# Gene

## Crygd crystallin, gamma D [ Mus musculus (house mouse) ]

<https://www.ncbi.nlm.nih.gov/gene?cmd=retrieve&dopt=full_report&list_uids=12967#gene-expression>

TCAACAGCACCATCCCATCCGACCTGCCAACACCAGCCATGGGGAAGGTGAGCCCAGGGCATCCTCATTTTGGGAAGGGACCTGCCCTGGGGGCCAGGCCACATCAGGCCTCTGAGCCCTGCCTTGCCTTGCCTTACAGATCACCTTCTATGAGGACCGCGGCTTCCAGGGCCGCCACTATGAGTGCAGCACCGACCACTCCAACCTGCAGCCCTACTTCAGCCGCTGCAACTCTGTGCGCGTGGACAGTGGCTGCTGGATGCTCTATGAGCAGCCCAACTTCACGGGCTGCCAGTACTTCCTGCGTCGCGGGGACTACCCTGACTACCAGCAGTGGATGGGTTTCAGTGACTCTGTCCGCTCCTGCCGCCTCATCCCCCACGTGAGTCCAGATTCTCAAGACTGAGGCACTGAAGACCCTGACTGCAGTTGCCAGTATAAGGTTAAATGTTGAAAGCAGAGCTGAGCCTGCTTGTAAAGAAAAACCCATAGCTAGAATTAATTAGGTCAATAGTTCCCACAACATCCAAAAAGCAAGGTGTTACCCAGTTACAACTATTCTATTGGCCCCTACGTATTTGTGGCATAAGAACGCATTGGCAGCAAGCGGGCTGTATGAAATCTGAGTCCTGTCATGCAATCATTTAGGATGGAAAAATAGAATGGTGGCTACTGAACACAAGAGTAATTATGCTTAAAGTCCCCCTCCTCCTTTTTGTCCTCTACGTGCATATCTGGGGGTTCCTCCATCTAATTCGGTCGAAGTCCTTTCGACAGAGCAACACAGATGTTTTACAGCTGAAAAATGGCTCTTGTGCTTACTGATTTTATCTCTCCATTTTTCCCTCATTATATTTATAAATTATTAACTGAGCAGTCATTGTTGTCTGAGACCTAAAATATTGAATATTTTAATACATTTTAATATAAAAACATTTTCCCCAATCAGCAAACCAAGTAGTAAGAAGCTGTTGACAGTCATGATTTCTCTCTGGTGTTTGCTTTACAGTATGCTGCACAGGAGGTGGTTTGGGCCCTGCAGTTTCTGAACACACTCATAGTTCCTTCTCCAATTCATTTCCTCATACTTCCTGATCTTAGAAAAGCCTGGAATCTGCCCTCATAGTGACGAGTTTATAAGAAGTCTGAGTTAATTAATGCATTTTTTATCTAGTTCAAATGGCTTGATGCAGCTGAGGCCATCCTAACGCATTAGAATCGCTTCACCGTTGCTTTTTACTGTTTCTGGGCCTGCCAGGCCGGCTCTCACAGGATCAGACTGTACGAGAGGGAAGAGTACAGAGGCCAGATGATAGAGTTCACGGAGGACTGCCCCTCTCTCCAGGACCGATTCCACTTCAATGAGATCTACTCCCTCAATGTGCTAGAGGGCTGCTGGGTCCTCTACGACATGACCAACTACCGGGGAAGGCAGTACTTGCTCAGACCCGGGGAGTACAGGCGCTACCACGACTGGGGCGCCATGAATGCCAGGGTGGGCTCTCTGAGGAGAGTCATGGATTTCTACTGAATTGGTTTTTTTACTCTACCCTTTCTCCATTTGGACGCTAATAAAATATTTTCTGTGTGTTCCTGGCACTTA

### mRNA:

TCAACAGCACCATCCCATCCGACCTGCCAACACCAGCCATGGGGAAGATCACCTTCTATGAGGACCGCGGCTTCCAGGGCCGCCACTATGAGTGCAGCACCGACCACTCCAACCTGCAGCCCTACTTCAGCCGCTGCAACTCTGTGCGCGTGGACAGTGGCTGCTGGATGCTCTATGAGCAGCCCAACTTCACGGGCTGCCAGTACTTCCTGCGTCGCGGGGACTACCCTGACTACCAGCAGTGGATGGGTTTCAGTGACTCTGTCCGCTCCTGCCGCCTCATCCCCCACGCCGGCTCTCACAGGATCAGACTGTACGAGAGGGAAGAGTACAGAGGCCAGATGATAGAGTTCACGGAGGACTGCCCCTCTCTCCAGGACCGATTCCACTTCAATGAGATCTACTCCCTCAATGTGCTAGAGGGCTGCTGGGTCCTCTACGACATGACCAACTACCGGGGAAGGCAGTACTTGCTCAGACCCGGGGAGTACAGGCGCTACCACGACTGGGGCGCCATGAATGCCAGGGTGGGCTCTCTGAGGAGAGTCATGGATTTCTACTGAATTGGTTTTTTTACTCTACCCTTTCTCCATTTGGACGCTAATAAAATATTTTCTGTGTGTTCCTGGCACTTAAAAAAAAAAAAAAAAAAAAA

### Protein:

MGKITFYEDRGFQGRHYECSTDHSNLQPYFSRCNSVRVDSGCWMLYEQPNFTGCQYFLRRGDYPDYQQWMGFSDSVRSCRLIPHAGSHRIRLYEREEYRGQMIEFTEDCPSLQDRFHFNEIYSLNVLEGCWVLYDMTNYRGRQYLLRPGEYRRYHDWGAMNARVGSLRRVMDFY

## CRYGD crystallin gamma D [ Homo sapiens (human) ]

<https://www.ncbi.nlm.nih.gov/gene?cmd=retrieve&dopt=full_report&list_uids=1421>

TTGTGCGGTTCTTGCCAACGCAGCAGCCCTCCTGCTATATAGCCCGCCGCGCCGCAGCCCCACCCGCTCAGCGCCGCCGCCCCACCAGCTCAGCACCGCCGTGCGCCCAGCCAGCCATGGGGAAGGTGAGCCCAGCCTGCGCCCCGGGACCCCGGAGCTTCCTCCATCGCGGGGGCCAGAGACTGGGGCAGGAGCAGGCCTGTGAGACCTCGCCTTGTCCCGCCTTGCCTTGCAGATCACCCTCTACGAGGACCGGGGCTTCCAGGGCCGCCACTATGAATGCAGCAGCGACCACCCCAACCTGCAGCCCTACTTGAGCCGCTGCAACTCGGCGCGCGTGGACAGCGGCTGCTGGATGCTCTATGAGCAGCCCAACTACTCGGGCCTCCAGTACTTCCTGCGCCGCGGCGACTATGCCGACCACCAGCAGTGGATGGGCCTCAGCGACTCGGTCCGCTCCTGCCGCCTCATCCCCCACGTGAGTACATCCTCAAGTCAGGACCCAGGCCCTCAGGACACTCACTGGATGGTTTCAAGCAAAAGTTAAACATTAGAAGTAGTGATCAGTCACAATAACTGAGAGTGGACAAAAGATGAACTATAGTGGATTAAGTCAATAGAGTTTGCTCCCCACATAAGCAAAGTATTACCCAGACACCAGTTAATCACAATTAATCCACAAATATGTATTGAGTAGGAATGTGTCTCCTGCCCTAGGGGTTGTATAAGACTTAAGTCCTATTCTGGAATCATTTAGAATGGAGTTGTAGAAAAACCACTAATACCCAATAGAAGAATAAATGCTAGAGCGTACAGCAGTTACTGAGCAAACAGGGTAATTTCTTTTGAGACTTTTTCCCGTTTTTGCTCCTCTCTTGCATATTTTGGGTTTTCCCAACCTATATAAGTAAGACTTTCCTTCAAAGGAGAGCAACACACATATTTTACACATGTGTCCCTTTTATCCCATATGTGTGTTAGAACACTAAAGTTTATGCAAAATTCGTCCTTGGACTTACTGATGTTTCTTCCTCCATTTTTCTTCATTGCATTCACAAGTTATTGACTTAGAATTAATTGTTCTTTAATATATGAAGATATTTAACATTTTATATTTTAATATATTTTAAATATTTATATTTTAATATATTTAAAACACTTATATTTTGAATAGAAGGCTTATATATTTAACATATTTTATTTATGTCATTGATTTAAATGATGCATTATCATTTAATTCAATATATTAAATGATATATTTAATATATTTTAAATACTTATATTTAAAATACATATTTTTATATTTTAAATATATTTACATTAAATATATTTAATGAATATAATGTATTTAATAATATATTTATTTAATAAATATGTATTTAATATATTTATATAACTACATAAATTATATTATATTTTAAATATATTTAACATATTTTAAATATATTTTAATATATTTTTAATATATTTCATTTACATTATATGTGTGTATATATATATTTTTGTTGTTGTTGTTTTGTTTTTGTTTTTTGAAACAGAGTCTCACTCTGACGCCCAGGCTGGAGTGCAGTGGTGCAATCTCGGCTCACTGCAACCTCCGCCTCCTGGATTCAAATGATTCTCGTCTCTCAGTCTCCTGAGTAGCTGGAGTTACAGGAGCACGCCACCACACCCAGCTAATTTTTGTATTTTTATTTTTATTTTATTTTATTTTATTATTTATTATTATTATTTTTTTTGACGAAGTCTTGCTCTGTTCCCCACGCTGGAGTGCAGTGGCATGATCTCGGCACACTGCAACCTCTGCTTCCTGGGCCCTAGCAATTTTCTTCCCAAGTAGCTGGGATTACAGGCACCCGCCACCACACCTGGCTAATTTTTGTATTTTTAGTATAGACAAGGTTTCGCCATATTCGTCAGGCTGGTCTTGAACTCCTGACCTCAAGTGATCCACCTGCCTCGGCTTCCCAGGGTGCTGGGACTACAGGCATGAGCCACTGCCCCACCCCTTATATTTCTGTATTTTAAATATATTTTATTTATATTTTAGTAAAGTTATTTTAAAATAAAATATAATTTGTAAAATAAATATAATTTTAATTTATACTTATAAAATATAATTTGAATATAATTATTAAAATAAAATATGATTAACTTTAAATAAAATATAATTTTATACATTTTATAATATATTTTAAATATAGTATATAATTAAATATGTATTAGATATCATATGTATATTAAAATTATACATTATTTAAATATATTTCTTTATAATTTAATGTTTATTTTAATATTAAAACATTTCTTCAAAATGGTATAAAATAGTAATAAGCTGTTACAGGTTTGGATTTGCATGTGGTACAGGATACTGAGCCTAGGAGGCAGCTCATCCTAAGAAATAGCTGAATATATTAAAGAGTGAGATTTCCTTCTCAATTTCTTCACCACACTTCATAATCTTGAAAAGGTACTGAATCTCTGTGCTCGGTAATGAGGAGTTTATAAATATTCAGAATTAATTAAATTTTACCATGTATTTCAAAATGGCTTGAGCGGGTCCTCACCAAGCTGGACTGCCTAACAATGCATTGGAATCATTTCACACTTGCTTTTCTTCTCTTTTTATTTCTGGGTCCGCCAGTCTGGCTCTCACAGGATCAGACTCTATGAGAGAGAGGACTACAGAGGCCAGATGATAGAGTTCACTGAGGACTGCTCCTGTCTTCAGGACCGCTTCCGCTTCAATGAAATCCACTCCCTCAACGTGCTGGAGGGCTCCTGGGTCCTCTACGAGCTGTCCAACTACCGAGGACGGCAGTACCTGCTGATGCCAGGGGACTATAGGCGCTACCAGGACTGGGGGGCCACGAATGCCAGAGTGGGCTCTCTGAGGAGAGTCATAGATTTCTCCTGAAATATGTCCTCTTTTGTTGTTTCTTAATTTGGAAACTAATAAAATATTTTCTGTGTGTTCCTGGCA

### mRNA:

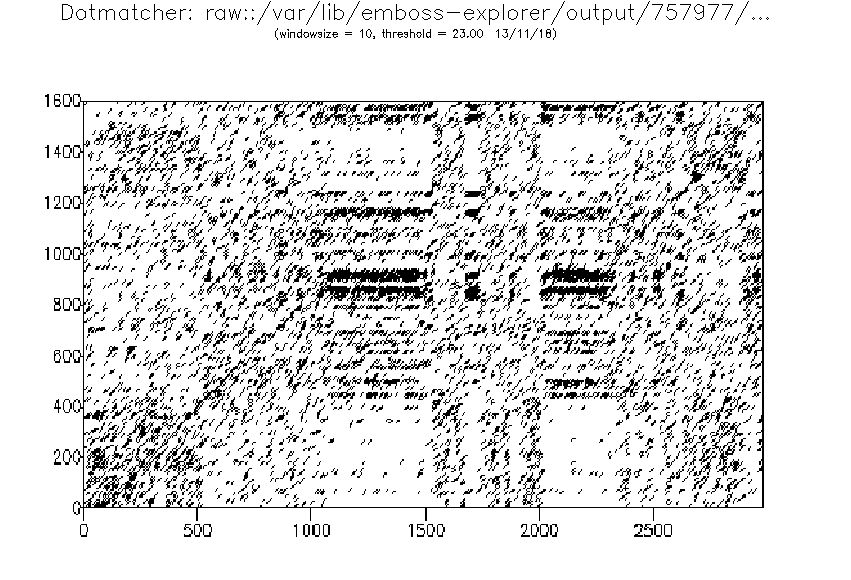
TTGTGCGGTTCTTGCCAACGCAGCAGCCCTCCTGCTATATAGCCCGCCGCGCCGCAGCCCCACCCGCTCAGCGCCGCCGCCCCACCAGCTCAGCACCGCCGTGCGCCCAGCCAGCCATGGGGAAGATCACCCTCTACGAGGACCGGGGCTTCCAGGGCCGCCACTATGAATGCAGCAGCGACCACCCCAACCTGCAGCCCTACTTGAGCCGCTGCAACTCGGCGCGCGTGGACAGCGGCTGCTGGATGCTCTATGAGCAGCCCAACTACTCGGGCCTCCAGTACTTCCTGCGCCGCGGCGACTATGCCGACCACCAGCAGTGGATGGGCCTCAGCGACTCGGTCCGCTCCTGCCGCCTCATCCCCCACTCTGGCTCTCACAGGATCAGACTCTATGAGAGAGAGGACTACAGAGGCCAGATGATAGAGTTCACTGAGGACTGCTCCTGTCTTCAGGACCGCTTCCGCTTCAATGAAATCCACTCCCTCAACGTGCTGGAGGGCTCCTGGGTCCTCTACGAGCTGTCCAACTACCGAGGACGGCAGTACCTGCTGATGCCAGGGGACTATAGGCGCTACCAGGACTGGGGGGCCACGAATGCCAGAGTGGGCTCTCTGAGGAGAGTCATAGATTTCTCCTGAAATATGTCCTCTTTTGTTGTTTCTTAATTTGGAAACTAATAAAATATTTTCTGTGTGTTCCTGGCAAAAAAAAAAAAAAAAAA

### Protein:

MGKITLYEDRGFQGRHYECSSDHPNLQPYLSRCNSARVDSGCWMLYEQPNYSGLQYFLRRGDYADHQQWMGLSDSVRSCRLIPHSGSHRIRLYEREDYRGQMIEFTEDCSCLQDRFRFNEIHSLNVLEGSWVLYELSNYRGRQYLLMPGDYRRYQDWGATNARVGSLRRVIDFS

# Gene Match Result:

## Dot match:



## Needleman-Wunsch:

> globalAlign

Global PairwiseAlignmentsSingleSubject (1 of 1)

pattern: T--------------CAAC--AGCACC---------AT--------------------CCCATCCG------------...TACTGAATTGGTTTTTTTACTCTACCCTTTCTCCATTTGGACGCTAATAAAATATTTTCTGTGTGTTCCTGGCACTTA

subject: TTGTGCGGTTCTTGCCAACGCAGCAGCCCTCCTGCTATATAGCCCGCCGCGCCGCAGCCCCACCCGCTCAGCGCCGCC...TCCTGAAATATGTCCTCTTTTGTTG--TTTCTTAATTTGGAAACTAATAAAATATTTTCTGTGTGTTCCTGGCA----

score: -2948

## Smith-Waterman:

> localAlign

Local PairwiseAlignmentsSingleSubject (1 of 1)

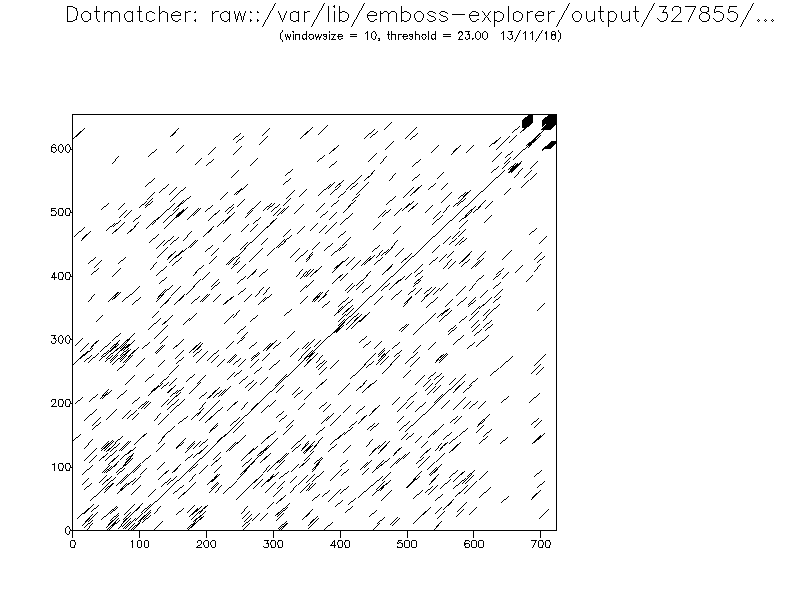
pattern: [126] GCCTTGCCTTACAGATCACCTTCTATGAGGACCGCGGCTTCCAGGGCCGCCACTATGAGTGCAGCACCGACCACT...GACTACCCTGACTACCAGCAGTGGATGGGTTTCAGTGACTCTGTCCGCTCCTGCCGCCTCATCCCCCACGTGAGT

subject: [222] GCCTTGCCTTGCAGATCACCCTCTACGAGGACCGGGGCTTCCAGGGCCGCCACTATGAATGCAGCAGCGACCACC...GACTATGCCGACCACCAGCAGTGGATGGGCCTCAGCGACTCGGTCCGCTCCTGCCGCCTCATCCCCCACGTGAGT

score: 163

mRNA match result:

## Dot match:



Needleman-Wunsch:

> globalAlign

Global PairwiseAlignmentsSingleSubject (1 of 1)

pattern: T--------------CAAC--AGCACC---------AT--------------------CCCATCCG------------...TCTACCCTTTCTCCATTTGGACGCTAATAAAATATTTTCTGTGTGTTCCTGGCACTTAAAAAAAAAAAAAAAAAAAAA

subject: TTGTGCGGTTCTTGCCAACGCAGCAGCCCTCCTGCTATATAGCCCGCCGCGCCGCAGCCCCACCCGCTCAGCGCCGCC...TGTTG--TTTCTTAATTTGGAAACTAATAAAATATTTTCTGTGTGTTCCTGGCA-------AAAAAAAAAAAAAAAAA

score: 107

Smith-Waterman:

> localAlign

Local PairwiseAlignmentsSingleSubject (1 of 1)

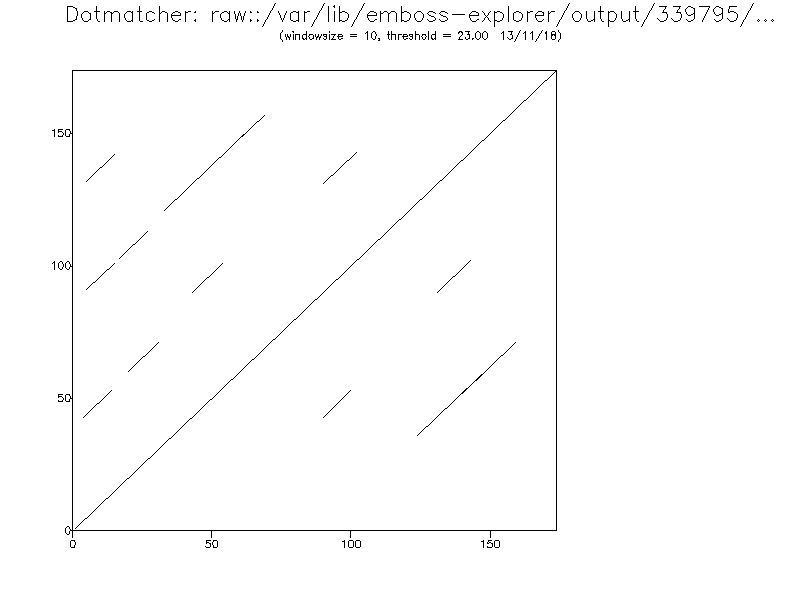
pattern: [33] CCAGCCATGGGGAAGATCACCTTCTATGAGGACCGCGGCTTCCAGGGCCGCCACTATGAGTGCAGCACCGACCAC...ACAGGCGCTACCACGACTGGGGCGCCATGAATGCCAGGGTGGGCTCTCTGAGGAGAGTCATGGATTTCTACTGAA

subject: [111] CCAGCCATGGGGAAGATCACCCTCTACGAGGACCGGGGCTTCCAGGGCCGCCACTATGAATGCAGCAGCGACCAC...ATAGGCGCTACCAGGACTGGGGGGCCACGAATGCCAGAGTGGGCTCTCTGAGGAGAGTCATAGATTTCTCCTGAA

score: 292

Protein match result:

## Dot match:



Needleman-Wunsch:

> globalAlign

Global PairwiseAlignmentsSingleSubject (1 of 1)

pattern: MGKITFYEDRGFQGRHYECSTDHSNLQPYFSRCNSVRVDSGCWMLYEQPNFTGCQYFLRRGDYPDYQQWMGFSDSVRS...EYRGQMIEFTEDCPSLQDRFHFNEIYSLNVLEGCWVLYDMTNYRGRQYLLRPGEYRRYHDWGAMNARVGSLRRVMDFY

subject: MGKITLYEDRGFQGRHYECSSDHPNLQPYLSRCNSARVDSGCWMLYEQPNYSGLQYFLRRGDYADHQQWMGLSDSVRS...DYRGQMIEFTEDCSCLQDRFRFNEIHSLNVLEGSWVLYELSNYRGRQYLLMPGDYRRYQDWGATNARVGSLRRVIDFS

score: 837

Smith-Waterman:

> localAlign

Local PairwiseAlignmentsSingleSubject (1 of 1)

pattern: [1] MGKITFYEDRGFQGRHYECSTDHSNLQPYFSRCNSVRVDSGCWMLYEQPNFTGCQYFLRRGDYPDYQQWMGFSDSV...YRGQMIEFTEDCPSLQDRFHFNEIYSLNVLEGCWVLYDMTNYRGRQYLLRPGEYRRYHDWGAMNARVGSLRRVMDF

subject: [1] MGKITLYEDRGFQGRHYECSSDHPNLQPYLSRCNSARVDSGCWMLYEQPNYSGLQYFLRRGDYADHQQWMGLSDSV...YRGQMIEFTEDCSCLQDRFRFNEIHSLNVLEGSWVLYELSNYRGRQYLLMPGDYRRYQDWGATNARVGSLRRVIDF

score: 839

1. For DNA, these two genes have a huge difference
2. For Protein, they are almost the same

Even through gene are different, the protein they coded are almost the same.