

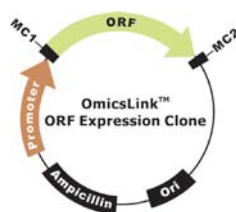


## OmicsLink Expression-Ready ORF cDNA Clones

- ◆ Clones
- ◆ ORFs
- ◆ cDNA
- ◆ Proteins
- ◆ Tags
- ◆ Vectors
- ◆ Markers
- ◆ Etc.

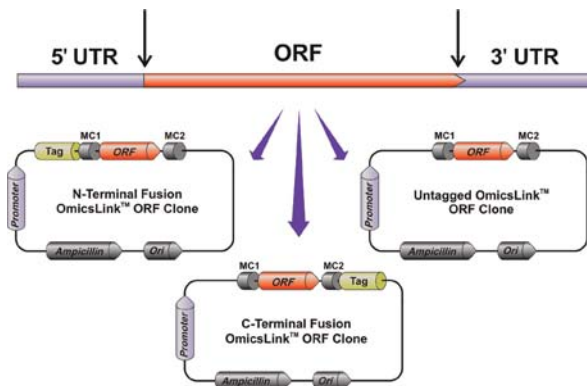
### GeneCopoeia

The original source for expression-ready human and mouse full-length ORF cDNA constructs.



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## Express any protein with OmicsLink™ full-length ORF cDNA clones...



### Exclusive

GeneCopoeia is the original manufacturer of expression-ready full-length ORF cDNA clones. OmicsLink clones deliver high levels of expression, increase productivity and save time.

### Complete

GeneCopoeia offers the largest collection of human and mouse full-length protein-coding ORF cDNA clones.

OmicsLink Expression-Ready ORF cDNA Clones are constructed from carefully curated and sequence-validated full-length cDNAs and cDNAs from high-quality libraries.

- 45,000 human and mouse genes
- Fully sequenced
- 80 vectors, 50 fusion tags

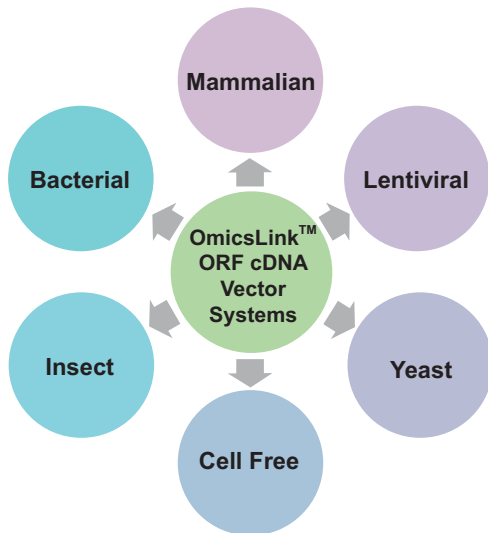
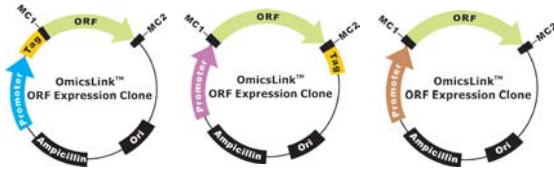
## ...in any system.

### Flexible

OmicsLink ORF cDNA clones are available for expression in any system including mammalian, lentiviral and bacterial. All constructs are optimized for protein expression, purification and functional assays in a variety of cell systems as well as in cell-free transcription and translation coupling systems.

- Save time
- Publish faster
- Increase productivity

...for any application.



**Versatile**

OmicsLink ORF cDNA clones are carefully designed for a variety of expression and functional studies using a range of cell systems.

OmicsLink clones are available in a variety of expression vectors that provide a choice of features including promoters, selection markers and fusion tags.

- Express proteins in *E. coli* mammalian cells or other common cell types
- Express proteins in vitro and at high success rate with cell-free translation systems
- Use tags for protein purification and production
- Use tags for protein detection and wide a range of functional assays
- Generate in situ hybridization probes for tissue or organ expression profiling
- Restore gene functions for shRNA or miRNA functional validation studies

**HTC/HTS**

Uniformity and high quality of OmicsLink Expression-Ready ORF cDNA Clone Sets make them ideal for large-scale high-content and high-throughput screening (HTC/HTS) studies in functional genomics, proteomics and systems biology.

**Comprehensive**

GeneCopoeia offers comprehensive suites of optimized, reliable and affordable gene- and protein-based products, including recombinant proteins, polyclonal and monoclonal antibodies, RNAi products, and other life sciences tools and products. In addition, custom cloning and protein production services are available.

## Streamline tasks

OmicLink Expression-Ready Clones are ready for in vitro and in vivo expression — eliminating time-consuming cloning and verification steps.

All clones are fully-sequenced and many have been verified in ongoing expression testing.

### Steps to acquire full-length expression-ready cDNA ORF clones

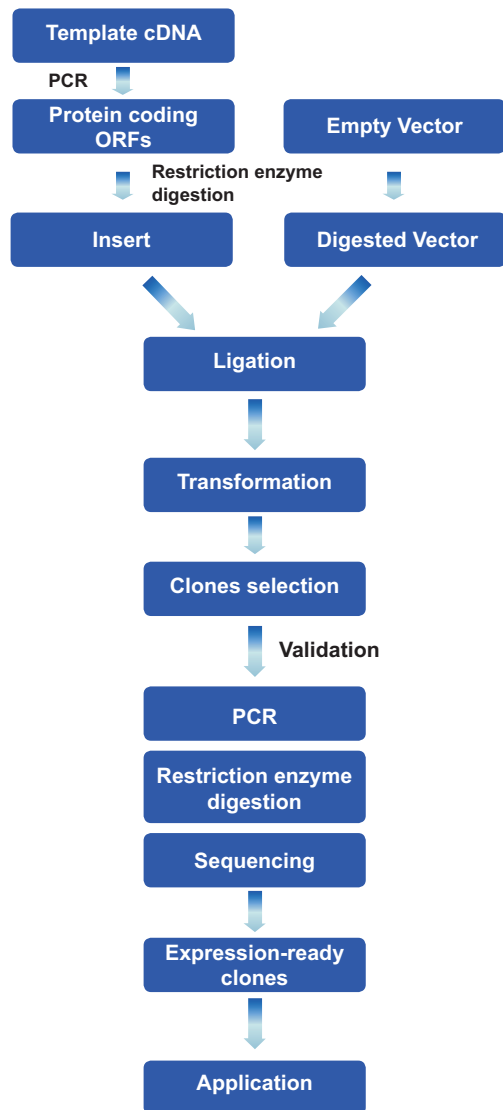
#### Option 1

Get expression-ready from GeneCopoeia



#### Option 2

Other vendors or “do-it-yourself”



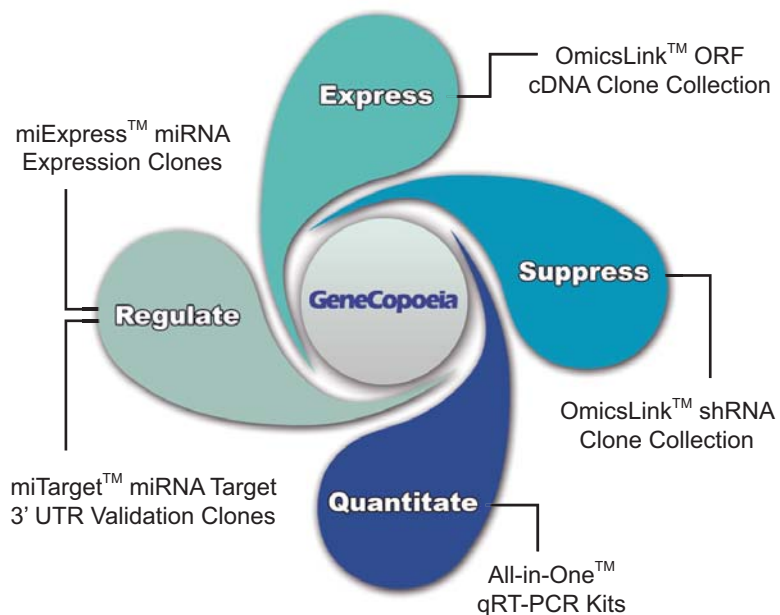
## Answer perplexing questions sooner

**What impact does this protein have on cellular functions?**  
**Which proteins does the protein of my interest interact with?**  
**Which cell signals are affected?**

OmicsLink expression-ready clones simplify the following applications:

- In vivo and in vitro protein production
- Functional studies using model cell lines or whole organisms
- Transduction into stem, primary and other difficult-to-transfect cells
- Cellular imaging for protein trafficking, localization, immobilization,
- Functional rescue in shRNA and miRNA studies
- High-throughput screening assays
- Protein-DNA and protein-protein interaction studies

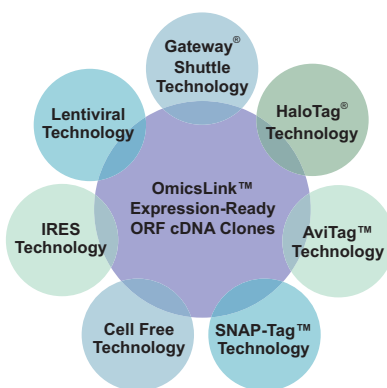
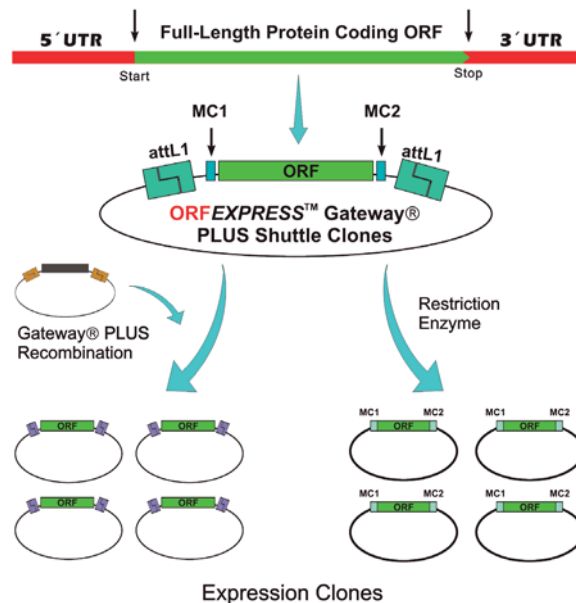
A comprehensive suite of GeneCopoeia expression ready constructs enables asking and answering a broad spectrum of questions. Gene knockdown with shRNA collections and miRNA precursor and target validation clones are available under the OmicsLink clone family.



## Choose the right platform...

**OmicsLink Expression-Ready ORF cDNA Clones** represent the largest collections of human and mouse full-length protein-coding ORF cDNA clones. Choose among 80 vectors and 50 different fusion tags to design the right clone for your task and begin immediately. The clones are optimized for protein expression, easy purification and functional assays in a variety of cell systems including cell-free transcription and translation.

**ORFEXPRESS Gateway PLUS Shuttle Clones** allow rapid and simple transfer of ORF inserts into any Gateway destination expression vector for expression and functional analysis of target proteins in various host cells. Multiple cloning sites flanking the ORFs make these clones compatible with traditional cloning systems that utilize classical restriction enzyme digestion and ligation cloning methods.



**Internal Ribosome Entry Site (IRES)** allows coordinated and efficient co-expression of two genes with the same promoter in a single vector. When reporter and target genes are simultaneously expressed, biological activities of the target proteins are minimally affected.

**AviTag™ technology** is based on site-specific in vitro or in vivo biotinylation of a short tag sequence enabling specific or reversible binding of avidin or streptavidin to biotin for immobilization, purification and visualization of the tagged target proteins.

**HaloTag®** is a novel multi-functional protein tag that binds covalently and specifically to a variety of synthetic ligands, enabling tagged proteins to be labeled with fluorophores for in vitro or in vivo imaging or with affinity agents for purification.



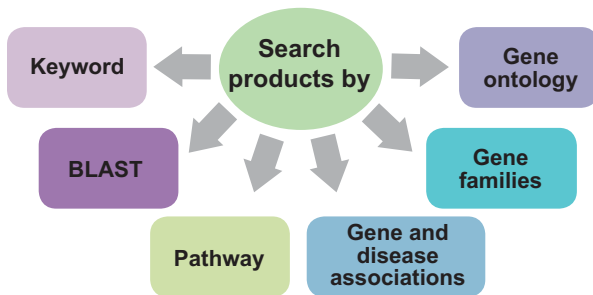
**...from the widest selection of promoters, tags and selection markers available.**

OmicsLink ORFs and genes are available in more than 80 different types of expression vectors offering a choice of more than 50 fusion tags and enabling expression in mammalian, bacterial, insect, or yeast cells as well as cell-free expression systems. GeneCopoeia Technical Services is ready to help you select the best tag to meet your needs.

Promoters	CMV, T7, Tac, EF1 $\alpha$ , GAL1, pADH, AcMNPV polyhedrin
Selection markers	Neomycin, puromycin, hygromycin, blastamycin, zeomycin
Fusion tags	eGFP, eYFP, eCFP, mCherry, HaloTag <sup>®</sup> , AviTag <sup>™</sup> , SNAP-Tag <sup>™</sup> , His6, Flag, GST, MBP, HA, Myc, Avi+ IRES-Biotin ligase, Myc+ IRES-eGFP, IRES-eGFP, IRES-Neomycin, and 35 other different types.
Cell systems	Bacterial, mammalian, lentiviral, insect, yeast, wheat germ cell-free systems

Fusion tag	Purification	Increase solubility	Ab-IP	Cellular labeling
His	+	+/-	+	
Sumo/His-Sumo	++	++	+	
GST	+	+	+	
MBP	+	++	+	
Flag/3xFlag	+	+/-	+	+
HA/3xHA			+	++
GFP/YFP/RFP				+++
cMyc			+	+
AviTag <sup>™</sup>	+		++	++
His-AviTag <sup>™</sup>	++		++	++
Halo-Tag <sup>®</sup>	++	++	++	+++

## Find your gene with a simple search...



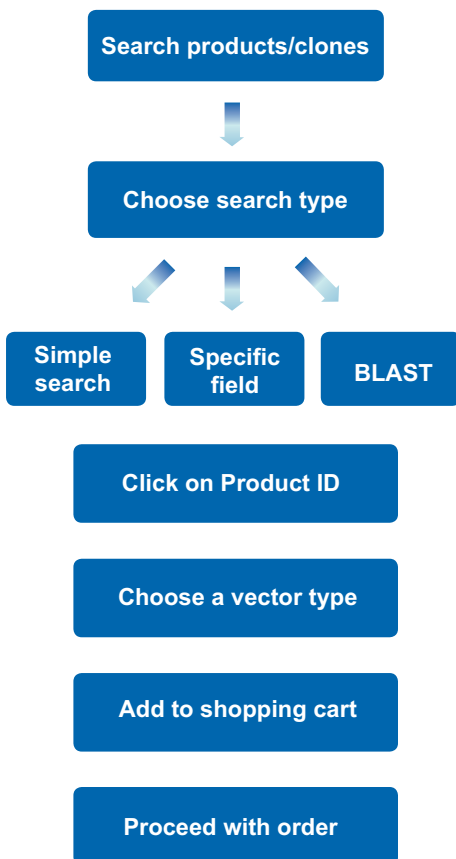
### Six online search tools for finding the OmicsLink ORF cDNA clone you need

- Keywords
- Sequence homology (BLAST)
- Gene families and groups
- Gene ontology classification
- Gene and disease associations
- Signal and metabolic pathways

### Multiple options for searching individual clones with the online search query tool

- Gene description
- Gene symbols and aliases
- Nucleotide accessions
- UniGene cluster IDs
- Entrez gene IDs
- Catalog numbers or product IDs

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### Easy search to find your favorite clones from GeneCopoeia

1. Go to "Search products/clones" webpage.
2. Choose any of three options provided to start the search
  - Use "Simple Search." Type any keyword. (Description, Nucleotide accession, Entrez gene ID, Symbols/Aliases or Catalog/product ID)
  - Search by a particular field
  - Search by BLAST
3. The search engine gives options based on the search query entered. Click on the column "Product ID."
4. The returned webpage contains brief annotation information for the gene corresponding to chosen product ID.
  - Choose among 80 different ready-for-expression vector types including mammalian, bacterial, lentiviral, insect and yeast.
  - Gateway shuttle system and ORFeome Collaboration clones are also available.
  - Related products with the clone of interest are also listed for quick access.
5. To learn more about the specific gene or to view detailed gene annotation page, click on "Product ID" again.
6. To view price and proceed with the order, select the appropriate expression vector type, then click on "Add to Shopping Cart".

## ...or use pre-selected gene families or disease groups

More than 40,000 OmicsLink ORF clones have been curated and categorized into various gene families, groups, ontological classifications, pathways and disease associations using GeneCopoeia bioinformatics analysis tools.

### Gene families and disease associations

Based on GeneCopoeia's proprietary literature mining algorithm, over 10,000 genes have been associated with major disease categories. Browsing these associations using the "Gene Families and Diseases" browser on the GeneCopoeia Website search page makes finding genes of interest straightforward and convenient.

Disease Families	ORF cDNAs
Cardiovascular diseases	1596
Congenital anomalies and genetic diseases	3978
Digestive system diseases	864
Diseases of the blood and blood-forming organs	1886
Endocrine, metabolic and nutrition diseases	1784
Immunologic diseases	3644
Infectious diseases	3536
Mental disorders	1805
Musculoskeletal system diseases	946
Neoplasms	8950
Nervous system and sense organs diseases	2404
Other diseases	141
Respiratory System diseases	565
Skin and connective tissue diseases	866
Symptoms and general pathology	2022
Urologic and Genital Diseases	1304

Gene Families	ORF cDNAs
Cytokines	315
Cytokine receptors	152
Druggable target genes	6245
G protein-coupled receptors	718
Histone modification enzymes	38
Histone proteins	66
Ion channels	463
Membrane-bound proteins	2138
Nuclear hormone receptors	105
Other kinases	201
Proteases	625
Protein kinases	933
Protein phosphatases	293
Surface antigens (CD)	263
Transcription factors	1096
Organelle markers	77

## Mammalian Expression Vectors with CMV Promoter and Neomycin Selection

Vector	Tag	Protease Site
pReceiver-M01	N-His	N/A
pReceiver-M02	N/A	N/A
pReceiver-M29	N-eGFP	N/A
pReceiver-M03	C-eGFP	N/A
pReceiver-M15	N-eYFP	N/A
pReceiver-M16	C-eYFP	N/A
pReceiver-M32	N-eCFP	N/A
pReceiver-M33	C-eCFP	N/A
pReceiver-M04	N-GST	EK
pReceiver-M05	N-Avi	N/A
pReceiver-M48	N-Avi+ IRES-Biotin ligase	N/A
pReceiver-M17	C-Avi	N/A
pReceiver-M06	N-3xHA	N/A
pReceiver-M07	C-3xHA	N/A
pReceiver-M08	C-3xHA-His	N/A
pReceiver-M45	C-3xHA+ IRES-eGFP	N/A
pReceiver-M09	C-Myc	N/A
pReceiver-M10	C-Myc-His	N/A
pReceiver-M47	C-Myc+ IRES-eGFP	N/A
pReceiver-M11	N-Flag	N/A
pReceiver-M12	N-3XFlag	N/A
pReceiver-M13	C-Flag	N/A
pReceiver-M46	C-Flag+ IRES-eGFP	N/A
pReceiver-M14	C-3XFlag	N/A
pReceiver-M24	N-SNAP	N/A
pReceiver-M26	C-SNAP	N/A
pReceiver-M49	N-Halo Tag	Tev protease
pReceiver-M50	C-Halo Tag	Tev protease
pReceiver-M55	N-mCherry	N/A
pReceiver-M56	C-mCherry	N/A
pReceiver-M01	N-His	N/A

## Yeast Expression Vectors

Vector	Promoter	Host Cell	Selection Marker	Tag	Protease Site
pReceiver-Y01	GAL1	S. cerevisiae	N/A	C-His	N/A
pReceiver-YAD	pADH	Yeast	N/A	GAL4AD	N/A
pReceiver-YBD	pADH	Yeast	N/A	GAL4DB	N/A

## Lentiviral Expression Vectors with CMV Promoter for Stem, Primary and Other Difficult-to-Transfect Cells

Vector	Selection Marker	Tag
pReceiver-Lv01	No	N/A
pReceiver-Lv31	No	IRES-eGFP
pReceiver-Lv36	No	IRES-luciferase
pReceiver-Lv40	Neomycin	IRES-Neomycin
pReceiver-Lv21	Neomycin	N/A
pReceiver-Lv02	No	C-3xHA
pReceiver-Lv32	No	C-3xHA + IRES-eGFP
pReceiver-Lv52	N/A	C-3xHA+IRES2-eGFP
pReceiver-Lv06	Neomycin	C-3xHA
pReceiver-Lv23	Neomycin	N-Flag
pReceiver-Lv03	No	C-Flag
pReceiver-Lv33	No	C-Flag + IRES-eGFP
pReceiver-Lv53	N/A	C-Flag+IRES2-eGFP
pReceiver-Lv07	Neomycin	C-Flag
pReceiver-Lv19	Neomycin	N-eGFP
pReceiver-Lv04	No	C-eGFP
pReceiver-Lv08	Neomycin	C-eGFP
pReceiver-Lv20	Neomycin	N-eYFP
pReceiver-Lv05	No	C-eYFP
pReceiver-Lv09	Neomycin	C-eYFP
pReceiver-Lv34	Neomycin	N-eCFP
pReceiver-Lv61	No	C-eCFP
pReceiver-Lv62	Neomycin	C-eCFP
pReceiver-Lv35	No	N-Avi + IRES-Biotin ligase
pReceiver-Lv26	Neomycin	N-Avi
pReceiver-Lv10	Neomycin	C-Avi
pReceiver-Lv25	Neomycin	N-Myc
pReceiver-Lv17	Neomycin	C-Myc
pReceiver-Lv18	Neomycin	C-Myc-His
pReceiver-Lv43	No	C-Myc+ IRES-eGFP
pReceiver-Lv70	N/A	C-Myc+IRES2-eGFP
pReceiver-Lv44	No	C-Myc+ IRES-eYFP
pReceiver-Lv47	Neomycin	C-Myc+IRES-Neomycin
pReceiver-Lv64	Neomycin	N-HaloTag*
pReceiver-Lv65	Neomycin	C-HaloTag*
pReceiver-Lv69	N/A	C-Myc+IRES-mCherry
pReceiver-Lv71	Puromycin	N-mCherry
pReceiver-Lv72	Neomycin	C-mCherry
pReceiver-Lv41 <sup>†</sup>	Neomycin	N/A

\*Tev protease site

<sup>†</sup>EF1a promoter

## Insect Expression Vector

Vector	Promoter	Host Cell	Selection Marker	Tag	Protease Site
pReceiver-I01	AcMNPV polyhedrin	Insect cell	N/A	N-His	Tev

## ORFEXPRESS™ Gateway® PLUS Shuttle Vector (Gateway pDEST compatible)

Vector	Promoter	Host Cell	Selection Marker	Tag	Protease Site
pDONR™ Vector	ORFEXPRESS™ Shuttle Clone (Gateway PLUS Clone)	N/A	N/A	N/A	N/A

## Bacterial Expression Vectors (14 types)

Vector	Promoter	Host Cell	Selection Marker	Tag	Protease Site
pReceiver-B01	T7	<i>E. Coli</i>	N/A	N-His	N/A
pReceiver-B02	T7	<i>E. Coli</i>	N/A	N/A	N/A
pReceiver-B03	T7	<i>E. Coli</i>	N/A	N-GST	Tev
pReceiver-B04	T7	<i>E. Coli</i>	N/A	N-GST	EK
pReceiver-B05	Tac	<i>E. Coli</i>	N/A	N-GST	Tev
pReceiver-B06	Tac	<i>E. Coli</i>	N/A	N-GST	EK
pReceiver-B07	Tac	<i>E. Coli</i>	N/A	N-MBP	Tev
pReceiver-B08	Tac	<i>E. Coli</i>	N/A	N-MBP	EK
pReceiver-B09	T7	<i>E. Coli</i>	N/A	N-Avi	N/A
pReceiver-B10	Tac	<i>E. Coli</i>	N/A	N-Flag	N/A
pReceiver-B11	Tac	<i>E. Coli</i>	N/A	N-His	N/A
pReceiver-B12	Tac	<i>E. Coli</i>	N/A	HisSUMO	SUMO protease
pReceiver-B13	T7	<i>E. Coli</i>	N/A	HisSUMO	SUMO protease
pReceiver-B31	T7	<i>E. Coli</i>	N/A	C-His	N/A

## Wheat Germ Cell-Free Expression Vectors (8 types)

Vector	Promoter	Host Cell	Selection Marker	Tag	Protease Site
pReceiver-WG02	T7	cell free	N/A	N-His	Factor Xa
pReceiver-WG03	T7	cell free	N/A	N-HisSUMO	CoolCutter™
pReceiver-WG04	T7	cell free	N/A	N-AviSUMO	CoolCutter™
pReceiver-WG05	T7	cell free	N/A	N-HisAviSUMO	CoolCutter™
pReceiver-WG09	T7	cell free	N/A	HisGST	TEV
pReceiver-WG16	T7	cell free	N/A	N/A	N/A
pReceiver-WG31	T7	cell free	N/A	N-HisSUMOAvi	CoolCutter™
pReceiver-WG33	T7	cell free	N/A	N-TrxHisSUMO	CoolCutter™

## ■ ■ ■ Custom Services from GeneCopoeia

### Custom gene synthesis

GeneCopoeia offers de novo gene synthesis services for any gene that is not currently available. Guaranteeing 100% sequence accuracy, GeneCopoeia can also customize sequence composition, splicing variants and functional domains or fragments. GeneCopoeia scientists use codon optimization techniques to ensure high levels of expression in host cells. Synthesized genes can be delivered in any of more than 80 different vector types at no additional custom service fee.

### Custom cloning and mutagenesis

GeneCopoeia offers a full spectrum of high-quality custom cloning services at very low costs and with speedy delivery.

### Protein production

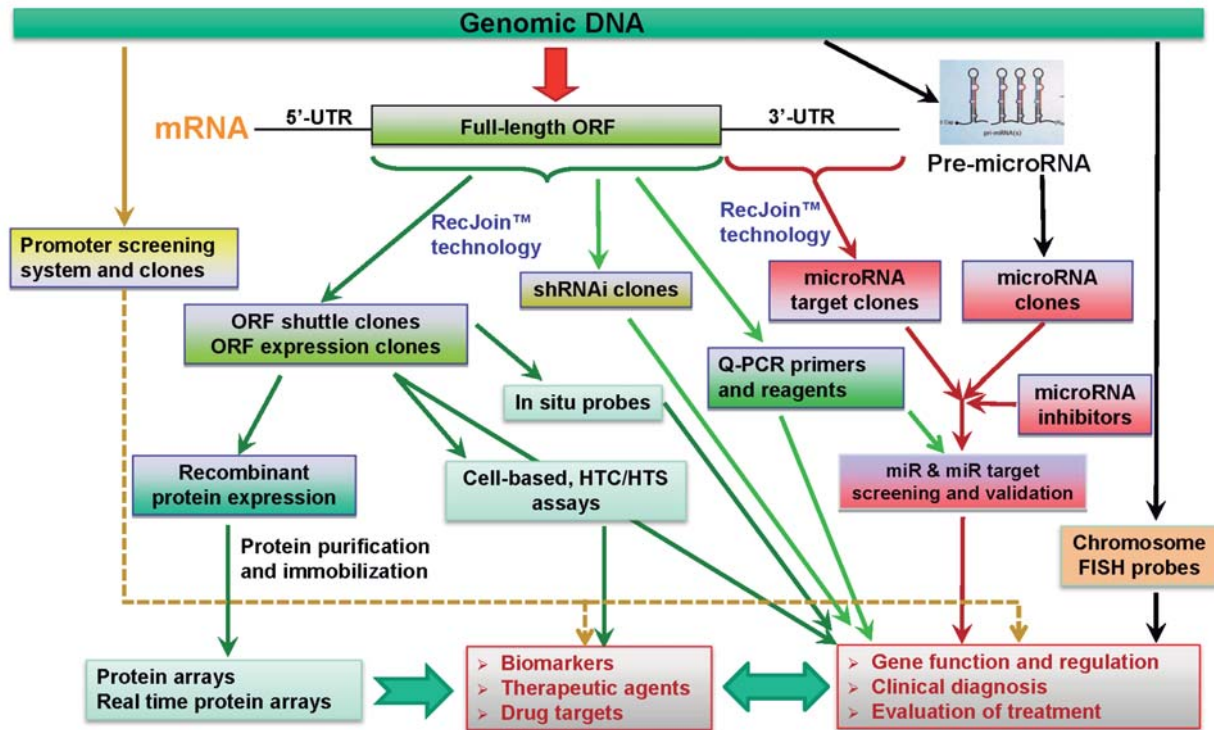
With GeneCopoeia custom protein services, you can skip cloning and expression steps. The protein production facility uses a range of host-cell and cell-free expression systems including *E. coli*, insect, yeast, CHO and mammalian cells as well as wheat germ cell-free systems. Protein expression, solubility and yield are significantly increased by using a variety of unique fusion tags that are not available in the market.

### Antibody production

GeneCopoeia custom services for poly- and monoclonal antibody production specializes in using recombinant proteins and different animal species for unmatched low costs and short delivery times.



## Overview of GeneCopoeia Product Platform



### Publish faster

With GeneCopoeia as your partner, ready-to-go constructs will help you realize robust and reproducible results quicker helping you to publish sooner.

Blish, K et al. (2008) A Human Bone Morphogenetic Protein Antagonist Is Down-Regulated in Renal Cancer, *MBC Online*, 19 (2): 457-464. [BMP-7, DKK1, Noggin and Wnt-3a]

Chiu, S et al. (2009) Over-expression of EphB3 enhances cell-cell contacts and suppresses tumor growth in HT-29 human colon cancer cells, *Carcinogenesis*, 30(9):1475-1486.

Chu, C et al. (2009) Conversion of MDCK cell line to suspension culture by transfecting with human sial7e gene and its application for influenza virus production, *PNAS*, 106 (35):14802-14807. [V1581, C-eGFP tag]

Dagda, R et al. (2009) Loss of PINK1 Function Promotes Mitophagy through Effects on Oxidative Stress and Mitochondrial Fission, *J. Biol. Chem.*, 284 (20):13843-13855. [Parkin, HA tag and PINK1, C-3xFlag tag]

Delisle, B et al. (2009) Small GTPase Determinants for the Golgi Processing and Plasmalemmal Expression of Human Ether-a-go-go Related (hERG) K<sup>+</sup> Channels, *J. Biol. Chemistry*, 284(5): 2844-2853. [Rab Transcripts]

Muik, M et al. (2008) Dynamic Coupling of the Putative Coiled-coil Domain of ORA1 with STIM1 Mediates ORA1 Channel Activation, *The Journal of Biological Chemistry*, 283(12): 8014-8022. [STIM1, C-eYFP tag]

Olma, M et al. (2009) An interaction network of the mammalian COP9 signalosome identifies Dda1 as a core subunit of multiple Cul4-based E3 ligases, *Journal of Cell Science*, 122: 1035-1044. [Lrr1 entry clone]

Pérot, G et al. (2009) Strong Smooth Muscle Differentiation Is Dependent on Myocardin Gene Amplification in Most Human Retroperitoneal Leiomyosarcomas, *Cancer Research*, 69: 2269. [EX-E0450-Lv06]

Ruvolo, V et al. (2008) PKR Regulates B56 $\alpha$ -mediated BCL2 Phosphatase Activity in Acute Lymphoblastic Leukemia-derived REH Cells, *J. Biol. Chem.*, 283(51): 35474-35485. [PPP2R5A, N-HA tag]

Soni, K et al. (2009) Coatomer-dependent protein delivery to lipid droplets, *Journal of Cell Science*, 122: 1834-1841. [ADRP GFP tag]

Taguchi, Y et al. (2009) Specific Biarsenical Labeling of Cell Surface Proteins Allows Fluorescent- and Biotin-tagging of Amyloid Precursor Protein and Prion Proteins, *MBC Online*, 20(1): 233-244. [APP695]

Zhang, Z et al. (2009) A Conserved Na<sup>+</sup> Binding Site of the Sodium-coupled Neutral Amino Acid Transporter 2 (SNAT2), *J. Biol. Chem.*, 284 (37):25314-25323. [SNAT2, C-eYFP tag]

## **Choose GeneCopoeia**

GeneCopoeia and its joint venture FulenGen have manufactured and released the largest number of full-length protein-coding ORF cDNA clones in multiple vector systems with a wider selection of features than is available anywhere else. GeneCopoeia clones are suitable for a variety of protein expression, purification and functional assay applications and can be used with many cell types as well as with cell-free transcription and translation coupling systems for large-scale functional genomics and proteomics studies.

Operating since 2000, GeneCopoeia is the original manufacturer and provider of expression-ready, full-length clones for academic and governmental research institutes as well as pharmaceutical and biotechnology industries.

With a focus on innovative technologies for developing products as well as unique tools and services for research, discovery and product development in the areas of biological and biomedical research, GeneCopoeia provides accelerated pathways to discovery, strong guarantees and the highest possible quality.

## **The ORFeome Collaboration**

GeneCopoeia is a member of the ORFeome Collaboration, funded by the National Institutes of Health (NIH) and National Center for Biotechnology Information (NCBI), which provides full-length ORF clones to the research community. Formed in 2005 to meet the research community's need for an unrestricted source of sequence-validated full-length human cDNA clones in a format allowing easy transfer into virtually any type of expression vector, the collaboration aims to provide at least one fully sequenced, full-length clone for each of the approximately 18,500 currently known human genes.

ORFeome Collaboration clones require transfer into protein expression vectors and are available without restriction to researchers worldwide through multiple commercial distributors including GeneCopoeia.

## **The GeneCopoeia Guarantee**

GeneCopoeia asserts that all full-length OmicsLink Expression Clones are free of artificial frame-shifting variations including deletion and insertions as well as translation termination mutations (point mutations that result in a pre-mature stop codon).

GeneCopoeia products are distributed by Life Technologies (India) Pvt. Ltd in India.

**Life Technologies (India) Pvt. Ltd.**

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