

Supplementary Material
Novel Hyaluronate Lyase Involved in Pathogenicity of *Streptococcus*
dysgalactiae* subsp. *equisimilis

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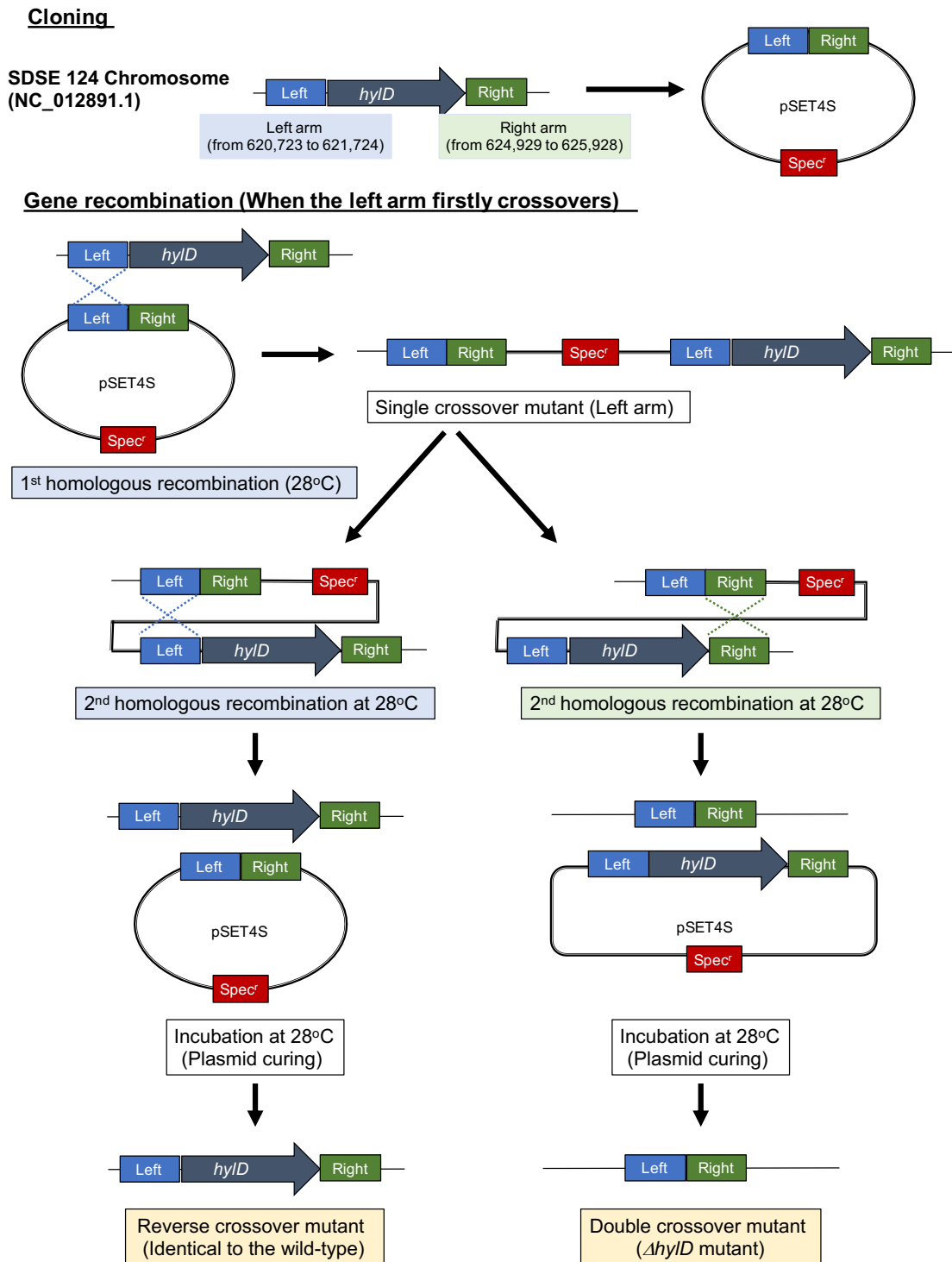


Figure S1. Diagram of procedure for prepare $\Delta hylD$ mutant strain. While this picture only shows a case when the first crossover mutant is obtained by homologous recombination of left arm (1 kb upstream sequences of the *hylD* gene in the SDSE chromosome), recombination of right arm (1 kb downstream sequences) also occurred. After transformation of the SDSE-124 by electroporation (1.75 kV pulse), All of the procedures were conducted at room temperature or 28°C.

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HylB MEIKKKHRIMLYSALILGTLVNNNSYQAKAEELTKTSTSTSQIRDQTNNIEVLQTESTTV
HylD -MKHKKYPYICSSILLACLLWSPVLADESSGTTALPMPQEIPEPQQITDLSHQVTSQ
      :*:      : *:::*. :* . : * . : . * : . . . :*: * . : * :
HylB KETSTTTTQQDLSNPTASTATATATHSTMKQVVDNQTNKELVKNGDFNQTNPVSGSWSH
HylD NDVAVTTTEKEGSDLESQVTLTGENLLKNPQFDQTSFASTTSTDKK-----GWSK
      :.:.***::: .. * . * . : : . * : . . : * . * :
HylB TSAREWSAWIDKENTADKSPIIQRTEQQVLSLSSDKGFRGAVTQKVNIDPTKKYEVKFDI
HylD EAAEGWQVYKDSKQTVGSPQIDASEQQLTMTNEAGKLRGCVHTVVINPEKQYLVSFDI
      :*. * . : * : * . . . * : * : : . : * : * : * * * : * * * : * :
HylB ETSNKAGQAFRLIMEKKDNN-----TRLWLSEMTSGTTNKHHTLTKIYNPKLVNSEVTLEL
HylD ETKDKIGQAFVRVIEEIKENNTLKEQRLWLSMATGMTKKH-QEKLYVPKLVNQIKLEL
      * . : * * * : * : * : : * : * * * * * : * : * * * : * : * : * :
HylB YYEKGTSATFDNISMKAKGPKDSEHPQVPTQIEESVNTALNKNYVFNKADYQYTLTN-
HylD FYETGQGVIFDNI SLREAGDKPSGAIKEVTHSLEERIALSLSKHLLAIPDYIQVAAG
      :* . * . * . * * * : * * * : * * : * * : * . * : : . * * : :
HylB -PSLGKIVGGILYPNATGSTTVKISDKSGKIIKEVPLSVTASTEDKFTKLLDKWVDVTIG
HylD ANQIVRIDNGTVEPLQEGHTLELVFTKEGQKIADLPLEVTGKDDSEMTALISQWRQMLG
      . : * . * : * * * : : * . * : * : * : * : * : * : * : * :
HylB NHVYDNTDSNMQKINQKLDETNAKNIKTIKLDNSHTFLWKDLNLSAQLTATYRRLLED
HylD ADSYSVSNPAMQALNQKLDSDVTKNLSLVNNQKESYLWEDLDFGKSSHMTATYRRLLE
      . * . : . . * * : * * * : : * : : : : . : . : * * : * : * : * : * :
HylB LAKQITNPHSTIYKNEKAIRTVKESLAWLHQNFYNVNDIEGSANWDFEIGVPRISITAT
HylD MAKQVNSPASKYQDOTALIRLIKDKLAWLHLNYPQKDIEGNANWDFEIGTPRAIVNT
      :* * : . * * . * : * * : * : * . * * * * * : * * * * * : * * * : * . *
HylB LALMNYFTDAEIKTYTDP IEHFVPDAGYFRKTLDNPFKALGGNLVDMGRVKIIEGLLRK
HylD LTLLYPYFTQDEIKAQTKSISHFVDPKQFRSLVNPFKAIIGNLVDMGRVKIIEALLTQ
      * : * : * * : * * . * . * * * . * * * * * : * * * * * : * * :
HylB DNTIIEKTSLSLKNLFTT--ATKAEGFYADGSYIDHTNVAYTGAYGNVLIDGLTQLLPI
HylD DDVKLKESIEALDTLFEFQRDGSKGEGFYKDSYIDHTNVAYTGAYGNVLIDGLSGLIPL
      * : . : : : . : * . * * . : * . * * * * * * * * * * * * * * * : * : * :
HylB IQETDYKISNQELDMVYKWINQSFPLPLIVKGELMDMSRGRSISREAASSHAAAVEVLRGF
HylD IQASPMALNAQKLEVIEHWIEKSFPLLIHGELIDMSRGRSISRENASSRMAALEALRGI
      * * : . . * : * : : * : * * * * * : * : * * * * * * * * * * * : * : * :
HylB LRLANMSNEERNLDLKSTIKTIITSNKFYNVFNLLKSYSDIANMNKMLNDSTVATKPLKS
HylD LRLSQVLPEANKNRIQQQLKSILAFHDKERMLSSLSYYDINLFEQVLANEVILKMPMST
      * * : : * . : . . : * : * : . . . : * . * * * * : * : * : * : * :
HylB NLSTFNMDRLAYYNAEKDFGFALSLHSKRTLNYEGMNDENTRDWYTGDMFYLYNSDQS
HylD NLSVFNQMDKLAYYHTDKDFGFALSMHSNRTLNFAMNNTNRGWYTGDMFYLYNHDLT
      * * . * : * : * * * : : * * * * * * * * * * * * * * * * * * * * :
HylB HYSNHFWPTVNPYKMACTTEKDAKREDTTKEFMSKHSK-----AKEKTQVTGTSDFVGS
HylD HYSKDYWPTVNPMPGTTEAEGKREDVTDYLLKLTIDYKEKAKEEAGMSTLPSFVGA
      * * : : * * * * * * * * * * : * * * * . : : : * * * * * : * * . * * :
HylB VKLNDHFALAAMDFTNWDRTLTAQKGWVILNDKIVFLGSIKNTNGIGNVSTTIDQRKDD
HylD IKGDDKTALAAMDFQNDRTVSAKAWGIFDDRIVFLGAGIQTSTKQ-AVSTTIDQRKDN
      : * : * * * * * * * * * : * * * * * * * * * * : * : . . * * * * * :
HylB SKTPYTTYVNGKTI DLKQASSQFTDTKSVFLESKEPGRNIGYIFFKNSTIDIERKEQTG
HylD PENPYRLVNGQEVSLTNDT-LEKDHVTSVLLSQDGKNNIGYLFDPKPTTLVFSRQEQSG
      . : * * * * * : * : . : : : . . * * * * * : * * * * * * * * * * :
HylB TWNSINRTSKNTSIVSNPFITISQKHDNKGDSYGYMMVNPIDRTSFDKLANSEVELLEN
HylD RWSINKGSTNKELVTQTFITISQRHQQANDTYAYTLLPNVSEDFDKARTESSIEVVRN
      * . * * : * . * . : * : * * * * * : * : * * * * * : * * * . . . : * : * :
HylB SSKQQVIYDKNSQTWAVIKHDNQESLNNQFKMKNAGLYLVQKVGNDYQNVYQPQMTMK
HylD DSDLQILHDHKQDLWTVVNYHDGPPQRINDQLTLEKAGLYLVQKVGNVFKLLSKDLLPSD-
      . * : * : * : : * : * : : . * * : * : * * * * * * * * * * : : :
HylB TDQLAI
HylD -----

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Figure S2. Alignments of HylB (from GBS strain COH1) and HylD (from SDSE strain 124) proteins using Clustal W. Catalytic residues were colored by yellow. The loop region (₈₀₄KKLTID₈₀₉) was indicated by blue.

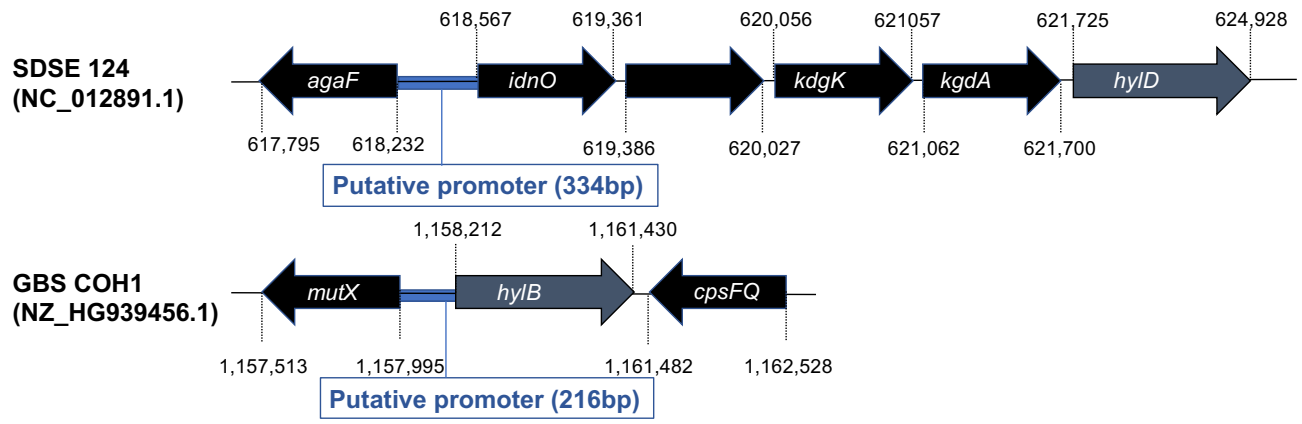


Figure S3. Genetic arrangements of *hylD* and *hylB* genes. Putative promoter regions were indicated in blue.