

## Product datasheet for TP319082L

### Nucleolin (NCL) (NM\_005381) Human Recombinant Protein

#### Product data:

**Product Type:** Recombinant Proteins  
**Description:** Recombinant protein of human nucleolin (NCL), 1 mg  
**Species:** Human  
**Expression Host:** HEK293T  
**Expression cDNA Clone or AA Sequence:** >RC219082 representing NM\_005381  
Red=Cloning site Green=Tags(s)

MVKLAKAGKNQGDPPKMAPPKVEEEDSEDEEMSEDEEDDSSGEEWIPQKKGKAAATSARKVVVSPK  
 KVAVATPAKKAAPTGPKKAAATPAKKTVPKAVTTPGKKGATPGKALVATPGKKGAAIPAKGAKNGKNA  
 KKEDSDEEEDDDSEDEEEDDEDEDEDEDEIEPAAMKAAAAPASEDEDEDEDEDDDDDEEDDSEEEA  
 METTPAKGKAAKVPVKAKNVAEEDDEEEDDEDDDDDEDEDDDEDEEEEEEEEEEPVKEAPGKR  
 KKEMAKQKAAPKAKQKVEGTEPTAFNLFVGNLNFNKSAPKLTGISDVFAKNDLAVDVRIGMTRKFG  
 YVDFESAEDLEKALELTGLKVFNEIKLEKPKGKDSKKERDARTLLAKNLPYKVTQDELKEVFEDAAEIR  
 LVSKDGSKGIAYIEFKTEADA EKTFFEEKQGT EIDGRSISLYTGEKGNQDYRGGKNSTWSGESKTLVL  
 SNLSYSATEETLQEVFEKATFIKVPQNQNGKSKGYAFIEFASFEDA KEALNSCNKREIEGRAIRLELQGP  
 RGS PNARSQPSKTLFVKGLSEDTTEETL KESFDG SVRARI VTDRETGSSKGF GFDNFSEEDAKAAKEAM  
 EDGEIDGNKVTLDWAKPKGEGGFGGRGGGRRGGGFGGRGGGRRGGGFGGRGGFRGGRRGGGGDH  
 KPQGKTKFE

TRTRPLEQKLISEEDLAANDILDYKDDDDKV

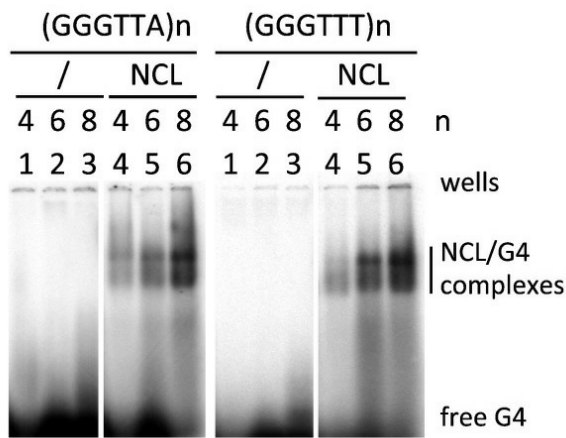
**Tag:** C-Myc/DDK  
**Predicted MW:** 76.4 kDa  
**Concentration:** >0.1 µg/µL as determined by microplate BCA method  
**Purity:** > 80% as determined by SDS-PAGE and Coomassie blue staining  
**Buffer:** 25 mM Tris-HCl, 100 mM glycine, pH 7.3, 10% glycerol



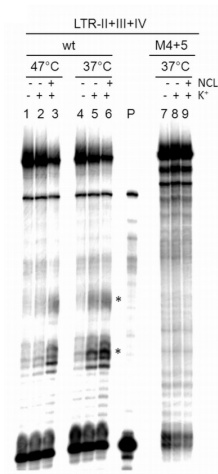
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<b>Bioactivity:</b>	EMSA reaction positive control (PMID: <a href="#">26354862</a> ) Taq polymerase assay (regulator) (PMID: <a href="#">26354862</a> ) Binding assay (Dimethylsulfate footprinting) (PMID: <a href="#">26354862</a> ) Binding assay (FRET) (PMID: <a href="#">26354862</a> ) Surface Plasmon Resonance (SPR) (PMID: <a href="#">26354862</a> ) Association in cell culture (PMID: <a href="#">26707270</a> ) Surface Plasmon Resonance (SPR) (PMID: <a href="#">27032748</a> ) EMSA reaction positive control (PMID: <a href="#">27913192</a> ) ELISA binding assay (PMID: <a href="#">28974366</a> )
<b>Preparation:</b>	Recombinant protein was captured through anti-DDK affinity column followed by conventional chromatography steps.
<b>Note:</b>	For testing in cell culture applications, please filter before use. Note that you may experience some loss of protein during the filtration process.
<b>Storage:</b>	Store at -80°C.
<b>Stability:</b>	Stable for 12 months from the date of receipt of the product under proper storage and handling conditions. Avoid repeated freeze-thaw cycles.
<b>RefSeq:</b>	<a href="#">NP_005372</a>
<b>Locus ID:</b>	4691
<b>UniProt ID:</b>	<a href="#">P19338</a> , <a href="#">B3KM80</a>
<b>RefSeq Size:</b>	2732
<b>Cytogenetics:</b>	2q37.1
<b>RefSeq ORF:</b>	2130
<b>Synonyms:</b>	C23; Nsr1
<b>Summary:</b>	Nucleolin (NCL), a eukaryotic nucleolar phosphoprotein, is involved in the synthesis and maturation of ribosomes. It is located mainly in dense fibrillar regions of the nucleolus. Human NCL gene consists of 14 exons with 13 introns and spans approximately 11kb. The intron 11 of the NCL gene encodes a small nucleolar RNA, termed U20. [provided by RefSeq, Jul 2008]
<b>Protein Families:</b>	Druggable Genome, Stem cell - Pluripotency
<b>Protein Pathways:</b>	Pathogenic Escherichia coli infection

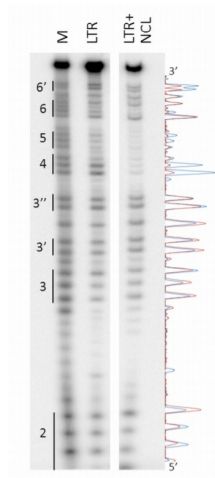
**Product images:**



EMSA analysis of nucleolin (NCL) (OriGene [TP319082]) binding to telomeric sequences (GGGTTA)n or (GGGTTT)n to form NCL/G-quadruplexes (G4s) complex (where n = 4, 6 and 8). Lanes 1 - 3 are control reactions without NCL. Figure cited from *Biochim Biophys Acta Gen Subj*, PMID: 27913192



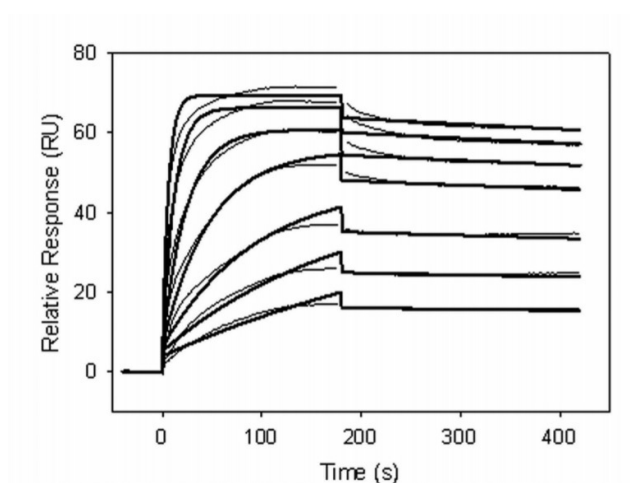
Taq polymerase stop assays were used to assess the stabilization imparted by NCL to wild-type (wt) and mutant M4+5 LTRII+III+IV (M4+5) sequences. Taq polymerization was performed in the presence/absence of K<sup>+</sup> and NCL (OriGene [TP319082]). Amplification of the wt template was performed at 37 C and 47 C; elongation was obtained at 37 C on the mutant template. The \* symbol highlights stop regions. Figure cited from *Nucleic Acids Res*, PMID: 26354862



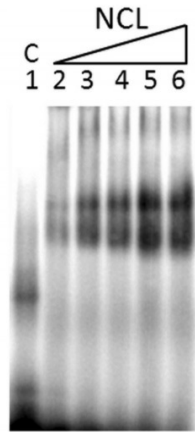
Dimethylsulfate protection analysis of the complex between NCL (OriGene [TP319082]) and LTR sequence oligonucleotides. A densitogram shown on the right quantifies band cleavage intensity: red and blue lines correspond to the LTR and NCL/LTR complex, respectively. G-tracts and their numbering are indicated on the left. The two gel portions derive from a single gel run. Figure cited from Nucleic Acids Res, PMID: 26354862

LTR sequence	$T_m$ LTR (°C)	$T_m$ LTR + NCL (°C)	$\Delta T_m$ (°C)
LTR-II	58.1 ± 0.2	76.2 ± 1.4	18.1
LTR-III	63.1 ± 0.1	75.1 ± 0.7	12.0
LTR-IV	62.1 ± 0.6	69.0 ± 1.4	6.9
LTR-III+IV	54.0 ± 0.6	78.5 ± 2.5	24.5
LTR-II+III+IV	48.0 ± 0.6	86.9 ± 1.4	38.9

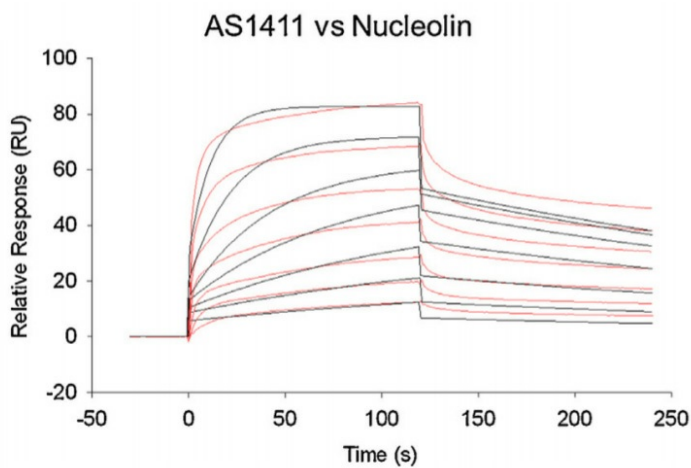
FRET melting analysis of the stabilization of NCL (OriGene [TP319082]) on the different length G4 LTR sequences. The results showed that NCL conferred the highest stabilization in the series to the LTR-II+III+IV construct, followed by LTR-III+IV. Progressively lower stabilization was observed for LTR-III and LTR-II, whereas LTR-IV was the least affected in the series. The negative control bovine serum albumin (BSA) did not afford any detectable stabilization to the selected sequences. Figure cited from Nucleic Acids Res, PMID: 26354862



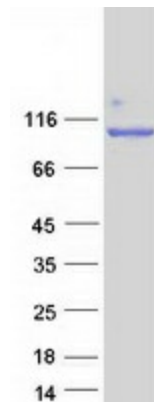
SPR binding analysis of wild-type (wt) LTR-II+III+IV to immobilized NCL (OriGene [TP319082]). Oligonucleotide concentration range was 31.25 nM - 2000 nM. Sensograms are shown as gray lines and their respective fits as black lines. Figure cited from Nucleic Acids Res, PMID: 26354862



EMSA analysis of the binding of increasing amounts of purified NCL (OriGene [TP319082]) to the HIV-1 LTR-II+III+IV G-quadruplexes (LTR G4). The vertical bar highlights the portion of the gel where the two NCL/LTR G4 complex bands are observed. Figure cited from Nucleic Acids Res, PMID: 26354862



Surface plasmon resonance (SPR) plots of AS1411 (concentrations 15.6, 31.2, 62.5, 125, 250, 500 and 1000 nM) interactions with nucleolin (OriGene [TP319082]). AS1411 showed a dose-dependent interaction with NCL (KD = 34.2 nM) with fast association rates. Figure cited from Int J Antimicrob Agents, PMID: 27032748



Coomassie blue staining of purified NCL protein (Cat# [TP319082]). The protein was produced from HEK293T cells transfected with NCL cDNA clone (Cat# [RC219082]) using MegaTran 2.0 (Cat# [TT210002]).