Expression Vectors

Table 9.1. Overview of Protein Expression Vectors.

Flexi® Vector Name[1]	Cat. #	Drug Selection[2]	Expression Application	Promoter for Expression			Peptide Fusion Tag	
				E. coli	Mammalian Cells	Cell-Free Transcription/ Translation	N-terminus	C-terminus
pF1A T7 Flexi® Vector pF1K T7 Flexi® Vector	C8441 C8451	Ampicillin Kanamycin	Inducible expression of native protein	T7		T7		
pFN2A (GST) Flexi® Vector pFN2K (GST) Flexi® Vector	C8461 C8471	Ampicillin Kanamycin	Soluble expression and purification via an N-terminal GST tag	T7		T7	GST	
pF3A WG (BYDV) Flexi® Vector pF3K WG (BYDV) Flexi® Vector	L5671 L5681	Ampicillin Kanamycin	In vitro wheat germ expression of native protein			T7, SP6		
pF25A ICE T7 Flexi® Vector pF25K ICE T7 Flexi® Vector	L1061 L1081	Ampicillin Kanamycin	In vitro insect cell free expression of native protein			T7		
pFN6A (HQ) Flexi® Vector pFN6K (HQ) Flexi® Vector	C8511 C8521	Ampicillin Kanamycin	Inducible expression and protein purification via a metal affinity resin	T7		T7	HQHQHQ	
pFC7A (HQ) Flexi® Vector pFC7K (HQ) Flexi® Vector	C8531 C8541	Ampicillin Kanamycin	Inducible expression and protein purification via a metal affinity resin	T7		T7		HQHQHQ
pF4A CMV Flexi® Vector pF4K CMV Flexi® Vector	C8481 C8491	Ampicillin Kanamycin	Constitutive high expression of native protein		CMV	T7		
pF5A CMV-neo Flexi® Vector pF5K CMV-neo Flexi® Vector	C9401 C9411	Ampicillin/ Neomycin Kanamycin/ Neomycin[M]	Constitutive high expression of native protein with selection for stable transfectants		CMV	T7		

[1] The "pF" indicates the vector is a Flexi® Vector suitable for Flexi® cloning (see chapter 1 for details).The letter after "pF" indicates the position of any expression tags ("N" for an N-terminal expression tag and "C" for a C-terminal expression tag). The letters "A" and "K" designate the bacterial drug selection for the vector ("A"= ampicillin and "K"= kanamycin).

[2] The "M" indicates the vector provides resistance to the indicated drug in mammalian cells.

Table 9.1. Overview of Protein Expression Vectors (continued).

Flexi® Vector Name[1]	Cat. #	Drug Selection[2]	Expression Application	Promoter for Expression			Peptide Fusion Tag	
				E. coli	Mammalian Cells	Cell-Free Transcription/ Translation	N-terminus	C-terminus
pF9A CMV *hRluc*-neo Flexi® Vector	C9361	Ampcillin Neomycin^{M}	Constitutive high expression of native protein with selection and reporter screening for stable transfectants		CMV	T7		
pFN10A (ACT) Flexi® Vector	C9331	Ampicillin/ Neomycin	Mammalian in vivo protein:protein interaction		CMV	T7	HSV VP16 activation domain	
pN11A (BIND) Flexi® Vector	C9341	Ampicillin	Mammalian in vivo protein:protein interaction		CMV	T7	GAL4 DNA-binding domain	
pF12A RM Flexi® Vector pF12K RM Flexi® Vector	C9431 C9441	Ampicillin Kanamycin	Regulated mammalian protein expression		12XOP-Mini CMV			
pFN18A HaloTag® T7 Flexi® Vector pFN18K HaloTag® T7 Flexi® Vector	G2751 G2681	Ampicillin Kanamycin	Protein interaction analysis and protein purification	T7		T7	HaloTag®	
pFN19A HaloTag® T7 SP6 Flexi® Vector pFN19K HaloTag® T7 SP6 Flexi® Vector	G1891 G1841	Ampicillin Kanamycin	Protein interaction analysis	T7		T7, SP6	HaloTag®	
pFC20A HaloTag® T7 SP6 Flexi® Vector pFC20K HaloTag® T7 SP6 Flexi® Vector	G1681 G1691	Ampicillin Kanamycin	Protein interaction analysis	T7		T7, SP6		HaloTag®
pFC14A HaloTag® CMV Flexi® Vector pFC14K HaloTag® CMV Flexi® Vector	G9651 G9661	Ampicillin Kanamycin	Cell imaging and protein interaction analysis; high constitutive expression		CMV	T7		HaloTag®

[1] The "pF" indicates the vector is a Flexi® Vector suitable for Flexi® cloning (see chapter 1 for details).The letter after "pF" indicates the position of any expression tags ("N" for an N-terminal expression tag and "C" for a C-terminal expression tag). The letters "A" and "K" designate the bacterial drug selection for the vector ("A"= ampicillin and "K"= kanamycin).

[2] The "M" indicates the vector provides resistance to the indicated drug in mammalian cells.

Table 9.1. Overview of Protein Expression Vectors (continued).

Flexi® Vector Name[1]	Cat. #	Drug Selection[2]	Expression Application	Promoter for Expression			Peptide Fusion Tag	
				E. coli	Mammalian Cells	Cell-Free Transcription/ Translation	N-terminus	C-terminus
pFC15A HaloTag® CMV*d1* Flexi® Vector	G1611	Ampicillin	Cell imaging and protein interaction analysis; medium constitutive expression	T7	CMV*d1*	T7, SP6		HaloTag®
pFC15K HaloTag® CMV*d1* Flexi® Vector	G1601	Kanamycin						
pFC16A HaloTag® CMV*d2* Flexi® Vector	G1591	Ampicillin	Cell imaging and protein interaction analysis; low constitutive expression	T7	CMV*d2*	T7, SP6		HaloTag®
pFC16K HaloTag® CMV*d2* Flexi® Vector	G1571	Kanamycin						
pFC17A HaloTag® CMV*d3* Flexi® Vector	G1551	Ampicillin	Cell imaging and protein interaction analysis; very low constitutive expression	T7	CMV*d3*	T7, SP6		HaloTag®
pFC17K HaloTag® CMV*d3* Flexi® Vector	G1321	Kanamycin						
pFN21A HaloTag® CMV Flexi® Vector	G2821	Ampicillin	Cell imaging and protein interaction analysis; high constitutive expression		CMV	T7	HaloTag®	
pFN21K HaloTag® CMV Flexi® Vector	G2831	Kanamycin						
pFN22A HaloTag® CMV*d1* Flexi® Vector	G2841	Ampicillin	Cell imaging and protein interaction analysis; medium constitutive expression	T7	CMV*d1*	T7, SP6	HaloTag®	
pFN22K HaloTag® CMV*d1* Flexi® Vector	G2851	Kanamycin						
pFN23A HaloTag® CMV*d2* Flexi® Vector	G2861	Ampicillin	Cell imaging and protein interaction analysis; low constitutive expression	T7	CMV*d2*	T7, SP6	HaloTag®	
pFN23K HaloTag® CMV*d2* Flexi® Vector	G2871	Kanamycin						

[1] The "pF" indicates the vector is a Flexi® Vector suitable for Flexi® cloning (see chapter 1 for details).The letter after "pF" indicates the position of any expression tags ("N" for an N-terminal expression tag and "C" for a C-terminal expression tag). The letters "A" and "K" designate the bacterial drug selection for the vector ("A"= ampicillin and "K"= kanamycin).

[2] The "M" indicates the vector provides resistance to the indicated drug in mammalian cells.

Table 9.1. Overview of Protein Expression Vectors (continued).

Flexi® Vector Name[1]	Cat. #	Drug Selection[2]	Expression Application	Promoter for Expression			Peptide Fusion Tag	
				E. coli	Mammalian Cells	Cell-Free Transcription/ Translation	N-terminus	C-terminus
pFC30A His_6HaloTag® T7 Flexi® Vector	G8321	Ampicillin	Inducible expression and protein purification via metal affinity resin or HaloTag®	T7		T7		His_6 HaloTag®
pFC30K His_6HaloTag® T7 Flexi® Vector	G8381	Kanamycin						
pFC27A HaloTag® CMV-neo Flexi® Vector	G8421	Ampicillin/ Neomycin[M]	Cell imaging and protein interaction analysis; high constitutive expression with selection for stable transfectants		CMV	T7		HaloTag®
pFC27K HaloTag® CMV-neo Flexi® Vector	G8431	Kanamycin/ Neomycin[M]						
pFN24A HaloTag® CMVd3 Flexi® Vector	G2881	Ampicillin	Cell imaging and protein interaction analysis; very low constitutive expression	T7	CMV*d3*	T7, SP6		HaloTag®
pFN24K HaloTag® CMVd3 Flexi® Vector	G2981	Kanamycin						
pFN28A HaloTag® CMV-neo Flexi® Vector	G8441	Ampicillin/ Neomycin[M]	Cell imaging and protein interaction analysis; high constitutive expression with selection for stable transfectants		CMV	T7		HaloTag®
pFN28K HaloTag® CMV-neo Flexi® Vector	G8451	Kanamycin/ Neomycin[M]						
pFN31A *Nluc* CMV-Hygro Flexi® Vector	N1311	Ampicillin/ Hygromycin[M]	NanoLuc® fusion proteins; NanoBRET™		CMV		NanoLuc®	
pFN31K *Nluc* CMV-neo Flexi® Vector	N1321	Kanamycin/ Neomycin[M]						
pFC32A *Nluc* CMV-Hygro Flexi® Vector	N1331	Ampicillin/ Hygromycin[M]	NanoLuc® fusion proteins; NanoBRET™		CMV			NanoLuc®
pFC32K *Nluc* CMV-neo Flexi® Vector	N1341	Kanamycin/ Neomycin[M]						

[1] The "pF" indicates the vector is a Flexi® Vector suitable for Flexi® cloning (see chapter 1 for details).The letter after "pF" indicates the position of any expression tags ("N" for an N-terminal expression tag and "C" for a C-terminal expression tag). The letters "A" and "K" designate the bacterial drug selection for the vector ("A"= ampicillin and "K"= kanamycin).

[2] The "M" indicates the vector provides resistance to the indicated drug in mammalian cells.

Standard Multiple Cloning Site (MCS) Vectors

Table 9.2. Overview of Protein Expression Vectors.

Vector Name	Cat. #	Drug Selection*	Expression Application	Promoter for Expression			Peptide Fusion Tag	
				E. coli	Mammalian Cells	Cell-Free Transcription/ Translation	N-terminus	C-terminus
pH6HTN His_6HaloTag® T7 Vector	G7971	Ampicillin	Inducible expression and protein purification via metal affinity resin or HaloTag®	T7		T7	His_6 HaloTag®	
pH6HTC His_6HaloTag® T7 Vector	G8031	Ampicillin	Inducible expression and protein purification via metal affinity resin or HaloTag®	T7		T7		His_6 HaloTag®
pHTC HaloTag® CMV-neo Vector	G7711	Ampicillin/ Neomycin^M	Cell imaging and protein interaction analysis; high constitutive expression with selection for stable transfectants		CMV	T7		HaloTag®
pHTN HaloTag® CMV-neo Vector	G7721	Ampicillin	Cell imaging and protein interaction analysis; high constitutive expression with selection for stable transfectants		CMV	T7	HaloTag®	
pNLF1-N [CMV/Hygro]	N1351	Ampicillin/ Neomycin^M	NanoLuc® fusion proteins; NanoBRET™		CMV		NanoLuc®	
pNLF1-C [CMV/Hygro]	N1361	Ampicillin/ Neomycin^M	NanoLuc® fusion proteins; NanoBRET™		CMV			NanoLuc®
pNLF1-secN [CMV/Hygro]	N1371	Ampicillin/ Neomycin^M	Secretory NanoLuc® fusion proteins; NanoBRET™		CMV		NanoLuc®	

*The "M" indicates the vector provides resistance to the indicated drug in mammalian cells.

For all vectors visit our website: **http://www.promega.de/resources/vector-sequences/all-vectors/**

Protein Conversion

Table 9.3. Protein Conversions.

Protein Molar Conversion	
100pmol of 100kDa protein	10µg
100pmol of 50kDa protein	5µg
100pmol of 10kDa protein	1µg
100pmol of 1kDa protein	100ng

Protein/DNA Conversions	
1kb of DNA	333 Amino Acids of Coding Capacity 37kDa protein
270bp DNA	10kDa protein
810bp DNA	30kDa protein
1.35kb DNA	50kDa protein
2.7kb DNA	100kDa protein
Average MW of an Amino Acid	110 daltons

Amino Acids

Table 9.4. Amino Acid Abbreviations and Molecular Weights.

Amino Acid	Three-Letter Abbreviation	One-Letter Symbol	Molecular Weight
Alanine	Ala	A	89Da
Arginine	Arg	R	174Da
Asparagine	Asn	N	132Da
Aspartic acid	Asp	D	133Da
Asparagine or Aspartic acid	Asx	B	–
Cysteine	Cys	C	121Da
Glutamine	Gln	Q	146Da
Glutamic Acid	Glu	E	147Da
Glutamine or Glutamic acid	Glx	Z	–
Glycine	Gly	G	75Da
Histidine	His	H	155Da
Isoleucine	Ile	I	131Da
Leucine	Leu	L	131Da
Lysine	Lys	K	146Da
Methionine	Met	M	149Da
Phenylalanine	Phe	F	165Da
Proline	Pro	P	115Da
Serine	Ser	S	105Da
Threonine	Thr	T	119Da
Tryptophan	Trp	W	204Da
Tyrosine	Tyr	Y	181Da
Valine	Val	V	117Da

The average molecular weight of an amino acid is 110Da.

Genetic Code

Table 9.5. Genetic Code.

1st Position	2nd Position U	2nd Position C	2nd Position A	2nd Position G	3rd Position
U	UUU Phe	UCU Ser	UAU Tyr	UGU Cys	U
	UUC Phe	UCC Ser	UAC Tyr	UGC Cys	C
	UUA Leu	UCA Ser	**UAA** Stop	**UGA** Stop	A
	UUG Leu	UCG Ser	**UAG** Stop	UGG Trp	G
C	CUU Leu	CCU Pro	CAU His	CGU Arg	U
	CUC Leu	CCC Pro	CAC His	CGC Arg	C
	CUA Leu	CCA Pro	CAA Gln	CGA Arg	A
	CUG Leu	CCG Pro	CAG Gln	CGG Arg	G
A	AUU Ile	ACU Thr	AAU Asn	AGU Ser	U
	AUC Ile	ACC Thr	AAC Asn	AGC Ser	C
	AUA Ile	ACA Thr	AAA Lys	AGA Arg	A
	AUG Met	ACG Thr	AAG Lys	AGG Arg	G
G	GUU Val	GCU Ala	GAU Asp	GGU Gly	U
	GUC Val	GCC Ala	GAC Asp	GGC Gly	C
	GUA Val	GCA Ala	GAA Glu	GGA Gly	A
	GUG Val	GCG Ala	GAG Glu	GGG Gly	G

Termination codons are in bold.
AUG start codon is in bold italics.

Gel Percentages

Table 9.6. Recommended Acrylamide Gel Percentages for Resolution of Proteins on Polyacrylamide Gels.

Recommended % Acrylamide	Protein Size Range
8	40–200kDa
10	–100kDa
12	10–40kDa

Chapter 1: Cloning System and Protein Expression Vectors	Size	Cat.#
Flexi® Cloning System		
Flexi® System, Entry/Transfer	5 entry & 20 transfer reactions	C8640
Flexi® System, Transfer	100 transfer reactions	C8820
Carboxy Flexi® System, Transfer	50 transfer reactions	C9320
HaloTag® Cloning Starter System	1 each	G6050
HaloTag® Flexi® Vectors—CMV Deletion Series Sample Pack	9x2µg	G3780
10X Flexi® Enzyme Blend (SgfI & PmeI)	25µg	R1851
	100µg	R1852
Carboxy Flexi® Enzyme Blend (SgfI & EcoICRI)	50µg	R1901
Kazusa Human ORF Library *www.promega.com/findmygene		
GeneX- Native human ORF in pF1K	100ng–10ng/µl	FHCxxxx*
GeneX - HaloTag® human ORF in pFN21A	100ng–10ng/µl	FHCxxxx*
Mammalian Expression Vectors (see Table 9.1; Table 9.2)		
Regulated Mammalian Expression System	1 system	C9470
Coumermycin A1	5mg	C9451
Novobiocin Sodium Salt	1g	C9461
pReg neo Vector	20µg	C9421
pF12A RM Flexi® Vector	20µg	C9431
pF12K RM Flexi® Vector	20µg	C9441
pTARGET™ Mammalian Expression Vector System	20 reactions	A1410
pGEM®-T Vector System I	20 reactions	A3600
pGEM®-T Vector System II	20 reactions	A3610
pGEM®-T Easy Vector System I	20 reactions	A1360
pGEM®-T Easy Vector System II	20 reactions	A1380
Competent Bacteria for Cloning		
Single-Use JM109 Competent Cells, >10^8cfu/µg	1ml - (20 × 50µl)	L2005
JM109 Competent Cells, >10^8cfu/µg	1ml - (5 × 200µl)	L2001
JM109 Competent Cells, >10^7cfu/µg	1ml - (5 × 200µl)	L1001
Single-Use HB101 Competent Cells, >10^8cfu/µg	1ml - (20 × 50µl)	L2015
HB101 Competent Cells, >10^8cfu/µg	1ml - (5 × 200µl)	L2011
IPTG, Dioxane-Free	1g	V3955
	5g	V3951
	50g	V3953
X-Gal	100mg/2ml	V3941

Chapter 2: Bacterial Strains for Protein Expression	Size	Cat.#
Single Step (KRX) Competent Cells for Protein Expression		
Single Step (KRX) Competent Cells	20 x 50µl	L3002
L-Rhamnose Monohydrate	10g	L5701
	50g	L5702
BL21 Competent Cells for Protein Expression		
Single-Use BL21(DE3)pLysS Competent Cell	1ml (20 × 50µl)	L1195
BL21(DE3)pLysS Competent Cells, >106cfu/µg	1ml (5x 200µl)	L1191

Chapter 3: Cell-Free Protein Expression Systems	Size	Cat.#
mRNA-based Translation Systems		
Rabbit Reticulocyte Lysate System, Nuclease Treated	30 reactions	L4960
Flexi® Rabbit Reticulocyte Lysate System	30 reactions	L4540
Wheat Germ Extract	5 x 200µl	L4380
Rabbit Reticulocyte Lysate/Wheat Germ Extract Combination System	24 reactions	L4330
DNA-based Transcription and Translation Systems: Rabbit Reticulocyte Lysate Systems		
TNT® SP6 Coupled Reticulocyte Lysate System	8 reactions (Trial Size)	L4601
	40 reactions	L4600
TNT® T7 Coupled Reticulocyte Lysate System	8 reactions (Trial Size)	L4611
	40 reactions	L4610
TNT® T3 Coupled Reticulocyte Lysate System	40 reactions	L4950
TNT® T7/T3 Coupled Reticulocyte Lysate System	40 reactions	L5010
TNT® T7/SP6 Coupled Reticulocyte Lysate System	40 reactions	L5020
TNT® T7 Quick Coupled Transcription/Translation System	5 reactions (Trial Size)	L1171
	40 reactions	L1170
TNT® SP6 Quick Coupled Transcription/Translation System	5 reactions (Trial Size)	L2081
	40 reactions	L2080
TNT® T7 Quick for PCR DNA	40 reactions	L5540
DNA-based Transcription and Translation Systems: Wheat Germ Extracts		
TNT® SP6 Coupled Wheat Germ Extract System	40 reactions	L4130
TNT® T7 Coupled Wheat Germ Extract System	40 reactions	L4140
TNT® T7/SP6 Coupled Wheat Germ Extract System	40 reactions	L5030
TNT® SP6 High-Yield Wheat Germ Protein Expression System	10 reactions	L3261
	40 reactions	L3260
DNA-based Transcription and Translation Systems: Insect Cell Extract		
TNT® T7 Insect Cell Extract Protein Expression System	10 reactions	L1101
	40 reactions	L1102
pF25A ICE T7 Flexi® Vector	20µg	L1061
pF25K ICE T7 Flexi® Vector	20µg	L1081
DNA-based Transcription and Translation Systems: *E. coli* S30 Extract Systems		
E. coli S30 Extract System for Linear Templates	30 reactions	L1030
E. coli S30 Extract System for Circular DNA	30 reactions	L1020
E. coli T7 S30 Extract System for Circular DNA	30 reactions	L1130
S30 T7 High-Yield Protein Expression System	8 reactions	L1115
	24 reactions	L1110
Luciferase Control RNA	20µg - 1mg/ml	L4561
Magnesium Acetate	100 µl - 25mM	L4581
Potassium Chloride	200µl - 2.5M	L4591
Amino Acid Mixture, Complete	175µl - 1mM	L4461
Amino Acid Mixture Minus Cysteine	175µl - 1mM	L4471
Amino Acid Mixture Minus Methionine and Cysteine	175µl - 1mM	L5511
Amino Acid Mixture Minus Leucine	175µl - 1mM	L9951
Amino Acid Mixture Minus Methionine	175µl - 1mM	L9961
Cell-Free Protein Labeling Reagents		
FluoroTect™ $Green_{Lys}$ in vitro Translation Labeling System	40 reactions	L5001
Transcend™ Colorimetric Translation Detection System	30 reactions	L5070

Promega

Chapter 3: Cell-Free Protein Expression Systems	Size	Cat.#
Cell-Free Protein Labeling Reagents		
Transcend™ Chemiluminescent Translation Detection System	30 reactions	L5080
Transcend™ tRNA	30µl	L5061
FluoroTect™ $Green_{Lys}$ in vitro Translation Labeling System	40 reactions	L5001
Transcend™ Colorimetric Translation Detection System	30 reactions	L5070
Transcend™ Chemiluminescent Translation Detection System	30 reactions	L5080
Membrane Vesicles for Signal Peptide Cleavage and Core Glycosylation		
Canine Pancreatic Microsomal Membranes	50µl	Y4041
Chapter 4: Protein Purification	**Size**	**Cat.#**
Affinity-based Protein Purification: HaloTag® Fusion Proteins		
HaloTag® Protein Purification System (*E.coli*)	1 each	G6280
HaloTag® Protein Purification System Sample Pack	1 each	G6270
HaloTag® Mammalian Protein Detection and Purification System Sample Pack (*E.coli*)	1 each	G6799
HaloTag® Mammalian Protein Purification System	1 each	G6790
HaloTag® Mammalian Protein Detection and Purification System	1 each	G6795
HaloTEV Protease	1,000u	G6601
	4,000u	G6602
HaloTag® TMRDirect™ Ligand	30µl	G2991
HaloLink™ Resin	1.25ml	G1912
	2.5ml	G1913
	10ml	G1914
	25ml	G1915
Protease Inhibitor Cocktail, 50X	1ml	G6521
Mammalian Lysis Buffer	40ml	G9381
Affinity-based Protein Purification: His-tagged Proteins		
HisLink™ Protein Purification Resin	5ml	V8823
	50ml	V8821
HisLink™ Spin Protein Purification System	25 reactions	V1320
HisLink™ 96 Purifiфcation System	1 x 96 blank	V3680
	5 x 96 blank	V3681
Affinity-based Protein Purification: Biotinylated Proteins		
SoftLink™ Soft Release Avidin Resin	1ml	V2011
	5ml	V2012
PinPoint™ Xa Protein Purification System (Production & Purification)	1 system	V2020
Magnetic Affinity-based Purification and Pull-Down Strategies: Biotinylated Proteins		
MagneGST™ Protein Purification System	40 reactions	V8600
	200 reactions	V8603
Magnetic Affinity-based Purification and Pull-Down Strategies: HaloTag® Fusion Proteins		
Magne™ HaloTag® Beads, 20% Slurry	1ml	G7281
	5ml	G7282
Magnetic Affinity-based Purification and Pull-Down Strategies: His-tagged Proteins		
MagneHis™ Protein Purification System	65 reactions	V8500
	325 reactions	V8550
Maxwell® 16 Polyhistidine Protein Purification Kit	48 preps	AS1060

Chapter 4: Protein Purification	Size	Cat.#
Magnetic Stands and Spacers		
MagneSphere® Technology Magnetic Separation Stand (two-position)	0.5ml	Z5331
	1.5ml	Z5332
	12 x 75mm	Z5333
MagneSphere® Technology Magnetic Separation Stand (twelve-position)	0.5ml	Z5341
	1.5ml	Z5342
	12 x 75mm	Z5343
PolyATtract® System 1000 Magnetic Separation Stand	1 each	Z5410
MagnaBot® 96 Magnetic Separation Device	1 each	V8151
MagnaBot® II Magnetic Separation Device	1 each	V8351
MagnaBot® Flat Top Magnetic Separation Device	1 each	V6041
Plate Clamp 96	1 each	V8251
Plate Stand	1 each	V8261
Deep Well MagnaBot® 96 Magnetic Separation Device	1 each	V3031
Heat Transfer Block	1 each	Z3271
Heat Block Insert	1 each	Z3651
Chapter 5: Antibody Purification and Labeling	**Size**	**Cat.#**
Antibody Purification		
Magne™ Protein G Beads, 20% Slurry	1ml	G7471
	5ml (5 x 1ml)	G7472
	50ml	G7473
Magne™ Protein A Beads, 20% Slurry	1ml	G8781
	5ml (5 x 1ml)	G8782
	50ml	G8783
Antibody Labeling		
pHAb Amine Reactive Dye	1 x 250µg	G9841
	4 x 250µg	G9845
pHAb Thiol Reactive Dye	1 x 250µg	G9831
	4 x 250µg	G9835
Chapter 6: Functional Protein Analysis using HaloTag® Technology	**Size**	**Cat.#**
Cellular Imaging: HaloTag® Ligands		
Janelia Fluor® 549 HaloTag® Ligand	5µg	GA1110
	3 x 5µg	GA1111
Janelia Fluor® 646 HaloTag® Ligand	5µg	GA1120
	3 x 5µg	GA1121
HaloTag® Alexa Fluor® 488 Ligand	30µl	G1001
	15µl	G1002
HaloTag® Oregon Green® Ligand	30µl	G2801
	15µl	G2802
HaloTag® TMRDirect™ Ligand	30µl	G2991
HaloTag® R110Direct™ Ligand	30µl	G3221
HaloTag® TMR Ligand	30µl	G8251
	15µl	G8252
HaloTag® diAcFAM Ligand	30µl	G8272
	15µl	G8273

Chapter 6: Functional Protein Analysis using HaloTag® Technology	Size	Cat.#
HaloTag® Biotin Ligand	30µl	G8281
	15µl	G8282
HaloTag® Alexa Fluor® 660 Ligand	30µl	G8471
	15µl	G8472
HaloTag® Coumarin Ligand	30µl	G8581
	15µl	G8582
HaloTag® PEG-Biotin Ligand	30µl	G8591
	15µl	G8592
HaloTag® Succinimidyl Ester (O2) Ligand	5mg	P1691
HaloTag® Amine (O2) Ligand	5mg	P6711
HaloTag® Amine (O4) Ligand	5mg	P6741
HaloTag® Succinimidyl Ester (O4) Ligand	5mg	P6751
HaloTag® Thiol (O4) Ligand	5mg	P6761
HaloTag® Iodoacetamide (O4) Ligand	5mg	P6771
Protein Interaction Analysis: NanoBRET™: Live Cell Protein:Protein Interaction Assay		
NanoBRET™ Nano-Glo® Detection Systems	200 assays	N1661
	1,000 assays	N1662
	10,000 assays	N1663
HaloTag® Mammalian Pull-Down System	24 reactions	G6504
HaloTag® Complete Pull-Down System	1 each	G6509
Protein Interaction Analysis: HaloTag® Mammalian Pulldown Kits		
HaloTag® Mammalian Pull-Down and Labeling System	24 reactions	G6500
HaloTag® Mammalian Pull-Down System	24 reactions	G6504
HaloTag® Complete Pull-Down System	1 each	G6509
Protein Interaction Analysis: HaloCHIP™ System		
HaloCHIP™ System	20 reactions	G9410
Additional Reagents		
Protease Inhibitor Cocktail, 50X	1ml	G6521
HaloTag® Control Vector	20µg	G6591
Anti-HaloTag® Monoclonal Antibody	200µg	G9211
Anti-HaloTag® pAb	200µg	G9281
Mammalian Lysis Buffer	40ml	G9381
HaloTag® Standard Protein	30µg	G4491
Chapter 7: Protein Characterization by Mass Spectrometry	**Size**	**Cat.#**
Trypsin		
Trypsin Gold, Mass Spectrometry Grade	100µg	V5280
Rapid Digestion - Trypsin	100µg	VA1060
Rapid Digestion - Trypsin/Lys-C	100µg	VA1061
Sequencing Grade Modified Trypsin	100µg (5 x 20µg)	V5111
	100µg	V5117
Sequencing Grade Modified Trypsin, Frozen	100µg (5 x 20µg)	V5113
Trypsin/Lys-C Mix, Mass Spec Grade	20µg	V5071
	100µg	V5072
	100µg (5x 20 µg)	V5073
Immobilized Trypsin	2 ml	V9012
	2x2 ml	V9013

Chapter 7: Protein Characterization by Mass Spectrometry	Size	Cat.#
Alternative Proteases: Specific Proteases		
Arg-C, Sequencing Grade	10µg	V1881
Asp-N, Sequencing Grade	2µg	V1621
Glu-C, Sequencing Grade	50µg (5 x 10µg)	V1651
Lys-C, Mass Spec Grade	20µg	VA1170
Lys-N, Mass Spec Grade	20µg	VA1180
rAsp-N, Mass Spec Grade	10µg	VA1160
rLys-C, Mass Spec Grade	15µg	V1671
Low-Specific Proteases		
Chymotrypsin, Sequencing Grade	25µg	V1061
	100µg (4 x 25µg)	V1062
Nonspecific Proteases		
Elastase	5mg	V1891
Pepsin	250mg	V1959
Thermolysin	25mg	V4001
Glycosidases		
PNGase F	500 units (10u/µl)	V4831
Endo H	10,000 units (500u/µl)	V4871
	50,000 units (500u/µl)	V4875
Fetuin (control protein)	500µg (10mg/ml)	V4961
ProteaseMAX™ Surfactant		
ProteaseMAX™ Surfactant, Trypsin Enhancer	1mg	V2071
	5 x 1mg	V2072
Protein Extracts for LC/MS Monitoring		
MS Compatible Human Protein Extract, Digest	100µg	V6951
MS Compatible Human Protein Extract, Intact	1mg	V6941
MS Compatible Yeast Protein Extract, Digest	100µg	V7461
MS Compatible Yeast Protein Extract, Intact	1mg	V7341
Peptide Mix For LC/MS Monitoring		
6 × 5 LC-MS/MS Peptide Reference Mix	25pmoles	V7491*
	200pmoles	V7495**
Antibody Characterization/Fragmentation		
AccuMAP™ Low pH Protein Digestion Kit	10 reactions	VA1040
	100 reactions	VA1050
IdeS Protease†	5,000u	V7511
	25,000u (5 × 5,000u)	V7515

Chapter 8: Protein Detection Tools for Western Blotting & ELISA	Size	Cat.#
Conjugated Secondary Antibodies: AP		
Anti-Mouse IgG (H+L), AP Conjugate	100µl	S3721
Anti-Rabbit IgG (Fc), AP Conjugate	100µl	S3731
Anti-Human IgG (H+L), AP Conjugate	100µl	S3821
Anti-Rat IgG (H+L), AP Conjugate	100µl	S3831
Conjugated Secondary Antibodies: HRP		
Anti-Rabbit IgG (H+L), HRP Conjugate	300µl	W4011
Anti-Mouse IgG (H+L), HRP Conjugate	300µl	W4021
Anti-Human IgG (H+L), HRP Conjugate	300µl	W4031
Anti-Chicken IgY, HRP Conjugate	300µl	G1351

Chapter 8: Protein Detection Tools for Western Blotting & ELISA	Size	Cat.#
Anti-ACTIVE® Qualified Antibodies		
Donkey Anti-Goat IgG, AP	60µl	V1151
Donkey Anti-Goat IgG, HRP	60µl	V8051
Substrates for ELISA		
AttoPhos® AP Fluorescent Substrate System	3 × 36mg	S1000
	1 × 36mg (Trial Size)	S1001
AttoPhos® Substrate	36mg	S1011
	100mg	S1012
	1g	S1013
AttoPhos® Buffer	60ml	S1021
	240ml	S1022
TMB One Solution	100ml	G7431
Substrates for Western Blotting		
BCIP/NBT Color Development Substrate	1.25/2.5ml	S3771
Western Blue® Stabilized Substrate for Alkaline Phosphatase	100ml	S3841
ECL Western Blotting Substrate	250ml	W1001
	500ml	W1015
TMB Stabilized Substrate for Horseradish Peroxidase	200ml	W4121
Tween® 20	2.5ml	W3831
Blot-Qualified BSA	10g	W3841
ProtoBlot® II AP System with Stabilized Substrate, Human	1 each	W3940
ProtoBlot® II AP System with Stabilized Substrate, Mouse	1 each	W3950
ProtoBlot® II AP System with Stabilized Substrate, Rabbit	1 each	W3960
Additional Reagents		
Protease Inhibitor Cocktail, 50x	1ml	G6521
Broad Range Protein Molecular Weight Markers	100 lanes	V8491

†Check with local Promega Branch or Distributor for availability.
*Supplied as frozen liquid. Includes 6 additional maximal recovery tubes for aliquots.
**Supplied lyophilized. Includes 6 additional maximal recovery tubes for aliquots.

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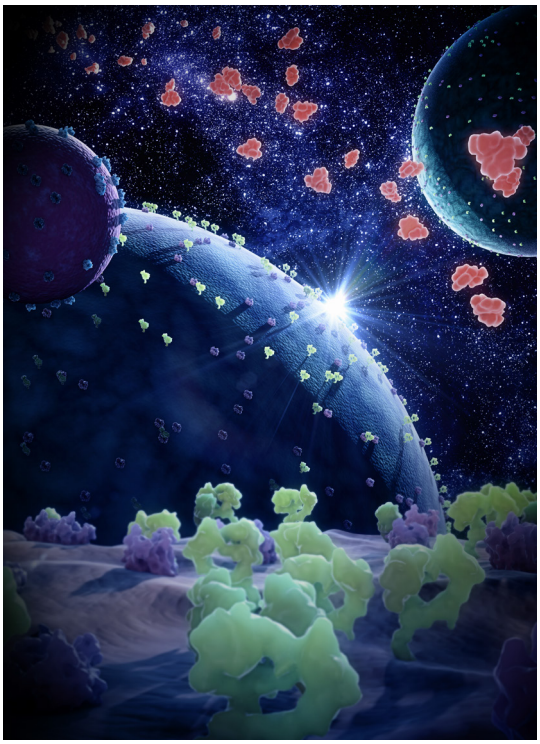

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