

High Throughput Protein Expression by CFS* *in vitro* Wheat Germ System

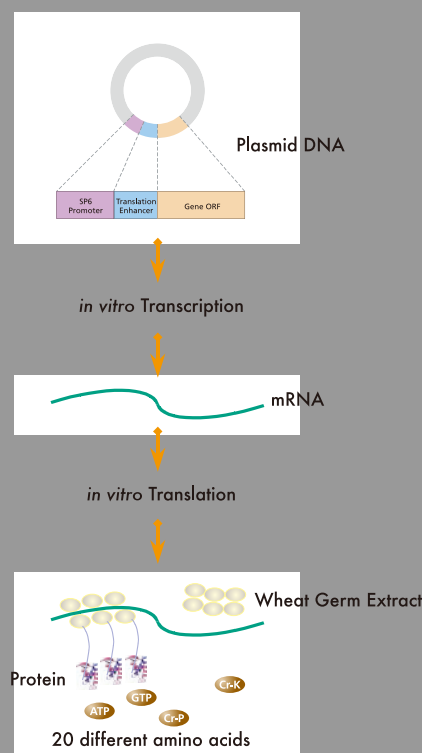
Abnova's cell-free protein synthesis system is pioneered by Professor Yaeta Endo of Ehime University, Japan. This high throughput platform is based on the eukaryotic translation apparatus of wheat germ, which has significant advantages over other commonly used protein expression systems. With an expression vector designed for large scale protein expression, the platform is amenable to production of many proteins in parallel using robotic instruments. Assessment of the proteins produced by this technology showed many of them retained their correct foldings and biological functions.

Advantages:

- ☉ High Solubility
- ☉ High Yield
- ☉ High Success Rate
- ☉ Automated Expression and Purification
- ☉ Native Protein Conformation



in vitro Wheat Germ Protein Expression Overview



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References:

- ① Madin K, Sawasaki T, Ogasawara T, Endo Y. A highly efficient and robust cell-free protein synthesis system prepared from wheat embryos: plants apparently contain a suicide system directed at ribosomes. Proc.Natl. Acad. Sci. U.S.A.. 2000 Jan. 18;97(2):559-64
- ② Sawasaki T, Hasegawa Y, Tsuchimochi M, Kasahara Y, Endo Y. Construction of an efficient expression vector for coupled transcription/translation in a wheat germ cell-free system. Nucleic Acids Symp. Ser.. 2000;(44):9-10
- ③ Sawasaki T, Ogasawara T, Morishita R, Endo Y, A cell-free protein synthesis system for high-throughput proteomics. Proc. Natl. Acad Sci. U.S.A.. 2002 Nov. 12; 99 (23): 14652-7.
- ④ Morita EH, Sawasaki T, Tanaka R, Endo Y. A wheat germ cell-free system is a novel way to screen protein folding and function. Protein Sci. 2003 Jun.; 12(6): 1216-21.
- ⑤ Kawasaki T, Gouda MD, Sawasaki T, Takai K, Endo Y. Efficient synthesis of a disulfide-containing protein through a batch cell-free system form wheat germ. Eur. j. Biochem. 2003 Dec.; 270(23):4780-6
- ⑥ Endo Y, Sawasaki T. High-throughput, genome-scale protein production method based on the wheat germ cell-free expression system. Biotechnol Adv. 2003 Nov.; 21(8):695-713.

Abnova Recombinant Protein References

Cat. Num.	Product Name	Reference
H00003491-P01	CYR61 Recombinant Protein (P01)	A combinatorial role for NFAT5 in both myoblast migration and differentiation during skeletal muscle myogenesis O'Connor RS, Pavlath GK et al. J. Cell Sci., Dec 2006; 10.1242/jcs.03307 (PubMed ID: 17164296)
H00004783-P01	NFIL3 Recombinant Protein (P01)	A novel E4BP4 element drives circadian expression of mPeriod2. Ohno T, Ishida N et al. Nucleic Acids Res. 2007;35(2):648-55. Epub 2006 Dec 19. (PubMed ID: 17182630)
H00005888-P01	RAD51 Recombinant Protein (P01)	A novel interaction of nucleolin with Rad51. De A, Campbell C et al. Biochem Biophys Res Commun. 2006 May 26;344(1):206-13. Epub 2006 Mar 29. (PubMed ID: 16600179)
H00002168-P01	FABP1 Recombinant Protein (P01)	Adipocyte fatty acid binding protein in a Caucasian population: a new marker of metabolic syndrome?
H00002173-P01	FABP7 Recombinant Protein (P01)	D. Stejskal, M. Karpisek Eur J Clin Invest. 2006 Sep;36(9):621-5. (PubMed ID: 16919044)
H00002168-P01	FABP1 Recombinant Protein (P01)	Adiponectin, Adipocyte Fatty Acid Binding Protein, and Epidermal Fatty Acid Binding Protein: Proteins Newly Identified in Human Breast Milk. Bronsky J, Nevoral J et al. Clin Chem. 2006 Jul 27 (PubMed ID: 16873294)
H00253935-P01	ANGPTL5 Recombinant Protein (P01)	Angiopoietin-like proteins stimulate ex vivo expansion of hematopoietic stem cells. Zhang CC, Lodish HF et al. Nat Med. 2006 Feb;12(2):240-5. Epub 2006 Jan 22 (PubMed ID: 16429146)
H00055775-P01	TDP1 Recombinant Protein (P01)	Aprataxin, causative gene product for EAOH/AOA1, repairs DNA single-strand breaks with damaged 3'-phosphate and 3'-phosphoglycolate ends. Takahashi T, Onodera O et al. Nucleic Acids Res. 2007;35(11):3797-809. Epub 2007 May 22. (PubMed ID: 17519253)
H00010818-P01	FRS2 Recombinant Protein (P01)	Bisindolylmaleimide I suppresses FGF-mediated activation of ERK map kinase in chondrocytes by preventing SHP2 association with the FRS2 and GAB1 adaptor proteins. Krejci P, Wilcox WR et al. J Biol Chem. 2007 Feb 2;282(5):2929-36. Epub 2006 Dec 4. (PubMed ID: 17145761)
H00005144-P01	PDE4D Recombinant Protein (P01)	Calcium-induced acrosomal exocytosis requires cAMP acting through a protein kinase A-independent, Epac-mediated pathway. Branham MT, Tomes CN et al. J Biol Chem. 2006 Mar 31;281(13):8656-66. Epub 2006 Jan 10. (PubMed ID: 16407249)
H00084612-P01	PARD6B Recombinant Protein (P01)	Ceramide regulates atypical PKCzeta /lambda -mediated cell polarity in primitive ectoderm cells: A novel function of sphingolipids in morphogenesis. Krishnamurthy K, Bieberich E et al. J Biol Chem. 2007 Feb 2;282(5):3379-90. Epub 2006 Nov 14. (PubMed ID: 17105725)
H00006857-P01	SYT1 Recombinant Protein (P01)	Comparing calpain- and caspase-3-mediated degradation patterns in traumatic brain injury by differential proteome analysis. Liu MC, Wang KK et al. Biochem J. 2006 Mar 15;394(Pt 3):715-25. (PubMed ID: 16351572)
H00006821-P01	SUOX Recombinant Protein (P01)	Demonstration of autoantibodies to recombinant human sulphite oxidase in patients with chronic liver disorders and analysis of their clinical relevance. Preuß B, Klein R. et al. Clin Exp Immunol. 2007 Oct 15;150(2):312-321. Epub 2007 Aug 17. (PubMed ID: 17711488)
H00000306-P01	ANXA3 Recombinant Protein (P01)	Differential radioactive quantification of protein abundance ratios between benign and malignant prostate tissues: Cancer association of annexin A3. Wozny W, Cahill MA et al. Proteomics. 2007 Jan;7(2):313-22. (PubMed ID: 17205602)
H00011116-P01	FGFR1OP Recombinant Protein (P01)	Fibroblast growth factor receptor 1 oncogene partner as a novel prognostic biomarker and therapeutic target for lung cancer. Mano Y, Daigo Y. et al. Cancer Sci. 2007 Dec;98(12):1902-13. Epub 2007 Sep 18. (PubMed ID: 17888034)
H00003148-P01	HMGB2 Recombinant Protein (P01)	HMGB1-secreting capacity of multiple cell lineages revealed by a novel HMGB1 ELISPOT assay. Wahamaa H, Harris HE et al. J Leukoc Biol. 2007 Jan;81(1):129-36. Epub 2006 Sep 15. (PubMed ID: 16980509)
H00000875-P01	CBS Recombinant Protein (P01)	Hydrogen sulfide induces DNA damage and changes in apoptotic gene expression in human lung fibroblast cells.
H00001491-P01	CTH Recombinant Protein (P01)	Baskar R, Moore PK et al. FASEB J. 2007 Jan;21(1):247-55. Epub 2006 Nov 20. (PubMed ID: 17116745)
H00001727-P01	DIA1 Recombinant Protein (P01)	Identification of the missing component in the mitochondrial benzamidoxime prodrug converting system as a novel molybdenum enzyme. Havemeyer A, Clement B et al. J Biol Chem. 2006 Nov 17;281(46):34796-802. Epub 2006 Sep 13. (PubMed ID: 16973608)
H00006648-P01	SOD2 Recombinant Protein (P01)	Identification of tumor antigens in human lung squamous carcinoma by serological proteome analysis.
H00007167-P01	TPH1 Recombinant Protein (P01)	Yang F, Chen ZC et al. J Proteome Res. 2007 Feb;6(2):751-8. (PubMed ID: 17269731)
H00011006-P01	LILRB4 Recombinant Protein (P01)	IL-10 inhibits endothelium-dependent T cell costimulation by up-regulation of ILT3/4 in human vascular endothelial cells. Glæssner CA, Dengler TJ et al. Eur J Immunol. 2007 Jan;37(1):177-92. (PubMed ID: 17163451)
H00007472-P01	WNT2 Recombinant Protein (P01)	Mice deficient in heparan sulfate 6-O-sulfotransferase-1 exhibit defective heparan sulfate biosynthesis, abnormal placentation and late embryonic lethality. Habuchi H, Kimata K et al. J Biol Chem. 2007 May 25;282(21):15578-88. Epub 2007 Apr 3. (PubMed ID: 17405882)
H00058157-P01	NGB Recombinant Protein (P01)	p53-mediated apoptosis, neuroglobin overexpression, and globin deposits in a patient with hereditary ferritinopathy. Powers JM J Neuropathol Exp Neurol. 2006 Jul;65(7):716-21. (PubMed ID: 16825958)
H00011331-P02	PHB2 Recombinant Protein (P02)	Prohibitin binds to C3 and enhances complement activation. Mishra S, Murphy LJ et al. Mol Immunol. 2007 Mar;44(8):1907-12. Epub 2006 Oct 30. (PubMed ID: 17070910)
H00001017-P01	CDK2 Recombinant Protein (P01)	Regulated Activating Thr172 Phosphorylation of Cyclin-Dependent Kinase 4(CDK4): Its Relationship with Cyclins and CDK "Inhibitors".
H00001019-P02	CDK4 Recombinant Protein (P01)	Bockstaele L, Coulonval K et al. Mol Cell Biol. 2006 Jul;26(13):5070-85 (PubMed ID: 16782892)