



**LD Biopharma, Inc.**  
7384 Trade Street, Suite B  
San Diego, CA 92121  
Tel: 858-876-8266  
<http://www.ldbiopharma.com>

## - PRODUCT DATA SHEET -

**Name of Product:** Recombinant Human SPAG5-N-Ter-11R Protein  
**Catalog Number:** hRP-2004  
**Manufacturer:** LD Biopharma, Inc.

### Introduction

Human sperm-associated antigen-5 (SPAG5) gene encodes a 1193aa protein, which is associated with the mitotic spindle apparatus. SPAG5 protein may be involved in the functional and dynamic regulation of mitotic spindles. It is an essential component of the mitotic spindle required for normal chromosome segregation and progression into anaphase. SPAG5 is required for chromosome alignment, normal timing of sister chromatid segregation, and maintenance of spindle pole architecture. In complex with SKAP, it promotes stable microtubule-kinetochore attachments. It is also involved in centriole duplication. SPAG5 is required for CDK5RAP2, CEP152, WDR62 and CEP63 centrosomal localization and promotes the centrosomal localization of CDK2. In non-mitotic cells, upon stress induction, SPAG5 inhibits mammalian target of rapamycin complex 1 (mTORC1) association and recruits the mTORC1 component RPTOR to stress granules (SGs), thereby preventing mTORC1 hyperactivation-induced apoptosis. It may enhance GSK3B-mediated phosphorylation of other substrates, such as MAPT/TAU. Normally, this gene expression is restricted in human testis tissue, but it is also expressed in a wide variety of cancer tissues. As such, SPAG5 is a good candidate protein for anti-tumor vaccine development.

N-terminal domain of human SPAG5 cDNA (2-681aa) was constructed with codon optimization gene synthesis and expressed with a human Alpha Fetal Protein at N-terminal / His Tag /TEV enzyme site/ and 11 arginine (11R tag) at C-terminal. This protein was expressed in *E. coli* as inclusion bodies. The final product was refolded using our unique “temperature shift inclusion body refolding” technology and chromatographically purified.

**Gene Symbol:** SPAG5 (DEEPEST; hMAP126)  
**Accession Number:** NP\_006452.3  
**Species:** Human  
**Size:** 20 µg / Vial



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**Composition:** 0.2 mg/ml, sterile-filtered, in 20 mM pH 8.0 Tris-HCl Buffer, with proprietary formulation of NaCl, KCl, EDTA, Sucrose and DTT.

**Storage:** In Liquid. Keep at -80°C for long term storage. Product is stable at 4 °C for at least 30 days.

## Key References

Yuan LJ, et al., *SPAG5 upregulation predicts poor prognosis in cervical cancer patients and alters sensitivity to taxol treatment via the mTOR signaling pathway*. Cell Death Dis 5, E1247 (2014)

Thedieck K, et al., *Inhibition of mTORC1 by astrin and stress granules prevents apoptosis in cancer cells*. Cell 154 (4), 859-874 (2013)

Salmaninejad A, et al. *Cancer/Testis Antigens: Expression, regulation, Tumor Invasion, and Use in Immunotherapy of Cancers*. Immunol Invest. Oct; 45(7): 619-640. (2016).

Nicole Brooks, et al. *Comparative Immunogenicity of a Cytotoxic T cell Epitope Delivered by Penetratin and TAT Cell Penetrating Peptides*. Molecules. 20, 14033-14050. (2015)

Madiha Derouazi, et al. *Novel cell penetration peptide based vaccine induces robust CD4+ and CD8+ T cell mediated antitumor immunity*. Cancer Res; 75(15) August 1, 3020-3031 (2015)

## Applications

1. May be used for SPAG5 mediated anti-tumor immunotherapy study for T cell activation with this protein for intracellular delivery and then re-presenting on the cell surface in MHC complex for antigen specific immunogenicity stimulation in vitro or in vivo.
2. As immunogen for specific antibody production.

## Quality Control

Purity: > 80% by SDS-PAGE.

## Recombinant Protein Sequence



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MTLHRNEYGIASILDSYQCTAEISLADLATIFFAQFVQEATYKEVSKMVKDALTAIEKPTGDEQ  
SSGCLENQLPAFLLEELCHEKEILEKYGHSDCCSQSEEGRHNCFLAHKKPTPASIPLFQVPEPVT  
SCEAYEEDRETFMNKF IYEIARRHPFLYAPTILLWAARYDKIIPSCCKAENAVECFQTKAATVT  
KELRESSGGSHHHHHHGSRVKKLSLSLSPSPQTGKPSMRTPLRELTLPQPGALTNSGKRSPACSS  
LTPSLCKLGLQEGSNNSPVDFVNNKRTDLSSEHFSHSSKWLETCQHESEDEQPLDPIPQISSSTP  
KTSEEAVDPLGNMVKTIIVLVPSPLGQQQDMIFEARLDTMAETNSISLNGPLRTDDLVREEVAP  
CMGDRFSEVAAVSEKPIFQESPSHLLLEESPPNPCSEQLHCSKESLSSRTEAVREDLVPSESNF  
LPSSVLWLSPSTALAADFRVNHVDPEEEIVEHGAMEEREMRFPHPKESETEDQALVSSVEDIL  
STCLTPNLVEMESQEAPGPAVEDVGRILGSDTESWMSPLAWLEKGVNTSVMLENLRQSLSLPSM  
LRDAAIGTTPFSTCSVGTWFTPSAPQEKSTNTSQTGLVGTKHSTSETEQLLCGRPPDLTALSRL  
DLEDNLLSSLVILEVLSRQLRDWKSQAVPHPETQDSSTQTDTSHSGITNKLQHLKESHEMGQA  
LQQARNVMQSWVLI SKELISLLHLSLLHLEEDKTTVSQESRRAETLVCCCFDILLKLRAKLQSL  
KAEREEARHREEMALRGKDAAEIVLEAFCAHASQRISQLEQDLASMREFRGLLKDAQTQLVGLH  
AKQEELVQQTVSLTSTLQQDWRSMLDYTTWTALLSRSRQLTEKLTVKSQQALQERDVAESGGG  
GSPGRRRRRRRRRR