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B. burgdorferi      -----MGF-----LDFFKKTATLDLIAPISGKVM SIDKVPDEAFAEKIVG
Streptomyces       MITGAAAAGLPHAPALASDRRAAAGRNGAAHTVDIYAPLSGEIVSIEDVDPDVFVFAEKIVG
S. pneumoniae     -----MGL-----FDKLFGS---KENKSVEVEIYAPISGEIVNIEDVDPDVFVFEKIVG
V. cholerae       -----MGL-----FDKLKLVSDSANAGAIIDIIAPLSGEIVNIEDVDPDVFVFAEKIVG
E. coli           -----MGL-----FDKLKSLVSDDKKDTGTIEIIAPLSGEIVNIEDVDPDVFVFAEKIVG
B. pseudomallei   -----MRAE-----ESQLKQQASHDQIVLVAPLTGPVVPVPLADVPDPVVFSGGMFG
S. aureus         -----MESMFK---KLFKSGKEVNKDIAIYAPLTGEYVKIEDIPDPVFAQKMMG
L. monocytogenes  -----MFK---KFLKK---SKQEVLF AHVTGQVIALEDVDPDPVFNQKMMG
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B. burgdorferi     DGIAILPTSNEELLAPCDGKIGKIFKTNHAFSLETKEGVEIFVHFGINTLNLNGKGFTRVA
Streptomyces       DGIAIAPSGSAIVAPADGTIGKIFDTHAFS IETDSGLELFLVHFGIDTVELKQGQFRRVA
S. pneumoniae     DGVAVRPIGNKIVAPVDGVIGKIFETNHAFSME SKEGVELFVHFGIDTVELKGEFTRIA
V. cholerae       DGIAIKPAGNKMVAPVNGTIGKIFETNHAFSIESDDGVELFVHFGIDTVELKGEFTRIA
E. coli           DGIAIKPTGNKMVAPVDGTIGKIFETNHAFSIESDSGVELFVHFGIDTVELKGEFTRIA
B. pseudomallei   DGIGIDPLEGRLLAPCAGV VSHVARTGHAVTIAADGGAEILLHIGIDTVELNGLGFTAKI
S. aureus         EGFGINPTEGEVVSPI SGRVDNVFPTKHAIGLKADNGLELLVHIGLDTVQLDGEFVFLV
L. monocytogenes  EGIAIKPETGTIVAPIDGKIIQLAETKHAFGIR TDMGQEILVHIGLETVSLNGEGFNVLV
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B. burgdorferi     EEGINVKQGEVIIRLDLEYLKEHSESVITPVV IANSDEVSSIEYSFGRLENDSEYILSSS
Streptomyces       EEGQRVTRGDTIIEVDLALLEEKAKSTLTPV VVISNMDALTGLTKLSGPVT-----
S. pneumoniae     QEGQSVKRGDTVIEFDLALLEEKAKSVLTP IIVISNMDEISCIVKKSGEVV-----
V. cholerae       EEGQSVKIGDTIIEFDLALLEEKAKSTLTPV VVISNMDIEIKELNKLSGSVT-----
E. coli           EEGQCVKVGDTVIEFDLPLLEEKAKSTLTPV VVISNMDIEIKELIKLSGSVT-----
B. pseudomallei   AEGARVAAGDLLIEFDQDAIARAAHSLVSV IAIANSDAFEVV-----
S. aureus         SSGDEVNVGDPLVRFNLEFINKNAKSVISPI IITNSDQAA-SINIHD-----
L. monocytogenes  SVGDKVKVGDSIVEADDFDIEKNAASTVVP M VITNSSEGKYDFDFHA-----
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B. burgdorferi     TVLTEEIRHKISQTKPVIAGKDLVLRVKK-----
Streptomyces       -----AGRSVILRATKE-----
S. pneumoniae     -----AGESVVLALKK-----
V. cholerae       -----VGETPILRVTK-----
E. coli           -----VGETPVIRIKK-----
B. pseudomallei   -----ERAGAGRRESGRDAAARAARARRG CKCGYKCECECGRGC
S. aureus         -----EKAVIKGETKVIDVTMN-----
L. monocytogenes  -----VTKAEAGKTEVITTNLK-----
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Fig S4: The sequence of the EIIA^{Glc} AH is not conserved. Clustal Omega was used to align the sequences of the EIIA^{Glc} homologs of *Borrelia burgdorferi* (*B. burgdorferi*), *Streptomyces* ScaeMP-e83, *Streptococcus pneumoniae* (*S. pneumoniae*), *Vibrio cholerae* (*V. cholerae*), *Escherichia coli* (*E. coli*), *Burkholderia pseudomallei* (*B. pseudomallei*), *Staphylococcus aureus* (*S. aureus*), and *Listeria monocytogenes* (*L. monocytogenes*). Red font is used to highlight the amino acid separating the poorly conserved N-terminus of EIIA^{Glc} from the protein core. While the sequence of the body of EIIA^{Glc} is conserved, the N terminus varies.