

**Entry Clone Source:** MGC

**Entry Clone Accession:** IMAGE:4824753

**SGC Construct ID:** GAPDHSA-c105

**GenBank GI number:** gi|7657116

**Vector:** pNIC-CTHF. Details [[PDF](#)] ; Sequence [[FASTA](#)] or [[GenBank](#)]

**Amplified construct sequence:**

CTTAAGAAGGAGATATACTATGGTGTCTG  
TGGCCCGGGAGCTGACTGTGGCATCAAT  
GGATTGGACGCATCGGTGCGCTGGTCCT  
GCGCGCTGCATGGAGAAGGGTGTAAAGG  
TGGTGGCTGTGAATGATCCATTGAC  
CCGGAATACATGGTGTACATGTTAAGTA  
TGACTCCACCCACGGCGATAACAAGGGAA  
GTGTGGAATTCAAGGAATGGACAACGGTC  
GTGGACAACCATGAGATCTCTGTCTACCA  
GTGCAAAGAGCCAAACAGATCCCCTGGA  
GGGCTGTCGGGAGCCCTACGTGGTGGAG  
TCCACAGGCGTGTACCTCTCCATACAGGC  
AGCTTCGGGACACATCTGCAGGTGCTC  
AACGTGTGGTCATCTCCGCGCCCTCACCG  
GATGCACCAATGTTGTCATGGGTGTCAA  
TGAAAATGACTATAACCCCTGGCTCCATGA  
ACATTGTGAGCAACGCGTCCTGCACCACC  
AACTGTTGGCTCCCTGCCAAAGTCAT  
CCACGAGCGATTGGGATCGTGGAAAGGGT  
TGATGACCACAGTCCATTCTACACGGCC  
ACCCAGAAGACAGTGGACGGGCCATCAAG  
GAAGGCCTGGCGAGATGGGCGGGGTGCC  
ACCAGAACATCATCCCAGCCTCCACTGGG  
GCTGCGAAAGCTGTGACCAAAGTCATCCC  
AGAGCTCAAAGGGAAAGCTGACAGGGATGG  
CGTTCCGGGTACCAACCCCGGATGTGTCT  
GTCGTGGACCTGACCTGCCGCTCGCCCA  
GCCTGCCCTACTCAGCCATCAAGGAGG  
CTGTAAAAGCAGCAGCCAAGGGGCCATG  
GCTGGCATCCTGCCTACACCGAGGATGA  
GGTCGTCTCTACGGACTTCCTCGGTGATA  
CCCACTCGCCATCTCGATGCTAAGGCC  
GGCATTGCGCTCAATGACAATTCTGTGAA  
GCTCATTTCATGGTACGACAACGAATATG  
GCTACAGTCACCGGGTGGTCACCTCCTC  
CGCTACATGTTCAGCCGAGACGCAGAGAA  
CCTCTACTTCCAATCGCACCATCATCACC  
ACCATGATTACAAGGATGACGACGATAAG  
TGAGGATCC

**Tags and additions:** C-terminal Histidine-tag with TEV protease cleavage site

**Final protein sequence (tag sequence in lowercase):**

MVSVARELTVGINGFGRIGRLVLRACMEK  
GVKVVAVNDPFIDPEYMVYMFKYDSTHGR  
YKGSVEFRNGQLVVDNHEISVYQCKEPKQ  
IPWRAVGSPYVVESTGVYLSIQAASDHIS  
AGAQRVVIISAPSPDAPMFVMGVNENDYNP  
GSMNIVSNASCTTNCLAPLAKVIHERFGI

VEGLMTTVHSYTATQKTVGSPSRKAWRDG  
RGAHQNIIPASTGAAKAVTKVIEPKLGKL  
TGMARVPTPDVSVDLTCRLAQPAWSA  
IKEAVKAAAKGPMAGILAYTEDEVVSTDF  
LGDTHSSIFDAKAGIALNDNFVKLISWYD  
NEYGYSHRVV DLLRYMFSRDaenlyfqsh  
hhhhhdyykdddk

**Host:** BL21(DE3)-R3 pRARE2

**Growth medium, induction protocol:** 10 µl of a glycerol stock was inoculated into 5ml of TB medium (supplemented with 50 µg/ml Kanamycin, 34 µg/ml Chloramphenicol) and cultured at 37°C overnight in a shaking incubator (275 rpm). Next day 0.75 ml of overnight culture was used to inoculate 1 litre of TB medium (6 x) and grown at 37°C with vigorous shaking (160 rpm) until the culture reaches an OD<sub>600</sub> of 1.5. Temperature was reduced to 18°C, and cells were induced with IPTG at a concentration of 0.5 mM, and further cultivated for 16 hrs. Cells were harvested by centrifugation at 6500 rpm for 10 min, and the cell pellet was stored at -20°C until further use.

**Extraction buffer, extraction method: Lysis buffer:** 500 mM NaCl, 5% Glycerol, 50 mM HEPES pH 7.5, 5 mM Imidazole, Complete® protease inhibitors (Roche, 1 tbl/50 ml). Frozen cell pellets were thawed and resuspended in a total volume of 30-40 ml of lysis buffer, and disrupted by using sonicator, and a supernatant containing the target protein was obtained by centrifugation at 21,000 (rpm) for 45 minutes.

**Column 1:** Ni-Sepharose 6 Fast Flow

**Buffers:** **Lysis buffer:** 50 mM HEPES pH 7.5, 500 mM NaCl, 5% Glycerol, 5 mM Imidazole; **Wash buffer:** 50 mM Tris-HCl pH 7.5, 500 mM NaCl, 5% Glycerol, 30 mM Imidazole; **Elution buffer:** 50 mM HEPES pH 7.5, 500 mM NaCl, 5% Glycerol, 250 mM Imidazole; **Note:** All the buffers contain 0.5mM TCEP.

**Procedure:** The column was packed with 2 ml of Ni-Sepharose 6 Fast Flow slurry and equilibrated with 15 ml of binding buffer. The supernatant was loaded onto the column and the column was washed with 20 ml of binding buffer and then 20 ml of washing buffer. The protein was eluted with 10 ml of elution buffer.

**Column 2:** SuperDex 75 16/60 HiLoad (GE/Amersham)

**Buffer:** 10 mM HEPES, pH 7.5, 500 mM NaCl, 5% glycerol, 0.5 mM TCEP.

**Procedure:** The eluted protein from the Ni-affinity column was loaded on the gel filtration column in GF buffer at 1.0 ml/min on an AKTA Purifier system. Eluted proteins were collected in 1 ml fractions.

**Enzymatic treatment:** TEV cleaved.

**Column 3:** Ni-NTA (TEV clean up)

**Buffer:** 10 mM HEPES, pH 7.5, 500 mM NaCl, 5% glycerol, 0.5 mM TCEP

**Procedure:** Total 5 mgs of protein was cleaved with 300 ug of TEV protease at 4°C for 48 hours.

**TEV clean up:** The TEV cleaved protein was applied to a 1 ml Ni-NTA column, already equalibrated with gel filtration buffer (10 mM HEPES, pH 7.5, 500 mM NaCl, 5% glycerol, 0.5 mM TCEP). The flow through form the column was collected. The eluate from the column was monitored by SDS gel analysis.

**Column 4:** HP Q column (ion exchange).

**PI value of protein:** 7.08

**Buffers:** **Buffer A:** 20 mM Tris-Cl pH 8.5, 50mM NaCl; **Buffer B:** 20 mM Tris-Cl pH 8.5, 2 M NaCl.

**Procedure:** The target protein was applied to 5ml HP Q column in buffer A and eluted from the column by a linear gradient with buffer B.

**Concentration:** The target protein was concentrated to 10 mg/ml using Vivaspin 5K concentrators and stored at -80°C.

**Mass spec characterization:** Corresponds to theoretical mass, as determined by ESI-TOF MS.

**Crystallization:** Crystals were grown by vapour diffusion in sitting drops at 4°C. Before setting up the experiment NAD<sup>+</sup> was added to the protein to a final concentration of 5mM. A sitting drop consisting of 50 nl protein and 100 nl well solution was equilibrated against well solution containing 0.10M Na/KPO<sub>4</sub> 20.0% PEG 3350; 10.0% EtGly. Crystals were cryo protected in 25% glycerol and flash-cooled in liquid nitrogen.

**Data Collection, Resolution:** 1.8Å, **X-ray source:** Synchrotron SLS-X10SA, single wavelength.