pHcRed-Tandem-B vector restriction map

The data has not been verified by restriction digestion with each enzyme listed and does not take into account possible methylation sites. Enzymes that recognize unambiguous sequences less than 6 basepairs long are not included – for the more complete enzyme list please refer to the Table of restriction sites.

Unique sites shown in bold blue. The location given specifies the 3' end of the cut DNA (the base to the left of the cut site). Amino acids coded by vector's backbone sequence and amino acids coded by linker between two identical HcRed1 sequences are shown in black.

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            Xho1                              BsrB1         Psi1      Mfe1    BsrB1
               |                                  |            |         |        |
               CTCGAGAAATCATAAAAAATTTATTTGCTTTGTGAGCGGATAACAATTATAATAGATTCAATTGTGAGCGGATAACAATTTCACACAGAATTGATTAAAG
            1  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 100
               GAGCTCTTTAGTATTTTTTAAATAAACGAAACACTCGCCTATTGTTAATATTATCTAAGTTAACACTCGCCTATTGTTAAAGTGTGTCTTAACTAATTTC

                                     BamH1                          Fsp1
                         BseR1      BsaB1|                         FspA1     BsrG1                    Msc1
                             |          ||                             |         |                       |
               AGGAGAAATTAACTATGAGAGGATCGGGATCCTCTGGTTTGTTGAAAGAAAGTATGCGCATCAAGATGTACATGGAAGGCACGGTTAATGGCCATTATTT
          101  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 200
               TCCTCTTTAATTGATACTCTCCTAGCCCTAGGAGACCAAACAACTTTCTTTCATACGCGTAGTTCTACATGTACCTTCCGTGCCAATTACCGGTAATAAA
t-HcRed      >               M  R  G  S  G  S  S  G  L  L  K  E  S  M  R  I  K  M  Y  M  E  G  T  V  N  G  H  Y  F

                                    BspM1
                      BsmB1         BfuA1                              BmgB1
                          |             |                                  |
               CAAGTGTGAAGGAGAAGGAGACGGCAACCCATTTGCAGGTACGCAGAGCATGAGGATTCACGTCACCGAAGGGGCTCCATTACCATTTGCCTTCGACATT
          201  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 300
               GTTCACACTTCCTCTTCCTCTGCCGTTGGGTAAACGTCCATGCGTCTCGTACTCCTAAGTGCAGTGGCTTCCCCGAGGTAATGGTAAACGGAAGCTGTAA
t-HcRed      >  K  C  E  G  E  G  D  G  N  P  F  A  G  T  Q  S  M  R  I  H  V  T  E  G  A  P  L  P  F  A  F  D  I
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                                            PshA1
                                                |
               TTGGCACCGTGTTGTGAGTACGGCAGCAGGACCTTTGTCCACCATACGGCAGAGATTCCCGATTTCTTCAAGCAGTCTTTCCCTGAAGGCTTTACTTGGG
          301  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 400
               AACCGTGGCACAACACTCATGCCGTCGTCCTGGAAACAGGTGGTATGCCGTCTCTAAGGGCTAAAGAAGTTCGTCAGAAAGGGACTTCCGAAATGAACCC
t-HcRed      > L  A  P  C  C  E  Y  G  S  R  T  F  V  H  H  T  A  E  I  P  D  F  F  K  Q  S  F  P  E  G  F  T  W  E

                                                                                                          Acc65
              Eco57                    Bsm1                                              Bpm1          Nco1   |
                  |                       |                                                 |             |   |
               AAAGAACCACAACCTATGAAGATGGAGGCATTCTTACTGCTCATCAGGACACAAGCCTGGAGGGGAACTGCCTTATATACAAGGTGAAAGTCCATGGTAC
          401  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 500
               TTTCTTGGTGTTGGATACTTCTACCTCCGTAAGAATGACGAGTAGTCCTGTGTTCGGACCTCCCCTTGACGGAATATATGTTCCACTTTCAGGTACCATG
t-HcRed      >   R  T  T  T  Y  E  D  G  G  I  L  T  A  H  Q  D  T  S  L  E  G  N  C  L  I  Y  K  V  K  V  H  G  T

           Kpn1                                                          Ale1             PflM1
              |                                                             |                 |
               CAATTTTCCTGCTGATGGCCCCGTGATGAAGAACAAATCAGGAGGATGGGAGCCAAGCACTGAGGTGGTTTATCCAGAGAATGGTGTCCTGTGTGGACGT
          501  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 600
               GTTAAAAGGACGACTACCGGGGCACTACTTCTTGTTTAGTCCTCCTACCCTCGGTTCGTGACTCCACCAAATAGGTCTCTTACCACAGGACACACCTGCA
t-HcRed      >  N  F  P  A  D  G  P  V  M  K  N  K  S  G  G  W  E  P  S  T  E  V  V  Y  P  E  N  G  V  L  C  G  R

                                                                                         BstAP
                                                                                             |
               AATGTGATGGCCCTTAAAGTCGGTGATCGTCATTTGATCTGCCATCACTATACTTCTTACAGGTCCAAGAAAGCAGTCCGTGCCTTGACAATGCCAGGAT
          601  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 700
               TTACACTACCGGGAATTTCAGCCACTAGCAGTAAACTAGACGGTAGTGATATGAAGAATGTCCAGGTTCTTTCGTCAGGCACGGAACTGTTACGGTCCTA
t-HcRed      > N  V  M  A  L  K  V  G  D  R  H  L  I  C  H  H  Y  T  S  Y  R  S  K  K  A  V  R  A  L  T  M  P  G  F

                                        Bpu10
                Eco57                   BbvC1
                 Eci1                  AlwN1|                 Sca1
                    |                      ||                    |
               TTCATTTTACAGACATCCGCCTTCAGATGCTGAGGAAAAAGAAAGACGAGTACTTTGAACTGTACGAAGCATCTGTGGCTAGGTACAGTGATCTTCCTGA
          701  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 800
               AAGTAAAATGTCTGTAGGCGGAAGTCTACGACTCCTTTTTCTTTCTGCTCATGAAACTTGACATGCTTCGTAGACACCGATCCATGTCACTAGAAGGACT
t-HcRed      >   H  F  T  D  I  R  L  Q  M  L  R  K  K  K  D  E  Y  F  E  L  Y  E  A  S  V  A  R  Y  S  D  L  P  E
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                                                          Fsp1
                      Bgl2    Sma1                       FspA1     BsrG1                    Msc1
                         |       |                           |         |                       |
               AAAAGCAAATAGATCTCCCGGGTCTGGTTTGTTGAAAGAAAGTATGCGCATCAAGATGTACATGGAAGGCACGGTTAATGGCCATTATTTCAAGTGTGAA
          801  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 900
               TTTTCGTTTATCTAGAGGGCCCAGACCAAACAACTTTCTTTCATACGCGTAGTTCTACATGTACCTTCCGTGCCAATTACCGGTAATAAAGTTCACACTT
t-HcRed      >  K  A  N  R  S  P  G  S  G  L  L  K  E  S  M  R  I  K  M  Y  M  E  G  T  V  N  G  H  Y  F  K  C  E

                          BspM1
            BsmB1         BfuA1                              BmgB1
                |             |                                  |
               GGAGAAGGAGACGGCAACCCATTTGCAGGTACGCAGAGCATGAGGATTCACGTCACCGAAGGGGCTCCATTACCATTTGCCTTCGACATTTTGGCACCGT
          901  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 1000
               CCTCTTCCTCTGCCGTTGGGTAAACGTCCATGCGTCTCGTACTCCTAAGTGCAGTGGCTTCCCCGAGGTAATGGTAAACGGAAGCTGTAAAACCGTGGCA
t-HcRed      > G  E  G  D  G  N  P  F  A  G  T  Q  S  M  R  I  H  V  T  E  G  A  P  L  P  F  A  F  D  I  L  A  P  C

                                  PshA1                                                             Eco57
                                      |                                                                     |
               GTTGTGAGTACGGCAGCAGGACCTTTGTCCACCATACGGCAGAGATTCCCGATTTCTTCAAGCAGTCTTTCCCTGAAGGCTTTACTTGGGAAAGAACCAC
         1001  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 1100
               CAACACTCATGCCGTCGTCCTGGAAACAGGTGGTATGCCGTCTCTAAGGGCTAAAGAAGTTCGTCAGAAAGGGACTTCCGAAATGAACCCTTTCTTGGTG
t-HcRed      >   C  E  Y  G  S  R  T  F  V  H  H  T  A  E  I  P  D  F  F  K  Q  S  F  P  E  G  F  T  W  E  R  T  T

                                                                                                     Kpn1
                                                                                                Acc65   |
                             Bsm1                                              Bpm1          Nco1   |   |
                                |                                                 |             |   |   |
               AACCTATGAAGATGGAGGCATTCTTACTGCTCATCAGGACACAAGCCTGGAGGGGAACTGCCTTATATACAAGGTGAAAGTCCATGGTACCAATTTTCCT
         1101  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 1200
               TTGGATACTTCTACCTCCGTAAGAATGACGAGTAGTCCTGTGTTCGGACCTCCCCTTGACGGAATATATGTTCCACTTTCAGGTACCATGGTTAAAAGGA
t-HcRed      >  T  Y  E  D  G  G  I  L  T  A  H  Q  D  T  S  L  E  G  N  C  L  I  Y  K  V  K  V  H  G  T  N  F  P

                                                               Ale1             PflM1
                                                                  |                 |
               GCTGATGGCCCCGTGATGAAGAACAAATCAGGAGGATGGGAGCCAAGCACTGAGGTGGTTTATCCAGAGAATGGTGTCCTGTGTGGACGTAATGTGATGG
         1201  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 1300
               CGACTACCGGGGCACTACTTCTTGTTTAGTCCTCCTACCCTCGGTTCGTGACTCCACCAAATAGGTCTCTTACCACAGGACACACCTGCATTACACTACC
t-HcRed      > A  D  G  P  V  M  K  N  K  S  G  G  W  E  P  S  T  E  V  V  Y  P  E  N  G  V  L  C  G  R  N  V  M  A
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                                                                                                          Eco57
                                                                               BstAP                       Eci1
                                                                                   |                          |
               CCCTTAAAGTCGGTGATCGTCATTTGATCTGCCATCACTATACTTCTTACAGGTCCAAGAAAGCAGTCCGTGCCTTGACAATGCCAGGATTTCATTTTAC
         1301  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 1400
               GGGAATTTCAGCCACTAGCAGTAAACTAGACGGTAGTGATATGAAGAATGTCCAGGTTCTTTCGTCAGGCACGGAACTGTTACGGTCCTAAAGTAAAATG
t-HcRed      >   L  K  V  G  D  R  H  L  I  C  H  H  Y  T  S  Y  R  S  K  K  A  V  R  A  L  T  M  P  G  F  H  F  T

                              Bpu10
                              BbvC1
                             AlwN1|                 Sca1
                                 ||                    |
               AGACATCCGCCTTCAGATGCTGAGGAAAAAGAAAGACGAGTACTTTGAACTGTACGAAGCATCTGTGGCTAGGTACAGTGATCTTCCTGAAAAAGCAAAT
         1401  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 1500
               TCTGTAGGCGGAAGTCTACGACTCCTTTTTCTTTCTGCTCATGAAACTTGACATGCTTCGTAGACACCGATCCATGTCACTAGAAGGACTTTTTCGTTTA
t-HcRed      >  D  I  R  L  Q  M  L  R  K  K  K  D  E  Y  F  E  L  Y  E  A  S  V  A  R  Y  S  D  L  P  E  K  A  N

              Hind3        Blp1
                  |           |
               TAGAAGCTTAATTAGCTGAGCTTGGACTCCTGTTGATAGATCCAGTAATGACCTCAGAACTCCATCTGGATTTGTTCAGAACGCTCGGTTGCCGCCGGGC
         1501  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 1600
               ATCTTCGAATTAATCGACTCGAACCTGAGGACAACTATCTAGGTCATTACTGGAGTCTTGAGGTAGACCTAAACAAGTCTTGCGAGCCAACGGCGGCCCG
t-HcRed      > *

                                   Nhe1                    Bpu10
                                      |                        |
               GTTTTTTATTGGTGAGAATCCAAGCTAGCTTGGCGAGATTTTCAGGAGCTAAGGAAGCTAAAATGGAGAAAAAAATCACTGGATATACCACCGTTGATAT
         1601  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 1700
               CAAAAAATAACCACTCTTAGGTTCGATCGAACCGCTCTAAAAGTCCTCGATTCCTTCGATTTTACCTCTTTTTTTAGTGACCTATATGGTGGCAACTATA

                                                                                       Pvu2                Dra1
                                                                                          |                   |
               ATCCCAATGGCATCGTAAAGAACATTTTGAGGCATTTCAGTCAGTTGCTCAATGTACCTATAACCAGACCGTTCAGCTGGATATTACGGCCTTTTTAAAG
         1701  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 1800
               TAGGGTTACCGTAGCATTTCTTGTAAAACTCCGTAAAGTCAGTCAACGAGTTACATGGATATTGGTCTGGCAAGTCGACCTATAATGCCGGAAAAATTTC
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                                                                         BspE1
                                                                       Bsm1  |                  BsrD1
                                                                          |  |                      |
      ACCGTAAAGAAAAATAAGCACAAGTTTTATCCGGCCTTTATTCACATTCTTGCCCGCCTGATGAATGCTCATCCGGAATTTCGTATGGCAATGAAAGACG
1801  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 1900
      TGGCATTTCTTTTTATTCGTGTTCAAAATAGGCCGGAAATAAGTGTAAGAACGGGCGGACTACTTACGAGTAGGCCTTAAAGCATACCGTTACTTTCTGC

                                                                 Acl1                               Bpm1
                                                                    |                                  |
      GTGAGCTGGTGATATGGGATAGTGTTCACCCTTGTTACACCGTTTTCCATGAGCAAACTGAAACGTTTTCATCGCTCTGGAGTGAATACCACGACGATTT
1901  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 2000
      CACTCGACCACTATACCCTATCACAAGTGGGAACAATGTGGCAAAAGGTACTCGTTTGACTTTGCAAAAGTAGCGAGACCTCACTTATGGTGCTGCTAAA

      CCGGCAGTTTCTACACATATATTCGCAAGATGTGGCGTGTTACGGTGAAAACCTGGCCTATTTCCCTAAAGGGTTTATTGAGAATATGTTTTTCGTCTCA
2001  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 2100
      GGCCGTCAAAGATGTGTATATAAGCGTTCTACACCGCACAATGCCACTTTTGGACCGGATAAAGGGATTTCCCAAATAACTCTTATACAAAAAGCAGAGT

 BsmB1   PflM1                       Dra1    Msc1                              Nco1       Ssp1
     |       |                          |       |                                 |          |
      GCCAATCCCTGGGTGAGTTTCACCAGTTTTGATTTAAACGTGGCCAATATGGACAACTTCTTCGCCCCCGTTTTCACCATGGGCAAATATTATACGCAAG
2101  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 2200
      CGGTTAGGGACCCACTCAAAGTGGTCAAAACTAAATTTGCACCGGTTATACCTGTTGAAGAAGCGGGGGCAAAAGTGGTACCCGTTTATAATATGCGTTC

                                                                              Bsm1             Sca1
                                                                                 |                |
      GCGACAAGGTGCTGATGCCGCTGGCGATTCAGGTTCATCATGCCGTCTGTGATGGCTTCCATGTCGGCAGAATGCTTAATGAATTACAACAGTACTGCGA
2201  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 2300
      CGCTGTTCCACGACTACGGCGACCGCTAAGTCCAAGTAGTACGGCAGACACTACCGAAGGTACAGCCGTCTTACGAATTACTTAATGTTGTCATGACGCT

                                                                                                   BpuE1
                                                                                                       |
      TGAGTGGCAGGGCGGGGCGTAATTTTTTTAAGGCAGTTATTGGTGCCCTTAAACGCCTGGGGTAATGACTCTCTAGCTTGAGGCATCAAATAAAACGAAA
2301  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 2400
      ACTCACCGTCCCGCCCCGCATTAAAAAAATTCCGTCAATAACCACGGGAATTTGCGGACCCCATTACTGAGAGATCGAACTCCGTAGTTTATTTTGCTTT
```

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                                                                                   Xba1
                           Bmr1                                  Eci1           BsrB1 |
                              |                                     |               | |
      GGCTCAGTCGAAAGACTGGGCCTTTCGTTTTATCTGTTGTTTGTCGGTGAACGCTCTCCTGAGTAGGACAAATCCGCCGCTCTAGAGCTGCCTCGCGCGT
2401  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 2500
      CCGAGTCAGCTTTCTGACCCGGAAAGCAAAATAGACAACAAACAGCCACTTGCGAGAGGACTCATCCTGTTTAGGCGGCGAGATCTCGACGGAGCGCGCA

                                      BsmB1                                                Drd1
                                          |                                                   |
      TTCGGTGATGACGGTGAAAACCTCTGACACATGCAGCTCCCGGAGACGGTCACAGCTTGTCTGTAAGCGGATGCCGGGAGCAGACAAGCCCGTCAGGGCG
2501  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 2600
      AAGCCACTACTGCCACTTTTGGAGACTGTGTACGTCGAGGGCCTCTGCCAGTGTCGAACAGACATTCGCCTACGGCCCTCGTCTGTTCGGGCAGTCCCGC

                                     Bmr1 PflF1                     BstZ1
                                        |     |                         |
      CGTCAGCGGGTGTTGGCGGGTGTCGGGGCGCAGCCATGACCCAGTCACGTAGCGATAGCGGAGTGTATACTGGCTTAACTATGCGGCATCAGAGCAGATT
2601  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 2700
      GCAGTCGCCCACAACCGCCCACAGCCCCGCGTCGGTACTGGGTCAGTGCATCGCTATCGCCTCACATATGACCGAATTGATACGCCGTAGTCTCGTCTAA

                   BstAP                                                        Sap1
           ApaL1   Nde1|                                                        Ear1
               |      ||                                                           |
      GTACTGAGAGTGCACCATATGCGGTGTGAAATACCGCACAGATGCGTAAGGAGAAAATACCGCATCAGGCGCTCTTCCGCTTCCTCGCTCACTGACTCGC
2701  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 2800
      CATGACTCTCACGTGGTATACGCCACACTTTATGGCGTGTCTACGCATTCCTCTTTTATGGCGTAGTCCGCGAGAAGGCGAAGGAGCGAGTGACTGAGCG

                            BsrB1                                                              BspLU
                                |                                                                  |
      TGCGCTCGGTCTGTCGGCTGCGGCGAGCGGTATCAGCTCACTCAAAGGCGGTAATACGGTTATCCACAGAATCAGGGGATAACGCAGGAAAGAACATGTG
2801  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 2900
      ACGCGAGCCAGACAGCCGACGCCGCTCGCCATAGTCGAGTGAGTTTCCGCCATTATGCCAATAGGTGTCTTAGTCCCCTATTGCGTCCTTTCTTGTACAC

                                                          Eci1                        BpuE1
                                                             |                            |
      AGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCCTGACGAGCATCACAAAAATCGACGC
2901  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 3000
      TCGTTTTCCGGTCGTTTTCCGGTCCTTGGCATTTTTCCGGCGCAACGACCGCAAAAAGGTATCCGAGGCGGGGGGACTGCTCGTAGTGTTTTTAGCTGCG
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    Drd1                                                            BssS1                         BciV1
       |                                                                |                             |
      TCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGACCCTGCCGCTTA
3001  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 3100
      AGTTCAGTCTCCACCGCTTTGGGCTGTCCTGATATTTCTATGGTCCGCAAAGGGGGACCTTCGAGGGAGCACGCGAGAGGACAAGGCTGGGACGGCGAAT

    Eci1                                                                                           BseY1
       |                                                                                               |
      CCGGATACCTGTCCGCCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCAATGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTCGCTCCAAGCT
3101  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 3200
      GGCCTATGGACAGGCGGAAAGAGGGAAGCCCTTCGCACCGCGAAAGAGTTACGAGTGCGACATCCATAGAGTCAAGCCACATCCAGCAAGCGAGGTTCGA

         ApaL1                                                                      BpuE1
             |                                                                          |
      GGGCTGTGTGCACGAACCCCCCGTTCAGCCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTG
3201  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 3300
      CCCGACACACGTGCTTGGGGGGCAAGTCGGGCTGGCGACGCGGAATAGGCCATTGATAGCAGAACTCAGGTTGGGCCATTCTGTGCTGAATAGCGGTGAC

           AlwN1
               |
      GCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGGACAG
3301  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 3400
      CGTCGTCGGTGACCATTGTCCTAATCGTCTCGCTCCATACATCCGCCACGATGTCTCAAGAACTTCACCACCGGATTGATGCCGATGTGATCTTCCTGTC

                                           Eco57
                                               |
      TATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTT
3401  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 3500
      ATAAACCATAGACGCGAGACGACTTCGGTCAATGGAAGCCTTTTTCTCAACCATCGAGAACTAGGCCGTTTGTTTGGTGGCGACCATCGCCACCAAAAAA

                         BpuE1
                             |
      TGTTTGCAAGCAGCAGATTACGCGCAGAAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAACGAAAACTCACGT
3501  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 3600
      ACAAACGTTCGTCGTCTAATGCGCGTCTTTTTTTCCTAGAGTTCTTCTAGGAAACTAGAAAAGATGCCCCAGACTGCGAGTCACCTTGCTTTTGAGTGCA
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               BspH1                                   Dra1               Dra1
                   |                                      |                  |
      TAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTAAATTAAAAATGAAGTTTTAAATCAATCTAAAGTATATATGAGTAAA
3601  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 3700
      ATTCCCTAAAACCAGTACTCTAATAGTTTTTCCTAGAAGTGGATCTAGGAAAATTTAATTTTTACTTCAAAATTTAGTTAGATTTCATATATACTCATTT

                                                                                         Ahd1
                                                                                            |
      CTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGATCTGTCTATTTCGTTCATCCATAGCTGCCTGACTCCCCGTCGTGTAGAT
3701  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 3800
      GAACCAGACTGTCAATGGTTACGAATTAGTCACTCCGTGGATAGAGTCGCTAGACAGATAAAGCAAGTAGGTATCGACGGACTGAGGGGCAGCACATCTA

                                                 BsrD1
                             Bmr1                 Bsa1     Bpm1
                                |                    |        |
      AACTACGATACGGGAGGGCTTACCATCTGGCCCCAGTGCTGCAATGATACCGCGAGACCCACGCTCACCGGCTCCAGATTTATCAGCAATAAACCAGCCA
3801  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 3900
      TTGATGCTATGCCCTCCCGAATGGTAGACCGGGGTCACGACGTTACTATGGCGCTCTGGGTGCGAGTGGCCGAGGTCTAAATAGTCGTTATTTGGTCGGT

         Bgl1                   Eci1                         Ase1
            |                      |                            |
      GCCGGAAGGGCCGAGCGCAGAAGTGGTCCTGCAACTTTATCCGCCTCCATCCAGTCTATTAATTGTTGCCGGGAAGCTAGAGTAAGTAGTTCGCCAGTTA
3901  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 4000
      CGGCCTTCCCGGCTCGCGTCTTCACCAGGACGTTGAAATAGGCGGAGGTAGGTCAGATAATTAACAACGGCCCTTCGATCTCATTCATCAAGCGGTCAAT

               Acl1
           Fsp1   |    BsrD1
              |   |        |
      ATAGTTTGCGCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTCACGCTCGTCGTTTGGTATGGCTTCATTCAGCTCCGGTTCCCAACGATCAAGGCG
4001  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 4100
      TATCAAACGCGTTGCAACAACGGTAACGATGTCCGTAGCACCACAGTGCGAGCAGCAAACCATACCGAAGTAAGTCGAGGCCAAGGGTTGCTAGTTCCGC

                                                           Pvu1                          Bts1
                                                              |                             |
      AGTTACATGATCCCCCATGTTGTGCAAAAAAGCGGTTAGCTCCTTCGGTCCTCCGATCGTTGTCAGAAGTAAGTTGGCCGCAGTGTTATCACTCATGGTT
4101  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 4200
      TCAATGTACTAGGGGGTACAACACGTTTTTTCGCCAATCGAGGAAGCCAGGAGGCTAGCAACAGTCTTCATTCAACCGGCGTCACAATAGTGAGTACCAA
```

```
         Bts1                                                        Sca1                    Bcg1a
            |                                                           |                        |
      ATGGCAGCACTGCATAATTCTCTTACTGTCATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTGAGAATAGTGTATGC
4201  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 4300
      TACCGTCGTGACGTATTAAGAGAATGACAGTACGGTAGGCATTCTACGAAAAGACACTGACCACTCATGAGTTGGTTCAGTAAGACTCTTATCACATACG

                                                                                        Xmn1
                           Bcg1b                                  Dra1                  Acl1 BpuE1
                               |                                     |                     |     |
      GGCGACCGAGTTGCTCTTGCCCGGCGTCAATACGGGATAATACCGCGCCACATAGCAGAACTTTAAAAGTGCTCATCATTGGAAAACGTTCTTCGGGGCG
4301  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 4400
      CCGCTGGCTCAACGAGAACGGGCCGCAGTTATGCCCTATTATGGCGCGGTGTATCGTCTTGAAATTTTCACGAGTAGTAACCTTTTGCAAGAAGCCCCGC

                                                           EcoK
                                                       Eco57  |
                                                       ApaL1  |
                                                    BssS1  |  |
                                                        |  |  |
      AAAACTCTCAAGGATCTTACCGCTGTTGAGATCCAGTTCGATGTAACCCACTCGTGCACCCAACTGATCTTCAGCATCTTTTACTTTCACCAGCGTTTCT
4401  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 4500
      TTTTGAGAGTTCCTAGAATGGCGACAACTCTAGGTCAAGCTACATTGGGTGAGCACGTGGGTTGACTAGAAGTCGTAGAAAATGAAAGTGGTCGCAAAGA

                                                                                    Ear1     Ssp1
                                                                                       |        |
      GGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAAAGGGAATAAGGGCGACACGGAAATGTTGAATACTCATACTCTTCCTTTTTCAATATTATTGAA
4501  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 4600
      CCCACTCGTTTTTGTCCTTCCGTTTTACGGCGTTTTTTCCCTTATTCCCGCTGTGCCTTTACAACTTATGAGTATGAGAAGGAAAAAGTTATAATAACTT

                             BsrB1
                         BciV1   |
                       BspH1 |   |
                           | |   |
      GCATTTATCAGGGTTATTGTCTCATGAGCGGATACATATTTGAATGTATTTAGAAAAATAAACAAATAGGGGTTCCGCGCACATTTCCCCGAAAAGTGCC
4601  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||* 4700
      CGTAAATAGTCCCAATAACAGAGTACTCGCCTATGTATAAACTTACATAAATCTTTTTATTTGTTTATCCCCAAGGCGCGTGTAAAGGGGCTTTTCACGG
```

```
           Aat2             BspH1                          BssS1   Bbs1
              |                 |                              |      |
      ACCTGACGTCTAAGAAACCATTATTATCATGACATTAACCTATAAAAATAGGCGTATCACGAGGCCCTTTCGTCTTCAC
4701  |||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*|||||||||*||||||||| 4779
      TGGACTGCAGATTCTTTGGTAATAATAGTACTGTAATTGGATATTTTTATCCGCATAGTGCTCCGGGAAAGCAGAAGTG
```

Found:

Aat2 Acc65 Acl1 **Ahd1** Ale1 AlwN1 ApaL1 **Ase1** **BamH1** **Bbs1** BbvC1 **Bcg1a** **Bcg1b** BciV1

BfuA1 **Bgl1** **Bgl2** **Blp1** BmgB1 Bmr1 Bpm1 Bpu10 BpuE1 **Bsa1** **BsaB1** **BseR1** **BseY1** Bsm1

BsmB1 **BspE1** BspH1 **BspLU** BspM1 BsrB1 BsrD1 BsrG1 BssS1 BstAP **BstZ1** Bts1 Dra1 Drd1

Ear1 Eci1 Eco57 **EcoK** FspA1 Fsp1 **Hind3** Kpn1 **Mfe1** Msc1 Nco1 **Nde1** **Nhe1** **PflF1**

PflM1 PshA1 **Psi1** **Pvu1** **Pvu2** **Sap1** Sca1 **Sma1** Ssp1 **Xba1** **Xho1** **Xmn1**

Unique:

Aat2 **Ahd1** **Ase1** **BamH1** **Bbs1** **Bcg1a** **Bcg1b** **Bgl1** **Bgl2** **Blp1** **Bsa1** **BsaB1** **BseR1** **BseY1**

BspE1 **BspLU** **BstZ1** **EcoK** **Hind3** **Mfe1** **Nde1** **Nhe1** **PflF1** **Psi1** **Pvu1** **Pvu2** **Sap1** **Sma1**

Xba1 **Xho1** **Xmn1**

```
Not found:

    Aar1    Afe1    Afl2    Age1    Apa1    Asc1   AsiS1    Avr2   Bae1a   Bae1b    Bcl1   BfrB1   BsaXa   BsaXb
    Bsg1   BsiW1   BssH2   BstB1   BstE2   BstX1   Bsu36    _Chi    Cla1    Dra3    Eag1   EcoN1   EcoR1   EcoRV
   ScFRT    Fse1    Hpa1   I_Ceu    Kas1    loxP    Mlu1    Nae1    Nar1   NgoM4    Not1    Nru1    Nsi1    Pac1
    Pme1    Pml1   PspOM    Pst1    Rsr2    Sac1    Sac2    Sal1   SanD1    Sbf1   SexA1    Sfi1    Sgf1   SgrA1
   SnaB1    Spe1    Sph1    Srf1    Stu1    Swa1   PISce    Xcm1


Excluded by site complexity:

    Acc1    Aci1    Afl3    Alu1    Alw1    Apo1    Ava1    Ava2    Ban1    Ban2    Bbv1   BceA1    Bfa1   Bme15
   BsaA1   BsaH1   BsaJ1   BsaW1   BseM2   BsiE1   BsiH1    Bsl1   BsmA1   BsmF1   Bsp12   BspCa   BspCb    Bsr1
   BsrF1   BssK1   BstF5   BstN1   BstU1   BstY1    Btg1    Cac8   CviJ1    Dde1    Eae1   EcoO1    Fau1   Fnu4H
    Fok1    Hae2    Hae3    Hga1    Hha1   Hinc2   Hinf1   HinP1    Hpa2    Hph1   Hpy99    Hpy1    Hpy3   HpyC3
   HpyC4   HpyC5    Mae3    Mbo2    Mnl1    Mse1    Msl1   MspA1    Mwo1    Nci1    Nla3    Nla4    Nsp1    Ple1
   PpuM1    Rsa1   Sau3A   Sau96   SfaN1    Sfc1    Sml1    Sty1    Taq1    Tat1    Tfi1    Tse1   Tsp45   Tsp50
   TspR1
```