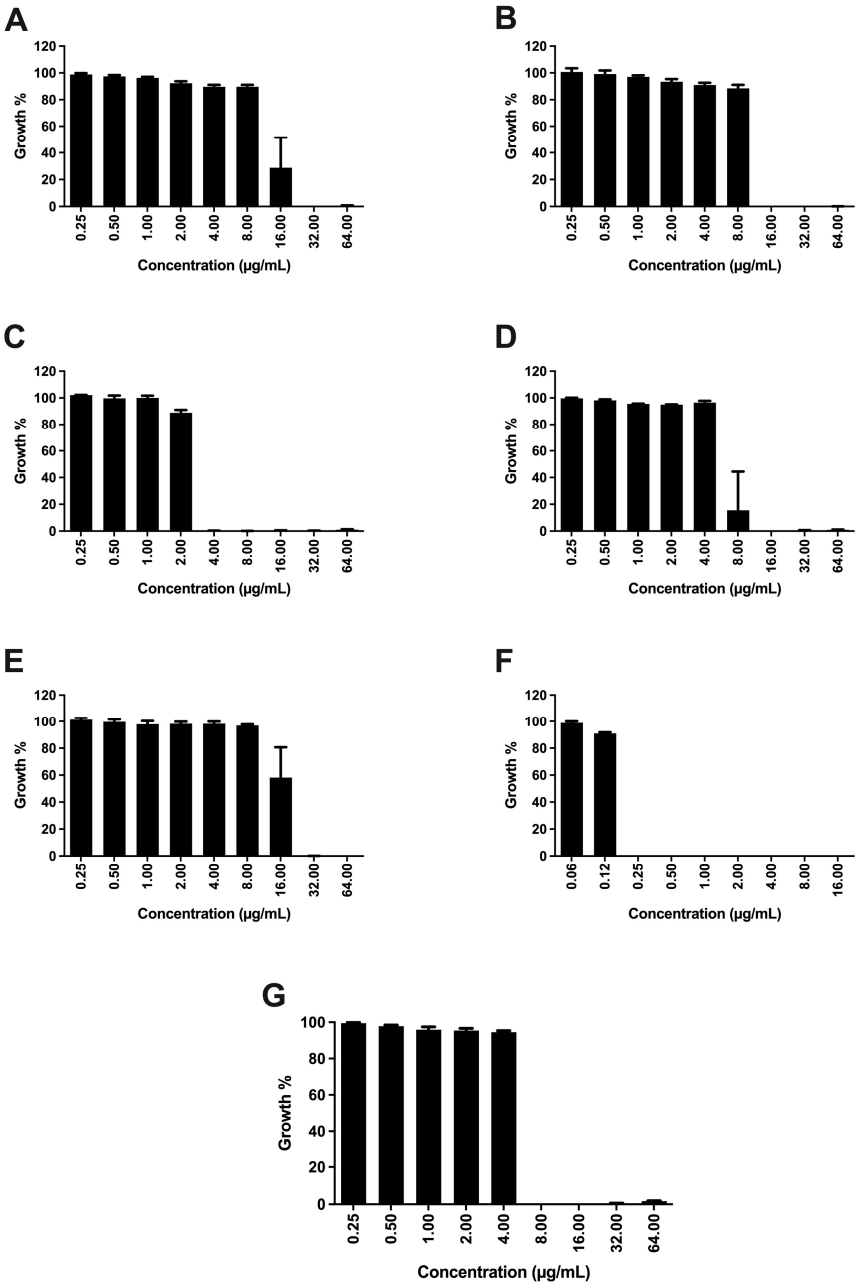


**Figure S2**. Minimum inhibitory concentration (MIC) of peptides against *A. baumannii* AB5075. (**A**) HRZN-13, (**B**) HRZN-14, (**C**) HRZN-15, (**D**) HRZN-16, (**E**) HRZN-17, (**F**) polymyxin B and (**G**) LL-37 resulted in MIC of 32, 32, 4, 16, 32, 0.5 and 8 μg/mL, respectively.

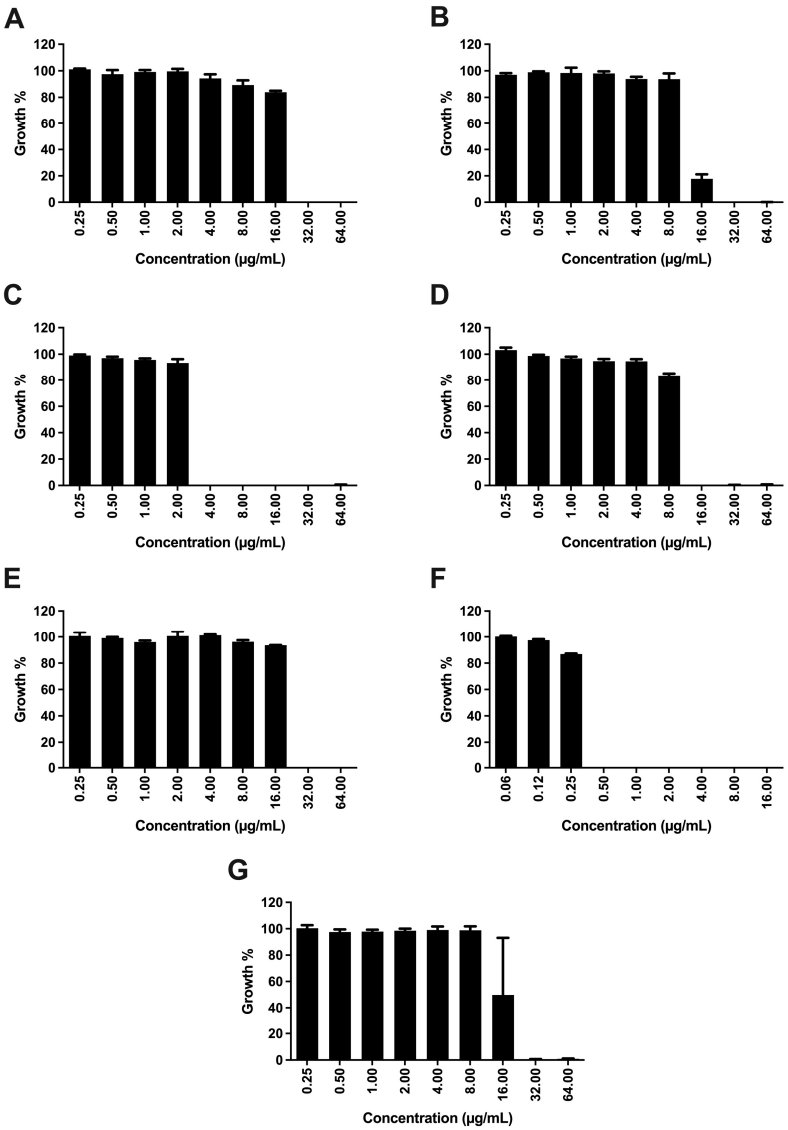


**Figure S3**. Minimum inhibitory concentration of peptides against *A. baumannii* BAA-1710. (**A**) HRZN-13, (**B**) HRZN-14, (**C**) HRZN-15, (**D**) HRZN-16, (**E**) HRZN-17, (**F**) polymyxin B and (**G**) LL-37 resulted in MIC of 32, 32, 4, 16, 32, 0.5 and 32 µg/mL, respectively.

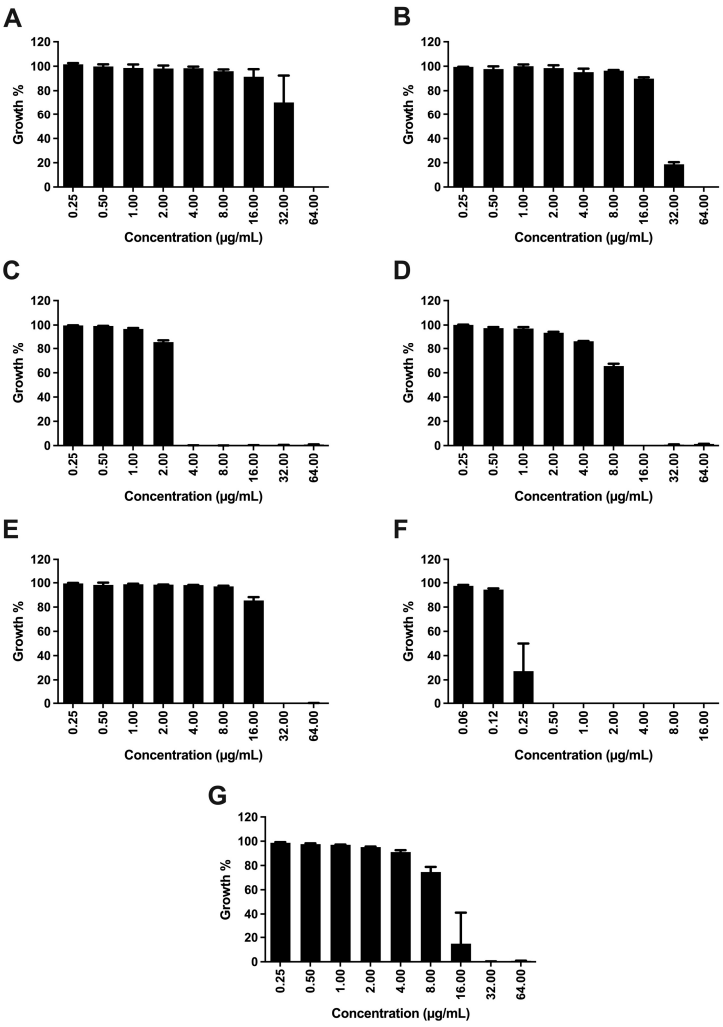


**Figure S4**. Minimum inhibitory concentration of peptides against *A. baumannii* BAA-1794. (**A**) HRZN-13, (**B**) HRZN-14, (**C**) HRZN-15, (**D**) HRZN-16, (**E**) HRZN-17, (**F**) polymyxin B and (**G**) LL-37 resulted in MIC of 64, 64, 4, 16, 32, 0.5 and 32 µg/mL, respectively.

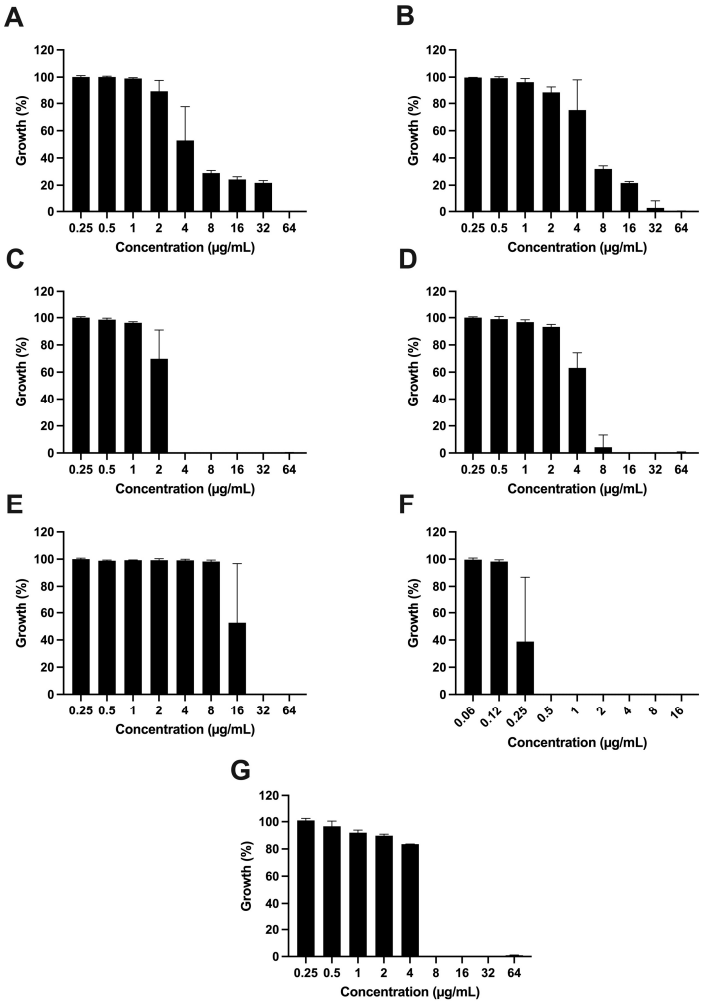


**Figure S5**. Minimum inhibitory concentration of peptides against *A. baumannii* BAA-1800. (**A**) HRZN-13, (**B**) HRZN-14, (**C**) HRZN-15, (**D**) HRZN-16, (**E**) HRZN-17, (**F**) polymyxin B and (**G**) LL-37 resulted in MIC of 64, 64, 4, 16, 32, 0.5 and 8 μg/mL, respectively.

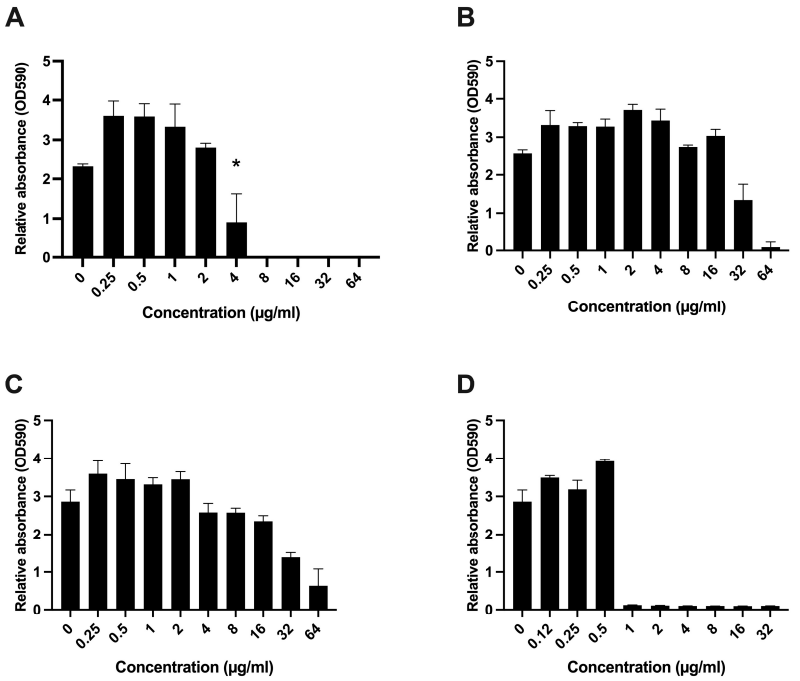


**Figure S6**. Minimum biofilm inhibition concentration (MBIC) of (**A**) HRZN-15, (**B**) LL-37, (**C**) IDR-1018 and (**D**) polymyxin B against *A. baumannii* BAA-1800. Biofilm detection on a polystyrene 96-well plate at 37°C after 24 h of growth in TSB was detected as the absorbance of crystal violet stain (590 nm). Percent biofilm production is indicated (n = 3), relative to "0 peptide/antibiotic" control. Asterisk * indicates P <0.05 (unpaired t-test).

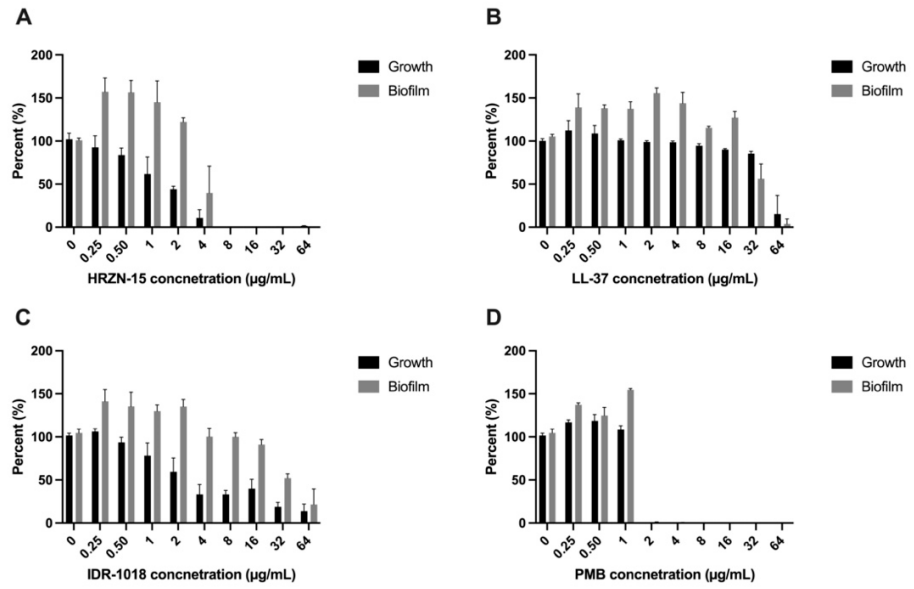

**Figure S7**. Minimum biofilm inhibition concentration (MBIC) of (**A**) HRZN-15, (**B**) LL-37, (**C**) IDR-1018 and (**D**) polymyxin B against *A. baumannii* BAA-1800. Panels indicate bacterial growth (absorbance at 600 nm) represented in black bars with "0 peptide/antibiotic" control set to 100%. Biofilm detection on a polystyrene 96-well plate at 37°C after 24 h of growth in TSB was detected as the absorbance of crystal violet stain (590 nm). Percent biofilm production is indicated by gray bars (n = 3), relative to "0 peptide/antibiotic" control.

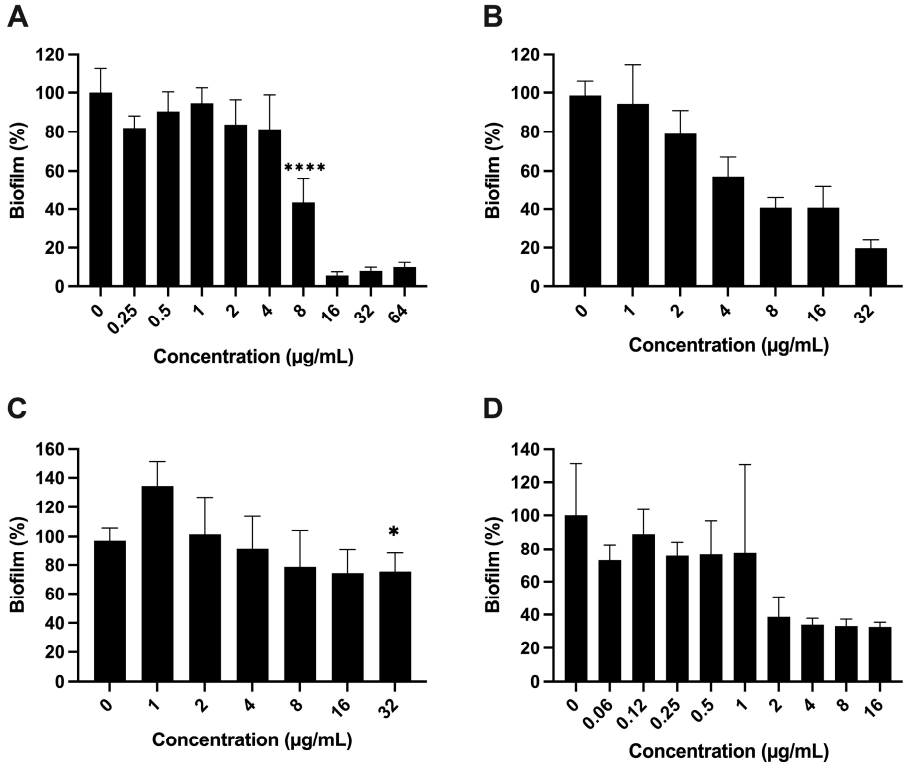


**Figure S8**. Minimum biofilm eradication concentration (MBEC) of (**A**) HRZN-15, (**B**) LL-37, (**C**) IDR-1018 and (**D**) polymyxin B against AB5075 (n = 6). Biofilm mass on pegs was detected at the absorbance of crystal violet stain (590 nm). Percentage biofilm mass is calculated relative to "0 peptide/antibiotic" control. The experiment was performed twice. (* $P$ <0.05 and **** $P$ <0.0001).

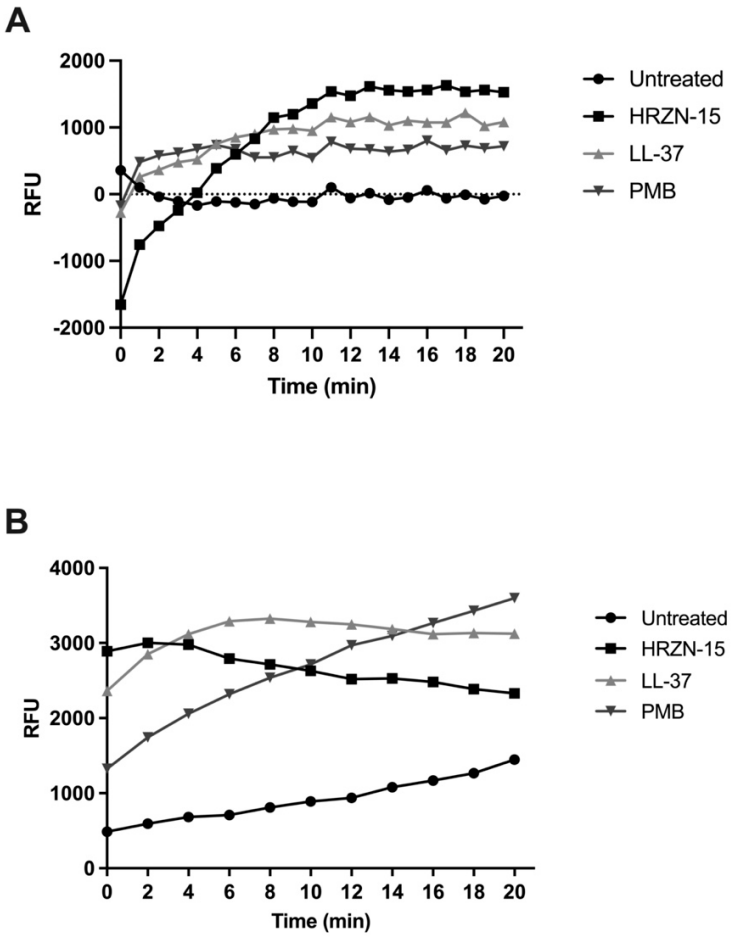


**Figure S9**. Kinetics of (**A**) membrane depolarization ($DiSC_3(5)$) and (**B**) disruption (EtBr) of HRZN-15, LL-37 and polymyxin B (PMB) against AB5075 upon exposure of 50 μg/mL of each compound.

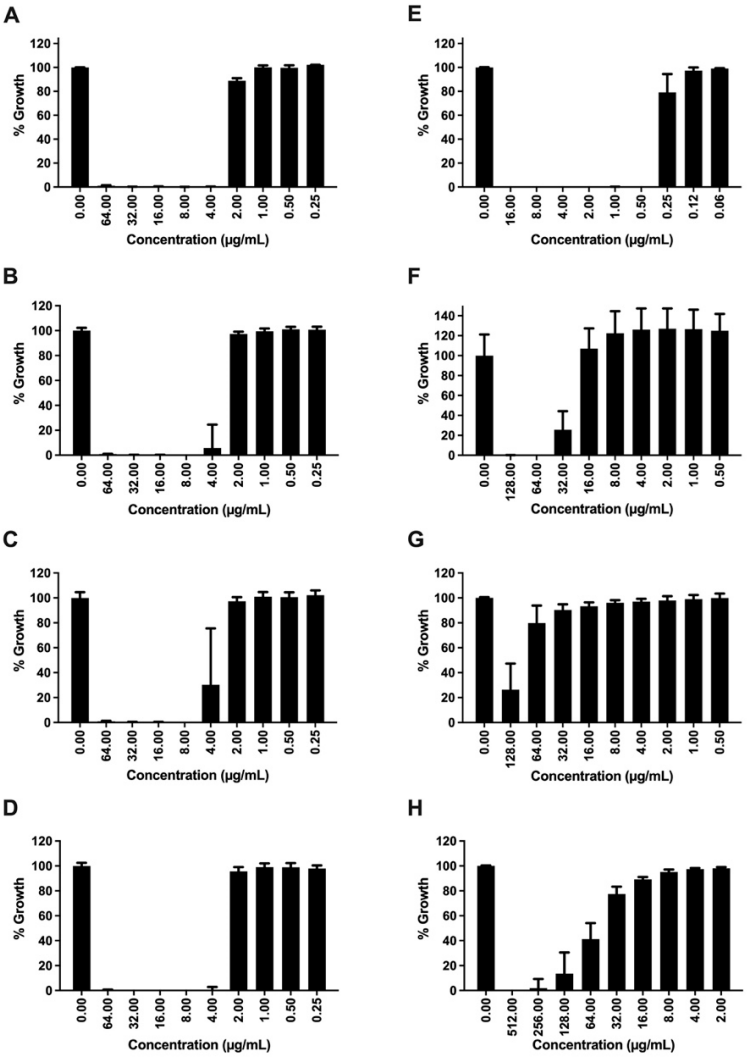


**Figure S10**. *In vitro* resistance acquisition induction of AB5075 upon exposure of HRZN-15 and colistin for 15 days. (**A** – **D**) shows consistent MIC values of AB5075 exposed to HRZN-15 on passage 0, 5, 10 and 15 (from top to bottom). (**E** – **H**) represents MIC of colistin against colistin-exposed bacteria performed on passage 0, 5, 10 and 15.

**Table S1**. *A. baumannii*-active peptides from GRAMPA database [43].

| Strain | Sequence | µM | µg/mL |
|---|---|---|---|
| ATCC 19606 | AAYLLAKINLKALAALAKKIL | 3.6 | 8.0 |
| NA | AAYLLAKINLKALAALAKKIL | 7.2 | 16.0 |
| CCARM 12036 | AFHHIFRGIVHVGKTIHRLVTG | 2.0 | 5.0 |
| CCARM 12005 | AFHHIFRGIVHVGKTIHRLVTG | 2.0 | 5.0 |
| CCARM 12035 | AFHHIFRGIVHVGKTIHRLVTG | 2.0 | 5.0 |
| CCARM 12037 | AFHHIFRGIVHVGKTIHRLVTG | 2.0 | 5.0 |
| ATCC 19606 | AGRGKQGGKVRAKAKTRSSRAGLQFPVGRVHRLLRKGNY | 60.1 | 256.0 |

| | | | |
|---|---|---|---|
| ATCC 19606 | AGYLLGKINLKALAALAKKIL | 3.7 | 8.0 |
| NA | AGYLLGKINLKALAALAKKIL | 3.7 | 8.0 |
| ATCC 19606 | AGYLLGKINLKPLAALAKKIL | 3.6 | 8.0 |
| NA | AGYLLGKINLKPLAALAKKIL | 3.6 | 8.0 |
| ATCC 19606 | AGYLLPKINLKPLAKLPKKIL | 54.9 | 128.0 |
| NA | AGYLLPKINLKPLAKLPKKIL | 54.9 | 128.0 |
| NA | AKKVFKRLGIGKFLHSAKKF | 3.1 | 7.2 |
| KCTC 2508 | AKKVFKRLGIGKFLHSAKKF | 6.3 | 14.4 |
| NA | AKRHHGYKRKFH | 81.8 | 128.0 |
| NA | ALASLLKTLSKAAKKALKTLLKALSA | 1.4 | 3.7 |
| ATCC 19606 | ALASLLKTLSKAAKKALKTLLKALSA | 2.9 | 7.7 |
| M89952 | ALASLLKTLSKAAKKALKTLLKALSA | 2.9 | 7.7 |
| ATCC 17978 | ALASLLKTLSKAAKKALKTLLKALSA | 5.8 | 15.4 |
| M89941 | ALASLLKTLSKAAKKALKTLLKALSA | 5.8 | 15.4 |
| ATCC 19606 | ALASLLKTLSKAKKKKLKTLLKALSA | 0.4 | 1.1 |
| ATCC 17978 | ALASLLKTLSKAKKKKLKTLLKALSA | 0.4 | 1.1 |
| M89941 | ALASLLKTLSKAKKKKLKTLLKALSA | 0.4 | 1.1 |
| M89952 | ALASLLKTLSKAKKKKLKTLLKALSA | 0.7 | 1.9 |
| NA | ALASLLKTLSKAKKKKLKTLLKALSA | 0.7 | 1.9 |
| M89955 | ALKSLLATLSKAAKKALKTLLAALSK | 0.7 | 1.9 |
| NA | ALKSLLATLSKAAKKALKTLLAALSK | 0.7 | 1.9 |
| M89953 | ALKSLLATLSKAAKKALKTLLAALSK | 1.4 | 3.7 |
| ATCC 19606 | ALKSLLATLSKAAKKALKTLLAALSK | 2.9 | 7.7 |
| ATCC 17978 | ALKSLLATLSKAAKKALKTLLAALSK | 2.9 | 7.7 |
| M89941 | ALKSLLATLSKAAKKALKTLLAALSK | 2.9 | 7.7 |
| ATCC 19606 | ALKSLLATLSKAKKKKLKTLLAALSK | 0.4 | 1.1 |
| ATCC 17978 | ALKSLLATLSKAKKKKLKTLLAALSK | 0.4 | 1.1 |
| M89941 | ALKSLLATLSKAKKKKLKTLLAALSK | 0.4 | 1.1 |
| M89952 | ALKSLLATLSKAKKKKLKTLLAALSK | 0.7 | 1.9 |
| NA | ALKSLLATLSKAKKKKLKTLLAALSK | 1.4 | 3.9 |
| M89955 | ALKSLLKTLSAAAKKALATLLKALSK | 0.4 | 1.1 |
| M89953 | ALKSLLKTLSAAAKKALATLLKALSK | 0.7 | 1.9 |
| NA | ALKSLLKTLSAAAKKALATLLKALSK | 1.0 | 2.7 |
| ATCC 19606 | ALKSLLKTLSAAAKKALATLLKALSK | 1.4 | 3.7 |
| ATCC 17978 | ALKSLLKTLSAAAKKALATLLKALSK | 1.4 | 3.7 |
| M89941 | ALKSLLKTLSAAAKKALATLLKALSK | 1.4 | 3.7 |
| M89963 | ALKSLLKTLSAAAKKALATLLKALSK | 2.9 | 7.7 |
| ATCC 17978 | ALKSLLKTLSAAKKKKLATLLKALSK | 0.2 | 0.6 |
| ATCC 19606 | ALKSLLKTLSAAKKKKLATLLKALSK | 0.4 | 1.1 |

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|---|---|---|---|
| M89941 | ALKSLLKTLSAAKKKKLATLLKALSK | 0.4 | 1.1 |
| NA | ALKSLLKTLSAAKKKKLATLLKALSK | 1.4 | 3.9 |
| ATCC 17978 | ALKSLLKTLSKAAAAALKTLLKALSK | 2.9 | 7.7 |
| M89941 | ALKSLLKTLSKAAAAALKTLLKALSK | 2.9 | 7.7 |
| ATCC 19606 | ALKSLLKTLSKAAAAALKTLLKALSK | 5.8 | 15.4 |
| M89963 | ALKSLLKTLSKAAAAALKTLLKALSK | 5.8 | 15.4 |
| NA | ALKSLLKTLSKAAAAALKTLLKALSK | 92.8 | 246.2 |
| ATCC 19606 | ALWHHLLHHLLHSAHHLG | 15.0 | 31.9 |
| ATCC 19606 | ALWKKLLKKLLKSAKKLG | 1.9 | 3.9 |
| ATCC 19606 | ALWMTLKKKVLKAAAKALNAVLVGANA | 0.4 | 1.1 |
| ATCC 17978 | ALWMTLKKKVLKAAAKALNAVLVGANA | 0.7 | 2.0 |
| NA | ALWMTLKKKVLKAAAKALNAVLVGANA | 1.4 | 3.9 |
| NA | ALWMTLLKKVLKAAAKALNAVLVGANA | 0.7 | 1.9 |
| ATCC 19606 | ALWMTLLKKVLKAAAKALNAVLVGANA | 2.8 | 7.8 |
| ATCC 17978 | ALWMTLLKKVLKAAAKALNAVLVGANA | 2.8 | 7.8 |
| ATCC 19606 | ALWRRLLRRLLRSARRLG | 3.8 | 8.5 |
| NA | AMVGT | 17.1 | 8.2 |
| NA | AMVSS | 15.2 | 7.5 |
| ATCC 15308 | AQWFAIQHISLNPPRSTIAMRAINNYRWR | 1.5 | 5.3 |
| ATCC 15308 | AQWFAIQHISLNPPRSTIAMRAINNYRWRSKNQNTFLR | 0.9 | 4.0 |
| ATCC 19606 | AVAGEKLWLLPHLLKMLLTPTP | 163.8 | 400.0 |
| Q12 | AWRWKAFRNCWRVRSSSL | 13.9 | 32.0 |
| Q13 | AWRWKAFRNCWRVRSSSL | 27.7 | 64.0 |
| NA | CLRKLRKRLLC | 22.8 | 32.0 |
| NA | CYCRIPACIAGERRYGTCIYQGRLWAFCC | 0.3 | 1.0 |
| CIP 70 | CYCRIPACIAGERRYGTCIYQGRLWAFCC | 1.2 | 4.0 |
| NA | DCYCRIPACIAGERRYGTCIYQGRLWAFCC | 0.3 | 1.0 |
| CIP 70 | DCYCRIPACIAGERRYGTCIYQGRLWAFCC | 1.1 | 4.0 |
| ATCC 19606 | DDALHHLLHHLLHHL | 100.0 | 182.1 |
| ATCC 19606 | DDALKHLLKHLLKHL | 50.0 | 89.7 |
| ATCC 19606 | DDALKKLLKKLLKKL | 25.0 | 44.2 |
| ATCC 19606 | DDALRHLLRHLLRHL | 100.0 | 187.8 |
| ATCC 19606 | DDALRRLLRRLLRRL | 100.0 | 193.5 |
| ATCC 19606 | DHYNCVSSGGQCLYSACPIFTKIQGTCYRGKAKCCK | 65.1 | 256.0 |
| NA | DSHAKRHHGYKRKFHEKHHSHRGY | 0.2 | 0.5 |
| ATCC 19606 | EKALEKLIAIQKAIKGMLNGWFTGVGFRRKR | 8.0 | 28.5 |
| M3237 | EKALEKLIAIQKAIKGMLNGWFTGVGFRRKR | 8.0 | 28.5 |
| ATCC 17978 | EKALEKLIAIQKAIKGMLNGWFTGVGFRRKR | 8.0 | 28.5 |
| CCARM 12036 | FAHHIFRGIVHVGKTIHRLVTG | 4.0 | 10.0 |

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|---|---|---|---|
| CCARM 12005 | FAHHIFRGIVHVGKTIHRLVTG | 4.0 | 10.0 |
| CCARM 12035 | FAHHIFRGIVHVGKTIHRLVTG | 4.0 | 10.0 |
| CCARM 12037 | FAHHIFRGIVHVGKTIHRLVTG | 4.0 | 10.0 |
| ATCC 19606 | FAKGIAGMAGKLF | 200.0 | 262.1 |
| NA | FALGAVTKRLPSLFCLITRKC | 4.0 | 9.4 |
| ATCC 19606 | FASGIAGMAGKLF | 200.0 | 253.9 |
| ATCC 19606 | FFFLRRIF | 100.0 | 114.5 |
| ATCC 19606 | FFFLSRIF | 100.0 | 107.6 |
| ATCC 19606 | FFGRLKSVWSAVKHGWKAAKSR | 4.2 | 10.8 |
| CCARM 12036 | FFHHIARGIVHVGKTIHRLVTG | 4.0 | 10.0 |
| CCARM 12005 | FFHHIARGIVHVGKTIHRLVTG | 4.0 | 10.0 |
| CCARM 12035 | FFHHIARGIVHVGKTIHRLVTG | 4.0 | 10.0 |
| CCARM 12037 | FFHHIARGIVHVGKTIHRLVTG | 4.0 | 10.0 |
| CCARM 12036 | FFHHIFRGIKHVGKTIHRLVTG | 2.0 | 5.2 |
| CCARM 12005 | FFHHIFRGIKHVGKTIHRLVTG | 2.0 | 5.2 |
| CCARM 12035 | FFHHIFRGIKHVGKTIHRLVTG | 2.0 | 5.2 |
| CCARM 12037 | FFHHIFRGIKHVGKTIHRLVTG | 2.0 | 5.2 |
| NA | FFHHIFRGIVHKGKTIHRLVTG | 1.5 | 3.9 |
| ATCC 19606 | FFHHIFRGIVHKGKTIHRLVTG | 3.0 | 7.8 |
| ATCC 17978 | FFHHIFRGIVHKGKTIHRLVTG | 3.0 | 7.8 |
| ATCC 19606 | FFHHIFRGKVHVGKTIHRLVTG | 1.5 | 3.9 |
| ATCC 17978 | FFHHIFRGKVHVGKTIHRLVTG | 3.0 | 7.8 |
| NA | FFHHIFRGKVHVGKTIHRLVTG | 6.0 | 15.5 |
| ATCC 19606 | FFHHIFRPIVHVGKTIHRLVTG | 5.9 | 15.4 |
| ATCC 17978 | FFHHIFRPIVHVGKTIHRLVTG | 5.9 | 15.4 |
| NA | FFHHIFRPIVHVGKTIHRLVTG | 5.9 | 15.4 |
| CCARM 12036 | FFHHIKRGIKHVGKTIHRLVTG | 4.0 | 10.3 |
| CCARM 12005 | FFHHIKRGIKHVGKTIHRLVTG | 4.0 | 10.3 |
| CCARM 12035 | FFHHIKRGIKHVGKTIHRLVTG | 4.0 | 10.3 |
| CCARM 12037 | FFHHIKRGIKHVGKTIHRLVTG | 4.0 | 10.3 |
| CCARM 12036 | FFHHIKRGIVHVGKTIHRLVTG | 4.0 | 10.2 |
| CCARM 12005 | FFHHIKRGIVHVGKTIHRLVTG | 4.0 | 10.2 |
| CCARM 12035 | FFHHIKRGIVHVGKTIHRLVTG | 4.0 | 10.2 |
| CCARM 12037 | FFHHIKRGIVHVGKTIHRLVTG | 4.0 | 10.2 |
| NA | FFPVIGRILNGIL | 6.0 | 8.8 |
| CCARM 12036 | FKHHIFRGIKHVGKTIHRLVTG | 2.0 | 5.2 |
| CCARM 12005 | FKHHIFRGIKHVGKTIHRLVTG | 2.0 | 5.2 |
| CCARM 12035 | FKHHIFRGIKHVGKTIHRLVTG | 2.0 | 5.2 |
| CCARM 12037 | FKHHIFRGIKHVGKTIHRLVTG | 2.0 | 5.2 |

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|---|---|---|---|
| CCARM 12036 | FKHHIFRGIVHVGKTIHRLVTG | 2.0 | 5.1 |
| CCARM 12005 | FKHHIFRGIVHVGKTIHRLVTG | 2.0 | 5.1 |
| CCARM 12035 | FKHHIFRGIVHVGKTIHRLVTG | 2.0 | 5.1 |
| CCARM 12037 | FKHHIFRGIVHVGKTIHRLVTG | 2.0 | 5.1 |
| ATCC 19606 | FLFSLIPSAIGGLISAFK | 20.0 | 37.6 |
| ATCC 15308 | FLGGLIKIVPAMICAVRKKC | 115.7 | 250.0 |
| SR 201346 | FLGGLIKIVPAMICAVTKKCHHHHHH | 10.9 | 32.0 |
| NA | FLGGLIKIVPAMICAVTKKCHHHHHH | 21.9 | 64.0 |
| ATCC 15308 | FLGGLIKPVPAMICAVRKKC | 116.6 | 250.0 |
| ATCC 15308 | FLGGLIKPWWPWRR | 69.0 | 125.0 |
| ATCC 15308 | FLGGLIKRPPAMICAVRKKC | 113.5 | 250.0 |
| ATCC 15308 | FLGGLIKRVPAMICAVRKKC | 113.4 | 250.0 |
| ATCC 15308 | FLGGLIKWKWPWWPWRR | 13.5 | 31.3 |
| ATCC 15308 | FLGGLIKWPWWPWRR | 31.3 | 62.5 |
| ATCC 15308 | FLGGLIKWWPWRR | 18.2 | 31.3 |
| ATCC 19606 | FLKGIKGMLGKLF | 25.0 | 36.3 |
| ATCC 19606 | FLKGIKGMLGKLL | 25.0 | 35.4 |
| ATCC 19606 | FLKGIVGKLGKLF | 25.0 | 35.5 |
| ATCC 19606 | FLKGIVGMLGKLF | 3.0 | 4.3 |
| ATCC 19606 | FLKGIVGMLGKLL | 6.0 | 8.3 |
| ATCC 19606 | FLKGIVGMLGKLW | 6.0 | 8.8 |
| NA | FLPAALAGIGGILGKLF | 15.8 | 26.2 |
| ATCC 19606 | FLPAALAGIGGILGKLF | 25.0 | 41.5 |
| NA | FLPLIGRVLSGIL | 24.0 | 33.5 |
| ATCC 19606 | FLPWFSKFLGRIL | 12.0 | 19.5 |
| ATCC 19606 | FLSGIVGMLGKLF | 6.0 | 8.3 |
| ATCC 19606 | FLSLIPHIVSGVASIAKHF | 6.3 | 12.7 |
| ATCC 19606 | FLSLIPHIVSGVASLAIHF | 200.0 | 404.3 |
| ATCC 19606 | FLSLIPHIVSGVASLAKHF | 6.3 | 12.7 |
| ATCC 19606 | FLSMIPHIVSGVAALAKHL | 6.3 | 12.5 |
| ATCC 19606 | FSFLSRIF | 100.0 | 101.6 |
| NA | FSTKTRNWFSEHFKKVKEKLKDTFA | 80.6 | 250.0 |
| ATCC 19606 | FVPWFSKFLGRIL | 12.5 | 20.1 |
| ATCC 19606 | FVPWFSKFLKRIL | 3.1 | 5.3 |
| ATCC 19606 | FVPWFSKFLPRIL | 50.0 | 82.5 |
| ATCC 19606 | FVPWFSKFLWRIL | 3.1 | 5.4 |
| ATCC 19606 | FVQWFSKFLGKIL | 6.0 | 9.7 |
| ATCC 19606 | FVQWFSKFLGRIL | 6.0 | 9.8 |
| ATCC 19606 | FVQWFSKFLLRIL | 48.0 | 81.5 |

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|---|---|---|---|
| ATCC 19606 | FVQWFSRFLGRIL | 6.0 | 10.0 |
| ATCC 19606 | FVRWFSKFLGRIL | 6.0 | 10.0 |
| ATCC 19606 | FVRWFSRFLGRIL | 6.0 | 10.2 |
| NA | FWGKLWEGVKNAI | 38.0 | 58.8 |
| ATCC 19606 | GCKKYRRFRWKFKGKFWFW | 24.1 | 64.0 |
| ATCC 19606 | GCKKYRRFRWKFKGKFWFWGG | 23.1 | 64.0 |
| ATCC 19606 | GCRALCYKQRCVTYCRGA | 8.0 | 16.4 |
| ATCC 19606 | GCRRFKKFKKWRYRGRFWFWCFG | 20.3 | 64.0 |
| ATCC 19606 | GCRRLCYKQRCVTYCRGPPR | 1.0 | 2.4 |
| ATCC 19606 | GCRRLCYKQRCVTYCRGR | 1.0 | 2.2 |
| ATCC 19606 | GCRRWKKFRWRYRGKFWFWCG | 22.0 | 64.0 |
| ATCC 19606 | GFCWYVCVYRNGVRVCYRRCN | 0.2 | 0.5 |
| NM8 | GFGSLLGKALRLGANVL | 3.0 | 5.1 |
| NA | GFGSLLGKALRLGANVL | 3.1 | 5.2 |
| ATCC 19606 | GFGSLLGKALRLGANVL | 4.7 | 8.0 |
| NA | GFLGPLLKLGLKGVAKVLPHLIPSRQQ | 12.5 | 36.0 |
| NM8 | GFLGPLLKLGLKGVAKVLPHLIPSRQQ | 12.5 | 36.0 |
| NM8 | GFLGSLLKTGLKVGSNLL | 6.0 | 10.9 |
| NM8 | GFSSIFRGVAKFASKGLGKDLAKLGVDLVA | 50.0 | 152.6 |
| NM8 | GFSSIFRGVAKFASKGLGKDLAKLGVDLVACKISKQC | 6.0 | 23.1 |
| NM8 | GFSSIFRGVAKFASKGLGKDLAKLGVDLVASKISKQS | 12.5 | 47.6 |
| NM35 | GFSSIFRGVAKFASKGLGKKLAKLGVKLVACKISKQC | 1.5 | 5.8 |
| NM8 | GFSSIFRGVAKFASKGLGKKLAKLGVKLVACKISKQC | 3.0 | 11.6 |
| NA | GFWGKLWEGVKNAI | 7.0 | 11.2 |
| NA | GFWSSALEGLKKFAKGGLEALTNPK | 12.5 | 33.1 |
| NM8 | GFWSSALEGLKKFAKGGLEALTNPK | 12.5 | 33.1 |
| AB3 | GGLKKLGKKLEGAGKRVFKASEKALPVVVGIKAIGK | 0.3 | 1.0 |
| AB1 | GGLKKLGKKLEGAGKRVFKASEKALPVVVGIKAIGK | 0.5 | 2.0 |
| ATCC 17978 | GGLKKLGKKLEGAGKRVFKASEKALPVVVGIKAIGK | 0.5 | 2.0 |
| ATCC 17978 | GGLKKLGKKLEGAGKRVFNAAEKALPVVAGAKALRK | 0.5 | 2.0 |
| NM35 | GIFPIFAKLLGKVIKVASSLISKGRTE | 10.0 | 28.7 |
| NA | GIFPIFAKLLGKVIKVASSLISKGRTE | 20.0 | 57.5 |
| NM8 | GIFPIFAKLLGKVIKVASSLISKGRTE | 20.0 | 57.5 |
| NA | GIGAVLKVLTTGLPALISWIKRKRQQ | 4.2 | 12.1 |
| NA | GIGDPVTCLKSGAICHPVFCPRRYKQIGTCGLPGTKCCKKP | 29.5 | 128.0 |
| ATCC 19606 | GIGK | 100.0 | 37.3 |
| ATCC 19606 | GIGKFLHSAGKFGKAFVGEIMKS | 26.6 | 64.0 |
| ATCC 19606 | GIGKFLHSAKKFGKAFVGEIMNS | 20.0 | 49.3 |
| NA | GILKTIKSIASKLKRKAK | 1.6 | 3.1 |

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|---|---|---|---|
| NA | GILKTIKSIASKVANTVQKLKRKAKNAV | 3.1 | 9.3 |
| NA | GILKTIKSIASKVANTVQKLKRKAKNAVA | 3.1 | 9.5 |
| NA | GILNTIKSIASKLKRKAK | 1.6 | 3.1 |
| NA | GIWDTIKSMGKVFAGAILQNL | 12.5 | 28.3 |
| NA | GIWDTIKSMGKVFAGLILQNL | 25.0 | 57.6 |
| NM109 | GIWKTIKSMGKVFAGAIKQNL | 3.0 | 6.9 |
| NM8 | GIWKTIKSMGKVFAGAIKQNL | 3.0 | 6.9 |
| NM75 | GIWKTIKSMGKVFAGAIKQNL | 3.0 | 6.9 |
| NM35 | GIWKTIKSMGKVFAGAIKQNL | 3.0 | 6.9 |
| NM124 | GIWKTIKSMGKVFAGAIKQNL | 3.0 | 6.9 |
| NA | GIWKTIKSMGKVFAGAIKQNL | 6.3 | 14.3 |
| NA | GIWKTIKSMGKVFAGAILQNL | 12.5 | 28.4 |
| NM75 | GIWKTIKSMGKVFAGKIKQNL | 3.0 | 7.0 |
| NM109 | GIWKTIKSMGKVFAGKIKQNL | 6.0 | 14.1 |
| NM8 | GIWKTIKSMGKVFAGKIKQNL | 6.0 | 14.1 |
| NM35 | GIWKTIKSMGKVFAGKIKQNL | 6.0 | 14.1 |
| NM124 | GIWKTIKSMGKVFAGKIKQNL | 6.0 | 14.1 |
| NA | GIWKTIKSMGKVFAGKIKQNL | 6.3 | 14.7 |
| NM109 | GIWKTIKSMGKVFAGKILQNL | 1.5 | 3.5 |
| NM124 | GIWKTIKSMGKVFAGKILQNL | 1.5 | 3.5 |
| NM8 | GIWKTIKSMGKVFAGKILQNL | 3.0 | 7.0 |
| NM75 | GIWKTIKSMGKVFAGKILQNL | 3.0 | 7.0 |
| NM35 | GIWKTIKSMGKVFAGKILQNL | 3.0 | 7.0 |
| NA | GIWKTIKSMGKVFAGKILQNL | 6.9 | 16.0 |
| NA | GIWSSIKNLASKAWNSDIGQSLRNKAAGAINKFVADKIGVTP SQAAS | 5.0 | 24.4 |
| ATCC 19606 | GKKYRRFRWKFKGKWFWFG | 6.1 | 16.0 |
| ATCC 19606 | GKKYRRFRWKFRKGRFWFWG | 5.7 | 16.0 |
| ATCC 19606 | GKKYRRFWKFKGKWFWFWG | 6.1 | 16.0 |
| ATCC 17978 | GKLTKDKLKRGAKKALNVASKVAPIVAAGASIAR | 0.9 | 3.0 |
| NA | GLASTIGSLLGKFAKGGAQAFLQPK | 25.0 | 61.5 |
| NM8 | GLASTIGSLLGKFAKGGAQAFLQPK | 25.0 | 61.5 |
| ATCC 15308 | GLFDIWAWWRWRR | 16.9 | 31.3 |
| ATCC 15308 | GLFDIWKKLRWRR | 17.6 | 31.3 |
| ATCC 15308 | GLFDIWKKWRWRR | 16.9 | 31.3 |
| ATCC 15308 | GLFDIWKWWRWRR | 8.2 | 15.6 |
| ATCC 15308 | GLFDKWAWWRWRR | 33.5 | 62.5 |
| NA | GLFKKLRRKIKKGFKKIFKRL | 3.8 | 10.0 |
| ATCC 9955 | GLFKKLRRKIKKGFKKIFKRL | 15.9 | 42.0 |

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|---|---|---|---|
| ATCC 9955 | GLFKKLRRKIKKGFKKIFKRLPPIGVGVSIPLAGKR | 1.3 | 5.2 |
| NA | GLFKKLRRKIKKGFKKIFKRLPPIGVGVSIPLAGKR | 1.3 | 5.2 |
| NM8 | GLGKDLAKLGVDLVACKISKQC | 200.0 | 452.0 |
| NM35 | GLGKDLAKLGVDLVACKISKQC | 200.0 | 452.0 |
| NA | GLGSLLGKAFKIGLKTVGKMMGGAPREQ | 4.0 | 11.4 |
| NA | GLGSVLGKALKIGANLL | 4.0 | 6.5 |
| NM8 | GLGSVLGKALKIGANLL | 6.0 | 9.7 |
| NM8 | GLKEIFKAGLGSLVKGIAAHVAS | 5.0 | 11.3 |
| NM35 | GLKEIFKAGLGSLVKGIAAHVAS | 10.0 | 22.7 |
| NM8 | GLKKIFKAGLGSLKKGIAAHVAS | 20.0 | 45.9 |
| NM35 | GLKKIFKAGLGSLKKGIAAHVAS | 20.0 | 45.9 |
| NM75 | GLKKIFKAGLGSLVKGIAAHVAS | 2.5 | 5.7 |
| NM35 | GLKKIFKAGLGSLVKGIAAHVAS | 20.0 | 45.3 |
| NM8 | GLKKIFKAGLGSLVKGIAAHVAS | 40.0 | 90.6 |
| NM75 | GLKKIFKAGLGSLVKGIKAHVAS | 5.0 | 11.6 |
| NM8 | GLKKIFKAGLGSLVKGIKAHVAS | 10.0 | 23.2 |
| NM124 | GLKKIFKAGLGSLVKGIKAHVAS | 20.0 | 46.5 |
| NM75 | GLKKIFKKGLGSLVKGIAAHVAS | 2.5 | 5.8 |
| NM8 | GLKKIFKKGLGSLVKGIAAHVAS | 5.0 | 11.6 |
| NM35 | GLKKIFKKGLGSLVKGIAAHVAS | 10.0 | 23.2 |
| NA | GLLKPLLKIAAKVGSNLL | 1.6 | 3.0 |
| KCTC 2508 | GLNALKKVFQGIHEAIKKINNHVQ | 2.0 | 5.4 |
| CCARM 12036 | GLNALKKVFQGIHEAIKKINNHVQ | 4.0 | 10.8 |
| CCARM 12035 | GLNALKKVFQGIHEAIKKINNHVQ | 4.0 | 10.8 |
| CCARM 12036 | GLNALKKVFQGIHKAIKKINNHVQ | 2.0 | 5.4 |
| CCARM 12035 | GLNALKKVFQGIHKAIKKINNHVQ | 2.0 | 5.4 |
| KCTC 2508 | GLNALKKVFQGIHKAIKKINNHVQ | 2.0 | 5.4 |
| CCARM 12036 | GLNALKKVFQPIHEAIKKINNHVQ | 16.0 | 43.8 |
| CCARM 12035 | GLNALKKVFQPIHEAIKKINNHVQ | 16.0 | 43.8 |
| KCTC 2508 | GLNALKKVFQPIHEAIKKINNHVQ | 16.0 | 43.8 |
| CCARM 12036 | GLNALKKVFQPIHEAIKLINNHVQ | 8.0 | 21.8 |
| CCARM 12035 | GLNALKKVFQPIHEAIKLINNHVQ | 8.0 | 21.8 |
| KCTC 2508 | GLNALKKVFQPIHEAIKLINNHVQ | 8.0 | 21.8 |
| CCARM 12036 | GLNALKKVFQPIHKAIKKINNHVQ | 8.0 | 21.9 |
| KCTC 2508 | GLNALKKVFQPIHKAIKKINNHVQ | 8.0 | 21.9 |
| CCARM 12035 | GLNALKKVFQPIHKAIKKINNHVQ | 16.0 | 43.8 |
| NA | GLVGTLLGHIGKAILG | 62.5 | 94.9 |
| NM124 | GLVGTLLGHIGKAILG | 250.0 | 379.7 |
| NM75 | GLVGTLLGHIGKAILG | 250.0 | 379.7 |

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|---|---|---|---|
| NM8 | GLVGTLLGHIGKAILG | 250.0 | 379.7 |
| NM35 | GLVGTLLGHIGKAILG | 250.0 | 379.7 |
| NM109 | GLVGTLLGHIGKAILG | 250.0 | 379.7 |
| NA | GLVGTLLGHIGKAILS | 62.5 | 96.8 |
| NM75 | GLVGTLLGHIGKAILS | 62.5 | 96.8 |
| NM124 | GLVGTLLGHIGKAILS | 125.0 | 193.6 |
| NM8 | GLVGTLLGHIGKAILS | 125.0 | 193.6 |
| NM35 | GLVGTLLGHIGKAILS | 125.0 | 193.6 |
| NM109 | GLVGTLLGHIGKAILS | 125.0 | 193.6 |
| NA | GMASKAGSVLGKVAKVALKAAL | 4.0 | 8.3 |
| NM8 | GMATKAGTALGKVAKAVIGAAL | 25.0 | 50.0 |
| ATCC 19606 | GRKKRRQRRRGGWMWVTNLRTD | 2.8 | 8.0 |
| NA | GRKKRRQRRRGGWMWVTNLRTD | 5.7 | 16.0 |
| NA | GRLRNLIEKAGQNIRGKIQGIGRRIKDILKNLQPRPQV | 1.1 | 4.7 |
| ATCC 19606 | GRRYKKFRWKFKGRWFWFG | 6.1 | 16.0 |
| Q13 | GTAWRWHYRARS | 82.8 | 128.0 |
| Q12 | GTAWRWHYRARS | 82.8 | 128.0 |
| NM8 | GVIKSVLKGVAKTVALGML | 6.0 | 11.3 |
| NM35 | GVIKSVLKGVAKTVALGML | 6.0 | 11.3 |
| NM109 | GVIKSVLKGVAKTVALGML | 12.5 | 23.6 |
| NM75 | GVIKSVLKGVAKTVALGML | 12.5 | 23.6 |
| NM124 | GVIKSVLKGVAKTVALGML | 12.5 | 23.6 |
| NA | GWANTLKNVAGGLCKITGAA | 19.3 | 37.5 |
| NA | GWFKKAWRKVKNAGRRVLKGVGIHYGVGLI | 2.4 | 8.0 |
| Q13 | HLRRINKLLTRIGLYRHAFG | 3.3 | 8.0 |
| NA | HLRRINKLLTRIGLYRHAFG | 26.3 | 64.0 |
| NA | IASKVANTVQKLKRKAKNAV | 50.0 | 108.4 |
| NA | IASKVANTVQKLKRKAKNAVA | 6.3 | 14.0 |
| ATCC 19606 | IDWKKVDWKKVSKKTCKVMLKACKFLG | 0.0 | 0.1 |
| NM35 | IKIPSFFRNILKKVGKEAVSLIAGALKQS | 5.0 | 15.8 |
| NM8 | IKIPSFFRNILKKVGKEAVSLIAGALKQS | 10.0 | 31.6 |
| NA | IKLSKETKDNLKKVLKGAIKGAIAVAKMV | 6.3 | 19.3 |
| NA | IKLSKETKKNLKKVLKGAIKGAIAVAKMV | 3.1 | 9.6 |
| NA | IKLSKKTKDNLKKVLKGAIKGAIAVAKMV | 3.1 | 9.6 |
| NA | IKLSPETKDNLKKVLKGAIKGAIAVAKMV | 6.3 | 19.2 |
| NA | IKLSPETKKNLKKVLKGAIKGAIAVAKMV | 3.1 | 9.5 |
| NA | IKLSPKTKDNLKKVLKGAIKGAIAVAKMV | 3.1 | 9.5 |
| NA | IKLSPKTKKNLKKVLKGAIKGAIAVAKMV | 3.1 | 9.5 |
| NA | IKSIASKVANTVQKLKRKAKNAV | 6.3 | 15.6 |

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|---|---|---|---|
| NA | IKSIASKVANTVQKLKRKAKNAVA | 3.1 | 8.0 |
| NM8 | ILGAILPLVSGLLSNKL | 128.0 | 220.3 |
| NM8 | ILGKLLKTAAGLLSNL | 64.0 | 104.0 |
| NM8 | ILGKLLKTAAKLLSNL | 4.0 | 6.8 |
| NM8 | ILGKLLSTAAGLLKNL | 32.0 | 52.0 |
| NM8 | ILGKLLSTAAGLLSKL | 128.0 | 204.5 |
| NM8 | ILGKLLSTAAGLLSNL | 64.0 | 101.4 |
| NM8 | ILGKLLSTAAKLLSNL | 8.0 | 13.2 |
| NA | ILSAIWSGIKSLF | 10.0 | 14.3 |
| NA | INLKAIAALAKKLF | 3.7 | 5.7 |
| ATCC 19606 | ISKRILTGKK | 223.9 | 256.0 |
| ATCC 15308 | ISLNPPRSTIAMRAINNYRWRSKNQNTFLR | 3.5 | 12.7 |
| NA | IWSAIWSGIKGLL | 14.0 | 20.2 |
| ATCC 19606 | KAAAKWAAKAAK | 100.0 | 121.4 |
| ATCC 19606 | KAK | 100.0 | 34.5 |
| ATCC 19606 | KCRRLCYRQRCVTYCRGR | 1.0 | 2.3 |
| ATCC 19606 | KCRRYCYRQRCVTYCRGR | 1.0 | 2.4 |
| ATCC 15308 | KESRAKKFQRQHMDSDSSPSSSSTYSNQMMRRRRNMTQGRSK PVNTFVH | 9.0 | 50.7 |
| NM124 | KFASKGLGKDLAKLGVDLVACKISKQC | 100.0 | 282.1 |
| NM8 | KFASKGLGKDLAKLGVDLVACKISKQC | 200.0 | 564.3 |
| NA | KFFKRLLKSVRRAVKKFRKKPRLIGLSTLL | 55.1 | 200.0 |
| ATCC 19606 | KFHEKHHSHRGY | 20.5 | 32.0 |
| CCARM 12036 | KFHHIFRGIKHVGKTIHRLVTG | 2.0 | 5.2 |
| CCARM 12005 | KFHHIFRGIKHVGKTIHRLVTG | 2.0 | 5.2 |
| CCARM 12035 | KFHHIFRGIKHVGKTIHRLVTG | 2.0 | 5.2 |
| CCARM 12037 | KFHHIFRGIKHVGKTIHRLVTG | 2.0 | 5.2 |
| CCARM 12036 | KFHHIFRGIVHVGKTIHRLVTG | 2.0 | 5.1 |
| CCARM 12005 | KFHHIFRGIVHVGKTIHRLVTG | 2.0 | 5.1 |
| CCARM 12035 | KFHHIFRGIVHVGKTIHRLVTG | 2.0 | 5.1 |
| CCARM 12037 | KFHHIFRGIVHVGKTIHRLVTG | 2.0 | 5.1 |
| Q12 | KFVRLKIYCRDKNKGRGISF | 26.3 | 64.0 |
| Q13 | KFVRLKIYCRDKNKGRGISF | 52.7 | 128.0 |
| ATCC 19606 | KFWKLLKKALRLWAKVL | 3.7 | 8.0 |
| NA | KFWKLLKKALRLWAKVL | 7.5 | 16.0 |
| ATCC 19606 | KFWKLLKKALRLWKKVL | 3.6 | 8.0 |
| NA | KFWKLLKKALRLWKKVL | 3.6 | 8.0 |
| ATCC 19606 | KFWSLLKKALRLWANVL | 3.8 | 8.0 |
| NA | KFWSLLKKALRLWANVL | 3.8 | 8.0 |

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| ATCC 19606 | KGGGKWGGKGGK | 25.0 | 27.9 |
| ATCC 19606 | KGGK | 12.5 | 4.9 |
| ATCC 19606 | KGIVGMLGKLF | 50.0 | 58.1 |
| NM8 | KGLGKDLAKLGVDLVACKISKQC | 200.0 | 477.6 |
| ATCC 19606 | KIAKVALKALKIAKGALKAL | 1.5 | 3.1 |
| NA | KIAKVALKALKIAKGALKAL | 1.5 | 3.1 |
| ATCC 19606 | KIAKVALKALKIAKVALKAL | 1.5 | 3.1 |
| NA | KIAKVALKALKIAKVALKAL | 1.5 | 3.1 |
| NA | KIKKGFKKIFKRLPPIGVGVSIPLAGKR | 3.3 | 10.0 |
| ATCC 9955 | KIKKGFKKIFKRLPPIGVGVSIPLAGKR | 9.1 | 28.0 |
| ATCC 19606 | KILGVSKKIMRRISKDILTGKK | 6.4 | 16.0 |
| ATCC 19606 | KILRGVSKKIMRRILTGKK | 0.9 | 2.0 |
| ATCC 19606 | KILRGVSKKIMRRISKDILTGKK | 3.0 | 8.0 |
| ATCC 19606 | KILRGVSKKIMRTFLRR | 3.8 | 8.0 |
| ATCC 19606 | KILRGVSKRILTGKK | 75.4 | 128.0 |
| ATCC 19606 | KISKKIMRTFLRR | 152.6 | 256.0 |
| ATCC 19606 | KISKKIMRTFLRRILTGKK | 1.7 | 4.0 |
| ATCC 19606 | KISKKIMRTFLRRISKDILTGKK | 1.4 | 4.0 |
| ATCC 19606 | KK | 75.0 | 20.6 |
| NA | KKCGFFCKLKNKLKSTGSRSNIAAGTHGGTFRV | 56.4 | 200.0 |
| NA | KKCKFFCKVKKKIKSIGFQIPIVSIPFK | 60.9 | 200.0 |
| ATCC 19606 | KKEK | 37.0 | 19.7 |
| ATCC 19606 | KKIMRTFLRR | 94.9 | 128.0 |
| ATCC 19606 | KKIMRTFLRRISKDILTGKK | 3.3 | 8.0 |
| ATCC 19606 | KKIMRTFLRRISKKILTGKK | 3.3 | 8.0 |
| ATCC 19606 | KKKK | 12.5 | 6.6 |
| ATCC 19606 | KKKLKKLKKKLK | 50.0 | 75.6 |
| ATCC 19606 | KKKLLLLLLLLLKKK | 50.0 | 90.3 |
| ATCC 19606 | KKLLKKLKKLLK | 19.0 | 28.1 |
| ATCC 19606 | KKLLKLLLKLLK | 4.5 | 6.5 |
| NA | KKRLKKIFKKPMVIGVTIPF | 1.7 | 4.0 |
| NA | KKWRKLLKKLKKLL | 0.5 | 1.0 |
| NA | KKWRKLLKWLAKK | 1.3 | 2.3 |
| NA | KKWRWWLKALAKK | 2.3 | 4.0 |
| NA | KKWRWWLKALAKKLL | 0.2 | 0.4 |
| ATCC 19606 | KLAKLAKKLAKLAK | 196.9 | 300.0 |
| ATCC 19606 | KLK | 100.0 | 38.8 |
| ATCC 19606 | KLKLLKLLKLLKLLK | 15.0 | 27.1 |
| ATCC 899 | KLKSLLKTLSKAKKKKLKTLLKALSK | 0.3 | 0.9 |

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|---|---|---|---|
| ATCC 821 | KLKSLLKTLSKAKKKKLKTLLKALSK | 0.3 | 0.9 |
| ATCC 985 | KLKSLLKTLSKAKKKKLKTLLKALSK | 0.3 | 0.9 |
| ATCC 1012 | KLKSLLKTLSKAKKKKLKTLLKALSK | 0.3 | 0.9 |
| ATCC 884 | KLKSLLKTLSKAKKKKLKTLLKALSK | 0.3 | 0.9 |
| ATCC 689 | KLKSLLKTLSKAKKKKLKTLLKALSK | 0.3 | 0.9 |
| ATCC 649 | KLKSLLKTLSKAKKKKLKTLLKALSK | 0.3 | 0.9 |
| ATCC 19606 | KLKSLLKTLSKAKKKKLKTLLKALSK | 0.7 | 2.1 |
| ATCC 17978 | KLKSLLKTLSKAKKKKLKTLLKALSK | 0.7 | 2.1 |
| ATCC 964 | KLKSLLKTLSKAKKKKLKTLLKALSK | 0.7 | 2.1 |
| ATCC 759 | KLKSLLKTLSKAKKKKLKTLLKALSK | 0.7 | 2.1 |
| ATCC 821 | KLKSLLKTLSKAKKKLLKTALKALSK | 0.3 | 0.9 |
| ATCC 985 | KLKSLLKTLSKAKKKLLKTALKALSK | 0.3 | 0.9 |
| ATCC 759 | KLKSLLKTLSKAKKKLLKTALKALSK | 0.3 | 0.9 |
| ATCC 649 | KLKSLLKTLSKAKKKLLKTALKALSK | 0.3 | 0.9 |
| ATCC 19606 | KLKSLLKTLSKAKKKLLKTALKALSK | 0.7 | 2.0 |
| ATCC 17978 | KLKSLLKTLSKAKKKLLKTALKALSK | 0.7 | 2.0 |
| ATCC 964 | KLKSLLKTLSKAKKKLLKTALKALSK | 0.7 | 2.0 |
| ATCC 899 | KLKSLLKTLSKAKKKLLKTALKALSK | 0.7 | 2.0 |
| ATCC 1012 | KLKSLLKTLSKAKKKLLKTALKALSK | 0.7 | 2.0 |
| ATCC 884 | KLKSLLKTLSKAKKKLLKTALKALSK | 0.7 | 2.0 |
| ATCC 689 | KLKSLLKTLSKAKKKLLKTALKALSK | 0.7 | 2.0 |
| NA | KLLK | 127.8 | 64.0 |
| ATCC 19606 | KLLLKWLLKLLK | 100.0 | 150.9 |
| ATCC 19606 | KNLRRIIRKIIHIIKKYG | 2.6 | 5.9 |
| ATCC 15308 | KPKDMTSSQWFKTQHVQPSPQASNSAMSIINKYTERSKDLNT FLH | 10.0 | 52.1 |
| ATCC 15308 | KPKGMTSSQWFKIQHMQPSPQASNSAMKNINKHTKRSKDL NTFLH | 1.2 | 6.3 |
| ATCC 15308 | KPPQFTWAQWFETQHINMTSQQSTNAMQVINNYQRRSKNQ NTFLL | 10.0 | 54.6 |
| NA | KRFKKFFKKLKNSVKKRAKKFFKKPRVIGVSIPF | 3.9 | 16.0 |
| NA | KRFKKFFKKLKNSVKKRVKKFFRKPRVIGVTFPF | 0.3 | 1.1 |
| NA | KRFKKFFKKVKKSV | 71.2 | 128.0 |
| NA | KRFKKFFKKVKKSVKKRLKKIFKKPMVIGVTIPF | 0.3 | 1.0 |
| NA | KRGFGKKLRKRLKKFRNSIKKRLKNFNVVIPIPLPG | 1.9 | 8.1 |
| ATCC 19606 | KRGFGKKLRKRLKKFRNSIKKRLKNFNVVIPIPLPG | 3.8 | 16.3 |
| NA | KRIVQRIKDFLRNLVPRTES | 6.5 | 16.0 |
| ATCC 19606 | KRIVQRIKDFLRNLVPRTES | 25.9 | 64.0 |
| NA | KRRGSVTTRYQFLMIHLLRPKKLFA | 3.1 | 9.4 |
| ATCC 17978 | KRWWKWIRW | 5.0 | 7.2 |

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| ATCC 17978 | KRWWKWWRR | 20.0 | 29.8 |
| NA | KSKEKIGKEFKRIVQRIKDFLRNLVPRTES | 2.2 | 8.0 |
| ATCC 19606 | KSKEKIGKEFKRIVQRIKDFLRNLVPRTES | 4.4 | 16.0 |
| NA | KTRNWFSEHFKKVKEKLKDTFA | 90.3 | 250.0 |
| NA | KVANTVQKLKRKAKNAVA | 50.0 | 98.4 |
| ATCC 19606 | KVVVKWVVKVVK | 100.0 | 141.1 |
| NA | KWCFRVCYRGICYRKCR | 7.1 | 16.0 |
| ATCC 19606 | KWCFRVCYRGICYRRCR | 0.1 | 0.1 |
| ATCC 19606 | KWKIFKKIEKVGRNIRNGIIKAGPAVAVLGEAKAL | 33.5 | 128.0 |
| NA | KWKLFKKIGIGAVLKVLTTG | 3.1 | 6.9 |
| KCTC 2508 | KWKLFKKIGIGAVLKVLTTG | 3.1 | 6.9 |
| NA | KWKLFKKIGIGKFLHSAKKF | 3.1 | 7.5 |
| KCTC 2508 | KWKLFKKIGIGKFLHSAKKF | 12.5 | 30.1 |
| NA | KWKLFKKIPKFLHLAKKF | 5.4 | 12.5 |
| NA | KWKSFIKKLTKKFLHSAKKF | 0.6 | 1.6 |
| NA | KWKSFIKKLTSKFLHSAKKF | 1.3 | 3.1 |
| ATCC 19606 | KWKSFLKTFKSAVKTVLHTALKAISS | 0.7 | 2.0 |
| ATCC 17978 | KWKSFLKTFKSAVKTVLHTALKAISS | 0.7 | 2.0 |
| ATCC 899 | KWKSFLKTFKSAVKTVLHTALKAISS | 0.7 | 2.0 |
| ATCC 821 | KWKSFLKTFKSAVKTVLHTALKAISS | 0.7 | 2.0 |
| ATCC 985 | KWKSFLKTFKSAVKTVLHTALKAISS | 0.7 | 2.0 |
| ATCC 1012 | KWKSFLKTFKSAVKTVLHTALKAISS | 0.7 | 2.0 |
| ATCC 759 | KWKSFLKTFKSAVKTVLHTALKAISS | 0.7 | 2.0 |
| ATCC 884 | KWKSFLKTFKSAVKTVLHTALKAISS | 0.7 | 2.0 |
| ATCC 689 | KWKSFLKTFKSAVKTVLHTALKAISS | 0.7 | 2.0 |
| ATCC 649 | KWKSFLKTFKSAVKTVLHTALKAISS | 0.7 | 2.0 |
| ATCC 964 | KWKSFLKTFKSAVKTVLHTALKAISS | 1.3 | 3.8 |
| ATCC 17978 | KWKSFLKTFSKAKKKALKTLLKAISK | 0.7 | 2.1 |
| ATCC 964 | KWKSFLKTFSKAKKKALKTLLKAISK | 0.7 | 2.1 |
| ATCC 899 | KWKSFLKTFSKAKKKALKTLLKAISK | 0.7 | 2.1 |
| ATCC 821 | KWKSFLKTFSKAKKKALKTLLKAISK | 0.7 | 2.1 |
| ATCC 985 | KWKSFLKTFSKAKKKALKTLLKAISK | 0.7 | 2.1 |
| ATCC 1012 | KWKSFLKTFSKAKKKALKTLLKAISK | 0.7 | 2.1 |
| ATCC 759 | KWKSFLKTFSKAKKKALKTLLKAISK | 0.7 | 2.1 |
| ATCC 884 | KWKSFLKTFSKAKKKALKTLLKAISK | 0.7 | 2.1 |
| ATCC 19606 | KWKSFLKTFSKAKKKALKTLLKAISK | 1.3 | 3.9 |
| ATCC 689 | KWKSFLKTFSKAKKKALKTLLKAISK | 1.3 | 3.9 |
| ATCC 649 | KWKSFLKTFSKAKKKALKTLLKAISK | 1.3 | 3.9 |
| ATCC 19606 | KWKSFLKTFSKAKKKKLKTLLKAISK | 0.6 | 1.8 |
| ATCC 899 | KWKSFLKTFSKAKKKKLKTLLKAISK | 0.6 | 1.8 |
| ATCC 985 | KWKSFLKTFSKAKKKKLKTLLKAISK | 0.6 | 1.8 |
| ATCC 1012 | KWKSFLKTFSKAKKKKLKTLLKAISK | 0.6 | 1.8 |
| ATCC 759 | KWKSFLKTFSKAKKKKLKTLLKAISK | 0.6 | 1.8 |
| ATCC 884 | KWKSFLKTFSKAKKKKLKTLLKAISK | 0.6 | 1.8 |
| ATCC 649 | KWKSFLKTFSKAKKKKLKTLLKAISK | 0.6 | 1.8 |
| ATCC 17978 | KWKSFLKTFSKAKKKKLKTLLKAISK | 1.2 | 3.7 |
| ATCC 964 | KWKSFLKTFSKAKKKKLKTLLKAISK | 1.2 | 3.7 |
| ATCC 821 | KWKSFLKTFSKAKKKKLKTLLKAISK | 1.2 | 3.7 |
| ATCC 689 | KWKSFLKTFSKAKKKKLKTLLKAISK | 1.2 | 3.7 |
| ATCC 899 | KWKSFLKTFSKAKKKVLKTALKAISK | 0.3 | 0.9 |

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|---|---|---|---|
| ATCC 759 | KWKSFLKTFSKAKKKVLKTALKAISK | 0.3 | 0.9 |
| ATCC 884 | KWKSFLKTFSKAKKKVLKTALKAISK | 0.3 | 0.9 |
| ATCC 649 | KWKSFLKTFSKAKKKVLKTALKAISK | 0.3 | 0.9 |
| ATCC 19606 | KWKSFLKTFSKAKKKVLKTALKAISK | 0.7 | 2.1 |
| ATCC 17978 | KWKSFLKTFSKAKKKVLKTALKAISK | 0.7 | 2.1 |
| ATCC 821 | KWKSFLKTFSKAKKKVLKTALKAISK | 0.7 | 2.1 |
| ATCC 985 | KWKSFLKTFSKAKKKVLKTALKAISK | 0.7 | 2.1 |
| ATCC 689 | KWKSFLKTFSKAKKKVLKTALKAISK | 0.7 | 2.1 |
| ATCC 964 | KWKSFLKTFSKAKKKVLKTALKAISK | 1.3 | 3.9 |
| ATCC 1012 | KWKSFLKTFSKAKKKVLKTALKAISK | 1.3 | 3.9 |
| ATCC 19606 | KWLKKWLKWLKK | 4.7 | 8.0 |
| NA | KWWKWWKKWWKK | 3.3 | 6.3 |
| ATCC 19606 | LFWKLLLKALRLWAKVL | 3.8 | 8.0 |
| NA | LFWKLLLKALRLWAKVL | 3.8 | 8.0 |
| NA | LGAWLAGKVAGTVATYAWNRYV | 25.0 | 59.2 |
| ATCC 19606 | LIRGLFKSFWQVF | 6.0 | 9.8 |
| NA | LKAAAAAAKLAAKAAKAALKAAAAAAKL | 3.2 | 8.1 |
| NA | LKFLKFG | 128.0 | 109.1 |
| NA | LKLKAIAALAKKKW | 5.1 | 8.0 |
| NA | LKLKSIVSWAKKVL | 1.2 | 2.0 |
| NA | LKLLKKLLKKLLKLL | 3.1 | 5.6 |
| ATCC 19606 | LKLLKKLLKKLLKLL | 13.0 | 23.5 |
| NA | LKLSPKTKDTLKKVLKGAIKGAIAIASMA | 0.6 | 1.8 |
| NA | LKWLKWG | 128.0 | 119.1 |
| NA | LLKKALRLWKKVL | 19.9 | 32.0 |
| ATCC 19606 | LLKKALRLWKKVL | 79.5 | 128.0 |
| NA | LLKKLLKKC | 18.4 | 20.0 |
| ATCC 19606 | LLKKLLKLLLKLLKK | 11.0 | 19.9 |
| ATCC 19606 | LLKLLKKLLKKLLKL | 10.0 | 18.1 |
| ATCC 19606 | LLLLLKKKKKKLLLL | 50.0 | 90.3 |
| ATCC 15308 | LLPWKWPWWKWRR | 129.0 | 250.0 |
| ATCC 19606 | LLQWLSKLLGRLL | 12.0 | 18.6 |
| ATCC 19606 | LLQWLSKLLGRWL | 6.0 | 9.8 |
| ATCC 19606 | LLWKALRLWWKVL | 9.3 | 16.0 |
| NA | LLWKALRLWWKVL | 9.3 | 16.0 |
| Q13 | LPRRNRWSKIWKKVVTVFS | 1.7 | 4.0 |
| NA | LPRRNRWSKIWKKVVTVFS | 9.4 | 22.6 |
| NA | LRDLVCYCRTRGCKRRERMNGTCRKGHLMYTLCCR | 30.1 | 128.0 |
| NA | LRKLRKRLLLRKLRKRLL | 13.5 | 32.0 |
| NA | LRKLRKRLVRLASHLRKLRKRLL | 2.1 | 6.0 |
| NA | LRWLRWG | 128.0 | 126.2 |
| ATCC 19606 | LRWTPTPSYPRYPTRSRGSRWSR | 8.0 | 22.9 |
| NA | LVQRGRFGRFLKKVRRFIPKVIIAAQIGSRFG | 1.3 | 4.8 |
| ATCC 17978 | NPEKALEKLIAIQKAIKGMLNGWFTGVGFRRKR | 4.0 | 15.1 |
| M6337 | NPEKALEKLIAIQKAIKGMLNGWFTGVGFRRKR | 4.0 | 15.1 |
| ATCC 19606 | NPEKALEKLIAIQKAIKGMLNGWFTGVGFRRKR | 8.0 | 30.2 |
| M105656 | NPEKALEKLIAIQKAIKGMLNGWFTGVGFRRKR | 8.0 | 30.2 |
| M2925 | NPEKALEKLIAIQKAIKGMLNGWFTGVGFRRKR | 8.0 | 30.2 |
| M3237 | NPEKALEKLIAIQKAIKGMLNGWFTGVGFRRKR | 16.0 | 60.3 |
| ATCC 19606 | NPEKALEPLIAIQIAIKGMLNGWFTGVGFRRKR | 64.0 | 238.4 |
| M3237 | NPEKALEPLIAIQIAIKGMLNGWFTGVGFRRKR | 64.0 | 238.4 |

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|---|---|---|---|
| ATCC 17978 | NPEKALEPLIAIQIAIKGMLNGWFTGVGFRRKR | 64.0 | 238.4 |
| Q12 | NRFTARFRRTPWRLCLQFRQ | 3.0 | 8.0 |
| Q13 | NRFTARFRRTPWRLCLQFRQ | 12.1 | 32.0 |
| NA | NRFTARFRRTPWRLCLQFRQ | 17.1 | 45.3 |
| NA | PPPVIKFNRPFLMWIVERDTRSILFMGKIVNPKAP | 60.8 | 250.0 |
| ICU 63169 | PRPGPRP | 165.0 | 128.0 |
| ICU 63169 | PRPLPRP | 153.8 | 128.0 |
| ICU 63169 | PRPRPRP | 146.3 | 128.0 |
| ICU 63169 | PRPWPRP | 141.4 | 128.0 |
| ATCC 15308 | QDGMYQRFLRQHVHPEETGGSDRYSNLMMQRRKMTLYHSK RFNTFIH | 0.5 | 2.9 |
| ATCC 15308 | QDNSRYTHFLTQHYDAKPQGRDDRYSESIMRRRGLTSPSKDI NTFIH | 10.0 | 56.4 |
| AB1 | QKKIRVRLSA | 13.4 | 16.0 |
| AB7 | QKKIRVRLSA | 26.7 | 32.0 |
| Q12 | QVRWWGRYWRRKWATCR | 6.7 | 16.0 |
| Q13 | QVRWWGRYWRRKWATCR | 26.7 | 64.0 |
| NA | RGGLCYCRGRFCVCVGR | 2.1 | 4.0 |
| NM124 | RGVAKFASKGLGKDLAKLGVDLVACKISKQC | 50.0 | 160.2 |
| NM8 | RGVAKFASKGLGKDLAKLGVDLVACKISKQC | 100.0 | 320.5 |
| NM35 | RGVAKFASKGLGKDLAKLGVDLVACKISKQC | 200.0 | 641.0 |
| NA | RIKRFWPVVIRTVVAGYNLYRAIKKK | 0.7 | 2.4 |
| ATCC 19606 | RILRGVSRRIMRRILTGRR | 3.4 | 8.0 |
| ATCC 17978 | RKWWRWIKW | 5.0 | 7.2 |
| ATCC 15308 | RLPWRWPRRPWRR | 130.3 | 250.0 |
| AB5075 | RLVRILVSKRPVAIKPYFRL | 2.0 | 4.9 |
| ATCC 15308 | RPPQFTRAQWFAIQHISLN | 10.0 | 23.1 |
| ATCC 15308 | RPPQFTRAQWFAIQHISLNPPRCTIAMRAINNYRWRCKNQN TFLRTTFANVVVNVCGNQSIRCPHNRTLNNCHRSRFRVPLLHC DLINPGAQNISNCTYADRPGRRFYVVACDNRDPRDSPRYPVV PVHLDTTI | 0.3 | 4.8 |
| ATCC 15308 | RPPQFTRAQWFAIQHISLNPPRSTIAMRAINNYRWRSKNQNT FL | 0.3 | 1.6 |
| ATCC 15308 | RPPQFTRAQWFAIQHISLNPPRSTIAMRAINNYRWRSKNQNT FLR | 0.6 | 3.3 |
| NA | RRGLFKKLRRKIKKGFKKIFKRLPPVGVGVSIPLAGRR | 1.1 | 4.7 |
| NA | RRIRPRPPRLPRPRPRPLPFPRPGPRPIPRPLPFP | 0.5 | 2.1 |
| ATCC 15308 | RRPWRWPRWPWRR | 125.5 | 250.0 |
| ATCC 15308 | RRPWRWPWWPWRR | 123.7 | 250.0 |
| ATCC 19606 | RRRRRFRRVIRRIRLPKYLTINTE | 2.0 | 6.5 |
| ATCC 19606 | RRRRRYRYWRRGLTIQGRPKSLPLNTGD | 2.0 | 7.1 |
| NA | RRSKARGGSRGSKMGRKDSKGGSRGRPGSGSRPGGGSSIAGA SRGDRGGTRNA | 4.7 | 24.4 |
| AB1 | RRWVRRVRRWVRRVVRVVRRWVRR | 1.5 | 5.0 |
| AB3 | RRWVRRVRRWVRRVVRVVRRWVRR | 1.8 | 6.0 |
| AB2 | RRWVRRVRRWVRRVVRVVRRWVRR | 3.2 | 11.0 |
| Q13 | RSITRPVLVRRRWRVRPVF | 52.2 | 128.0 |
| Q12 | RSITRPVLVRRRWRVRPVF | 52.2 | 128.0 |
| NA | RVRRFWPLVPVAINTVAAGINLYKAIRRK | 2.8 | 9.5 |
| NA | RWKIFKKIEKMGRNIRDGIVKAGPAIEVLGSAKAIGK | 1.4 | 5.7 |
| CCARM 12035 | RWKIFKKIEKVGRNVRDGIIKAGPAVAVVGQAATVVK | 1.0 | 4.0 |

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|---|---|---|---|
| CCARM 12037 | RWKIFKKIEKVGRNVRDGIIKAGPAVAVVGQAATVVK | 1.0 | 4.0 |
| CCARM 12036 | RWKIFKKIEKVGRNVRDGIIKAGPAVAVVGQAATVVK | 1.0 | 4.0 |
| CCARM 12005 | RWKIFKKIEKVGRNVRDGIIKAGPAVAVVGQAATVVK | 2.0 | 8.0 |
| CCARM 12035 | RWKIFKKIPKFLHSAKKF | 2.0 | 4.6 |
| CCARM 12037 | RWKIFKKIPKFLHSAKKF | 2.0 | 4.6 |
| CCARM 12036 | RWKIFKKIPKFLHSAKKF | 2.0 | 4.6 |
| CCARM 12005 | RWKIFKKIPKFLHSAKKF | 2.0 | 4.6 |
| DSM 30007 | RWRWRW | 85.0 | 88.8 |
| AB2 | RWWRWWRRWWRR | 1.4 | 3.0 |
| AB1 | RWWRWWRRWWRR | 2.4 | 5.0 |
| NA | RWWRWWRRWWRR | 2.7 | 5.6 |
| AB3 | RWWRWWRRWWRR | 5.3 | 11.0 |
| NA | SAVGRHGRRFGLRKHRKH | 50.0 | 107.8 |
| CICC 22934 | SAVGRHGRRFGLRKHRKH | 100.0 | 215.6 |
| CICC 22934 | SAVGRHLRRFGLRKHRKH | 100.0 | 221.2 |
| CICC 22934 | SAVGRHLRRFLLRKHRKH | 100.0 | 226.8 |
| CICC 22934 | SAVLRHLRRFLLRKHRKH | 100.0 | 232.4 |
| Q12 | SIKILKIYFIQGKRHWSF | 14.1 | 32.0 |
| Q13 | SIKILKIYFIQGKRHWSF | 28.3 | 64.0 |
| CICC 22934 | SKVGRHGRRFGHRAHRKL | 100.0 | 215.6 |
| CICC 22934 | SKVGRHLRRFGHRAHRKL | 100.0 | 221.2 |
| CICC 22934 | SKVGRHLRRFLHRAHRKL | 100.0 | 226.8 |
| CICC 22934 | SKVLRHLRRFLHRAHRKL | 100.0 | 232.4 |
| CICC 22934 | SKVWRHWRRFWHRAHRKK | 7.8 | 20.0 |
| NA | SKVWRHWRRFWHRAHRLH | 25.0 | 63.8 |
| ATCC 19606 | SMATPHVAGAAALILSKHPTWTNAQVRDRLESTATYLGNSF YYGK | 26.1 | 128.0 |
| SRAC2 | SMATPHVAGAAALILSKHPTWTNAQVRDRLESTATYLGNSF YYGK | 26.1 | 128.0 |
| ATCC 15308 | TIAMRAINNYRWRSKNQNTFLR | 1.1 | 3.0 |
| Q12 | TMSLRFWRWKVR | 9.6 | 16.0 |
| Q13 | TMSLRFWRWKVR | 19.2 | 32.0 |
| NA | TMSLRFWRWKVR | 76.8 | 128.0 |
| NA | TRWLWLLRGGLKAAGWGIRAHLNRNQ | 65.7 | 200.0 |
| AB5075 | TTSIRRRYQVSLIRRHRGKR | 1.0 | 2.5 |
| DSM 3008 | TWLKKRRWKKVKPP | 34.6 | 64.0 |
| AB1 | VAKGLIKGVKAKGELPAKGVFKGLKESIGKRAVLKG | 8.7 | 32.0 |
| ATCC 17978 | VAKGLIKGVKAKGELPAKGVFKGLKESIGKRAVLKG | 8.7 | 32.0 |
| DSM 30008 | VDKPPYLPRPRPPRRIYNR | 6.7 | 16.0 |
| ATCC 19606 | VKGSWSKKFEVIA | 1.6 | 2.3 |
| NA | VKGSWSKKFEVIA | 3.1 | 4.6 |
| Q12 | VLHTGYRKFLHRSKRFFHLR | 24.6 | 64.0 |
| Q13 | VLHTGYRKFLHRSKRFFHLR | 49.2 | 128.0 |
| NA | VQLRIRVAVIRA | 23.0 | 32.0 |
| NA | VQLRIRVCVIRK | 10.8 | 16.0 |
| NA | VQLRIRVCVIRR | 21.2 | 32.0 |
| NA | VQWRIRIAVIRA | 10.8 | 16.0 |
| NA | VQWRIRVAVIRK | 5.2 | 8.0 |
| NA | VWLSALKFIGKHLAKHQLSKL | 3.1 | 7.5 |
| ATCC 19606 | WFKKLLKKALRLWKKVL | 3.6 | 8.0 |
| NA | WFKKLLKKALRLWKKVL | 7.3 | 16.0 |

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|---|---|---|---|
| ATCC 19606 | WFWKLLWKALRLWWKVL | 6.7 | 16.0 |
| NA | WFWKLLWKALRLWWKVL | 6.7 | 16.0 |
| ATCC 19606 | WGRRWRIRIPRLPRPWPPRPKWPRSATINTDQ | 2.0 | 8.1 |
| ATCC 19606 | WKRRIKIWKKIR | 256.0 | 438.1 |
| NA | WKRRIKIWKKIR | 256.0 | 438.1 |
| ATCC 19606 | WLRRIKAWLRR | 16.0 | 24.9 |
| NA | WLRRIKAWLRR | 64.0 | 99.5 |
| ATCC 19606 | WLRRIKAWLRRIKA | 2.0 | 3.7 |
| NA | WLRRIKAWLRRIKA | 2.0 | 3.7 |
| NA | WLRRIKAWLRRKRK | 4.0 | 7.9 |
| ATCC 19606 | WLRRIKAWLRRKRK | 16.0 | 31.5 |
| ATCC 15308 | WPKRLTKAHWFEIQHIQPSPLQCNRAMSGINNYTQHCKHQNTFLH | 0.9 | 5.1 |
| ATCC 15308 | WPKRLTKAHWFEIQHIQPSPLQCNRAMSGINNYTQHCKHQNTFLHDSFQNVAAVCDLLSIVCKNRRHNCHQSSKPVNMTDCRLTSGKYPQCRYSAAAQYKFFIVACDPPQKSDPPYKLVPVHLDSIL | 0.6 | 9.1 |
| ATCC 15308 | WPKRLTKAHWFEIQHIQPSPLQSNRAMSGINNYTQHSKHQNTFLH | 1.2 | 6.5 |
| ATCC 19606 | WPRFPKPRKPTYPGPTYPGPTWPRPTWRRSATIDTEH | 32.0 | 141.8 |
| ATCC 19606 | WW | 145.5 | 56.8 |
| ATCC 19606 | YSWPRMPRIPRLPRYPRYPRYPRWPRHPTIYA | 1.0 | 4.2 |
| ATCC 19606 | YSWPRMPRIPRLPRYPRYPRYPRWPRWPRQPTIYA | 4.0 | 18.5 |

**Table S2:** Dataset 1 containing unique antimicrobial peptides with activity against *A. baumannii*. By removing duplicate sequences from the Table S1 peptide list, we generated **Dataset 1 (**374 sequences), and this dataset was used for designing novel HRZN peptides using our "DFT+PA" method.

| **Strain** | **Sequence** | **μM** | **μg/mL** |
|---|---|---|---|
| ATCC 19606 | IDWKKVDWKKVSKKTCKVMLKACKFLG | 0.0 | 0.1 |
| ATCC 19606 | KWCFRVCYRGICYRRCR | 0.1 | 0.1 |
| NA | KKWRWWLKALAKKLL | 0.2 | 0.4 |
| ATCC 19606 | GFCWYVCVYRNGVRVCYRRCN | 0.2 | 0.5 |
| NA | DSHAKRHHGYKRKFHEKHHSHRGY | 0.2 | 0.5 |
| ATCC 17978 | ALKSLLKTLSAAKKKKLATLLKALSK | 0.2 | 0.6 |
| ATCC 821 | KLKSLLKTLSKAKKKLLKTALKALSK | 0.3 | 0.9 |
| ATCC 899 | KLKSLLKTLSKAKKKKLKTLLKALSK | 0.3 | 0.9 |
| ATCC 899 | KWKSFLKTFSKAKKKVLKTALKAISK | 0.3 | 0.9 |
| NA | CYCRIPACIAGERRYGTCIYQGRLWAFCC | 0.3 | 1.0 |
| NA | DCYCRIPACIAGERRYGTCIYQGRLWAFCC | 0.3 | 1.0 |
| AB3 | GGLKKLGKKLEGAGKRVFKASEKALPVVVGIKAIGK | 0.3 | 1.0 |
| NA | KKWRKLLKKLKKLL | 0.5 | 1.0 |
| NA | KRFKKFFKKVKKSVKKRLKKIFKKPMVIGVTIPF | 0.3 | 1.0 |
| M89955 | ALKSLLKTLSAAAKKALATLLKALSK | 0.4 | 1.1 |
| NA | KRFKKFFKKLKNSVKKRVKKFFRKPRVIGVTFPF | 0.3 | 1.1 |
| ATCC 19606 | ALKSLLATLSKAKKKKLKTLLAALSK | 0.4 | 1.1 |
| ATCC 19606 | ALWMTLKKKVLKAAAKALNAVLVGANA | 0.4 | 1.1 |
| ATCC 15308 | RPPQFTRAQWFAIQHISLNPPRSTIAMRAINNYRWRSKNQNTFL | 0.3 | 1.6 |
| NA | KWKSFIKKLTKKFLHSAKKF | 0.6 | 1.6 |

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|---|---|---|---|
| NA | LKLSPKTKDTLKKVLKGAIKGAIAIASMA | 0.6 | 1.8 |
| ATCC 19606 | KWKSFLKTFSKAKKKKLKTLLKAISK | 0.6 | 1.8 |
| M89955 | ALKSLLATLSKAAKKALKTLLAALSK | 0.7 | 1.9 |
| ATCC 19606 | KILRGVSKKIMRRILTGKK | 0.9 | 2.0 |
| ATCC 17978 | GGLKKLGKKLEGAGKRVFNAAEKALPVVAGAKALRK | 0.5 | 2.0 |
| NA | LKLKSIVSWAKKVL | 1.2 | 2.0 |
| ATCC 19606 | KWKSFLKTFKSAVKTVLHTALKAISS | 0.7 | 2.0 |
| NA | RRIRPRPPRLPRPRPRPLPFPRPGPRPIPRPLPFP | 0.5 | 2.1 |
| ATCC 17978 | KWKSFLKTFSKAKKKALKTLLKAISK | 0.7 | 2.1 |
| ATCC 19606 | GCRRLCYKQRCVTYCRGR | 1.0 | 2.2 |
| NA | KKWRKLLKWLAKK | 1.3 | 2.3 |
| ATCC 19606 | VKGSWSKKFEVIA | 1.6 | 2.3 |
| ATCC 19606 | KCRRLCYRQRCVTYCRGR | 1.0 | 2.3 |
| NA | RIKRFWPVVIRTVVAGYNLYRAIKKK | 0.7 | 2.4 |
| ATCC 19606 | KCRRYCYRQRCVTYCRGR | 1.0 | 2.4 |
| ATCC 19606 | GCRRLCYKQRCVTYCRGPPR | 1.0 | 2.4 |
| AB5075 | TTSIRRRYQVSLIRRHRGKR | 1.0 | 2.5 |
| ATCC 15308 | QDGMYQRFLRQHVHPEETGGSDRYSNLMMQRRKMTLYHSK RFNTFIH | 0.5 | 2.9 |
| NA | GLLKPLLKIAAKVGSNLL | 1.6 | 3.0 |
| ATCC 17978 | GKLTKDKLKRGAKKALNVASKVAPIVAAGASIAR | 0.9 | 3.0 |
| AB2 | RWWRWWRRWWRR | 1.4 | 3.0 |
| ATCC 15308 | TIAMRAINNYRWRSKNQNTFLR | 1.1 | 3.0 |
| NA | GILNTIKSIASKLKRKAK | 1.6 | 3.1 |
| ATCC 19606 | KIAKVALKALKIAKGALKAL | 1.5 | 3.1 |
| NA | GILKTIKSIASKLKRKAK | 1.6 | 3.1 |
| NA | KWKSFIKKLTSKFLHSAKKF | 1.3 | 3.1 |
| ATCC 19606 | KIAKVALKALKIAKVALKAL | 1.5 | 3.1 |
| ATCC 15308 | RPPQFTRAQWFAIQHISLNPPRSTIAMRAINNYRWRSKNQNT FLR | 0.6 | 3.3 |
| NM109 | GIWKTIKSMGKVFAGKILQNL | 1.5 | 3.5 |
| NA | ALASLLKTLSKAAKKALKTLLKALSA | 1.4 | 3.7 |
| ATCC 19606 | WLRRIKAWLRRIKA | 2.0 | 3.7 |
| ATCC 19606 | ALWKKLLKKLLKSAKKLG | 1.9 | 3.9 |
| ATCC 19606 | FFHHIFRGKVHVGKTIHRLVTG | 1.5 | 3.9 |
| NA | RGGLCYCRGRFCVCVGR | 2.1 | 4.0 |
| ATCC 19606 | KISKKIMRTFLRRILTGKK | 1.7 | 4.0 |
| ATCC 19606 | KISKKIMRTFLRRISKDILTGKK | 1.4 | 4.0 |
| NA | KKRLKKIFKKPMVIGVTIPF | 1.7 | 4.0 |
| Q13 | LPRRNRWSKIWKKVVTVFS | 1.7 | 4.0 |
| NA | KKWRWWLKALAKK | 2.3 | 4.0 |
| CCARM 12035 | RWKIFKKIEKVGRNVRDGIIKAGPAVAVVGQAATVVK | 1.0 | 4.0 |
| ATCC 15308 | AQWFAIQHISLNPPRSTIAMRAINNYRWRSKNQNTFLR | 0.9 | 4.0 |
| ATCC 19606 | YSWPRMPRIPRLPRYPRYPRYPRWPRHPTIYA | 1.0 | 4.2 |
| ATCC 19606 | FLKGIVGMLGKLF | 3.0 | 4.3 |
| CCARM 12035 | RWKIFKKIPKFLHSAKKF | 2.0 | 4.6 |
| NA | RRGLFKKLRRKIKKGFKKIFKRLPPVGVGVSIPLAGRR | 1.1 | 4.7 |
| NA | GRLRNLIEKAGQNIRGKIQGIGRRIKDILKNLQPRPQV | 1.1 | 4.7 |

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|---|---|---|---|
| ATCC 15308 | RPPQFTRAQWFAIQHISLNPPRCTIAMRAINNYRWRCKNQN TFLRTTFANVVNVCGNQSIRCPHNRTLNNCHRSRFRVPLLHC DLINPGAQNISNCTYADRPGRRFYVVACDNRDPRDSPRYPVV PVHLDTTI | 0.3 | 4.8 |
| NA | LVQRGRFGRFLKKVRRFIPKVIIAAQIGSRFG | 1.3 | 4.8 |
| AB5075 | RLVRILVSKRPVAIKPYFRL | 2.0 | 4.9 |
| ATCC 19606 | KGGK | 12.5 | 4.9 |
| CCARM 12036 | AFHHIFRGIVHVGKTIHRLVTG | 2.0 | 5.0 |
| AB1 | RRWVRRVRRWVRRVVRVVRRWVRR | 1.5 | 5.0 |
| NM8 | GFGSLLGKALRLGANVL | 3.0 | 5.1 |
| ATCC 15308 | WPKRLTKAHWFEIQHIQPSPLQCNRAMSGINNYTQHCKHQ NTFLH | 0.9 | 5.1 |
| CCARM 12036 | FKHHIFRGIVHVGKTIHRLVTG | 2.0 | 5.1 |
| CCARM 12005 | KFHHIFRGIVHVGKTIHRLVTG | 2.0 | 5.1 |
| CCARM 12036 | FKHHIFRGIKHVGKTIHRLVTG | 2.0 | 5.2 |
| CCARM 12036 | KFHHIFRGIKHVGKTIHRLVTG | 2.0 | 5.2 |
| ATCC 9955 | GLFKKLRRKIKKGFKKIFKRLPPIGVGVSIPLAGKR | 1.3 | 5.2 |
| CCARM 12036 | FFHHIFRGIKHVGKTIHRLVTG | 2.0 | 5.2 |
| ATCC 19606 | FVPWFSKFLKRIL | 3.1 | 5.3 |
| ATCC 15308 | AQWFAIQHISLNPPRSTIAMRAINNYRWR | 1.5 | 5.3 |
| CCARM 12036 | GLNALKKVFQGIHKAIKKINNHVQ | 2.0 | 5.4 |
| KCTC 2508 | GLNALKKVFQGIHEAIKKINNHVQ | 2.0 | 5.4 |
| ATCC 19606 | FVPWFSKFLWRIL | 3.1 | 5.4 |
| NA | LKLLKKLLKKLLKLL | 3.1 | 5.6 |
| NA | INLKAIAALAKKLF | 3.7 | 5.7 |
| NM75 | GLKKIFKAGLGSLVKGIAAHVAS | 2.5 | 5.7 |
| NA | RWKIFKKIEKMGRNIRDGIVKAGPAIEVLGSAKAIGK | 1.4 | 5.7 |
| NM35 | GFSSIFRGVAKFASKGLGKKLAKLGVKLVACKISKQC | 1.5 | 5.8 |
| ATCC 19606 | KNLRRIIRKIIHIIKKYG | 2.6 | 5.9 |
| NA | LRKLRKRLVRLASHLRKLRKRLL | 2.1 | 6.0 |
| ATCC 15308 | KPKGMTSSQWFKIQHMQPSPQASNSAMKNINKHTKRSKDL NTFLH | 1.2 | 6.3 |
| NA | KWWKWWKKWWKK | 3.3 | 6.3 |
| ATCC 19606 | RRRRRFRRVIRRIRLPKYLTINTE | 2.0 | 6.5 |
| ATCC 15308 | WPKRLTKAHWFEIQHIQPSPLQSNRAMSGINNYTQHSKHQN TFLH | 1.2 | 6.5 |
| NA | GLGSVLGKALKIGANLL | 4.0 | 6.5 |
| ATCC 19606 | KKLLKLLLKLLK | 4.5 | 6.5 |
| ATCC 19606 | KKKK | 12.5 | 6.6 |
| NM8 | ILGKLLKTAAKLLSNL | 4.0 | 6.8 |
| NA | KWKLFKKIGIGAVLKVLTTG | 3.1 | 6.9 |
| NM109 | GIWKTIKSMGKVFAGAIKQNL | 3.0 | 6.9 |
| NM75 | GIWKTIKSMGKVFAGKIKQNL | 3.0 | 7.0 |
| ATCC 19606 | RRRRRYRYWRRGLTIQGRPKSLPLNTGD | 2.0 | 7.1 |
| NA | AKKVFKRLGIGKFLHSAKKF | 3.1 | 7.2 |
| ATCC 17978 | KRWWKWIRW | 5.0 | 7.2 |
| ATCC 17978 | RKWWRWIKW | 5.0 | 7.2 |
| NA | VWLSALKFIGKHLAKHQLSKL | 3.1 | 7.5 |
| NA | AMVSS | 15.2 | 7.5 |

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|---|---|---|---|
| NA | KWKLFKKIGIGKFLHSAKKF | 3.1 | 7.5 |
| ATCC 17978 | ALKSLLKTLSKAAAAALKTLLKALSK | 2.9 | 7.7 |
| NA | WLRRIKAWLRRKRK | 4.0 | 7.9 |
| ATCC 19606 | RILRGVSRRIMRRILTGRR | 3.4 | 8.0 |
| ATCC 19606 | GRKKRRQRRRGGWMWVTNLRTD | 2.8 | 8.0 |
| ATCC 19606 | KILRGVSKKIMRTFLRR | 3.8 | 8.0 |
| ATCC 19606 | KILRGVSKKIMRRISKDILTGKK | 3.0 | 8.0 |
| ATCC 19606 | KKIMRTFLRRISKDILTGKK | 3.3 | 8.0 |
| ATCC 19606 | KKIMRTFLRRISKKILTGKK | 3.3 | 8.0 |
| Q12 | NRFTARFRRTPWRLCLQFRQ | 3.0 | 8.0 |
| NA | KSKEKIGKEFKRIVQRIKDFLRNLVPRTES | 2.2 | 8.0 |
| Q13 | HLRRINKLLTRIGLYRHAFG | 3.3 | 8.0 |
| NA | VQWRIRVAVIRK | 5.2 | 8.0 |
| NA | GWFKKAWRKVKNAGRRVLKGVGIHYGVGLI | 2.4 | 8.0 |
| ATCC 19606 | AGYLLGKINLKALAALAKKIL | 3.7 | 8.0 |
| ATCC 19606 | AAYLLAKINLKALAALAKKIL | 3.6 | 8.0 |
| NA | LKLKAIAALAKKKW | 5.1 | 8.0 |
| ATCC 19606 | KFWSLLKKALRLWANVL | 3.8 | 8.0 |
| ATCC 19606 | KFWKLLKKALRLWAKVL | 3.7 | 8.0 |
| ATCC 19606 | KFWKLLKKALRLWKKVL | 3.6 | 8.0 |
| ATCC 19606 | WFKKLLKKALRLWKKVL | 3.6 | 8.0 |
| ATCC 19606 | LFWKLLLKALRLWAKVL | 3.8 | 8.0 |
| ATCC 19606 | KWLKKWLKWLKK | 4.7 | 8.0 |
| NA | IKSIASKVANTVQKLKRKAKNAVA | 3.1 | 8.0 |
| NA | LKAAAAAAKLAAKAAKAALKAAAAAAKL | 3.2 | 8.1 |
| ATCC 19606 | WGRRWRIRIPRLPRPWPPRPKWPRSATINTDQ | 2.0 | 8.1 |
| NA | KRGFGKKLRKRLKKFRNSIKKRLKNFNVVIPIPLPG | 1.9 | 8.1 |
| NA | AMVGT | 17.1 | 8.2 |
| NA | GMASKAGSVLGKVAKVALKAAL | 4.0 | 8.3 |
| ATCC 19606 | FLSGIVGMLGKLF | 6.0 | 8.3 |
| ATCC 19606 | FLKGIVGMLGKLL | 6.0 | 8.3 |
| ATCC 19606 | ALWRRLLRRLLRSARRLG | 3.8 | 8.5 |
| NA | FFPVIGRILNGIL | 6.0 | 8.8 |
| ATCC 19606 | FLKGIVGMLGKLW | 6.0 | 8.8 |
| ATCC 15308 | WPKRLTKAHWFEIQHIQPSPLQCNRAMSGINNYTQHCKHQ NTFLHDSFQNVAAVCDLLSIVCKNRRHNCHQSSKPVNMTD CRLTSGKYPQCRYSAAAQYKFFIVACDPPQKSDPPYKLVPVH LDSIL | 0.6 | 9.1 |
| NA | GILKTIKSIASKVANTVQKLKRKAKNAV | 3.1 | 9.3 |
| NA | FALGAVTKRLPSLFCLITRKC | 4.0 | 9.4 |
| NA | KRRGSVTTRYQFLMIHLLRPKKLFA | 3.1 | 9.4 |
| NA | RVRRFWPLVPVAINTVAAGINLYKAIRRK | 2.8 | 9.5 |
| NA | IKLSPKTKDNLKKVLKGAIKGAIAVAKMV | 3.1 | 9.5 |
| NA | IKLSPKTKKNLKKVLKGAIKGAIAVAKMV | 3.1 | 9.5 |
| NA | IKLSPETKKNLKKVLKGAIKGAIAVAKMV | 3.1 | 9.5 |
| NA | GILKTIKSIASKVANTVQKLKRKAKNAVA | 3.1 | 9.5 |
| NA | IKLSKKTKDNLKKVLKGAIKGAIAVAKMV | 3.1 | 9.6 |
| NA | IKLSKETKKNLKKVLKGAIKGAIAVAKMV | 3.1 | 9.6 |
| ATCC 19606 | FVQWFSKFLGKIL | 6.0 | 9.7 |

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| ATCC 19606 | LLQWLSKLLGRWL | 6.0 | 9.8 |
| ATCC 19606 | FVQWFSKFLGRIL | 6.0 | 9.8 |
| ATCC 19606 | LIRGLFKSFWQVF | 6.0 | 9.8 |
| CCARM 12036 | FAHHIFRGIVHVGKTIHRLVTG | 4.0 | 10.0 |
| CCARM 12036 | FFHHIARGIVHVGKTIHRLVTG | 4.0 | 10.0 |
| NA | KIKKGFKKIFKRLPPIGVGVSIPLAGKR | 3.3 | 10.0 |
| NA | GLFKKLRRKIKKGFKKIFKRL | 3.8 | 10.0 |
| ATCC 19606 | FVQWFSRFLGRIL | 6.0 | 10.0 |
| ATCC 19606 | FVRWFSKFLGRIL | 6.0 | 10.0 |
| ATCC 19606 | FVRWFSRFLGRIL | 6.0 | 10.2 |
| CCARM 12036 | FFHHIKRGIVHVGKTIHRLVTG | 4.0 | 10.2 |
| CCARM 12036 | FFHHIKRGIKHVGKTIHRLVTG | 4.0 | 10.3 |
| ATCC 19606 | FFGRLKSVWSAVKHGWKAAKSR | 4.2 | 10.8 |
| NM8 | GFLGSLLKTGLKVGSNLL | 6.0 | 10.9 |
| NA | GFWGKLWEGVKNAI | 7.0 | 11.2 |
| NM8 | GVIKSVLKGVAKTVALGML | 6.0 | 11.3 |
| NM8 | GLKEIFKAGLGSLVKGIAAHVAS | 5.0 | 11.3 |
| NA | GLGSLLGKAFKIGLKTVGKMMGGAPREQ | 4.0 | 11.4 |
| NM75 | GLKKIFKAGLGSLVKGIKAHVAS | 5.0 | 11.6 |
| NA | GIGAVLKVLTTGLPALISWIKRKRQQ | 4.2 | 12.1 |
| NA | KWKLFKKIPKFLHLAKKF | 5.4 | 12.5 |
| ATCC 19606 | FLSMIPHIVSGVAALAKHL | 6.3 | 12.5 |
| ATCC 15308 | ISLNPPRSTIAMRAINNYRWRSKNQNTFLR | 3.5 | 12.7 |
| ATCC 19606 | FLSLIPHIVSGVASIAKHF | 6.3 | 12.7 |
| ATCC 19606 | FLSLIPHIVSGVASLAKHF | 6.3 | 12.7 |
| NM8 | ILGKLLSTAAKLLSNL | 8.0 | 13.2 |
| NA | IASKVANTVQKLKRKAKNAVA | 6.3 | 14.0 |
| NA | ILSAIWSGIKSLF | 10.0 | 14.3 |
| ATCC 17978 | NPEKALEKLIAIQKAIKGMLNGWFTGVGFRRKR | 4.0 | 15.1 |
| ATCC 19606 | FFHHIFRPIVHVGKTIHRLVTG | 5.9 | 15.4 |
| NA | IKSIASKVANTVQKLKRKAKNAV | 6.3 | 15.6 |
| ATCC 15308 | GLFDIWKWWRWRR | 8.2 | 15.6 |
| NM35 | IKIPSFFRNILKKVGKEAVSLIAGALKQS | 5.0 | 15.8 |
| NA | KWCFRVCYRGICYRKCR | 7.1 | 16.0 |
| NA | VQLRIRVCVIRK | 10.8 | 16.0 |
| Q12 | TMSLRFWRWKVR | 9.6 | 16.0 |
| ATCC 19606 | KILGVSKKIMRRISKDILTGKK | 6.4 | 16.0 |
| Q12 | QVRWWGRYWRRKWATCR | 6.7 | 16.0 |
| AB1 | QKKIRVRLSA | 13.4 | 16.0 |
| NA | KRIVQRIKDFLRNLVPRTES | 6.5 | 16.0 |
| DSM 30008 | VDKPPYLPRPRPPRRIYNR | 6.7 | 16.0 |
| NA | VQWRIRIAVIRA | 10.8 | 16.0 |
| NA | KRFKKFFKKLKNSVKKRAKKFFKKPRVIGVSIPF | 3.9 | 16.0 |
| ATCC 19606 | GKKYRRFRWKFRKGRFWFWG | 5.7 | 16.0 |
| ATCC 19606 | GRRYKKFRWKFKGRWFWFG | 6.1 | 16.0 |
| ATCC 19606 | GKKYRRFRWKFKGKWFWFG | 6.1 | 16.0 |
| ATCC 19606 | LLWKALRLWWKVL | 9.3 | 16.0 |
| ATCC 19606 | GKKYRRFWKFKGKWFWFWG | 6.1 | 16.0 |
| ATCC 19606 | WFWKLLWKALRLWWKVL | 6.7 | 16.0 |

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| ATCC 19606 | GCRALCYKQRCVTYCRGA | 8.0 | 16.4 |
| ATCC 19606 | LLKLLKKLLKKLLKL | 10.0 | 18.1 |
| ATCC 19606 | YSWPRMPRIPRLPRYPRYPRYPRWPRWPRQPTIYA | 4.0 | 18.5 |
| ATCC 19606 | LLQWLSKLLGRLL | 12.0 | 18.6 |
| NA | IKLSPETKDNLKKVLKGAIKGAIAVAKMV | 6.3 | 19.2 |
| NA | IKLSKETKDNLKKVLKGAIKGAIAVAKMV | 6.3 | 19.3 |
| ATCC 19606 | FLPWFSKFLGRIL | 12.0 | 19.5 |
| ATCC 19606 | KKEK | 37.0 | 19.7 |
| ATCC 19606 | LLKKLLKLLLKLLKK | 11.0 | 19.9 |
| CICC 22934 | SKVWRHWRRFWHRAHRKK | 7.8 | 20.0 |
| NA | LLKKLLKKC | 18.4 | 20.0 |
| ATCC 19606 | FVPWFSKFLGRIL | 12.5 | 20.1 |
| NA | IWSAIWSGIKGLL | 14.0 | 20.2 |
| ATCC 19606 | KK | 75.0 | 20.6 |
| CCARM 12036 | GLNALKKVFQPIHEAIKLINNHVQ | 8.0 | 21.8 |
| CCARM 12036 | GLNALKKVFQPIHKAIKKINNHVQ | 8.0 | 21.9 |
| ATCC 19606 | LRWTPTPSYPRYPTRSRGSRWSR | 8.0 | 22.9 |
| NM8 | GFSSIFRGVAKFASKGLGKDLAKLGVDLVACKISKQC | 6.0 | 23.1 |
| ATCC 15308 | RPPQFTRAQWFAIQHISLN | 10.0 | 23.1 |
| NA | GIWSSIKNLASKAWNSDIGQSLRNKAAGAINKFVADKIGVTP SQAAS | 5.0 | 24.4 |
| NA | RRSKARGGSRGSKMGRKDSKGGSRGRPGSGSRPGGGSSIAGA SRGDRGGTRNA | 4.7 | 24.4 |
| ATCC 19606 | WLRRIKAWLRR | 16.0 | 24.9 |
| NA | FLPAALAGIGGILGKLF | 15.8 | 26.2 |
| ATCC 19606 | KLKLLKLLKLLKLLK | 15.0 | 27.1 |
| ATCC 19606 | KGGGKWGGKGGK | 25.0 | 27.9 |
| ATCC 19606 | KKLLKKLKKLLK | 19.0 | 28.1 |
| NA | GIWDTIKSMGKVFAGAILQNL | 12.5 | 28.3 |
| NA | GIWKTIKSMGKVFAGAILQNL | 12.5 | 28.4 |
| ATCC 19606 | EKALEKLIAIQKAIKGMLNGWFTGVGFRRKR | 8.0 | 28.5 |
| NM35 | GIFPIFAKLLGKVIKVASSLISKGRTE | 10.0 | 28.7 |
| ATCC 17978 | KRWWKWWRR | 20.0 | 29.8 |
| ATCC 15308 | FLGGLIKWWPWRR | 18.2 | 31.3 |
| ATCC 15308 | FLGGLIKWKWPWWPWRR | 13.5 | 31.3 |
| ATCC 15308 | GLFDIWKKLRWRR | 17.6 | 31.3 |
| ATCC 15308 | GLFDIWKKWRWRR | 16.9 | 31.3 |
| ATCC 15308 | GLFDIWAWWRWRR | 16.9 | 31.3 |
| ATCC 19606 | ALWHHLLHHLLHSAHHLG | 15.0 | 31.9 |
| NA | CLRKLRKRLLC | 22.8 | 32.0 |
| SR 201346 | FLGGLIKIVPAMICAVTKKCHHHHHH | 10.9 | 32.0 |
| NA | VQLRIRVCVIRR | 21.2 | 32.0 |
| Q12 | AWRWKAFRNCWRVRSSSL | 13.9 | 32.0 |
| NA | VQLRIRVAVIRA | 23.0 | 32.0 |
| ATCC 19606 | KFHEKHHSHRGY | 20.5 | 32.0 |
| NA | LRKLRKRLLLRKLRKRLL | 13.5 | 32.0 |
| AB1 | VAKGLIKGVKAKGELPAKGVFKGLKESIGKRAVLKG | 8.7 | 32.0 |
| NA | LLKKALRLWKKVL | 19.9 | 32.0 |
| Q12 | SIKILKIYFIQGKRHWSF | 14.1 | 32.0 |

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| NA | GFWSSALEGLKKFAKGGLEALTNPK | 12.5 | 33.1 |
| NA | FLPLIGRVLSGIL | 24.0 | 33.5 |
| ATCC 19606 | KAK | 100.0 | 34.5 |
| ATCC 19606 | FLKGIKGMLGKLL | 25.0 | 35.4 |
| ATCC 19606 | FLKGIVGKLGKLF | 25.0 | 35.5 |
| NA | GFLGPLLKLGLKGVAKVLPHLIPSRQQ | 12.5 | 36.0 |
| ATCC 19606 | FLKGIKGMLGKLF | 25.0 | 36.3 |
| ATCC 19606 | GIGK | 100.0 | 37.3 |
| NA | GWANTLKNVAGGLCKITGAA | 19.3 | 37.5 |
| ATCC 19606 | FLFSLIPSAIGGLISAFK | 20.0 | 37.6 |
| ATCC 19606 | KLK | 100.0 | 38.8 |
| CCARM 12036 | GLNALKKVFQPIHEAIKKINNHVQ | 16.0 | 43.8 |
| ATCC 19606 | DDALKKLLKKLLKKL | 25.0 | 44.2 |
| NM8 | GLKKIFKAGLGSLKKGIAAHVAS | 20.0 | 45.9 |
| NM8 | GFSSIFRGVAKFASKGLGKDLAKLGVDLVASKISKQS | 12.5 | 47.6 |
| ATCC 19606 | GIGKFLHSAKKFGKAFVGEIMNS | 20.0 | 49.3 |
| NM8 | GMATKAGTALGKVAKAVIGAAL | 25.0 | 50.0 |
| ATCC 15308 | KESRAKKFQRQHMDSDSSPSSSSTYSNQMMRRRNMTQGRSK PVNTFVH | 9.0 | 50.7 |
| NM8 | ILGKLLSTAAGLLKNL | 32.0 | 52.0 |
| ATCC 15308 | KPKDMTSSQWFKTQHVQPSPQASNSAMSIINKYTERSKDLNT FLH | 10.0 | 52.1 |
| ATCC 15308 | KPPQFTWAQWFETQHINMTSQQSTNAMQVINNYQRRSKNQ NTFLL | 10.0 | 54.6 |
| ATCC 15308 | QDNSRYTHFLTQHYDAKPQGRDDRYSESIMRRRGLTSPSKDI NTFIH | 10.0 | 56.4 |
| ATCC 19606 | WW | 145.5 | 56.8 |
| NA | GIWDTIKSMGKVFAGLILQNL | 25.0 | 57.6 |
| ATCC 19606 | KGIVGMLGKLF | 50.0 | 58.1 |
| NA | FWGKLWEGVKNAI | 38.0 | 58.8 |
| NA | LGAWLAGKVAGTVATYAWNRYV | 25.0 | 59.2 |
| NA | GLASTIGSLLGKFAKGGAQAFLQPK | 25.0 | 61.5 |
| ATCC 15308 | GLFDKWAWWRWRR | 33.5 | 62.5 |
| ATCC 15308 | FLGGLIKWPWWPWRR | 31.3 | 62.5 |
| NA | SKVWRHWRRFWHRAHRLH | 25.0 | 63.8 |
| ATCC 19606 | GCRRWKKFRWRYRGKFWFWCG | 22.0 | 64.0 |
| ATCC 19606 | GCRRFKKFKKWRYRGRFWFWCFG | 20.3 | 64.0 |
| Q12 | KFVRLKIYCRDKNKGRGISF | 26.3 | 64.0 |
| ATCC 19606 | GIGKFLHSAGKFGKAFVGEIMKS | 26.6 | 64.0 |
| ATCC 19606 | GCKKYRRFRWKFKGKFWFWGG | 23.1 | 64.0 |
| ATCC 19606 | GCKKYRRFRWKFKGKFWFW | 24.1 | 64.0 |
| Q12 | VLHTGYRKFLHRSKRFFHLR | 24.6 | 64.0 |
| NA | KLLK | 127.8 | 64.0 |
| DSM 3008 | TWLKKRRWKKVKPP | 34.6 | 64.0 |
| ATCC 19606 | KKKLKKLKKKLK | 50.0 | 75.6 |
| ATCC 19606 | FVQWFSKFLLRIL | 48.0 | 81.5 |
| ATCC 19606 | FVPWFSKFLPRIL | 50.0 | 82.5 |
| DSM 30007 | RWRWRW | 85.0 | 88.8 |
| ATCC 19606 | DDALKHLLKHLLKHL | 50.0 | 89.7 |

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| ATCC 19606 | KKKLLLLLLLLLKKK | 50.0 | 90.3 |
| ATCC 19606 | LLLLLKKKKKLLLL | 50.0 | 90.3 |
| NA | GLVGTLLGHIGKAILG | 62.5 | 94.9 |
| NA | GLVGTLLGHIGKAILS | 62.5 | 96.8 |
| NA | KVANTVQKLKRKAKNAVA | 50.0 | 98.4 |
| NM8 | ILGKLLSTAAGLLSNL | 64.0 | 101.4 |
| ATCC 19606 | FSFLSRIF | 100.0 | 101.6 |
| NM8 | ILGKLLKTAAGLLSNL | 64.0 | 104.0 |
| ATCC 19606 | FFFLSRIF | 100.0 | 107.6 |
| NA | SAVGRHGRRFGLRKHRKH | 50.0 | 107.8 |
| NA | IASKVANTVQKLKRKAKNAV | 50.0 | 108.4 |
| NA | LKFLKFG | 128.0 | 109.1 |
| ATCC 19606 | FFFLRRIF | 100.0 | 114.5 |
| NA | LKWLKWG | 128.0 | 119.1 |
| ATCC 19606 | KAAAKWAAKAAK | 100.0 | 121.4 |
| ATCC 15308 | FLGGLIKPWWPWRR | 69.0 | 125.0 |
| NA | LRWLRWG | 128.0 | 126.2 |
| NA | LRDLVCYCRTRGCKRRERMNGTCRKGHLMYTLCCR | 30.1 | 128.0 |
| NA | GIGDPVTCLKSGAICHPVFCPRRYKQIGTCGLPGTKCCKKP | 29.5 | 128.0 |
| ATCC 19606 | KKIMRTFLRR | 94.9 | 128.0 |
| ATCC 19606 | SMATPHVAGAAALILSKHPTWTNAQVRDRLESTATYLGNSF YYGK | 26.1 | 128.0 |
| ICU 63169 | PRPRPRP | 146.3 | 128.0 |
| ICU 63169 | PRPGPRP | 165.0 | 128.0 |
| ATCC 19606 | KILRGVSKRILTGKK | 75.4 | 128.0 |
| Q13 | GTAWRWHYRARS | 82.8 | 128.0 |
| ICU 63169 | PRPLPRP | 153.8 | 128.0 |
| NA | AKRHHGYKRKFH | 81.8 | 128.0 |
| Q13 | RSITRPVLVRRRWRVRPVF | 52.2 | 128.0 |
| ATCC 19606 | KWKIFKKIEKVGRNIRNGIIKAGPAVAVLGEAKAL | 33.5 | 128.0 |
| ICU 63169 | PRPWPRP | 141.4 | 128.0 |
| ATCC 19606 | AGYLLPKINLKPLAKLPKKIL | 54.9 | 128.0 |
| NA | KRFKKFFKKVKKSV | 71.2 | 128.0 |
| ATCC 19606 | KVVVKWVVKVVK | 100.0 | 141.1 |
| ATCC 19606 | WPRFPKPRKPTYPGPTYPGPTWPRPTWRRSATIDTEH | 32.0 | 141.8 |
| ATCC 19606 | KLLLKWLLKLLK | 100.0 | 150.9 |
| NM8 | GFSSIFRGVAKFASKGLGKDLAKLGVDLVA | 50.0 | 152.6 |
| ATCC 19606 | DDALHHLLHHLLHHL | 100.0 | 182.1 |
| ATCC 19606 | DDALRHLLRHLLRHL | 100.0 | 187.8 |
| ATCC 19606 | DDALRRLLRRLLRRL | 100.0 | 193.5 |
| NA | KKCGFFCKLKNKLKSTGSRSNIAAGTHGGTFRV | 56.4 | 200.0 |
| NA | KKCKFFCKVKKKIKSIGFQIPIVSIPFK | 60.9 | 200.0 |
| NA | TRWLWLLRGGLKAAGWGIRAHLNRNQ | 65.7 | 200.0 |
| NA | KFFKRLLKSVRRAVKKFRKKPRLIGLSTLL | 55.1 | 200.0 |
| NM8 | ILGKLLSTAAGLLSKL | 128.0 | 204.5 |
| CICC 22934 | SKVGRHGRRFGHRAHRKL | 100.0 | 215.6 |
| NM8 | ILGAILPLVSGLLSNKL | 128.0 | 220.3 |
| CICC 22934 | SAVGRHLRRFGLRKHRKH | 100.0 | 221.2 |
| CICC 22934 | SKVGRHLRRFGHRAHRKL | 100.0 | 221.2 |

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|---|---|---|---|
| CICC 22934 | SAVGRHLRRFLLRKHRKH | 100.0 | 226.8 |
| CICC 22934 | SKVGRHLRRFLHRAHRKL | 100.0 | 226.8 |
| CICC 22934 | SAVLRHLRRFLLRKHRKH | 100.0 | 232.4 |
| CICC 22934 | SKVLRHLRRFLHRAHRKL | 100.0 | 232.4 |
| ATCC 19606 | NPEKALEPLIAIQIAIKGMLNGWFTGVGFRRKR | 64.0 | 238.4 |
| ATCC 15308 | FLGGLIKRPPAMICAVRKKC | 113.5 | 250.0 |
| ATCC 15308 | FLGGLIKRVPAMICAVRKKC | 113.4 | 250.0 |
| ATCC 15308 | FLGGLIKPVPAMICAVRKKC | 116.6 | 250.0 |
| ATCC 15308 | FLGGLIKIVPAMICAVRKKC | 115.7 | 250.0 |
| NA | PPPVIKFNRPFLMWIVERDTRSILFMGKIVNPKAP | 60.8 | 250.0 |
| ATCC 15308 | RLPWRWPRRPWRR | 130.3 | 250.0 |
| NA | KTRNWFSEHFKKVKEKLKDTFA | 90.3 | 250.0 |
| NA | FSTKTRNWFSEHFKKVKEKLKDTFA | 80.6 | 250.0 |
| ATCC 15308 | RRPWRWPRWPWRR | 125.5 | 250.0 |
| ATCC 15308 | RRPWRWPWWPWRR | 123.7 | 250.0 |
| ATCC 15308 | LLPWKWPWWKWRR | 129.0 | 250.0 |
| ATCC 19606 | FASGIAGMAGKLF | 200.0 | 253.9 |
| ATCC 19606 | DHYNCVSSGGQCLYSACPIFTKIQGTCYRGKAKCCK | 65.1 | 256.0 |
| ATCC 19606 | KISKKIMRTFLRR | 152.6 | 256.0 |
| ATCC 19606 | AGRGKQGGKVRAKAKTRSSRAGLQFPVGRVHRLLRKGNY | 60.1 | 256.0 |
| ATCC 19606 | ISKRILTGKK | 223.9 | 256.0 |
| ATCC 19606 | FAKGIAGMAGKLF | 200.0 | 262.1 |
| NM124 | KFASKGLGKDLAKLGVDLVACKISKQC | 100.0 | 282.1 |
| ATCC 19606 | KLAKLAKKLAKLAK | 196.9 | 300.0 |
| ATCC 19606 | AVAGEKLWLLPHLLKMLLTPTP | 163.8 | 400.0 |
| ATCC 19606 | FLSLIPHIVSGVASLAIHF | 200.0 | 404.3 |
| ATCC 19606 | WKRRIKIWKKIR | 256.0 | 438.1 |
| NM8 | GLGKDLAKLGVDLVACKISKQC | 200.0 | 452.0 |
| NM8 | KGLGKDLAKLGVDLVACKISKQC | 200.0 | 477.6 |
| NM35 | RGVAKFASKGLGKDLAKLGVDLVACKISKQC | 200.0 | 641.0 |