

CLUSTAL 2.1 multiple sequence alignment

```
YJ      GTTTAAGCGTCAATTGATAGTTTAAACTGAAGCGGGAAACGACAATCTGATCCAAGCTC 60
LUCH    GTTTAAGCGTCAATTGATAGTTTAAACTGAAGCGGGAAACGACAATCTGATCCAAGCTC 60
*****

YJ      AAGCTGCTCTAGCATTGCCATT CAGGCTGCGCAACTGTTGGGAAGGGCGATCGGTGCGG 120
LUCH    AAGCTGCTCTAGCATTGCCATT CAGGCTGCGCAACTGTTGGGAAGGGCGATCGGTGCGG 120
*****

YJ      GCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGGATGTGCTGCAAGGCGATTAAGTTGG 180
LUCH    GCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGGATGTGCTGCAAGGCGATTAAGTTGG 180
*****

YJ      GTAACGCCAGGGTTTTCCAGTCACGACGTTGTA AACGACGCGCCAGTGCCAAGCTTGCA 240
LUCH    GTAACGCCAGGGTTTTCCAGTCACGACGTTGTA AACGACGCGCCAGTGCCAAGCTTGCA 240
*****

YJ      TGCCTGCAGGTCGACGGTATCGATAAGCTTGATATCGAATTCCTGCAGGTCAACATGGTG 300
LUCH    TGCCTGCAGGTCGACGGTATCGATAAGCTTGATATCGAATTCCTGCAGGTCAACATGGTG 300
*****

YJ      GAGCACGACACACTTGCTACTC CAAAAATATCAAAGATACAGTCTCAGAAGACCAAAGG 360
LUCH    GAGCACGACACACTTGCTACTC CAAAAATATCAAAGATACAGTCTCAGAAGACCAAAGG 360
*****

YJ      GCAATTGAGACTTTTCAACAAAGGGTAATATCCGGAAACCTCCTCGGATTCCATTGCCCA 420
LUCH    GCAATTGAGACTTTTCAACAAAGGGTAATATCCGGAAACCTCCTCGGATTCCATTGCCCA 420
*****

YJ      GCTATCTGTCAC TTTATTGTGAAGATAGTGGAAAAGGAAGGTGGCTCCTACAAATGCCAT 480
LUCH    GCTATCTGTCAC TTTATTGTGAAGATAGTGGAAAAGGAAGGTGGCTCCTACAAATGCCAT 480
*****

YJ      CATTGCGATAAAGGAAAGGCCATCGTTGAAGATGCCTCTGCCGACAGTGGTCCCAAAGAT 540
LUCH    CATTGCGATAAAGGAAAGGCCATCGTTGAAGATGCCTCTGCCGACAGTGGTCCCAAAGAT 540
*****

YJ      GGACCCCCACCCACGAGGAGCATCGTGGAAAAGAAGACGTTCCAACCACGTCTTCAAAG 600
LUCH    GGACCCCCACCCACGAGGAGCATCGTGGAAAAGAAGACGTTCCAACCACGTCTTCAAAG 600
*****

YJ      CAAGTGGATTGATGTGATAACGTGGTGGAGCACGACACACTTGCTACTC CAAAAATATC 660
LUCH    CAAGTGGATTGATGTGATAACGTGGTGGAGCACGACACACTTGCTACTC CAAAAATATC 660
*****

YJ      AAAGATACAGTCTCAGAAGACCAAAGGGCAATTGAGACTTTTCAACAAAGGGTAATATCC 720
LUCH    AAAGATACAGTCTCAGAAGACCAAAGGGCAATTGAGACTTTTCAACAAAGGGTAATATCC 720
*****

YJ      GGAAACCTCCTCGGATTCCATTGCCAGCTATCTGTCACTTTATTGTGAAGATAGTGGAA 780
LUCH    GGAAACCTCCTCGGATTCCATTGCCAGCTATCTGTCACTTTATTGTGAAGATAGTGGAA 780
*****

YJ      AAGGAAGGTGGCTCCTACGAATGCCATCATTGCGATAAAGGAAAGGCCATCGTTGAAGAT 840
LUCH    AAGGAAGGTGGCTCCTACGAATGCCATCATTGCGATAAAGGAAAGGCCATCGTTGAAGAT 840
*****

YJ      GCCTCTGCCGACAGTGGTCCCAAAGATGGACCCCCACCCACGAGGAGCATCGTGGAAAAA 900
```

LUCH GCCTCTGCCGACAGTGGTCCCAAAGATGGACCCCCACCCACGAGGAGCATCGTGGAAAAA 900

 YJ GAAGACGTTCCAACCACGTCTTCAAAGCAAGTGGATTGATGTGATATCTCCACTGACGTA 960
 LUCH GAAGACGTTCCAACCACGTCTTCAAAGCAAGTGGATTGATGTGATATCTCCACTGACGTA 960

 YJ AGGGATGACGCACAATCCCACTATCCTTCGCAAGACCCTTCTCTATATAAGGAAGTTCA 1020
 LUCH AGGGATGACGCACAATCCCACTATCCTTCGCAAGACCCTTCTCTATATAAGGAAGTTCA 1020

 YJ TTTCAATTTGGAGAGGACCTCGAGAATTCTCAACACAACATATACAAAACAAACGAATCTC 1080
 LUCH TTTCAATTTGGAGAGGACCTCGAGAATTCTCAACACAACATATACAAAACAAACGAATCTC 1080

 YJ AAGCAATCAAGCATTCTACTTCTATTGCAGCAATTTAAATCATTCTTTTAAAGCAAAG 1140
 LUCH AAGCAATCAAGCATTCTACTTCTATTGCAGCAATTTAAATCATTCTTTTAAAGCAAAG 1140

 YJ CAATTTTCTGAAAATTTTACCATTTACGAACGATAGCCATGGAAGACGCCAAAAACATA 1200
 LUCH CAATTTTCTGAAAATTTTACCATTTACGAACGATAGCCATGGAAGACGCCAAAAACATA 1200

 YJ AAGAAAGGCCCGGCGCCATTCTATCCGCTGGAAGATGGAACCGCTGGAGAGCAACTGCAT 1260
 LUCH AAGAAAGGCCCGGCGCCATTCTATCCGCTGGAAGATGGAACCGCTGGAGAGCAACTGCAT 1260

 YJ AAGGCTATGAAGAGATACGCCCTGGTTCTGGAACAATTGCTTTTACAGATGCACATATC 1320
 LUCH AAGGCTATGAAGAGATACGCCCTGGTTCTGGAACAATTGCTTTTACAGATGCACATATC 1320

 YJ GAGGTGGACATCACTTACGCTGAGTACTTCGAAATGTCCGTTTCGGTTGGCAGAAGCTATG 1380
 LUCH GAGGTGGACATCACTTACGCTGAGTACTTCGAAATGTCCGTTTCGGTTGGCAGAAGCTATG 1380

 YJ AAACGATATGGGCTGAATACAAATCACAGAATCGTCGATGCAGTGAAAACCTCTCTTCAA 1440
 LUCH AAACGATATGGGCTGAATACAAATCACAGAATCGTCGATGCAGTGAAAACCTCTCTTCAA 1440

 YJ TTCTTTATGCCGGTGTGGGCGCGTTATTTATCGGAGTTGCAGTTGCGCCCGCAACGAC 1500
 LUCH TTCTTTATGCCGGTGTGGGCGCGTTATTTATCGGAGTTGCAGTTGCGCCCGCAACGAC 1500

 YJ ATTTATAATGAACGTGAATTGCTCAACAGTATGGGCATTTTCGAGCCTACCGTGGTGTTT 1560
 LUCH ATTTATAATGAACGTGAATTGCTCAACAGTATGGGCATTTTCGAGCCTACCGTGGTGTTT 1560

 YJ GTTTCCAAAAGGGGTTGCAAAAATTTTGAACGTGCAAAAAGCTCCCAATCATCCAA 1620
 LUCH GTTTCCAAAAGGGGTTGCAAAAATTTTGAACGTGCAAAAAGCTCCCAATCATCCAA 1620

 YJ AAAATTATTATCATGGATTCTAAAACGGATTACCAGGGATTTTCAGTCGATGTACACGTTT 1680
 LUCH AAAATTATTATCATGGATTCTAAAACGGATTACCAGGGATTTTCAGTCGATGTACACGTTT 1680

 YJ GTCACATCTCATCTACCTCCCGTTTTAATGAATACGATTTTGTGCCAGAGTCCTTCGAT 1740
 LUCH GTCACATCTCATCTACCTCCCGTTTTAATGAATACGATTTTGTGCCAGAGTCCTTCGAT 1740

 YJ AGGGACAAGACAATTGCACTGATCATGAACTCCTCTGGATCTACTGGTCTGCCTAAAGGT 1800
 LUCH AGGGACAAGACAATTGCACTGATCATGAACTCCTCTGGATCTACTGGTCTGCCTAAAGGT 1800

YJ GTCGCTCTGCCTCATAGAAGTGCCTGCGTGAGATTCTCGCATGCCAGAGATCCATATTTT 1860
LUCH GTCGCTCTGCCTCATAGAAGTGCCTGCGTGAGATTCTCGCATGCCAGAGATCCATATTTT 1860

YJ GGCAATCAAATCATTCCGGATACTGCGATTTTAAAGTGTGTTCCATTCCATCACGGTTTT 1920
LUCH GGCAATCAAATCATTCCGGATACTGCGATTTTAAAGTGTGTTCCATTCCATCACGGTTTT 1920

YJ GGAATGTTTACTTACACTCGGATATTTGATATGTGGATTTGAGTCGTCTTAATGTATAGA 1980
LUCH GGAATGTTTACTTACACTCGGATATTTGATATGTGGATTTGAGTCGTCTTAATGTATAGA 1980

YJ TTTGAAGAAGAGCTGTTTCTGAGGAGCCTTCAGGATTACAAGATTCAAAGTGCCTGCTG 2040
LUCH TTTGAAGAAGAGCTGTTTCTGAGGAGCCTTCAGGATTACAAGATTCAAAGTGCCTGCTG 2040

YJ GTGCCAACCTATTCTCCTTCTTCGCCAAAAGCACTCTGATTGACAAATACGATTTATCT 2100
LUCH GTGCCAACCTATTCTCCTTCTTCGCCAAAAGCACTCTGATTGACAAATACGATTTATCT 2100

YJ AATTTACACGAAATTGCTTCTGGTGGCGCTCCCCTCTCTAAGGAAGTCGGGAAGCGGTT 2160
LUCH AATTTACACGAAATTGCTTCTGGTGGCGCTCCCCTCTCTAAGGAAGTCGGGAAGCGGTT 2160

YJ GCCAAGAGGTTCCATCTGCCAGGTATCAGGCAAGGATATGGGCTCACTGAGACTACATCA 2220
LUCH GCCAAGAGGTTCCATCTGCCAGGTATCAGGCAAGGATATGGGCTCACTGAGACTACATCA 2220

YJ GCTATTCTGATTACACCCGAGGGGGATGATAAACC GGCGCGGTTCGGTAAAGTTGTTCCA 2280
LUCH GCTATTCTGATTACACCCGAGGGGGATGATAAACC GGCGCGGTTCGGTAAAGTTGTTCCA 2280

YJ TTTTTGAAGCGAAGGTTGTGGATCTGGATACCGGAAAACGCTGGGCGTTAATCAAAGA 2340
LUCH TTTTTGAAGCGAAGGTTGTGGATCTGGATACCGGAAAACGCTGGGCGTTAATCAAAGA 2340

YJ GGCGAACTGTGTGTGAGAGGTCCTATGATTATGTCCGTTATGTAAACAATCCGGAAGCG 2400
LUCH GGCGAACTGTGTGTGAGAGGTCCTATGATTATGTCCGTTATGTAAACAATCCGGAAGCG 2400

YJ ACCAACGCCTTGATTGACAAGGATGGATGGCTACATTCTGGAGACATAGCTTACTGGGAC 2460
LUCH ACCAACGCCTTGATTGACAAGGATGGATGGCTACATTCTGGAGACATAGCTTACTGGGAC 2460

YJ GAAGACGAACACTTCTTCATCGTTGACCGCCTGAAGTCTCTGATTAAGTACAAAGGCTAT 2520
LUCH GAAGACGAACACTTCTTCATCGTTGACCGCCTGAAGTCTCTGATTAAGTACAAAGGCTAT 2520

YJ CAGGTGGCTCCCGCTGAATTGGAATCCATCTTGCTCCAACACCCCAACATCTTCGACGCA 2580
LUCH CAGGTGGCTCCCGCTGAATTGGAATCCATCTTGCTCCAACACCCCAACATCTTCGACGCA 2580

YJ GGTGTCGCAGGTTCTCCCGACGATGACGCCGGTGAACCTCCCGCCCGGTTGTTGTTTTG 2640
LUCH GGTGTCGCAGGTTCTCCCGACGATGACGCCGGTGAACCTCCCGCCCGGTTGTTGTTTTG 2640

YJ GAGCACGAAAGACGATGACGGAAAAAGAGATCGTGGATTACGTCGCCAGTCAAGTAACA 2700
LUCH GAGCACGAAAGACGATGACGGAAAAAGAGATCGTGGATTACGTCGCCAGTCAAGTAACA 2700

YJ ACCGCGAAAAAGTTGCGCGGAGGAGTTGTGTTTGTGGACGAAGTACCGAAAAGGTTCTTACC 2760
LUCH ACCGCGAAAAAGTTGCGCGGAGGAGTTGTGTTTGTGGACGAAGTACCGAAAAGGTTCTTACC 2760

YJ GGAAAACCTCGACGCAAGAAAAATCAGAGAGATCCTCATAAAGGCCAAGAAGGGCGGAAAG 2820
LUCH GGAAAACCTCGACGCAAGAAAAATCAGAGAGATCCTCATAAAGGCCAAGAAGGGCGGAAAG 2820

YJ ATCGCCGTGTAATTCTAGAGATTCTCTGTGTAAGCG---AAAGTCTAGAGTCCGCAAAA 2876
LUCH ATCGCCGTGGGATCCCACCGTTTTGATGGTCGGGCTCGACGAACCAAGTGTGACAAAT 2880
***** .** * * .** .** ..** ..* .:***:* .***:

YJ -----ATCACCAG---TCTCT-CTCTACAATCTATCT-----CTCTCTAT 2913
LUCH GCTGCAGCATCATCAGATTCTCTCCTCATCATCACAATCAGATTTTTAATTCTACTTCT 2940
**** ** ***** **:*.*:*.***: ** *.*

YJ TTTTCTCCAGAATAATGTGTGAG-----TAGTCCAG-----ATAAGGGAATTA 2958
LUCH ACTCCTCATCAAAATTGGCTGCAGACAAATGGCTTCCAACCTCCTCTCATGAGACCTTCT 3000
: * ***: .**:*.* **.. *.* * ***. **.*. :.* :

YJ GGGTTCTTATA-----GGTTTTCGCTCATGTGTTGAGCATATAAGAAACCTTAGT 3009
LUCH TGAATCTTTTATATTTTAAGGTTTATTATTATATAAGAAAAACAAAAATGAACCTTTGA 3060
*.:****:* ** **: .* ***: .*. * * ***. :.* ***. :.*

YJ ATG---TATTTGTATTTGTAATAACTTCTATCAAT---AAAATTTCTAATTCCTAAAAC 3063
LUCH AATCCCCACATGTTCTTGGTCATTTCATTAAATCATCGGCTTATATTTTGGCTTATTTTCCC 3120
*: * :***: ** .*:***:* :****: :*:*** *..* .*:..*

YJ CAAAATCCAG-TGACCTGCAGGTCGACTCTAGAGGATCCCCGGGTACCGAG---CTCGAA 3119
LUCH CTAATCCTCTTGTAACTTAGGCGAACAAAAAAATTAATGGAAATCTTTTTCCCTGAA 3180
*:*****: **: .: .:* ***. :.*.* ** .. **:* * : * **

YJ TTCGTAATCATGGTCATAGCTGTTTCTGTGTGAAATTGTTATCCGCTCACAATTCCACA 3179
LUCH TTCGTAATCATG-TCATAGCTGTTTCTGTGTGAAATTGTTATCCGCTCACAATTCCACA 3239

YJ CAACATACGAGCCGGAAGCATAAAGTGTAAGCCTGGGGTGCCTAATGAGTGAGCTAACT 3239
LUCH CAACATACGAGCCGGAAGCATAAAGTGTAAGCCTGGGGTGCCTAATGAGTGAGCTAACT 3299

YJ CACATTAATTGCGTTGCGCTCACTGCCCGCTTCCAGTCGGGAAACCTGTCGTGCCAGCT 3299
LUCH CACATTAATTGCGTTGCGCTCACTGCCCGCTTCCAGTCGGGAAACCTGTCGTGCCAGCT 3359

YJ GCATTAATGAATCGGCAACGCGCGGGGAGAGGCGGTTTTCGCTATTGGCTAGAGCAGCTT 3359
LUCH GCATTAATGAATCGGCAACGCGCGGGGAGAGGCGGTTTTCGCTATTGGCTAGAGCAGCTT 3419

YJ GCCAACATGGTGGAGCAGGACTCTCGTCTACTCCAAGAATATCAAAGATACAGTCTCA 3419
LUCH GCCAACATGGTGGAGCAGGACTCTCGTCTACTCCAAGAATATCAAAGATACAGTCTCA 3479

YJ GAAGACCAAAGGGCTATTGAGACTTTTCAACAAAGGGTAATATCGGGAAACCTCCTCGGA 3479
LUCH GAAGACCAAAGGGCTATTGAGACTTTTCAACAAAGGGTAATATCGGGAAACCTCCTCGGA 3539

YJ TTCCATTGCCAGCTATCTGTCACTTCATCAAAGGACAGTAGAAAAGGAAGGTGGCACC 3539
LUCH TTCCATTGCCAGCTATCTGTCACTTCATCAAAGGACAGTAGAAAAGGAAGGTGGCACC 3599

YJ TACAAATGCCATCATTGCGATAAAGGAAAGGCTATCGTTCAAGATGCCTCTGCCGACAGT 3599
LUCH TACAAATGCCATCATTGCGATAAAGGAAAGGCTATCGTTCAAGATGCCTCTGCCGACAGT 3659

YJ GGTCCCAAAGATGGACCCCCACCCACGAGGAGCATCGTGAAAAAGAAGACGTTCCAACC 3659
LUCH GGTCCCAAAGATGGACCCCCACCCACGAGGAGCATCGTGAAAAAGAAGACGTTCCAACC 3719

YJ ACGTCTTCAAAGCAAGTGGATTGATGTGATAACATGGTGGAGCACGACACTCTCGTCTAC 3719
LUCH ACGTCTTCAAAGCAAGTGGATTGATGTGATAACATGGTGGAGCACGACACTCTCGTCTAC 3779

YJ TCCAAGAATATCAAAGATACAGTCTCAGAAGACCAAAGGGCTATTGAGACTTTTCAACAA 3779
LUCH TCCAAGAATATCAAAGATACAGTCTCAGAAGACCAAAGGGCTATTGAGACTTTTCAACAA 3839

YJ AGGGTAATATCGGGAAACCTCCTCGGATTCCATTGCCAGCTATCTGTCACTTCATCAAA 3839
LUCH AGGGTAATATCGGGAAACCTCCTCGGATTCCATTGCCAGCTATCTGTCACTTCATCAAA 3899

YJ AGGACAGTAGAAAAGGAAGGTGGCACCTACAAATGCCATCATTGCGATAAAGGAAAGGCT 3899
LUCH AGGACAGTAGAAAAGGAAGGTGGCACCTACAAATGCCATCATTGCGATAAAGGAAAGGCT 3959

YJ ATCGTTCAAGATGCCTCTGCCGACAGTGGTCCCAAAGATGGACCCCCACCCACGAGGAGC 3959
LUCH ATCGTTCAAGATGCCTCTGCCGACAGTGGTCCCAAAGATGGACCCCCACCCACGAGGAGC 4019

YJ ATCGTGGAAAAAGAAGACGTTCCAACCACGTCTTCAAAGCAAGTGGATTGATGTGATATC 4019
LUCH ATCGTGGAAAAAGAAGACGTTCCAACCACGTCTTCAAAGCAAGTGGATTGATGTGATATC 4079

YJ TCCACTGACGTAAGGGATGACGCACAATCCCACTATCCTTCGCAAGACCCTTCCTCTATA 4079
LUCH TCCACTGACGTAAGGGATGACGCACAATCCCACTATCCTTCGCAAGACCCTTCCTCTATA 4139

YJ TAAGGAAGTTCATTTCAATTTGGAGAGGACACGCTGAAATCACCAGTCTCTCTACAAAT 4139
LUCH TAAGGAAGTTCATTTCAATTTGGAGAGGACACGCTGAAATCACCAGTCTCTCTACAAAT 4199

YJ CTATCTCTCGATTTCGAGATCTGTCGATCGACCATGGGGATTGAACAAGATGGATTGC 4199
LUCH CTATCTCTCGATTTCGAGATCTGTCGATCGACCATGGGGATTGAACAAGATGGATTGC 4259

YJ ACGCAGGTTCTCCGGCCGCTTGGGTGGAGAGGCTATTCGGCTATGACTGGGCACAACAGA 4259
LUCH ACGCAGGTTCTCCGGCCGCTTGGGTGGAGAGGCTATTCGGCTATGACTGGGCACAACAGA 4319

YJ CAATCGGCTGCTCTGATGCCGCCGTGTTCCGGCTGTCAGCGCAGGGGCGCCCGTTCTTT 4319
LUCH CAATCGGCTGCTCTGATGCCGCCGTGTTCCGGCTGTCAGCGCAGGGGCGCCCGTTCTTT 4379

YJ TTGTCAAGACCGACCTGTCCGGTGCCCTGAATGAACTCCAGGACGAGGCAGCGCGGCTAT 4379
LUCH TTGTCAAGACCGACCTGTCCGGTGCCCTGAATGAACTCCAGGACGAGGCAGCGCGGCTAT 4439

YJ CGTGGCTGGCCACGACGGGCGTTCCTTGCAGCTGTGCTCGACGTTGTCAGTGAAGCGG 4439
LUCH CGTGGCTGGCCACGACGGGCGTTCCTTGCAGCTGTGCTCGACGTTGTCAGTGAAGCGG 4499

YJ GAAGGGACTGGCTGCTATTGGGCGAAGTGCCGGGGCAGGATCTCCTGTCATCTCACCTTG 4499

LUCH GAAGGGACTGGCTGCTATTGGGCGAAGTGCCGGGGCAGGATCTCTGTCATCTCACCTTG 4559

YJ CTCCTGCCGAGAAAGTATCCATCATGGCTGATGCAATGCGGCGGCTGCATACGCTTGATC 4559
LUCH CTCCTGCCGAGAAAGTATCCATCATGGCTGATGCAATGCGGCGGCTGCATACGCTTGATC 4619

YJ CGGCTACCTGCCATTGACCACCAAGCGAAACATCGCATCGAGCGAGCACGTACTCGGA 4619
LUCH CGGCTACCTGCCATTGACCACCAAGCGAAACATCGCATCGAGCGAGCACGTACTCGGA 4679

YJ TGGGAGCCGGTCTTGTGTCATCAGGATGATCTGGACGAAGAGCATCAGGGGCTCGCGCCAG 4679
LUCH TGGGAGCCGGTCTTGTGTCATCAGGATGATCTGGACGAAGAGCATCAGGGGCTCGCGCCAG 4739

YJ CCGAACTGTTGCCAGGCTCAAGGCGCGCATGCCGACGCGGAGGATCTCGTCGTGACAC 4739
LUCH CCGAACTGTTGCCAGGCTCAAGGCGCGCATGCCGACGCGGAGGATCTCGTCGTGACAC 4799

YJ ATGGCGATGCCTGCTTGCCGAATATCATGGTGGAAAATGGCCGCTTTTCTGGATTCATCG 4799
LUCH ATGGCGATGCCTGCTTGCCGAATATCATGGTGGAAAATGGCCGCTTTTCTGGATTCATCG 4859

YJ ACTGTGGCCGGCTGGGTGTGGCGGACCGCTATCAGGACATAGCGTTGGGTACCCGTGATA 4859
LUCH ACTGTGGCCGGCTGGGTGTGGCGGACCGCTATCAGGACATAGCGTTGGGTACCCGTGATA 4919

YJ TTGCTGAAGAGCTTGGCGGCGAATGGGCTGACCGCTTCTCGTGCTTTACGGTATCGCCG 4919
LUCH TTGCTGAAGAGCTTGGCGGCGAATGGGCTGACCGCTTCTCGTGCTTTACGGTATCGCCG 4979

YJ CTCCCGATTGCGAGCGCATCGCCTTCTATCGCCTTCTTGACGAGTTCTTCTGAGCGGGAC 4979
LUCH CTCCCGATTGCGAGCGCATCGCCTTCTATCGCCTTCTTGACGAGTTCTTCTGAGCGGGAC 5039

YJ TCTGGGGTTCGGATCGATCCTCTAGCTAGAGTCGATCGACATCGAGTTTCTCCATAATAA 5039
LUCH TCTGGGGTTCGGATCGATCCTCTAGCTAGAGTCGATCGACATCGAGTTTCTCCATAATAA 5099

YJ TGTGTGAGTAGTCCCAGATAAGGGAATTAGGGTTCTTATAGGGTTTCGCTCACGTGTTG 5099
LUCH TGTGTGAGTAGTCCCAGATAAGGGAATTAGGGTTCTTATAGGGTTTCGCTCACGTGTTG 5159

YJ AGCATATAAGAAACCCCTTAGTATGTATTTGTATTTGTAATACTTCTATCAATAAAATT 5159
LUCH AGCATATAAGAAACCCCTTAGTATGTATTTGTATTTGTAATACTTCTATCAATAAAATT 5219

YJ TCTAATTCCTAAAACCAAAATCCAGTACTAAAATCCAGATCACCTAAAGTCCCTATAGAT 5219
LUCH TCTAATTCCTAAAACCAAAATCCAGTACTAAAATCCAGATCACCTAAAGTCCCTATAGAT 5279

YJ CCCCCGAATTAATTCGGCGTTAATTCAGTACATTAATAACGTCGCAATGTGTTATTAAG 5279
LUCH CCCCCGAATTAATTCGGCGTTAATTCAGTACATTAATAACGTCGCAATGTGTTATTAAG 5339

YJ TTGTCTAAG 5288
LUCH TTGTCTAAG 5348
