Seasons Greetings From DNA 2.0

FREE GENE INCLUDED!

Creation of the Tomten gene G051225

Way up in the arctic north, the long winter nights are dark and unforgivingly cold. This is where the Tomten (the gnome) makes his home. The Tomten is the real creature from which all the tales of Santa Claus are derived.

In an attempt to honor Tomten and investigate its molecular basis, DNA 2.0 decided to create the Tomten gene.

We first identified the verse 'Tomten' by Viktor Rydberg to be the text that captures as much as possible (79%) of the ancestral Tomten spirit

Tomten
Deep in the grip of the midwinter cold,
Stars send a sparkling light.
All are asleep on this lonely farm,
Late in this winter night.
The pale moon is a wanderer,
Snow lies white on pine and fir.
Snow glows on a rooftop shake,
The tomte alone is awake.

In order to encode the verse using the single letter amino acid code, O (not represented in the aa code) was replaced by Q (glutamine). The complete Tomten amino acid sequence thus reads:

TQMTENDEEPINTHEGRIPQFTHEMIDWINTERCQLDSTARSSEN-
DASPARKLINGLIGHTALLAREASLEEPQNTHISLQNELYFARMLAT
EINTHISWINTERNIGHTTHEPALEMQQNISAWANDERERSNQWLIE
SWHITEQNPINEANDFIRSNQWGLQWSQNARQQFTQPSHAKETHETQ
MTEALQNEISAWAKESEASQNSGREETINGSFRQMDNATWQPQINTQ

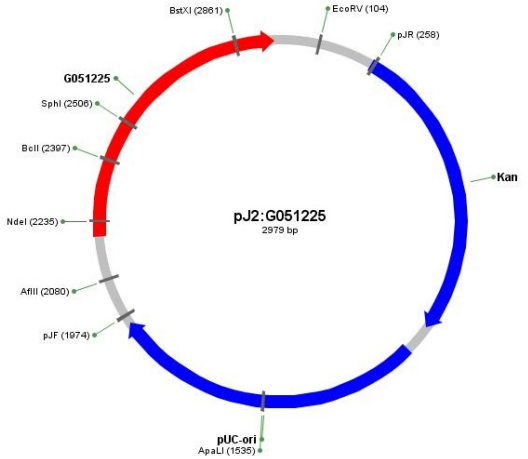
The Gene Designer software (freely available from DNA2.0) was used to design the DNA sequence of the Tomten gene construct. The gene was codon optimized for expression in

reindeer. Ribosome binding site, start and stop codon were added to ensure protein expression in the correct frame. The fragment was flanked by attB sequences to facilitate cloning.

Complete DNA sequence of Tomten construct:

GGGGACAAGTTTGTACAAAAAAGCAGGCTAGGAGGATAACATATGACGCA-
GATGACCGAAAACGATGAAGAACCGATTAACACTCACGAAGGTCGTATCCC
GCAATTCACGCACGAGATGATCGACTGGATCAACACGGAGCGTTGCCAACT
GGACTCTACTGCGCGCTCTAGCGAAAACGACGCATCTCCGGCGCGTAAACT
GATCAACGGCCTGATCGGTCATACGGCCCTGCTGGCACGCGAAGCCTCCCT
GGAAGAACCGCAGAATACGCACATCTCTCTGCAAAACGAGCTGTATTTCGC
TCGCATGCTGGCTACCGAAATTAACACCCATATCTCTTGGATCAATACCGA
GCGTAACATCGGCCATACTACCCACGAACCGGCCCTGGAGATGCAGCAGAA
CATCTCTGCATGGGCGAACGATGAGCGCGAACGCTCTAACCAGTGGCTGAT
CGAAAGCTGGCATATCACCGAACAGAACCCTATTAACGAGGCAAATGACTT
CATCCGTTCTAATCAGTGGGGTCTGCAATGGAGCCAGAACGCCCGTCAGCA
GTTTACCCAGCCTTCTCATGCTAAGGAAACTCACGAAACCCAGATGACTGA
AGCCCTGCAAAATGAAATCTCCGCGTGGGCTAAAGAGTCCGAAGCATCCCA
GAACTCTGGTCGTGAAGAAACCATTAACGGCAGCTTCCGTCAGATGGACAA
CGCTACCTGGCAGCCTCAGATTAATACCCAGTGAACCCAGCTTTCTTGTAC
AAAGTGGTCCCC

The Tomten gene was synthesized and cloned into vector pJ2 resulting in plasmid pJ2:G051225.



The pJ2:pG051225 construct including the Tomten gene can be retrieved from the attached GFC filter by adding 100ul of 10mM Tris-HCl, pH 7.5 directly to the center of the filter. Incubate at room temperature for 2 minutes. Place filter in small tabletop centrifuge tube. Spin 3 minutes at full speed. Remove filter.

Tube should now contain ~90ul Buffer+DNA. Carefully remove supernatant. There may be a small pellet consisting of filter debris, this pellet does NOT contain any of the DNA. The supernatant should contain approximately 2ng plasmid DNA.

Please note, the suggested tertiary protein structure of Tomten (front page) is NOT based on crystallographic data, but on structure based modeling to the closest homolog in the structure database, the 39 kda initiator binding protein IBP39 (d1q88a).

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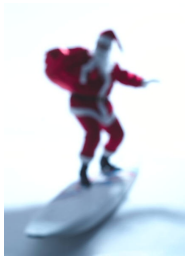

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