

## Animal-Free LIGHT/TNFSF14 Protein, Human (His)

<b>Cat. No.:</b>	HY-P700136AF
<b>Synonyms:</b>	Herpes virus entry mediator ligand; HVEM-L; Herpesvirus entry mediator ligand; CD258; HVEML; LIGHT; UNQ391; PRO726;
<b>Species:</b>	Human
<b>Source:</b>	E. coli
<b>Accession:</b>	O43557 (R64-V240)
<b>Gene ID:</b>	8740
<b>Molecular Weight:</b>	Approximately 20.30 kDa

### PROPERTIES

<b>AA Sequence</b>	<pre> M R L G E M V T R L   P D G P A G S W E Q   L I Q E R R S H E V   N P A A H L T G A N S S L T G S G G P L   L W E T Q L G L A F   L R G L S Y H D G A   L V V T K A G Y Y Y I Y S K V Q L G G V   G C P L G L A S T I   T H G L Y K R T P R   Y P E E L E L L V S Q Q S P C G R A T S   S S R V W W D S S F   L G G V V H L E A G   E K V V V R V L D E R L V R L R D G T R   S Y F G A F M V           </pre>
<b>Biological Activity</b>	1. Measure by its ability to induce cytotoxicity in HT-29 cells in the presence of IFN-gamma. The ED <sub>50</sub> for this effect is <23 ng/mL. 2. Measure by its ability to induce proliferation in HUVEC cells. The ED <sub>50</sub> for this effect is <3 ng/mL.
<b>Appearance</b>	Lyophilized powder.
<b>Formulation</b>	Lyophilized from a solution containing 0.1% sarkosyl in 1X PBS, pH 8.0.
<b>Endotoxin Level</b>	<0.1 EU per 1 µg of the protein by the LAL method.
<b>Reconstitution</b>	It is not recommended to reconstitute to a concentration less than 100 µg/mL in ddH <sub>2</sub> O.
<b>Storage &amp; Stability</b>	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
<b>Shipping</b>	Room temperature in continental US; may vary elsewhere.

### DESCRIPTION

<b>Background</b>	<p>LIGHT/TNFSF14 is a type II transmembrane protein produced by activated T cells, belongs to tumor necrosis factor (TNF) family. LIGHT/TNFSF14 is a TNFRSF14/HVEM (herpesvirus entry mediator) ligand, engages the receptor for the LTalpha heterotrimer but does not form complexes with either secreted lymphotoxin alpha (LTalpha) or LTbeta<sup>[1]</sup>.</p> <p>LIGHT/TNFSF14 is predominantly expressed in the spleen but also found in the brain. It is weakly expressed in peripheral</p>
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lymphoid tissues and in heart, placenta, liver, lung, appendix, and kidney, and no expression seen in fetal tissues, endocrine glands, or nonhematopoietic tumor lines<sup>[1]</sup>.

LIGHT/TNFSF14 has a transmembrane, thus it can be cleaved into 2 chains: membrane form and soluble form. The soluble form of isoform 1 derives from the membrane form by proteolytic processing.

In tumor immunology, TNFSF14/LIGHT also serves as a novel immune checkpoint molecule for glioblastoma multiforme (GBM), as well as lung carcinoma, breast carcinoma, cervical cancer, and prostate cancer. TNFSF14/LIGHT can stimulate NK cells to produce IFN $\gamma$  via nuclear factor- $\kappa$ B (NF $\kappa$ B) RelA/p50 signaling. TNFSF14/LIGHT sustains the function of CD8<sup>+</sup> effector T cells, trigger apoptosis of various tumor cells<sup>[2]</sup>.

In cell signaling, TNFSF14/LIGHT binds to lymphotoxin- $\beta$  receptor (LT $\beta$ R) and HVEM for activating both of them, and disrupts the HVEM-BTLA complex in surface-bound form, and facilitates HVEM-BTLA complex formation in the soluble form<sup>[2]</sup>. TNFSF14/LIGHT promotes an inflammatory esophageal fibroblast in vitro via a LT $\beta$ R-NIK-p52 NF- $\kappa$ B dominant pathway with promoting inflammatory gene expression and down-regulating homeostatic factors including WNTs, BMPs and type 3 semaphorins<sup>[3]</sup>.

Beside that, TNFSF14/LIGHT protein is a costimulatory factor for the activation of lymphoid cells and as a deterrent to infection by herpesvirus. TNFSF14/LIGHT also prevents tumor necrosis factor alpha mediated apoptosis in primary hepatocyte<sup>[4][5]</sup>.

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## REFERENCES

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**Caution: Product has not been fully validated for medical applications. For research use only.**

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: [tech@MedChemExpress.com](mailto:tech@MedChemExpress.com)

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA