**Supplementary file 8A. Bacterial strains used in this study.**

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| **Strains** | **Description** | **Reference** |
| DH5α | Host for DNA cloning |  |
| RN4220 | Restriction-defective derivate of RN450 | (Kreiswirth et al., 1983) |
| RN450 | NCTC8325 cured of φ11, φ12 and φ13 | (Novick, 1967) |
| BL21 (DE3) | *E. coli* expression strain | Stratagene |
| JP6774 | RN4220 Δ*spa* SaPIbov1 *tst*::*tet*M | (Tormo-Más et al., 2010) |
| JP11634 | RN4220 SaPIbov5::*erm*C adjusted | (Carpena et al., 2016) |
| JP12491 | RN4220 pJP674 | (Tormo-Más et al., 2010) |
| JP5468 | RN4220 pJP674 pJP653 | (Tormo-Más et al., 2010) |
| RN10539 | RN450 lysogenic for 80α | (Ubeda et al., 2007) |
| JP12884 | Lysate of φ80 | (Christie et al., 2010) |
| JP15166 | BL21 DE3 pJP1987 | This work |
| JP15167 | BL21 DE3 pJP1988 | This work |
| JP13792 | BTH101: BACTH System Kit, Bacterial Adenylate Cyclase Two-hybrid System Kit | EUROMEDEX |
| JP975 | *S. aureus* N315 | (Kuroda et al., 2001) |
| JP5011 | RN4220 lysogenic for φSLT *pvl*::*tet*M | (Ferrer et al., 2011) |
| JP2878 | RN4220 SaPI2 *tst*::*tet*M | (Subedi et al., 2007) |
| JP15847 | RN4220 Δ*spa* SaPI2 *tst*::*tet*M | This work |
| JP14818 | RN4220 pJP674 pJP1928 | This work |
| JP13056 | RN4220 pJP674 pJP1927 | This work |
| JP14835 | RN4220 pJP674 pJP1930 | This work |
| JP15091 | RN4220 pJP1925 | This work |
| JP15092 | RN4220 pJP1925 JP1928 | This work |
| JP15093 | RN4220 pJP1925 pJP1927 | This work |
| JP15095 | RN4220 pJP1925 pJP1930 | This work |
| JP15097 | RN4220 pJP1925 pJP653 | This work |
| JP15098 | RN4220 pJP1926 | This work |
| JP15099 | RN4220 pJP1926 JP1928 | This work |
| JP15100 | RN4220 pJP1926 pJP1927 | This work |
| JP15102 | RN4220 pJP1926 pJP1930 | This work |
| JP15104 | RN4220 pJP1926 pJP653 | This work |
| JP15105 | RN4220 pJP674 pCN51 | This work |
| JP15106 | RN4220 pJP1924 pCN51 | This work |
| JP15107 | RN4220 pJP1925 pCN51 | This work |
| JP15108 | RN4220 pJP1926 pCN51 | This work |
| JP14832 | BL21 DE(3) pJP1932 | This work |
| JP14833 | BL21 DE(3) pJP1933 | This work |
| JP10560 | BL21 DE(3) pJP1938 | This work |
| JP14649 | JP6774 pJP1928 | This work |
| JP14817 | JP11634 pJP1931 | This work |
| JP15161 | RN4220 + 80α chimera ORF16-17 | This work |
| JP2592 | RN4220 φ52A | Lab strain |

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| **Strains** | **Description** | **Reference** |
| JP4729 | *S. epidermidis* φPH15 | Lab strain |
| JP15927 | JP15847 pJP2050 | This work |
| JP15928 | JP15847 pJP2051 | This work |
| JP15929 | JP15847 pJP2052 | This work |
| JP15930 | JP15847 pJP2053 | This work |
| JP15932 | JP15847 pJP2054 | This work |
| JP15933 | JP15847 pCN51 | This work |
| JP13969 | RN4220 pJP1977 pJP1883 | This work |
| JP13970 | RN4220 pJP1977 pJP1965 | This work |
| JP13971 | RN4220 pJP1977 pJP1966 | This work |
| JP14737 | RN4220 pJP1977 pJP1967 | This work |
| JP15164 | RN4220 pJP1977 pJP1968 | This work |
| JP13975 | RN4220 pJP1977 pJP1969 | This work |
| JP13976 | RN4220 pJP1977 pCN51 | This work |
| JP13927 | RN4220 pJP1978 pJP1883 | This work |
| JP13929 | RN4220 pJP1978 pJP1965 | This work |
| JP13931 | RN4220 pJP1978 pJP1966 | This work |
| JP14738 | RN4220 pJP1978 pJP1967 | This work |
| JP13932 | RN4220 pJP1978 pJP1968 | This work |
| JP13936 | RN4220 pJP1978 pJP1969 | This work |
| JP13937 | RN4220 pJP1978 pCN51 | This work |
| JP13938 | RN4220 pJP1980 pJP1883 | This work |
| JP13940 | RN4220 pJP1980 pJP1965 | This work |
| JP13942 | RN4220 pJP1980 pJP1966 | This work |
| JP14740 | RN4220 pJP1980 pJP1967 | This work |
| JP13943 | RN4220 pJP1980 pJP1968 | This work |
| JP13947 | RN4220 pJP1980 JP1969 | This work |
| JP13948 | RN4220 pJP1980 pCN51 | This work |
| JP13977 | RN4220 pJP1979 pJP1883 | This work |
| JP13978 | RN4220 pJP1979 pJP1965 | This work |
| JP13979 | RN4220 pJP1979 pJP1966 | This work |
| JP14739 | RN4220 pJP1979 pJP1967 | This work |
| JP15165 | RN4220 pJP1979 pJP1968 | This work |
| JP13983 | RN4220 pJP1979 pJP1969 | This work |
| JP13984 | RN4220 pJP1979 pCN51 | This work |
| JP15168 | BTH101 pJP1986 pJP1981 | This work |
| JP15169 | BTH101 pJP1986 pJP1982 | This work |
| JP15170 | BTH101 pJP1986 pJP1983 | This work |
| JP15171 | BTH101 pJP1986 pJP1984 | This work |
| JP15172 | BTH101 pJP1986 pJP1985 | This work |
| JP15173 | BTH101 pUT18c pKNT25 | This work |
| JP15174 | BTH101 pUT18c-Zip pKT25-Zip | This work |

**Supplementary file 8B. Plasmids used in this study.**

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| **Plasmid** | **Description** | **Reference** |
| pPROEX HTa | Expression vector | Invitrogen |
| pCU1 | Expression vector | (Augustin et al., 1992) |
| pCN36 | Expression vector | (Charpentier et al., 2004) |
| pCN41 | Expression vector | (Charpentier et al., 2004) |
| pCN51 | Expression vector | (Charpentier et al., 2004) |
| pJP674 | pRN8298-chlor-pInt-20-19-18-*bla*Z (SaPIbov1) | (Tormo-Más et al., 2010) |
| pUT18c | Two hybrid assay plasmid | EUROMEDEX |
| pKNT25 | Two hybrid assay plasmid | EUROMEDEX |
| pUT18c-Zip | Two hybrid assay plasmid | EUROMEDEX |
| pKT25-Zip | Two hybrid assay plasmid | EUROMEDEX |
| pJP653 | pCN51-3xflag-φ11 Dut | (Tormo-Más et al., 2010) |
| pJP1969 | pCN51 80α ORF16-17 chimera | This work |
| pJP1987 | pPROEX HTa His-StlSaPI2 + ORF16 of 80α | This work |
| pJP1988 | pPROEX HTa His-StlSaPI2 + ORF16-17 chimera 80α | This work |
| pJP1925 | pRN8298-chlor-*stl*-*str*-*xis-bla*Z (ShoCI794\_SEPI) | This work |
| pJP1926 | pRN8298-chlor-*stl*-*str*-*xis-bla*Z (ShaCI51-48) | This work |
| pJP1928 | pCN51-3xflag-O11 Dut | This work |
| pJP1927 | pCN51-3xflag-NM1 Dut | This work |
| pJP1930 | pCN51-3xflag-IPLA6 Dut | This work |
| pJP1931 | pCN51-3tet-3xflag-O11 Dut | This work |
| pJP1932 | pPROEX HTa His-StlSaPIbov1 + DutΦO11 | This work |
| pJP1933 | pPROEX HTa StlSaPIbov1 + DutΦO11 | This work |
| pJP1938 | pET28a-*dut* φO11 | This work |
| pJP1883 | pCN51 80α ORF16 | (Neamah et al., 2017) |
| pJP1965 | pCN51 Φ52A ORF16 | This work |
| pJP1966 | pCN51 ORF17 ΦSLT | This work |
| pJP1967 | pCN51 ΦN315 ORFRS1794 | This work |
| pJP1968 | pCN51 Φ15 ORF46 (*S. epidermidis*) | This work |
| pJP1970 | pCN41 SaPI2 *stl-str* region | This work |
| pJP2050 | pCN51-3xflag-80α ORF16 | This work |
| pJP2051 | pCN51-3xflag-φ52A ORF16 | This work |
| pJP2052 | pCN51-3xflag-φSLT ORF17 | This work |
| pJP2053 | pCN51-3xflag-φN315 ORFRS1794 | This work |
| pJP2054 | pCN51-3xflag- 80α Chimeric 16-17 | This work |
| pJP1971 | pCU57 SaPI2-like *stl-str* region of SsiCIUMC-CNS990 (*S. simulans*) | This work |

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| **Plasmid** | **Description** | **Reference** |
| pJP1972 | pCU57 SaPI2-like *stl-str* region of SeCINIHLM095 (*S. epidermidis*) | This work |
| pJP1973 | pCU57 SaPI2-like *stl*-*str* region of ShaCI137133 (*S. haemolyticus*) | This work |
| pJP1974 | pCN41 SaPI2-like *stl-str* region of SeCINIHLM095 | This work |
| pJP1975 | pCN41 SaPI2-like *stl-str* region of ShaCI137133 | This work |
| pJP1976 | pCN41 SaPI2-like *stl-str* region of ScCIUMC-CNS990 | This work |
| pJP1977 | pCU1 SaPI2 *stl-str* region + *bla*Z | This work |
| pJP1978 | pCU1 SaPI2-like *stl-str* region of SeCINIHLM095 + *bla*Z | This work |
| pJP1979 | pCU1 SaPI2-like *stl-str* region of ShaCI137133 + *bla*Z | This work |
| pJP1980 | pCU1 SaPI2-like *stl-str* region of SsiCIUMC-CNS990 + *bla*Z | This work |
| pJP1981 | pUT18c 80α ORF16 | This work |
| pJP1982 | pUT18c φ52A ORF16 | This work |
| pJP1983 | pUT18c φSLT ORF17 | This work |
| pJP1984 | pUT18c φN315 ORFRS1794 | This work |
| pJP1985 | pUT18c φ80a ORF16-17 chimera | This work |
| pJP1986 | pKNT25 *stl*\_SaPI2 | This work |

**Supplementary file 8C. Oligonucleotide designs used in this study.**

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| **Plasmid** | **Oligonucleotides** | **Sequence** |
| pJP674 | SaPIbov1-149cB  NY-24mK | CGCGGATCCGATCAGTACCTAAATATGCG  CGGGGTACCCACTCGGTTATAACCTT |
| pJP1925 | Sepid-Stl-1mB  Sepid-Stl-2cK | CGCGGATCCGGAGAAGTTATTTTGAATTTTTGATTTGTTC  CGGGGTACCCTTTTGCTGGGCGATTTGCTCTGCAAGTTTC |
| pJP1926 | Shaem-Stl-1mB  Shaem-Stl-2cK | CGCGGATCCGCGAGAAAAGTCATTTACAATTTTTAAATTG  CGGGGTACCCGCTTCTGTTGTTGTTCTATCTTTTGCTGTG |
| pJP1928  pJP1927 | dutNM1-1mS  dutNM1-2m  dut-DI-2cB | ACGCGTCGACATTATGACGGGTCAAGTTGTCTATAAATATGAGGAGGCACAGGAAAATGGATTATAAAGATCACGATGGCGATTATAAAGATC  CACGATGGCGATTATAAAGATCACGATATCGATTATAAAGATGATGATGATAAAATGACTAACACATTAACAATTGATCAG  CGCGGATCCTTACACGTATCCTTTTCCTGC  (These plasmids were constructed using the same primers with different templates.) |
| pJP1930 | dutNM1-1mS  IPLA5\_0063\_2m  IPLA5\_0063\_3cB | ACGCGTCGACATTATGACGGGTCAAGTTGTCTATAAATATGAGGAGGCACAGGAAAATGGATTATAAAGATCACGATGGCGATTATAAAGATC  CGATGGCGATTATAAAGATCACGATATCGATTATAAAGATGATGATGATAAAATGAGTAAGAAATTAGAAATTAAATTG  CGCGGATCCTTAGAATCCTGTTGATCCAAACCC |
| pJP1931 | dutNM1-1mS  dutNM1-2m  dut-DI-2cB | ACGCGTCGACATTATGACGGGTCAAGTTGTCTATAAATATGAGGAGGCACAGGAAAATGGATTATAAAGATCACGATGGCGATTATAAAGATC  CACGATGGCGATTATAAAGATCACGATATCGATTATAAAGATGATGATGATAAAATGACTAACACATTAACAATTGATCAG  CGCGGATCCTTACACGTATCCTTTTCCTGC  (Tetracycline marker from pCN36 used to replace the Erythromycin marker in pCN51) | |

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| **Plasmid** | **Oligonucleotides** | **Sequence** |
| pJP1932  pJP1933 | StlSaPIbov1  SaPIbov1- 203 mB  SaPIbov1-223cE  dUTPaseΦO11  dutNM1-35mS  phiO11\_Dut\_1cP | CGCGGATCCCATGGAAGGAGCTGGTCAAATGGC  CCGGAATTCGATTAATTAGTGTCTTTTTCAAG  ACGCGTCGACTTCACACAGGAAACAGACCATGACTAACACATTAACAATTG  CTGCAGTTACACGTATCCTTTTCCTGCG  (These plasmids were constructed using the same primers with different templates. pJP1933 was created by using Klenow to transfer the His-tag to a different reading frame from the StlSaPIbov1.) |
| pJP1938 | dutNM1-19cS  dutNM1-18mB | ACGCGTCGACTTACACGTATCCTTTTCCTGC CGCGGATCCATGACTAACACATTAACAATTGATC |
| pJP1965 | ORF13 phi80-1mS  ORF13 phi80-1cB | ACGCGTCGACCGGTAAAGGTGGGAGAATAG  CGCGGATCCGTGATTTTCATAATTTTTATAC |
| pJP1966 | ORF17 phiSLT-1mS  ORF17 phiSLT-1cB | ACGCGTCGACGAGGGTGCTAGCATTGTTGAG  CGCGGATCCCCTTTTAACTCTGGATCTGC |
| pJP1967 | Rec phiN315-1mB  Rec phiN315-2cE | CGCGGATCCCAAAACAGAATCACAACAAATTC  CCGGAATTCGTAGCAGTTACCACTTGAACC |
| pJP1968 | ORF46 phi15 S.epi-1mS  ORF46 phi15 S.epi-1cB | ACGCGTCGACCTAAGCACAGAGCAATTAAAAAG  CGCGGATCCCTAAATCTTTAGTGATACGTCC |
| pJP1969 | ORF16 phi80α-21mS  ORF16-17 chi phi80α 6cB | ACGCGTCGACTGATATGTCTAAGCACAAAGC  CGCGGATCCTCAGAACGGTAAGTCATCATC |
| pJP1970 | Stl SaPI2-1mS  Str SaPI2-1cB | ACGCGTCGACTTAATATTCTTTAAAAATATCACTAGATAAACGGC  CGCGGATCCTTATGCCTCCTTTACTTCAAATTC |
| pJP1977 | Stl SaPI2-1mS  blaZ-1cHindIII | ACGCGTCGACTTAATATTCTTTAAAAATATCACTAGATAAACGGC  CCCAAGCTTGGGGTTATCAGTATTTATTATGCATTTAG |
| pJP1978 | Stl-Se-1mS  blaZ-1cHindIII | ACGCGTCGACGGCATGCCTGCAGGTCGACCCTAC  CCCAAGCTTGGGGTTATCAGTATTTATTATGCATTTAG |
| pJP1980 | Stl-Se-1mS  blaZ-1cHindIII | ACGCGTCGACGGCATGCCTGCAGGTCGACCCTAC  CCCAAGCTTGGGGTTATCAGTATTTATTATGCATTTAG |
| pJP1979 | Stl-Sh-2m  blaZ-2cSphI | CTGCAGGTCGACCCTACTTAATATTC  ACATGCATGCGATGTTATCAGTATTTATTATG |
| pJP1981 | T-ORF16 phi80α-4mS  T-ORF16 phi80α-5cB | ACGCGTCGACAATGACTGAACAAACATTATTTG  CGCGGATCCTTATTGTTTCTCCTCACTATC |
| **Plasmid** | **Oligonucleotides** | **Sequence** |
| pJP1982 | T-ORF16 phi52A-5mS  T-ORF16 phi52A-6cB | ACGCGTCGACAATGACTGAAAAAACTAATCAAG  CGCGGATCCTTAATTACCATTTCTAATTGC |
| pJP1983 | T-ORF17 phiSLT-6mS  T-ORF17 phiSLT-6cB | ACGCGTCGACAATGGCCGAACAACTTAATTTG  CGCGGATCCTCATTGTTCAATTCCTCCAAG |
| pJP1984 | T-rec phiN315 6mS  T-rec phiN315 6cB | ACGCGTCGACAATGACGAATGAATTACTATTAAAAAAC  CGCGGATCCTTAAAATGGCTCTTCTTCGCTTTC |
| pJP1985 | T-ORF16 phi80α-4mS  ORFchi phi80α-6cB | ACGCGTCGACAATGACTGAACAAACATTATTTG  CGCGGATCCTCAGAACGGTAAGTCATCATC |
| pJP1986 | TN-stl\_SaPI2-6mB  TN-stl\_SaPI2-6cKpnI | CGCGGATCCCATGATTAGAAATAGATTGTCTG  GGGGTACCATATATTCTTTAAAAATATCACTAGATAAACGGCTATC |
| pJP1987 | SaPI2-12mB  SaPI2-13cE  orf16-phi80α-15mS  orf16-phi80α-16mXb | CGCGGATCCGATGATTAGAAATAGATTGTCTG  CCGGAATTCTGATCACCTCGATTAATATTC  ACGCGTCGACTAACAATTTCACACAGGAAACAGACCATGACTGAACAAACATTATTTG  GCTCTAGATTATTGTTTCTCCTCACTATCC |
| pJP1988 | SaPI2-12mB  SaPI2-13cE  ORF16-17 chi phi80α-8mS  ORF16-17 chi phi80α-9cXbaI | CGCGGATCCGATGATTAGAAATAGATTGTCTG  CCGGAATTCTGATCACCTCGATTAATATTC  ACGCGTCGACTAACAATTTCACACAGGAAACAGACCATGACTGAACAAACATTATTTG  GCTCTAGATCAGAACGGTAAGTCATCATC |
| pJP2050 | ORF16 phi80α \_flag-6mS  Orf16-phi80α-13m  Orf16phi80α-20cB | ACGCGTCGACTGATATGTCTAAGCACAAAGCAATCAAGAAAACAGTGACAGAAACTATTGAGTACGAGGAGGTAGAACATGGATTATAAAGATCACGATGG  ATGGATTATAAAGATCACGATGGCGATTATAAAGATCACGATATCGATTATAAAGATGATGATGATAAAATGACTGAACAAACATTATTTG  CGCGGATCCTTATTGTTTCTCCTCACTATC |
| pJP2051 | ORF16 phi80α\_flag-6mS  ORF16 phi52A-17m  ORF13 phi80-1cB | ACGCGTCGACTGATATGTCTAAGCACAAAGCAATCAAGAAAACAGTGACAGAAACTATTGAGTACGAGGAGGTAGAACATGGATTATAAAGATCACGATGG  ATGGATTATAAAGATCACGATGGCGATTATAAAGATCACGATATCGATTATAAAGATGATGATGATAAAATGACTGAAAAAACTAATCAAGATG  CGCGGATCCGTGATTTTCATAATTTTTATAC |

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| **Plasmid** | **Oligonucleotides** | **Sequence** |
| pJP2052 | ORF16 phi80α\_flag-6mS  ORF17 phiSLT-17m  ORF17 phiSLT-1cB | ACGCGTCGACTGATATGTCTAAGCACAAAGCAATCAAGAAAACAGTGACAGAAACTATTGAGTACGAGGAGGTAGAACATGGATTATAAAGATCACGATGG  ATGGATTATAAAGATCACGATGGCGATTATAAAGATCACGATATCGATTATAAAGATGATGATGATAAAATGGCCGAACAACTTAATTTG  CGCGGATCCCCTTTTAACTCTGGATCTGC |
| pJP2053 | ORF16 phi80α\_flag-6mS  ORF10305 phiN315-17m  Rec phiN315-2cE | ACGCGTCGACTGATATGTCTAAGCACAAAGCAATCAAGAAAACAGTGACAGAAACTATTGAGTACGAGGAGGTAGAACATGGATTATAAAGATCACGATGG  ATGGATTATAAAGATCACGATGGCGATTATAAAGATCACGATATCGATTATAAAGATGATGATGATAAAATGACGAATGAATTACTATTAAAAAACA  CCGGAATTCGTAGCAGTTACCACTTGAACC |
| pJP5054 | ORF16 phi80α\_flag-6mS  orf16-phi80a-13m  orf17phi80a-10cB | ACGCGTCGACTGATATGTCTAAGCACAAAGCAATCAAGAAAACAGTGACAGAAACTATTGAGTACGAGGAGGTAGAACATGGATTATAAAGATCACGATGG  ATGGATTATAAAGATCACGATGGCGATTATAAAGATCACGATATCGATTATAAAGATGATGATGATAAAATGACTGAACAAACATTATTTG  CGCGGATCCTCAGAACGGTAAGTCATCATC |
| pETNKI-StlΔHTH | Stl\_M1-K176\_Fw | CGATAAAAAATAAGAAGTAACAATAGAAGAAATTG |
|  | Stl\_M1-K176\_Rv | CTTGATTTTCGAGTATTTGCTAAAG |
| pETNKI-StlΔCter | Stl\_T87-N267\_Fw | CCAGCAGCAGACGGGAGGTATGACATTAAA |
|  | Stl\_T87-N267\_Rv | GGCGGCGGAGCCCGTTAATTAGTGTCTTTT |
| Sequences recognized by the restriction enzymes used in cloning are underlined. | | |

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| **Probe** | **Oligonucleotides** | **Sequence** |
| **SaPIbov1/SaPIbov5** | SaPIbov1-112mE SaPIbov1-113cB | CCGGAATTCAATTGCTGAGGCAAAACTTC  CGCGGATCCTAATTCTCCACGTCTAAAGC |
| **SaPI2** | Tet-1m  Tet-2c | GTGGACAAAGGTACAACGAGG  CTTTCCTCTTGTTCGAGTTCC |

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