<html><head></head><body><pre style="word-wrap: break-word; white-space: pre-wrap;">

```
#######################################
# Program: needle
# Rundate: Wed 24 Jan 2018 12:56:22
# Commandline: needle
#    -auto
#    -stdout
#    -asequence emboss_needle-I20180124-125619-0400-7777544-p2m.asequence
#    -bsequence emboss_needle-I20180124-125619-0400-7777544-p2m.bsequence
#    -datafile EDNAFULL
#    -gapopen 25.0
#    -gapextend 0.5
#    -endopen 10.0
#    -endextend 0.5
#    -aformat3 pair
#    -snucleotide1
#    -snucleotide2
# Align_format: pair
# Report_file: stdout
#######################################

#=======================================
#
# Aligned_sequences: 2
# 1: human
# 2: mouse
# Matrix: EDNAFULL
# Gap_penalty: 25.0
# Extend_penalty: 0.5
#
# Length: 10983
# Identity:    2870/10983 (26.1%)
# Similarity:  2870/10983 (26.1%)
# Gaps:        6829/10983 (62.2%)
# Score: 2781.5
#
#
#=======================================

human              1 gtgtgtcagccgtccctgctgcccggttgcttctcttttgggggcggggt     50

mouse              1 --------------------------------------------------      0

human             51 ctagcaagagcaggtgtgggtttaggaggtgtgtgtttttgtttttccca    100

mouse              1 --------------------------------------------------      0

human            101 ccctctctccccactacttgctctcacagtactcgctgagggtgaacaag    150

mouse              1 --------------------------------------------------      0

human            151 aaaagacctgataaagattaaccagaagaaaacaaggagggaaacaaccg    200

mouse              1 --------------------------------------------------      0

human            201 cagcctgtagcaagctctggaactcaggagtcgcgcgctaggggccgggg    250

mouse              1 --------------------------------------------------      0

human            251 ccggggccggggcgtggtcggggcgggcccgggggcgggcccggggcggg    300

mouse              1 --------------------------------------------------      0

human            301 gctgcggttgcggtgcctgcgcccgcggcggcggaggcgcaggcggtggc    350

mouse              1 --------------------------------------------------      0

human            351 gagtgggtgagtgaggaggcggcatcctggcgggtggctgtttggggttc    400
                         |||||||||..|...|......||.|||..||||....||  ||

mouse              1 ------gtgagtgagacgcgcgggcggagggggctgctgccacgg--tc     42

human            401 ggctgccgggaag---aggcgcgggtagaagcgggg----gctctcctca    443
                     ||||..||||..|   .|...||||||..|||||||    ..||||||..

mouse             43 ggctcgcgggccggccggctccgggtaccagcggggtttttttctccttc     92
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human            444 gagctcgacgcatttttactttccctctcatttctctgaccgaagctggg    493
                     |||.|..||            .||||.|..|.|.|.|..||||
mouse             93 gaggtgaac-------------tcctccctgtcccccgggcgaa------    123

human            494 tgtcgggctttcgcctctagcgactggtggaattgcctgcatccgggccc    543
                                                                .|.||||
mouse           124 ----------------------------------------agagccc    130

human            544 cgggcttcccggcggcggcggcggcggcggcgcagggacaagggatg    593
                     ..|||.|..|.|..|..||||.|||.|||||||.||.|    |.||||||
mouse           131 ttggccttgcaggagttgcgggggccgcggcggtgcgg----aggggatg    176

human            594 gggatctggcctcttccttgctttcc-----cgccctcagtacccgagct    638
                     ||||| .||||||.||.|||||.|||     |||.|.|.|..||||||.|.
mouse           177 gggat-gggcctcatctttgctgtccgcccgcgctccccgatcccgaccc    225

human            639 gtctccttccc-----------ggggacccgctgggagcgctgccgctgc    677
                     |...|.|..||           |||.||||.|.|||||..|.||....||
mouse           226 ggagcgtctcccgggcccttgagggaaccctccgggagtacggcgagcgc    275

human            678 gggctcgagaaaagggagcctcgggtactgagaggcctcgcctgggggaa    727
                     ||.|.|.|........|||||  ||..|..||.|||||.|||.||
mouse           276 ggcccccaccgccacaagcct--gggccccaggggcctggcccgg-----    318

human            728 ggccggagggtgggcggcgcgcggcttctgcggaccaagtcggggttcgc    777
                                 .|.|.||..|.||.|.|||| ||||.||||.||..||.|
mouse           319 -----------cgacagctggtgggtcctgc-gacccagtcaggtctccc    356

human            778 taggaacccgagacggtccctgccggcgaggagatcatgcgggatgagat    827
                                 ||.||||||.|||.|.|||||||         |.|.|..
mouse           357 -----------gagggtccccgcccgggaggaga---------aagcgcc    386

human            828 gggggtgtggag-------------------acgcctgcacaatttcagc    858
                     ||.||..|||||                   ||||..|||..||||| ||
mouse           387 ggtgggatggagtaaggacggacagaacaacacgcaggcaggatttc-gc    435

human            859 ccaagcttctagagagtggtgatg---acttgcatatgagggcagcaatg    905
                     ..|||.||..|..|||||..||||   ||||.|||    ||||.||.|..
mouse           436 agaagtttgcaaggagtgcggatgcccacttacat----gggctgctact    481

human            906 caagtcggtgtgctcccca-ttctgtgggacatgacctggttgcttcaca    954
                     |....|.|..||.|||||| ||||||||||.||||||||||||.|||||
mouse           482 cttaccaggttgttccccagttctgtgggacgtgacctggttgcctcaca    531

human            955 gctccgagatgacacagacttgcttaaaggaagtgactattgtgacttgg   1004
                     ||||||.|.|...|||||||| .|||||||||||||.||||||||||||
mouse           532 gctccgcggttgtacagactt-attaaaggaagtgaccattgtgacttgg    580

human           1005 gcatcacttgactgatggtaatcagttg--tctaaagaagtgcacagatt   1052
                     |||||||||||||||||||||||||||  ...|.||||||||||.||||
mouse           581 gcatcacttgactgatggtaatcagttgcagagagagaagtgcactgatt    630

human           1053 acatgtccgtgtgctcattgggtctatctggccgcgttgaacaccaccag   1102
                     |..|    .|||.|.||..||||||.||||||
mouse           631 aagt----ctgtccacacagggtctgtctggc-----------------    658

human           1103 gctttgtattcagaaacaggagggaggtcctgcactttcccaggagg---   1149
                                        ||||||        ||||.||.||..|||||
mouse           659 ----------------caggag--------tgcatttgcctgggagggat    684

human           1150 -ggtggccctttcagatgcaatcgagattgttaggctctgggagagtagt   1198
                      |||.||.|||||.|.||   |.|.||.|.|||||||||.|.|||||
mouse           685 tggttgcgctttctggtg---tggggactattaggctcttgtagagt---    728

human           1199 tgcctggttgtggcagttgg-taaatttctattcaaacagttgccatgca   1247
                        .|.||...|||||.||| |||||||||..|.|.||.|||.||.|.|.
mouse           729 ---tttgtcccggcagatggataaatttcttgttacactgttcccgttcg    775

human           1248 ccagttgttcacaacaa-gggtacgtaatctgtct-ggcattacttctac   1295
                     .||...|||.|.||.|| ||||||..|.||||||| .|.|.|||||.|||
mouse           776 tcaccagttgagaaaaacgggtacacagtctgtctcagtagtacttttac    825

human           1296 ttttgtacaaaggatcaaaa--aaaaaaaagatactgttaagatatgatt   1343
                     |||.....||.||..|||||  .|....||.||||| ||||||||..||.
mouse           826 tttatattaaggggggaaaaggagtggaaaatagt-ttaagatagaatg    874
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mouse           826 tttatattaagggcccaaaagggactggaaaatact-ttaagatagaatc   874

human          1344 tttctcagactttgggaaacttttaacataatctgtga------------  1381
                    .||.....|| ||||.||||||     |.|||.||.||
mouse           875 gttagtccac-ttggaaaactt-----aaaatatgagagagagagggggg   918

human          1382 -----------------------atatcacagaaacaagactatcatat  1407
                                            |.|..|..|||..||||.......|.
mouse           919 ggggagagagagagagagagagagagagaaaggaaggaagaaggaggaag   968

human          1408 agggg-------------------atattaataacctggagtcagaatac  1438
                    |||.|                   ||.|||||||..||||.||||||||.
mouse           969 aggaggaggaaagagattgagattatgttaataatatggaatcagaatat  1018

human          1439 ttgaaatacggt---------gtcatttgacacgggcat-----------  1468
                    ||||||||..||         .|||.||.|...||.|||
mouse          1019 ttgaaatatagtaagcgtcccctcagttaaagaggacattccaggaggcc  1068

human          1469 ------------------------------------------------  1468

mouse          1069 cccagtatagcctgaaatctcaggaaacgcctacatacacccatcgtgtg  1118

human          1469 --------tgttgtcac--------------------------------  1477
                            ||||.||.|
mouse          1119 gatataggtgttttcccttcattacatttcatacacagatgttaaagttt  1168

human          1478 ------------------------------------------------  1477

mouse          1169 agaaagtaggcacaataagagattacaaataactgataataaagtcgagc  1218

human          1478 ------------------------------------------------  1477

mouse          1219 cattgcagctgctctgtaaaagtcctgtgaatgtgatcgctttgtgtttc  1268

human          1478 -------------------cacctctgccaag------------------  1490
                                        ||||.|||..|||
mouse          1269 aaagtaacttactgtacttcacccctgttaagcaaaacaagattcacctg  1318

human          1491 ------------------------------------------------  1490

mouse          1319 aacgcaggcaccttggtaccttggcagacaccagatctgataaccaagag  1368

human          1491 ------------------------------------------------  1490

mouse          1369 gatggagaagtagtggcagacagtgtggagagcatgaatatgctagacaa  1418

human          1491 ------------------------------------------------  1490

mouse          1419 aagggtgaatcataacctaggagcagaaagcaggtatttcatcatcctcc  1468

human          1491 ------------------------------------------------  1490

mouse          1469 acagtaaaaacctatgtcacgtaaaaaacctacaagtagtttttctttta  1518

human          1491 ----------------gcctgc----------------------------  1496
                                    ||.|||
mouse          1519 ctctttttgaatgaaagcttgctacaggcactgaaagttaaaataatctg  1568

human          1497 ------------------------------------------------  1496

mouse          1569 tggatcaggaggaacaggggttttctgtctgagtcactgctgactagcac  1618

human          1497 ---------------cactttaggaaaaccctgaatcagttggaaactgc  1531
                                   ||||.|.|||||.|||.||.|||||||||||||.|
mouse          1619 ctcagtgaccattggcactgtgggaaaccccagagtcagttggaaacttc  1668

human          1532 taca-------------tgctgatagtacatctgaaac-aagaacgagag  1567
                    .|.|             ||.|..||.|.|||...|.|| ||.||..||||
mouse          1669 gaaactaaaggtgacggtgttcttatttcatagaacacaaaaaataagag  1718

human          1568 taattaccacat----tccagattgttcactaagccagcattt-acctgc  1612
                    ...||||..|.|    |.||||.||..||.|.|.|.||||||| |..|.|
mouse          1719 gggttacagcctgcgctgcagactggacattcaacaagcatttaaatttc  1768

human          1613 tccaggaaaaaattacaagcaccttatgaagttgataaaatattttgttt  1662
                    |....||.|||..||.|...|.|||...||||||.|||||||.|.|||||
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mouse           1769 tgggagacaaatgtaaatataactttaaaagttggtaaaatactctgttt   1818

human           1663 ggctatgttggcactccacaatttgctttcagagaaacaaag------ta   1706
                     ||||||||||||..||||...||||||||.|||.||..|..|      ||
mouse           1819 ggctatgttggccatccaatgtttgcttttagaaaatgactgaatggata   1868

human           1707 aaccaaggaggacttctgtttttcaagtctgccctcgggttctattctac   1756
                     ||         ||.|||.|.|||..||.|||||||.|....|.||
mouse           1869 aa---------acgtctatcttttgagcctgccctagacccccat-----   1904

human           1757 gttaattagatagttcccaggaggactaggttagcctacctattgtctga   1806
                     |||.|.|..|||.|..|||  ||...||||||||||       .|.||||
mouse           1905 gttgagtgaatactgtcca--agtgttaggttagcc-------ggcctga   1945

human           1807 gaaacttggaactgtgagaaatggccagatagtgatatga--acttcacc   1854
                     ||||||||||.||..|..|.|||||....|..||.|.|.|  |.|...|.
mouse           1946 gaaacttggatctaggcaagatggcacagtcctggtgtcatgagtatgca   1995

human           1855 ttccagtcttccctgatgttga----------agattgagaaagtgttgt   1894
                     |...|||.||..||||..||||          |||.|||.||||
mouse           1996 tgtgagttttggctgaaattgaacatttgtagagaatgacaaag------   2039

human           1895 gaactttctggtactgtaaacagttcactgtccttgaagtggtcctgggc   1944
                           .|||||...|.||..|||.|||||||.||..|||||||.|||..
mouse           2040 ------gctggtctggcaagtagtccactgtctttacagtggtcttggtt   2083

human           1945 agctcctgttgtggaaagtggac-ggtttagg---atcctgcttctcttt   1990
                     ||.|||||||..|...||.||.| ||||.|.|   .||||||..|||||
mouse           2084 agttcctgtttggctgagagggctggttgatggctgtcctgcccctctt-   2132

human           1991 gggctgggagaaaataaacagcatggttacaagtattgagagccaggttg   2040

mouse           2133 ---------------------------------------------------   2132

human           2041 gagaaggtggcttacacctgtaatgccagagctttgggaggcggaggcaa   2090

mouse           2133 ---------------------------------------------------   2132

human           2091 gaggatcacttgaagccaggagttcaagctcaacctgggcaacgtagacc   2140

mouse           2133 ---------------------------------------------------   2132

human           2141 ctgtctctacaaaaaattaaaaacttagccgggcgtggtgatgtgcacct   2190

mouse           2133 ---------------------------------------------------   2132

human           2191 gtagtcctagctacttgggaggctgaggcaggagggtcatttgagcccaa   2240

mouse           2133 ---------------------------------------------------   2132

human           2241 gagtttgaagttaccgagagctatgatcctgccagtgcattccagcctgg   2290

mouse           2133 ---------------------------------------------------   2132

human           2291 atgacaaaacgagaccctgtctctaaaaaacaagaagtgagggctttatg   2340
                                                  .|.|.|||||...||.|||||
mouse           2133 ------------------------------cccacaagtggaagccttatg   2153

human           2341 attgtagaatt-ttcactacaatagcagtggaccaaccacctttctaaat   2389
                        |||.|||| ||.|..|||.|||||||.|.|.||..|.|||.||.||
mouse           2154 ---gtataattcttgatcacagtagcagtaggcaaatgaacttcctcaa-   2199

human           2390 accaatcagggaag----------------------agatggttgatttt   2417
                     |.||..|.||.|||                      ...|..||..||||
mouse           2200 agcagcctggaaagctgattttttttctttctttctctttttttttttt   2249

human           2418 ttaacagacgtttaaagaaaaagcaaa--acctcaaacttagcactctac   2465
                     ||..||.|.|.||||||||||||.||||  .|.|||||..|..||.|||.|
mouse           2250 ttttcacaaggttaaagaaaaaacaaagggcttcaaatgtgccagtctgc   2299

human           2466 taacagttttagcagatgttaattaatgtaatcatgtctgcatgtatggg   2515
                     |||||||.|||  |.|||||.|||||..|||          ||..|....
mouse           2300 taacagtgtta--acatgtttattaacataa----------ataaacttt   2337

human           2516 attatttccagaaagtgtattgggaaacctctcatgaaccctgtgagc--   2563
```

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                 ||||.||...|.||  |||||||..||.|.|||.|||.|||||....|
mouse        2338 attagtttttggaa--gtattggttaagccctcgtgacccctgaactcgg   2385

human        2564 -------------aagccaccgtctcactc-aatttgaatcttggcttcc   2599
                              .||.|...|.|||||||  ..||||.|...|||||||.
mouse        2386 tttatagagtgatgagtcgtagcctcactctggtttggactctggcttct   2435

human        2600 ctcaaaagac----tggctaatgtttggtaactctctggagtagacagca   2645
                  ||||.|||||    ||||||||||    ||||..||||.|||||.||| |
mouse        2436 ctcagaagactctgtggctaatgt----taaccttctgaagtagccag-a   2480

human        2646 ctacatgtacgtaagataggtacataaacaactat-tggttttgagctga   2694
                  ..||||.||.|.||              ||.|.| ||...||||..|||
mouse        2481 aaacatataagcaa---------------aagtctgtgaggttgaaatga   2515

human        2695 ttttttcagctgcatttgcatgtatggatttttctcaccaaagacgatg   2744
                  .|||||| .||..||||||.||.|..|     |||.|||||   |.|.|.
mouse        2516 atttttt-ggccacatttgtatatggg-----ttcccacca---atgcta   2556

human        2745 acttcaagtattagtaaaataattgt-acagctctcctgattatacttct   2793
                  ||||||.||.|||||||.||.|...| ||||||..|||||||||.|||||.
mouse        2557 acttcaggtgttagtaatatcagactcacagcttccctgattacacttcg   2606

human        2794 ctgtgacatttcatttcccagg-------ctatttcttttggtaggatt   2835
                  ||.|.|.|.||.||||...|||        .|.|..|.|||...|.||||
mouse        2607 ctataagactttatttttaggtcataggaatttcccctttttcatgatt   2656

human        2836 ------------------------taaaactaagcaatt-----------   2850
                                          |||||.||.|..|||
mouse        2657 cctaaatcatgaaataacatagtctaaaaatacggtattcctgaaataaa   2706

human        2851 -----------------------------------cagtatgat------   2859
                                                     ||||.||||
mouse        2707 caatttctaagttttaagctgcgtgctattctgaacagtctgatgccctc   2756

human        2860 ------------------------------------------ctttgtc--   2866
                                                            |||||||
mouse        2757 ttgtagcttttactgtgtcctaccccgggcatggttgattcctttgtcca   2806

human        2867 ------------------------------------------------   2866

mouse        2807 aacatctgtctgttgtatccacactggattgcaccacctgcgtgctagtc   2856

human        2867 ------------------------------cttcattttctttcttattc   2886
                                              |||...|||..|.||||||.
mouse        2857 agtcactcagacattttagttataaggtagcttatatttactccttattt   2906

human        2887 ttttt---------------------------------------------g   2892
                  |.|||                                             |
mouse        2907 tatttaataatggcctcatagcaaggcggtaatgatactggtaatttggg   2956

human        2893 tttgtt--------------------------------------------   2898
                  ||||.|
mouse        2957 tttgcttaagaggagccatgaagtagttttaaatgaaaaggtgaaaattc   3006

human        2899 ------------------------------------------------   2898

mouse        3007 ccactatagtttggagggggaggctatactggtactactacgattcacgg   3056

human        2899 ------------------------------------------------   2898

mouse        3057 taagactaaatcttctgtgaaattatgaaggagaaaaagttacactggtc   3106

human        2899 ---------tgtttgtttgtttttttcttga------------------   2920
                            ||||.|.||..||||.|..|.|
mouse        3107 tggtcttgctgttggattaattttatagttataaccactgtacatgataa   3156

human        2921 --------------------------------ggcagagtct--------   2930
                                                   ||||.|.|||
mouse        3157 ataaccctaaaacaatgaatttgtaggtggatggcataatctgaaaacca   3206

human        2931 ------------------------------------------------   2930

mouse        3207 tgttctgagcagttgatggcagcaggctgtgctggaagtgttaggcatat   3256
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human           2931 --------------------------------------------------   2930

mouse           3257 ttatagatttcagcccaagttctgaagaggctggagagatggctcagtgg   3306

human           2931 -----------------------------------ctct-----------   2934
                                                         ||||
mouse           3307 ttaagagtgcttgctattgcagaggacctaggttcctctacaggcaccag   3356

human           2935 --------------------------------------------------   2934

mouse           3357 gcaagcgtgggacacactgagatacatacagacaaaacataaaattaaat   3406

human           2935 --------------------------------------------------   2934

mouse           3407 aaattgtgcataataatactagtaatatatgagtaaaataaggataaata   3456

human           2935 --------------------------------------------------   2934

mouse           3457 cacatcataattaaataaataaattgtaaagttccctagaagtgagggtc   3506

human           2935 --------------------------------------------------   2934

mouse           3507 accaagccattcacaagatggctgcgctgatgcagggatatatgtgaact   3556

human           2935 --------------------------------------------------   2934

mouse           3557 agaaaaaggtcaaacttaacagagaagttccaaggcatgctactgcaggc   3606

human           2935 ------------------------------ctgtcgcc-------------   2942
                                                    |||.||.|
mouse           3607 ttggctagcatgcttgacctgcagaaatgctgacggccactgggaggttt   3656

human           2943 --------------------------------------------------   2942

mouse           3657 tcacaaatgaggaattagaagaactttttttactaatctccagaaaaaaa   3706

human           2943 ----------------------caggctg----------------------   2949
                                            |||.|||
mouse           3707 aaagggaagaagaaactgaagcagcctgtgatgtggaccagaaacgcagt   3756

human           2950 --------------------------------------------------   2949

mouse           3757 gacagtaacatgtgtgacattgcaaaggcatgaaaggacagagctgtgga   3806

human           2950 --------------------------------------------------   2949

mouse           3807 atacagacctcaggtggagctcagcatagagtcattcggggattatgcct   3856

human           2950 ---------------------------------------------gagtgc   2955
                                                                  ||.|||
mouse           3857 gctgcagcaacaaaaggatgagctcaaaagagacaccgacttctgaatgc   3906

human           2956 agtgg------------------------------------------------   2960
                     |||||
mouse           3907 agtgggtgtttgttttgttttgtttcaaatgaattgggcagaaaactttc   3956

human           2961 ----------------------------------cgccatctcagctcat   2976
                                                      .|.|||||.|||   .
mouse           3957 cagctgtggaagcttctgaaccgtcccttgctgctgacatctaagc---g   4003

human           2977 tgcaacctctgccacctccgggttc------------aagagattctcct   3014
                     |.|....|.|.|||.|||.|.|.||            ||.||||..|||.
mouse           4004 tccgctgtgtcccagctcagtgatctagggtcttccaaacagatggtccg   4053

human           3015 g------------------------------------------------   3015
                     |
mouse           4054 gtgctgagcactttgaatctcaatcctgagtttctaccacgcctttggcc   4103

human           3016 -------------------------------------------------c   3016
                                                                      |
mouse           4104 atttaattcccagataaaagacacatacaacctttatatttataataaac   4153

human           3017 ctcagcctcccgagtagctgggattacaggtgtcc---------------   3051
                     ||.||.|..|..|..|||||.|...|.|..|||||
mouse           4154 cttagtcagcacaagagctgagcaaatatctgtcctctatgctattatat   4203
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human           3052 --------------------------------------------------   3051

mouse           4204 ctattacccagccaataaccccattctataatttgctgtgcttcatctgg   4253

human           3052 --------------------accaccacacccggctaatttttt---gta   3078
                                          .|||.|.|||..|||.|.|.||||   .|.
mouse           4254 gctgctcttaacttcagtcagccagcccacgtggccattattttaagatt   4303

human           3079 ttttta------------------------------------------   3084
                     ||||||
mouse           4304 tttttaccccatagtgtcttctcactttactttacattttctctctctc   4353

human           3085 --------------------------------------------------   3084

mouse           4354 ctcatggttctcctctgaccccaagcctaggaaccctaaaccccacccat   4403

human           3085 ------------------------gtagaggtggggtttcacca------   3104
                                             ||||...|.....|||||||
mouse           4404 gtctcttctgcccatctattggctgtaggcatctttattcaccaatcagg   4453

human           3105 ------tgttggccaggct-------------ggtcttg-----------   3124
                          ||..|||.|||.|             |||||.|
mouse           4454 ataacttggaggcaaggttaagtagtctcctgggtctaggtgctgtctct   4503

human           3125 ----------------------------agctcctgacctc----------   3137
                                               |...||.||||||
mouse           4504 gggagcaaccagtatttagcatagcaaaagaccagacctccacaatgatc   4553

human           3138 --------------------aggtgatccacctgcctcggcctacca----   3164
                                          |.|..|.|.||..||||..|||...||
mouse           4554 actctgaccatcggggcagaaggcacctactagcctgtgccactcacctc   4603

human           3165 ---------------------------------------aagagctgggata   3177
                                                            |....|||..||.
mouse           4604 actttgttgaatcacatcttatcctgtagtgtgtatcactgcctgttatc   4653

human           3178 acag------gtgtgaccc------------------------accatg   3196
                     ||||      |||.|.|||                         ||||||
mouse           4654 acaggaaaaagtgagtcccatcaaataagatgtttcagaaagagaccatg   4703

human           3197 cccggcccatttttttttcttattctgttaggagtga------------   3234
                     ..|.....|||.|..||.|..||..||.|||...||.|
mouse           4704 ttcatataattatcattctggtaagcttttaatggttatatttgttatt   4753

human           3235 --------------------------------------------------   3234

mouse           4754 aatctctttgttcctattttgcaaattataccttacagtaaatatatatg   4803

human           3235 --------------------------------------------------   3234

mouse           4804 catccaatggggtctttgaattcctccccggggagtaggaggactctttg   4853

human           3235 --------------------------------------------------   3234

mouse           4854 aggatgggctgcatttaaagctaaacaacgcaacatgacctttagtcctt   4903

human           3235 -----------------gagtgtaactagcag--------tataatagtt   3259
                                      |||..|||.||..||        ||||||..||
mouse           4904 atagatagcctagagatgagactaaataaaagaaatggtatataatgctt   4953

human           3260 caattttcacaacgtggt--aaaagtttccctataattcaatcagatttt   3307
                     .||.||||.|||...|.|  |||..|||.|||||||.||..|.||||||.|
mouse           4954 taagtttcccaatcagcttaaaagcttttcctataaatctttaagattat   5003

human           3308 gctccagggttcagttctgttttaggaaatactttattttcagtttaat   3357
                     ||||..|||.|||.|.|||.||.|.|||...||||||.||
mouse           5004 gctctggggctcaatactgcttcaagaagggcttttctt-----------   5042

human           3358 gatgaaatattagagttgtaatattgcctttatgattatccacctttta   3407
                                             |||..||||..|||||.||||||||||
mouse           5043 -----------------------ttgtatttagaattattcacctttta   5069

human           3408 acctaaa----agaatgaaagaaaaatatgtttgcaatataattttatgg   3453
                     |.|.|||    |.||||.||.|.|||||||||||||.||||||||||.
mouse           5070 aacaaaaggagaaaatggaatagaaatatgtttgcaacataattttatga   5119
```

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human           3454 ttgtatgttaacttaattcattatgttggcctccagtttgctgttgttag   3503
                     .|.|.||||.|.||......||.|||.|||||.||||||||||.|||||.
mouse           5120 ctatgtgtttatttcgcgtgttctgtgggcctgcagtttgctgctgttaa   5169

human           3504 ttatgacagcagtagtgtcattaccatttcaattcagattacattcctat   3553
                     |.|.||||.||||.|...||.|||..||||.|.||||||||||||  ||.|
mouse           5170 tgaggacaacagtggcaccaatacagtttccactcagattacatt-ctct   5218

human           3554 atttgatcattgtaaactgactgcttacattgtattaaaaacagtggata   3603
                     .||...|...||.||.|||.|..| |.||.||.....||||.|||...||
mouse           5219 gttccctttctgaaagctgccctc-tccactgggcccaaaagagtcagta   5267

human           3604 ttttaaagaagctgtacggcttatatctagtgctgtctcttaagactatt   3653
                     |.|||||.||||||||||..||||.|| .|.....|||||||.||||||.|
mouse           5268 tcttaaacaagctgtacaacttagat-aaccatggtctcttcagactagt   5316

human           3654 aaattgatacaacatatttaaaagtaaatattacctaaatgaatttttga   3703
                     .||||||   .|.|||||.||||||||||.||||.||.|||||||.|||
mouse           5317 taattga---catatattaaaaagtaaatagtaccaaagtgaatttctga   5363

human           3704 aattacaaatacacgtgttaaaactgtcgttgtgttcaaccatttctgta   3753
                     |||||.||||..||.|.|.||||||.|     .|.|.|||.||
mouse           5364 aattaaaaatgaacatttaaaaactct-----aggtaaactat-------   5401

human           3754 catacttagagttaactgttttgccaggctctgtatgcctactcataata   3803
                       |.||||||||||.||||||||||.|.||||      ||.||||||||
mouse           5402 --tccttagagttaagtgttttgccaagttctg------taatcataata   5443

human           3804 tgataaaagcactcatctaatgctctgtaaatagaagtcagtgctttcca   3853
                     |||||.||.|.||||...|....|||..|.||||||||.|.|.|||..||
mouse           5444 tgatagaaacgctcactcagcattctaaatatagaagttactccttcgca   5493

human           3854 tcagactgaactctcttgacaagatgtggatgaaattctttaagtaaaat   3903
                     |.|.|||..|.| ||||||.|||.||
mouse           5494 tgacactctaat-tcttgataaggtg-----------------------   5518

human           3904 tgtttactttgtcatacatttacagatcaaatgttagctcccaaagcaat   3953

mouse           5519 ------------------------------------------------   5518

human           3954 catatggcaaagataggtatatcatagtttgcctattagctgctttgtat   4003
                          |..|||||.||..|.|
mouse           5519 -----gagaaagagagagaga----------------------------   5534

human           4004 tgctattattataaatagacttcacagttttagacttgcttaggtgaaat   4053
                                                     |....||.||.|.
mouse           5535 -------------------------------------gaggggagagac   5547

human           4054 tgcaattctttttactttcagtcttagataacaagtcttcaattatagta   4103
                     .|.||.|                                  ||..|.||.
mouse           5548 agaaaat-----------------------------------atggtggtt   5563

human           4104 caatcacacattgcttaggaatgcatcattaggcgattttgtcattatgc   4153
                     |||..||...|||   |||.|      |||||
mouse           5564 caaggaccatttg---aggga------attag------------------   5586

human           4154 aaacatcatagagtgtacttacacaaacctagatagtatagcctttatgt   4203
                                                                  ||||||
mouse           5587 ---------------------------------------------ttatgt   5592

human           4204 acctaggccgtatggtatagtctgttgctcctaggccacaaacctgtaca   4253
                     .|.|..|          |..|||||.|.||.||||
mouse           5593 tcttccg----------tcctctgtggatcttagg---------------   5617

human           4254 actgttactgtactgaatactatagacagttgtaacacagtggtaaatat   4303
                                                |.|..||.|||||
mouse           5618 ----------------------------ggttgaatacagt---------   5630

human           4304 ttatctaaatatatgcaaacagagaaaaggtacagtaaaagtatggtata   4353

mouse           5631 ------------------------------------------------   5630

human           4354 aaagataatggtatacctgtgtaggccacttaccacgaatggagcttgca   4403
                                                        .||.|||||.|..
```

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mouse           5631 -------------------------------------cattgagctcggt   5643

human           4404 ggactagaagttgctctgggtgagtcagtgagtgagtggtgaattaatgt   4453
                     |||             |||.||
mouse           5644 gga-------------tggctg----------------------------   5652

human           4454 gaaggcctagaacactgtacaccactgtagactataaacacagtacgctg   4503

mouse           5653 --------------------------------------------------   5652

human           4504 aagctacaccaaatttatcttaacagtttttcttcaataaaaaattataa   4553

mouse           5653 --------------------------------------------------   5652

human           4554 ctttttaactttgtaaacttttttaatttttttaactttttaaaatacttagc   4603
                                                  ..||.||.|||....|..|
mouse           5653 -------------------------------tcctgttgaaaggtctgcc   5671

human           4604 ttgaaacacaaatacattgtatagctatacaaaaatatttttttctttgta   4653
                     ..|.|...||||
mouse           5672 cagcagagcaaa-------------------------------------   5683

human           4654 tccttattctagaagctttttctattttctattttaaattttttttttt   4703
                                                      ||.|.|||||||.|||
mouse           5684 ----------------------------------tagactttttttattt   5698

human           4704 acttgttagtcgtttttgttaaaaactaaaacacacacactttcacctag   4753
                     ||.||....||..|||......||.||||....||
mouse           5699 acatggacatccgtttgtgactaatctaatgttca---------------   5733

human           4754 gcatagacaggattaggatcatcagtatcactcccttccacctcactgcc   4803

mouse           5734 --------------------------------------------------   5733

human           4804 ttccacctccacatcttgtcccactggaaggtttttaggggcaataacac   4853
                           ||||..|..|..||.|||.|                   |||.
mouse           5734 ------ctcccaaagtaatcacacag--------------------acag   5757

human           4854 acatgtagctgtcacctatgataacagtgctttctgttgaatacctcctg   4903
                     |.|.||||||                                    ||||.
mouse           5758 agaggtagct-----------------------------------tcctt   5772

human           4904 aaggacttgcctgaggctgttttacatttaacttaaaaaaaaaaaaagta   4953
                     .||                   |||..|||.||||.|
mouse           5773 cag-------------------tactcttaccttaca-------------   5790

human           4954 gaaggagtgcactctaaaataacaataaaaggcatagtatagtgaataca   5003
                                                              |||||.|
mouse           5791 ------------------------------------------tgaatcc-   5797

human           5004 taaaccagcaatgtagtagtttattatcaagtgttgtacactgtaataat   5053
                                ||..|.|||.||||   .|.||.|.||||.|||...|
mouse           5798 -------------taccattttgttat---ttttttccactttaaatct   5831

human           5054 t---gtatgtgctatactttaaataacttgcaaaatagtactaagacctt   5100
                     |   .||||||.|.|...|||.|.||.|||||.|..|.|....|.||..|
mouse           5832 ttgattatgtgtttttaattagaaaatttgcatacaaatttccatacagt   5881

human           5101 atgatggttacagtgtcactaaggcaatagcatattttcaggtccattgt   5150
                     |||
mouse           5882 atg-----------------------------------------------   5884

human           5151 aatctaatgggactaccatcatatatgcagtctaccattgactgaaacgt   5200
                                                  ||..||||||||
mouse           5885 ---------------------------------tagaattgactg------   5896

human           5201 tacatggcacataactgtatttgcaagaatgatttgttttacattaatat   5250

mouse           5897 --------------------------------------------------   5896

human           5251 cacataggatgtacctttttagagtggtatgtttatgtggattaagatgt   5300
                                                 |||||...|||.|.|||||..
mouse           5897 ----------------------------tgtttgaatgggtgaagatcc   5917

human           5301 acaagttgagcaaggggaccaagagccctgggttctgtcttggatgtgag   5350
                     ||| ||                  |  ||   | ||||   ||| | ||||
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                 |||.||                |...||...|.||||...|||.|.||||
mouse        5918 acatgt----------------gtaaccctagctctggactggctctgag   5951

human        5351 cgtttatgttcttctcctcatgtctgttttctcattaaattcaaaggctt   5400
                  |.|.|.||.|||||||          ||||
mouse        5952 cttgtttgctcttctc----------tttt-------------------   5971

human        5401 gaacgggccctatttagcccttctgttttctacgtgttctaaataactaa   5450
                                                  |||||||.|.||||||.|
mouse        5972 ---------------------------------gtgttctgagtaactga   5988

human        5451 agcttttaaattctagccatttagtgtagaactctctttgcagtgatgaa   5500
                  |.||.||..|||.||||...||||||.|   .|.|.|||..|        |
mouse        5989 aactctttcattttagcagcttagtat---gcgcccttcac--------a   6027

human        5501 atgctgtattggtttcttggctagcatattaaatattttatctttgtct   5550
                  .||||||..||..|.||...|||.|||......|.|..||||.||...||
mouse        6028 ttgctgtgctgcctgctgcactaacattactcctttgcttatgttcccct   6077

human        5551 tgatacttcaatgtcgttttaaacatcaggatcgggcttcagtattctca   5600
                  |..|..||||.||||.||||||.||..||.|..||.|.||||||   .|.
mouse        6078 tcctgattcagtgtcattttaagcagtagtactggacctcagta---cct   6124

human        5601 taaccagagagttcactgaggatacaggactg------------------   5632
                  ||.||  .|||.|||||||||..||||||.|||
mouse        6125 tagcc--ggagctcactgaggtgacagggctgaggctctgctgctgtctt   6172

human        5633 --------------tttgcccatttttgttatggct----ccagacttg   5664
                                |||.....||||.||.|||..||    ||||..|||
mouse        6173 ttgagcttacctcttttaatgttttatggtatttctgctgccaggtttg   6222

human        5665 tggtatttccatgtctttttttttttttttttttttgacctttagcggc   5714
                  .||..||    |||.||.||||.||||||.|||||||
mouse        6223 ggggttt----tgttttgttttgtttttttgtttttttg-------------   6255

human        5715 tttaaagtatttctgttgttaggtgttgtattacttttctaagattactt   5764
                                          .||.|.|||.|||||||.||..||.|
mouse        6256 ------------------------tttttttaattttctaggaacacct   6281

human        5765 aacaaagcaccacaaactgagtggctttaaacaacagcaatttattctct   5814
                  |..|||    ||||||||..|...|||.|||.|.||||...||.|||.||
mouse        6282 agaaaa----cacaaactaggaaacttaaaagagcagcgtcttgttccct   6327

human        5815 cacaattctagaagctagaagtccgaaatcaaagt----gttgacagggg   5860
                    ...||||||||..|..|||.|..|...||..||    ||||.||||..
mouse        6328 --gcgttctagaaagtccaagcctaatgccagtgtcatggttgtcaggaa   6375

human        5861 catgatcttcaagagagaagact----------ctttccttgcctcttcc   5900
                  |||||.|.||     .||||.||          |.||.||||.|||..|
mouse        6376 catgagcctc-----tgaaggcttcttgggaaacctttcttgtctcaac-   6419

human        5901 tggcttctggtggttaccagcaatcctgagtgttcctttcttgccttgta   5950
                    .|.||||||||..|.|||.|.|||   .||.|.||.|||  |..|..|
mouse        6420 --acctctggtggcaagcagtagtcc---atggtactctct--ctgtcca   6462

human        5951 gtttcaacaatccagtatctgccttttgtcttcacatggctgtctaccat   6000
                  ...|||.||..|||||..||||||.|||.||||.....||.|.|.|.|.|
mouse        6463 cggtcagcatcccagtccctgccctttatctttgtgcagccgaccagctt   6512

human        6001 ttgtct-ctgtgtctccaaat------------ctctctccttataaaca   6037
                  |..|.| .|.|||||||...|            |.|.|||||..|||.||
mouse        6513 tgctttagtctgtctccttctcaggtctccttccccgctcctcttaagca   6562

human        6038 cagcagttattggattaggccccactctaatccagtatgaccccatttta   6087
                  |||||||.||||||||||..||||..||...|..|.|||.|||  .||||.
mouse        6563 cagcagtcattggattagagcccatccttccctcggatggccc--atttg   6610

human        6088 acatgattacacttatttctagataaggtcacattcacgtacaccaaggg   6137
                  ||.|.|||..||.|||||.||..|||||||.||||.||.||||
mouse        6611 acctaattttacgtatttgtaactaaggtcccatttacttaca-------   6653

human        6138 ttaggaattgaacatatctttttgggggacacaattcaacccacaagtgt   6187

mouse        6654 ------------------------------------------------   6653

human        6188 cagtctctagctgagcctttccccttcctgtttttctcctttttagttgct   6237
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human          6186 cagtctcagctgagcctttcccttgtttttctctttagtgct   6237
                    |.|.|||.|.|||||||||||||..||   |||||.||..
mouse          6654 ----------cagggccctccccttcctgttttgttc---tttagctgaa   6690

human          6238 atgggttaggggccaaatctccagtcatactagaattgcacatggactgg   6287
                    ||||.||.|.|.||||||.||||.||||...|....||||||.|...||.
mouse          6691 atggtttggagaccaaatatccaatcattacaattgtgcacaagctatgt   6740

human          6288 atatttgggaatactgcgggtctattctatg--agctttagtatgtaaca   6335
                    ..||||||...||.|...||...|||||.||  ....||.||||||.|||
mouse          6741 tcatttggaggtaataaaggctcattctttgcttctattggtatgtgaca   6790

human          6336 tttaatatcagtgtaaagaagcccttttttaagttatttctttgaatttc   6385
                    ||
mouse          6791 tt-----------------------------------------------   6792

human          6386 taaatgtatgccctgaatataagtaacaagttaccatgtcttgtaaaatg   6435

mouse          6793 ----------------------------------------------   6792

human          6436 atcatatcaacaaacatttaatgtgcacctactgtgctagttgaatgtct   6485

mouse          6793 ----------------------------------------------   6792

human          6486 ttatcctgataggagataacaggattccacatctttgacttaagaggaca   6535

mouse          6793 ----------------------------------------------   6792

human          6536 aaccaaatatgtctaaatcatttggggttttgatggatatctttaaattg   6585
                            |.|||||.|||.|||||| ||||||.||||||||||||||.|
mouse          6793 ---------tttctaagtcacttgggg-tttgatagatatctttaaatgg   6832

human          6586 ctgaacctaatcattg--gtttcatatgtcattgtttag-----------   6622
                    ||||||||.||||.||  .|||..||||||..|||||||
mouse          6833 ctgaacctgatcactgttcttttgtatgtccctgtttagctattgcaagc   6882

human          6623 ----------------------------------------------   6622

mouse          6883 gttcggataatgtgagacctggaatgcagtgagacctgggatgcagggat   6932

human          6623 ----------------------------------------------   6622

mouse          6933 gtcgactatctgcccccaccatctcctgctgttgccaagacagagattg   6982

human          6623 ----------------------------------------------   6622

mouse          6983 ctttaagtggtgaatcacccttgttggcggctacctttgcttactgggat   7032

human          6623 ----------------------------------------------   6622

mouse          7033 aatattcttggtcctagagtaaggcatatttgggctccaaagacagacca   7082

human          6623 ----------------------------------------------   6622

mouse          7083 agtgcttctcagtgatggagaaataacttttcttgccaaccacactctaa   7132

human          6623 ----------------------------------------------   6622

mouse          7133 atggagaaattcttcgaaatgcagagagtggggctatagatgtaaaattt   7182

human          6623 ----------------------------------------------   6622

mouse          7183 tttgtcttatctgaaaaaggggtaattattgtttcattaatcttcgacgg   7232

human          6623 ----------------------------------------------   6622

mouse          7233 aaactggaatggagatcggagcacttatggactatcaattatactgccgc   7282

human          6623 ----------------------------------------------   6622

mouse          7283 agacagagctgagcttctacctcccacttcacagagtgtgtgttgacagg   7332

human          6623 ----------------------------------------------   6622

mouse          7333 ctaacacacattattcgaaaaggaagaatatggatgcataaggtaagggg   7382
```

```
human           6623 --------------------------------------------------   6622

mouse           7383 cttttgagcttgatcatggtagcctggccaatgaaagtttttttctggta   7432

human           6623 --------------------------------------------------   6622

mouse           7433 cagttacacttaagttttggaaattatatgctgctaacaccagacagctg   7482

human           6623 --------------------------------------------------   6622

mouse           7483 ttatgttgtgtctcctgggcacagaaagccctgctctcatgcctggggtc   7532

human           6623 --------------------------------------------------   6622

mouse           7533 ttcacagtcctaatggaaagtaagatcttataaacattgtgtctgagttt   7582

human           6623 --------------------------------------------------   6622

mouse           7583 gttctggaagctgtgactctaccttcttgttttcctttccctgtgtgact   7632

human           6623 --------------------------------------------------   6622

mouse           7633 ttgtcctttgcttacaacagtgcaaaagtataaatattctcagattttga   7682

human           6623 --------------------------------------------------   6622

mouse           7683 taagctgtcagccacacagccttagtaactaagctgctgtcccacgctcc   7732

human           6623 --------------------------------------------------   6622

mouse           7733 cagttctgtataacgaggatggaccaattagattctaaggagttattcct   7782

human           6623 --------------------------------------------------   6622

mouse           7783 ttcaatttgcaaatttagctaaaggaaatattgttttctcctgatattta   7832

human           6623 --------------------------------------------------   6622

mouse           7833 cattgcttttcattttcagcatatctaaagaacaaacctaattctccttc   7882

human           6623 --------------------------------------------------   6622

mouse           7883 ctactttctagtttaatataatcctaaaaatccattaaaacatgactaat   7932

human           6623 --------------------------------------------------   6622

mouse           7933 tctataaggcctctaacctacaaagggaagtagcattttgaaaagaatag   7982

human           6623 --------------------------------------------------   6622

mouse           7983 ttttctctattatacctattcatgcagacttccttccttatttctgacat   8032

human           6623 --------------------------------------------------   6622

mouse           8033 acttaacaaaaatcatttagattcaaacagtttagctgcaggtgatatta   8082

human           6623 --------------------------------------------------   6622

mouse           8083 cagacaagtaatcccagtgctctatctagtctgaggcaaaaggatttgag   8132

human           6623 --------------------------------------------------   6622

mouse           8133 ctcagtgccagcctgttctatctacctggtgagttccagtcccataaata   8182

human           6623 --------------------------------------------------   6622

mouse           8183 aacaaactaaaacaaccgttcctctgttcctcagatgcgagtcgatcttg   8232

human           6623 --------------------------------------------------   6622

mouse           8233 tttgatttaaatagtgtgtaattattttcttttgaagctgcaggtgttat   8282

human           6623 --------------------------------------------------   6622

mouse           8283 gtgggctgttttagactaaattctctctttactgtggagtaaagggtgct   8332
```

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human            6623 --------------------------------------------------   6622

mouse            8333 gtgattgtatttcatgttctctgcgagagcttgaacttgttgggctaatc   8382

human            6623 --------------------------------------------------   6622

mouse            8383 gcttgtctccatcctgtctccccacctgcgtaaaaagtattttcctgtga   8432

human            6623 --------------------------------------------------   6622

mouse            8433 gctgtacatgatagagcatatctacattgaaaaatgaacgagcatcaaaa   8482

human            6623 ---------------------------------   6622

mouse            8483 tggatttgttaaagtaaattttctttttcttag   8515


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