

COPA (NM_004371.4) - cDNA + Protein - 2026-11-23

```
GTCGCTGACG TGGAGGCGTC CGAAGGGCAG CAGGGTGTGT CGGGGCTCGG -31
ATTAAGACAT CGGAGTCGGA GACCTGAGAG ATGTTAACCA AATTCGAGAC 20
                                 MetLeuThrL ysPheGluTh 7

CAAGAGCGCG CGGGTCAAAG GGCTCAGCTT TCACCCCAAA AGACCTTGGA 70
rLysSerAla ArgValLysG lyLeuSerPh eHisProLys ArgProTrpI 24

TCCTGACTAG TTTACATAAT GGGGTCATCC AGTTATGGGA CTATCGGATG 120
leLeuThrSe rLeuHisAsn GlyValIleG lnLeuTrpAs pTyrArgMet 40

TGCACTCTCA TTGACAAGTT TGATGAACAT GATGGTCCAG TGCGAGGCAT 170  p.G56S
CysThrLeuI leAspLysPh eAspGluHis AspGlyProV alArgGlyIl 57

TGACTTCCAT AAGCAGCAGC CACTGTTCGT CTCTGGAGGA GATGACTATA 220
eAspPheHis LysGlnGlnP roLeuPheVa lSerGlyGly AspAspTyrL 74

AGATTAAGGT TTGGAATTAC AAGCTTCGGC GCTGTCTTTT CACATTGCTT 270
ysIleLysVa lTrpAsnTyr LysLeuArgA rgCysLeuPh eThrLeuLeu 90

GGGCACTTAG ATTATATTCG CACCACGTTT TTTCATCATG AATATCCCTG 320
GlyHisLeuA spTyrIleAr gThrThrPhe PheHisHisG luTyrProTr 107

GATTCTGAGT GCCTCCGATG ATCAGACCAT CCGAGTGTGG AACTGGCAAT 370
pIleLeuSer AlaSerAspA spGlnThrIl eArgValTrp AsnTrpGlnS 124

CTAGAACCTG TGTTTGTGTG TTAACAGGGC ACAACCATTA TGTGATGTGT 420
erArgThrCy sValCysVal LeuThrGlyH isAsnHisTy rValMetCys 140

GCTCAGTTCC ACCCCACAGA AGACTTGGTA GTATCAGCCA GCCTGGACCA 470
AlaGlnPheH isProThrGl uAspLeuVal ValSerAlaS erLeuAspGl 157

GACTGTGCGC GTTTGGGATA TTTCTGGTCT GAGGAAAAAA AACCTGTCCC 520
nThrValArg ValTrpAspI leSerGlyLe uArgLysLys AsnLeuSerP 174

CTGGTGCGGT GGAATCGGAT GTGAGAGGAA TAACTGGGGT TGATCTATTT 570
roGlyAlaVa lGluSerAsp ValArgGlyI leThrGlyVa lAspLeuPhe 190

GGAACTACAG ATGCAGTGGT GAAGCATGTA CTAGAGGGTC ACGATCGTGG 620  p.H199R L201P
GlyThrThrA spAlaValVa lLysHisVal LeuGluGlyH isAspArgGl 207
```

AGTAAACTGG GCTGCCTTCC ACCCCACTAT GCCCCTTATT GTATCTGGGG 670 p.A211V

yValAsnTrp AlaAlaPheH isProThrMe tProLeuIle ValSerGlyA 224

CAGATGATCG TCAAGTGAAG ATCTGGCGCA TGAATGAATC AAAGGCATGG 720 p.R227C p.K230N R233C p.R233H p.R233L p.K238E p.A239P p.W240R p.W240L p.W240S

laAspAspAr gGlnValLys IleTrpArgM etAsnGluSe rLysAlaTrp 240

GAGGTTGATA CCTGCCGGGG CCATTACAAC AATGTATCTT GTGCCGTCTT 770 p.E241K p.E241A E241D p.V242G p.D243N p.D243G G247D

GluValAspT hrCysArgGl yHisTyrAsn AsnValSerC ysAlaValPh 257

CCACCCTCGC CAAGAGTTGA TCCTCAGCAA TTCTGAGGAC AAGAGTATTC 820 H258R L263S

eHisProArg GlnGluLeuI leLeuSerAs nSerGluAsp LysSerIleA 274

GAGTCTGGGA TATGTCTAAG CGGACTGGGG TTCAGACTTT CCGCAGAGAC 870 p.R281W p.Q285H

rgValTrpAs pMetSerLys ArgThrGlyV alGlnThrPh eArgArgAsp 290

CATGATCGTT TCTGGGTCCT AGCTGCTCAC CCTAACCTTA ACCTCTTTGC 920

HisAspArgP heTrpValLe uAlaAlaHis ProAsnLeuA snLeuPheAl 307

AGCAGGCCAT GATGGTGGTA TGATTGTGTT TAAGCTGGAA CGGGAACGGC 970

aAlaGlyHis AspGlyGlyM etIleValPh eLysLeuGlu ArgGluArgP 324

CAGCCTATGC TGTTCATGGC AATATGCTAC ACTATGTCAA GGACCGATTC 1020 p.R339Q

roAlaTyrAl aValHisGly AsnMetLeuH isTyrValLy sAspArgPhe 340

TTACGACAGC TGGATTTCAA CAGCTCCAAA GATGTAGCTG TGATGCAGTT 1070

LeuArgGlnL euAspPheAs nSerSerLys AspValAlaV alMetGlnLe 357

GCGGAGTGGT TCCAAGTTTC CAGTATTCAA TATGTCATAC AATCCAGCAG 1120 R358W p.Y370S

uArgSerGly SerLysPheP roValPheAs nMetSerTyr AsnProAlaG 374

AAAATGCAGT CCTGCTTTGT ACAAGAGCTA GCAATCTAGA GAATAGTACC 1170

luAsnAlaVa lLeuLeuCys ThrArgAlaS erAsnLeuGl uAsnSerThr 390

TATGACCTGT ACACCATCCC TAAAGATGCT GACTCCCAGA ATCCTGATGC 1220

TyrAspLeuT yrThrIlePr oLysAspAla AspSerGlnA snProAspAl 407

GCCTGAAGGG AAACGATCCT CAGGCCTGAC AGCCGTTTGG GTCGCTCGAA 1270 p.P408S

aProGluGly LysArgSerS erGlyLeuTh rAlaValTrp ValAlaArgA 424

ATCGGTTTGC TGTCCTAGAT CGGATGCATT CGCTTCTGAT CAAGAATCTG 1320

snArgPheAl aValLeuAsp ArgMetHisS erLeuLeuIl eLysAsnLeu 440

AAGAATGAGA TCACCAAAAA GGTACAGGTG CCCAACTGTG ATGAGATCTT 1370

LysAsnGluI leThrLysLy sValGlnVal ProAsnCysA spGluIlePh 457

CTATGCTGGC ACAGGCAATC TCCTGCTTCG AGATGCGGAC TCTATCACAC 1420

```
eTyrAlaGly ThrGlyAsnL euLeuLeuAr gAspAlaAsp SerIleThrL 474

TCTTTGACGT ACAGCAGAAG CGGACTCTGG CATCTGTGAA GATTTCTAAA 1470
euPheAspVa lGlnGlnLys ArgThrLeuA laSerValLy sIleSerLys 490

GTGAAATACG TTATCTGGTC AGCAGACATG TCACATGTAG CACTACTAGC 1520
ValLysTyrV alIleTrpSe rAlaAspMet SerHisValA laLeuLeuAl 507

CAAACACGCC ATTGTGATCT GTAACCGCAA ACTGGATGCT TTATGTAACA 1570 p.D519Y
aLysHisAla IleValIleC ysAsnArgLy sLeuAspAla LeuCysAsnI 524

TTCATGAGAA CATTCGTGTC AAGAGTGGGG CCTGGGATGA GAGTGGGGTA 1620 S532I
leHisGluAs nIleArgVal LysSerGlyA laTrpAspGl uSerGlyVal 540

TTTATCTATA CCACAAGCAA CCACATCAAA TATGCTGTCA CCACTGGGGA 1670
PheIleTyrT hrThrSerAs nHisIleLys TyrAlaValT hrThrGlyAs 557

CCACGGGATC ATTCGAACTC TGGATTTACC CATCTATGTC ACACGGGTGA 1720
pHisGlyIle IleArgThrL euAspLeuPr oIleTyrVal ThrArgValL 574

AGGGCAACAA TGTATACTGC CTAGACAGGG AGTGTCGTCC CCGGGTACTC 1770
ysGlyAsnAs nValTyrCys LeuAspArgG luCysArgPr oArgValLeu 590

ACCATTGATC CCACTGAGTT CAAATTCAAG CTGGCCCTGA TCAACAGAAA 1820
ThrIleAspP roThrGluPh eLysPheLys LeuAlaLeuI leAsnArgLy 607

ATATGATGAG GTACTGCACA TGGTGAGGAA TGCCAAACTA GTTGGCCAGT 1870
sTyrAspGlu ValLeuHisM etValArgAs nAlaLysLeu ValGlyGlnS 624

CTATTATTGC TTATCTCCAG AAGAAGGGCT ATCCTGAAGT GGCACTGCAT 1920
erIleIleAl aTyrLeuGln LysLysGlyT yrProGluVa lAlaLeuHis 640

TTTGTCAAGG ATGAGAAAAC TCGCTTTAGT CTGGCACTGG AGTGTGGAAA 1970
PheValLysA spGluLysTh rArgPheSer LeuAlaLeuG luCysGlyAs 657

CATTGAGATT GCTCTGGAAG CAGCCAAAGC ACTGGATGAC AAGAACTGCT 2020
nIleGluIle AlaLeuGluA laAlaLysAl aLeuAspAsp LysAsnCysT 674

GGGAAAAGCT GGGAGAAGTG GCCCTGCTGC AGGGGAACCA CCAGATTGTG 2070 G678E
rpGluLysLe uGlyGluVal AlaLeuLeuG lnGlyAsnHi sGlnIleVal 690

GAAATGTGCT ATCAGCGTAC CAAAAACTTT GACAAACTTT CCTTCCTGTA 2120 Y694C T697I
GluMetCysT yrGlnArgTh rLysAsnPhe AspLysLeuS erPheLeuTy 707

TCTTATCACT GGCAACTTAG AAAAACTTCG CAAGATGATG AAGATTGCTG 2170
rLeuIleThr GlyAsnLeuG luLysLeuAr gLysMetMet LysIleAlaG 724
```

```
AGATCAGAAA GGACATGAGT GGCCACTATC AGAATGCCCT ATACCTGGGT 2220
luIleArgLy sAspMetSer GlyHisTyrG lnAsnAlaLe uTyrLeuGly 740

GATGTGTCAG AGCGTGTGCG GATCCTGAAG AACTGTGGAC AGAAGTCCCT 2270 R745H
AspValSerG luArgValAr gIleLeuLys AsnCysGlyG lnLysSerLe 757

GGCCTATCTC ACAGCTGCTA CCCATGGCTT AGATGAAGAA GCTGAGAGCC 2320
uAlaTyrLeu ThrAlaAlaT hrHisGlyLe uAspGluGlu AlaGluSerL 774

TAAAGGAGAC ATTTGACCCA GAGAAGGAGA CAATCCCAGA CATTGACCCT 2370 T777I
euLysGluTh rPheAspPro GluLysGluT hrIleProAs pIleAspPro 790

AATGCCAAGC TGCTCCAGCC ACCTGCACCT ATCATGCCAT TGGATACCAA 2420 p.Asn807Thr
AsnAlaLysL euLeuGlnPr oProAlaPro IleMetProL euAspThrAs 807

TTGGCCTTTA TTGACTGTAT CCAAAGGATT TTTTGAAGGC ACCATTGCCA 2470
nTrpProLeu LeuThrValS erLysGlyPh ePheGluGly ThrIleAlaS 824

GCAAAGGGAA GGGAGGAGCA CTGGCTGCTG ACATTGACAT TGACACTGTT 2520 p.G828E
erLysGlyLy sGlyGlyAla LeuAlaAlaA spIleAspIl eAspThrVal 840

GGTACAGAGG GCTGGGGAGA GGATGCAGAG CTGCAGTTGG ATGAAGATGG 2570 G844D
GlyThrGluG lyTrpGlyGl uAspAlaGlu LeuGlnLeuA spGluAspGl 857

GTTTGTGGAG GCTACAGAAG GTTTGGGGGA TGATGCTCTT GGCAAGGGAC 2620
yPheValGlu AlaThrGluG lyLeuGlyAs pAspAlaLeu GlyLysGlyG 874

AGGAAGAAGG AGGTGGCTGG GATGTAGAAG AAGATCTGGA GCTCCCTCCT 2670
lnGluGluGl yGlyGlyTrp AspValGluG luAspLeuGl uLeuProPro 890

GAGCTGGATA TATCCCCTGG GGCAGCTGGT GGGGCTGAAG ATGGTTTCTT 2720
GluLeuAspI leSerProGl yAlaAlaGly GlyAlaGluA spGlyPhePh 907

TGTGCCCCCA ACCAAGGGAA CAAGTCCAAC TCAGATCTGG TGTAATAACT 2770
eValProPro ThrLysGlyT hrSerProTh rGlnIleTrp CysAsnAsnS 924

CTCAGCTTCC AGTTGATCAC ATCCTGGCAG GCTCTTTCGA AACAGCCATG 2820
erGlnLeuPr oValAspHis IleLeuAlaG lySerPheGl uThrAlaMet 940

CGGCTCCTTC ATGACCAAGT AGGGGTAATC CAGTTTGGCC CCTACAAGCA 2870
ArgLeuLeuH isAspGlnVa lGlyValIle GlnPheGlyP roTyrLysGl 957

ACTGTTCCTA CAGACATACG CCCGAGGCCG CACAACCTAT CAGGCTCTGC 2920
nLeuPheLeu GlnThrTyrA laArgGlyAr gThrThrTyr GlnAlaLeuP 974

CCTGCCTACC CTCCATGTAT GGCTATCCTA ATCGCAACTG GAAGGATGCA 2970
roCysLeuPr oSerMetTyr GlyTyrProA snArgAsnTr pLysAspAla 990
```

```
GGGCTGAAGA ATGGTGTACC AGCTGTGGGC CTGAAGCTTA ATGACCTCAT 3020
GlyLeuLysA snGlyValPr oAlaValGly LeuLysLeuA snAspLeuIl 1007

CCAACGGTTG CAGCTGTGCT ACCAGCTCAC CACAGTTGGC AAATTTGAGG 3070 p.C1013S
eGlnArgLeu GlnLeuCysT yrGlnLeuTh rThrValGly LysPheGluG 1024

AGGCTGTGGA AAAATTCCGT TCCATCCTTC TCAGTGTGCC ACTTCTTGTT 3120
luAlaValGl uLysPheArg SerIleLeuL euSerValPr oLeuLeuVal 1040

GTGGACAATA AACAAGAGAT TGCAGAGGCC CAGCAGCTCA TCACCATTTG 3170
ValAspAsnL ysGlnGluIl eAlaGluAla GlnGlnLeuI leThrIleCy 1057

CCGTGAGTAC ATTGTGGGTT TGTCCGTGGA GACAGAAAGG AAGAAGCTGC 3220 p.R1058C
sArgGluTyr IleValGlyL euSerValGl uThrGluArg LysLysLeuP 1074

CCAAAGAGAC TCTAGAACAG CAGAAGCGCA TCTGTGAGAT GGCAGCCTAT 3270
roLysGluTh rLeuGluGln GlnLysArgI leCysGluMe tAlaAlaTyr 1090

TTCACCCACT CAAACCTGCA GCCTGTGCAC ATGATCCTGG TGCTGCGTAC 3320
PheThrHisS erAsnLeuGl nProValHis MetIleLeuV alLeuArgTh 1107

AGCCCTCAAT CTGTTCTTCA AGCTCAAGAA CTTCAAGACA GCTGCCACCT 3370
rAlaLeuAsn LeuPhePheL ysLeuLysAs nPheLysThr AlaAlaThrP 1124

TTGCTCGGCG CCTACTAGAA CTCGGGCCCA AGCCTGAGGT GGCCCAACAG 3420
heAlaArgAr gLeuLeuGlu LeuGlyProL ysProGluVa lAlaGlnGln 1140

ACCCGAAAAA TCCTGTCTGC CTGTGAGAAG AATCCCACAG ATGCCTACCA 3470 p.R1142X
ThrArgLysI leLeuSerAl aCysGluLys AsnProThrA spAlaTyrGl 1157

GCTCAATTAT GACATGCACA ACCCCTTTGA CATTTGTGCT GCATCATATC 3520
nLeuAsnTyr AspMetHisA snProPheAs pIleCysAla AlaSerTyrA 1174

GGCCCATCTA CCGTGGAAAG CCAGTAGAAA AGTGTCCACT CAGTGGGGCC 3570
rgProIleTy rArgGlyLys ProValGluL ysCysProLe uSerGlyAla 1190

TGCTATTCCC CTGAGTTCAA AGGTCAAATC TGCAGGGTCA CCACAGTGAC 3620
CysTyrSerP roGluPheLy sGlyGlnIle CysArgValT hrThrValTh 1207

AGAGATTGGC AAAGATGTGA TTGGTTTAAG GATCAGTCCT CTGCAGTTTC 3670
rGluIleGly LysAspValI leGlyLeuAr gIleSerPro LeuGlnPheA 1224

GCTAAGGCCC CCTTTGTGTG CATGGGTCAG TCACCATATG TTCCCCCCAG *45
rgStop

AGAATGTGTC TATATCCTCC TTCTAACAGC ACCTTCCCCC TGCAGCTACT *95
CTTCAGATCT GGCTCTCTGT ACCCTAAAAC CTAGTATCTT TTTCTCTTCT *145
```

ATGGAAAATC CGAAGGTCTA AACTTGACTT TTTTGAGGTC TTCTCAACTT *195

GACTACAGTT GTGCTCATAA TTGTCCTTGC CTTTCCAGCT TAATTATTTT *245

AAGGAACAAA TGAAAACTCT GGGCTGGGTG GAGTGGCTCA TACCTGTAAT *295

CCCAGCACTT TGGGAGGCTA CGGTGGGCAG ATCATCTGAG GCCAGGAGTT *345

CGAGACCTGC CTGGCCAACA TGGCAACACC CCGTCTCTAA TAAAAATATA *395

AAAATTAGCC TGGCATGGTA GCATGCGCCT ATAGTCCCAG CTGCTCAGGA *445

GGCTGAGGCA TGAGAATCGC TTGAACCTAG GAGGTGGAGG TTGCATTCAA *495

CTGAGATCAT ACCACTTCAT TCCAGCCTGG GTGACAGAGC AAGACTCTGT *545

CTCAAAAAAA AAAAAAAGGA AAACTCTGTG ATGGACATTT GTTTAGTAAA *595

TCCCTTCAGT ATTTATCCCT CCTTTCCCCA CAGCAGCTTT CTTTCCTGTC *645

AACTAGAAAG GAGCAGGATG TAATAAATAC ATTTTGGTGT GACTAGGCCA *695

CACCAACTCT TAATCATCTC CCATTTTCCT TAGACATTTA AATTTCAAGG *745

CAGGTACCCT CTGTGTACTC AGAAATTTGA AGAAGTTATT TGGTTTTCCA *795

AAATGCACAC TGCGGGTTAT TGATTTGTTC TTTACAACTA TTGTTCTCAT *845

ATTTCTCACA CTAAATAAAT CTCTATGAGA GCTTCTTGAC TTGGCCATTT *895

ATTTCTTGGA CACTCTCATG TTCTTGTTCA CCCATGCAGG CACCCCACCA *945

AAGTACATAT CTTCCTTCCA GTAATAATTT TTAATTACAA AATAAACATC *995

CACTATTGGA AAAAAAAAAA AAAAGCTAGC CGGGCATGGT GGTGGGTGCC *1045

TGTAATCCCA GCTACTCTGG AGGCTGAGGC AGAGGATTGC TTGAACCCGG *1095

GAGGCGGAGG TTGCAGTAAG CTGAGATCGC GCCACCGCAC TCCAGCCTGG *1145

GCGACAGAGT GAGACTCCAT CTCAAAAAAA AAGAAAGAAA AAAAGAAGCA *1195

CATGTTTTTC ATAGGGTATA TATGAGGACC TAAACTGCTG TGAAAATGAT *1245

AGAAAGCAAG TAGCTCCCTT ATTCTGTTTT TGATTGCAGC CTTTTATCTT *1295

TTGCTAATTA TAGCAATATT TATTGAGCAC CTGCCATGTG ACTGTCACTG *1345

TTCTAGATAT TTTACATGTA ATATACAGAT AAAAGAATAG TACTTTATAT *1395

ATATTACAAT GATACAATGA TTACATTAAC AATACAATAT TTTGCTTGTC *1445

ATATGCTAAG AATAATTGGG TAGAGTGACA TTACTGTGCC TTCGATTAAA *1495

ATAAGTACTT TTTTGCGTGT TAAATTCATG TTTTCAATAA ATAATAAATG *1545

CATATAGTTG AAAAATCA

COPA (NM_004371.4) - cDNA + Protein - 2026-11-23

