

# GenSmart Optimization Report

(Tool Version Beta 1.0)

<b>Job ID:</b>	20260219083231485729
<b>Date:</b>	2026-02-19 08:32:32
<b>Gene Name:</b>	PIGH_HUMAN
<b>Expression Host Organism:</b>	Escherichia coli (E.coli)
<b>Secondary Expression Host Organism:</b>	Staphylococcus aureus
<b>Sequence Type:</b>	DNA
<b>Size:</b>	564bp
<b>Excluded enzyme sites:</b>	[]
<b>Kept enzyme sites:</b>	[]

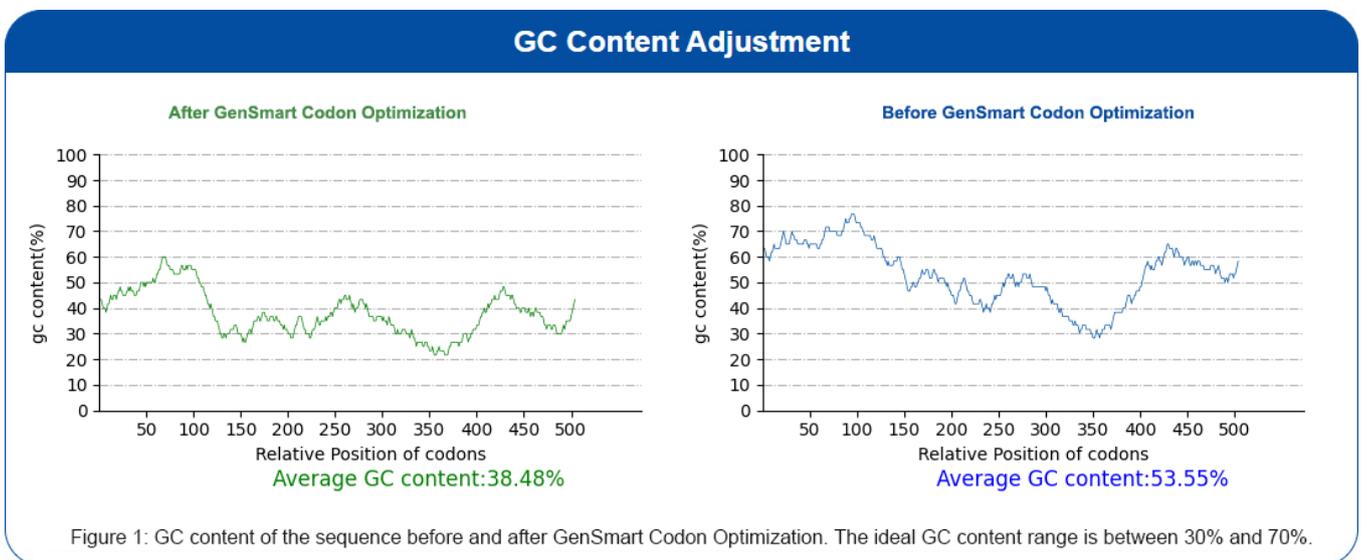
**Original Sequence (Original Sequence Length: 564bp, GC%:53.55%):**

ATGGAAGATGAACGCAGCTTTAGCGATATTTGCGGCGGCCCTGGCGCTGCAGCGCCGCTATTATAGCCCGAGCTGCCGCGAATTTGCCTGAGCTGCCCGCGCCTGAGC  
 CTGCGCAGCCTGACCGCGGTGACCTGCACCGTGTGGCTGGCGCGGTATGGCCTGTTTACCCTGTGCGAAAACAGCATGATTCTGAGCGCGCGGATTTTTATTACCCTGCCTGG  
 GCCTGCTGGGCTATCTGCATTTTGTGAAAATTGATCAGGAAACCCCTGCTGATTATTGATAGCCTGGGCATTGAGATGACCAGCAGCTATGCGAGCGGCAAAGAAAAGCACCACC  
 TTATTGAAATGGGCAAAGTAAAGATATTGTGATTAACGAAGCGATTTATATGCAAGAAAGTATTATTATCTGTGCATTCTGCTGAAAGATCCGGTGGAAACCGCATGGCATTG  
 GCCAGGTGGTCCGGTGTTCAGAGCGCGAAACCGCGCTGGATTGCCTGATTGAAGTGTATCGCAGCTGCCAGGAAATTTGCGCATCAGAAAAGCAGCAGCACCAGCC  
 CG

**Optimized Sequence (Optimized Sequence Length: 564bp, GC%:38.48%):**

ATGGAAGATGAACGTAGCTTTAGTGATATTTGGTGGTAGATTAGCACTGCAGCGTCTTATTATAGCCCGAGCTGTCGTGAATTTTGTCTGAGTTGTCACGTCTGAGCCTG  
 CGCAGCCTGACCGCCGTTACTTGTACAGTTTGGTTAGCTGCATATGGTTTATTACATTATGTGAAAATCAATGATCTTGCAGCAGCAATTTTATCACCCTGCTGGGATTGT  
 TAGGTTATTACATTTGAAAAATTGATCAAGAAACCGCTGCTGATTATTGACAGCCTGGGCATTCAAATGACATCAAGCTATGCTTCAGGTAAGAAAAGTACCACCTTTATTGAA  
 ATGGGTAAGGTTAAAGATATCGTTTAAATGAAGCGATTTATATGCAAAAAGTAATACTATCTTTGATTCTGTGTTAAAAGATCCTGTTGAACCATGGTATTTACAGGTTGTT  
 CCGGTGTTCCAGAGTGCAAAACCTCGTTTAGATTGTTTAAATGAAGTTTATCGTTCATGCCAGGAAATTTAGCACATCAAAAAGCAACCAGCACTAGCCCG

**GC Content Adjustment:**



**DNA Alignment (Optimized Region)**

Optimized	1	ATGGAAGATGAAC <b>CGT</b> AGCTTT <b>AGT</b> GATATTT <b>TGTGGTGGT</b> AGATT <b>AGCA</b> CTGCAG <b>CGT</b> CGT
Original	1	ATGGAAGATGAACGCAGCTTTAGCGATATTTGCGGCGGCCCTGGCGCTGCAGCGCCG
Optimized	61	TATTATAGCCCGAGC <b>TGTCGT</b> GAATTT <b>TGTCG</b> AG <b>TGTCC</b> AGCTGAGCCTGCGCAGC
Original	61	TATTATAGCCCGAGCTGCCGGAATTTGCTGAGCTGCCGCGCTGAGCCTGCGCAGC
Optimized	121	CTGACC <b>CGCT</b> ACT <b>TGT</b> ACAGTT <b>TGGT</b> AGCTGCAT <b>TATGGTT</b> ATT <b>AC</b> ATTAT <b>TG</b> TAA

Original	121	CTGACCGCGGTGACCTGCACCGTGTGGCTGGCGCGTATGGCCTGTTACCCCTGTGCGAA
Optimized	181	AATTCAATGATCTTGTTCAGCAGCAATTTTATCACCCCTGCTGGATTGTTAGGTATTTA
Original	181	AACAGCATGATTCTGAGCGCGGCGATTTTATTACCCTGCTGGGCCTGCTGGGTATCTG
Optimized	241	CATTTTGTAAAAATTGATCAAGAAACGCTGCTGATTATTGACAGCCTGGGCATTCAAATG
Original	241	CATTTTGTGAAAAATTGATCAGGAAACCCCTGCTGATTATTGATAGCCTGGGCATTGATG
Optimized	301	ACATCAAGCTATGCTTCAGTAAAGAAAGTACCACCTTTATTGAAATGGTAAGGTTAAA
Original	301	ACCAGCAGCTATGCGAGCGGCAAAGAAAGCACCACCTTTATTGAAATGGCAAAGTGAAA
Optimized	361	GATATCGTTATTAAATGAAGCGATTTATATGCAAAAAGTAATATACTATCTTTGTATTCTG
Original	361	GATATTGTGATTAACGAAGCGATTTATATGCAGAAAGTATTATTATCTGTGCATTCTG
Optimized	421	TTAAAAGATCCTGTTGAAACCATGGTATTTCACAGGTTGTTCCGGTGTTCAGAGTGCA
Original	421	CTGAAAAGATCCGGTGAACCGCATGGCATTAGCCAGGTGGTGCCGGTGTTCAGAGCGCG
Optimized	481	AAACCTCGTTTAGATTGTTTAAATTGAAAGTTTATCGTTCATGCCAGGAAATTTAGCACAT
Original	481	AAACCGCGCCTGGATTGCCTGATTGAAGTGTATCGCAGCTGCCAGGAAATTCGGCGCAT
Optimized	541	CAAAAAGCAACCAGCACTAGCCCG
Original	541	CAGAAAAGCGACCAGCACCCAGCCCG

### Citation

If you would like to cite the GenSmart™ Codon Optimization Tool, please include the following information:

The sequence was codon-optimized using the GenSmart™ Codon Optimization Tool (<https://www.genscript.com/tools/genSMART-codon-optimization>) [1].

1. Long Fan (2020, February 6). *Codon optimization*. (WO Patent [WO 2020/024917 A1](#)). Nanjing GenScript Biotech Co., Ltd.