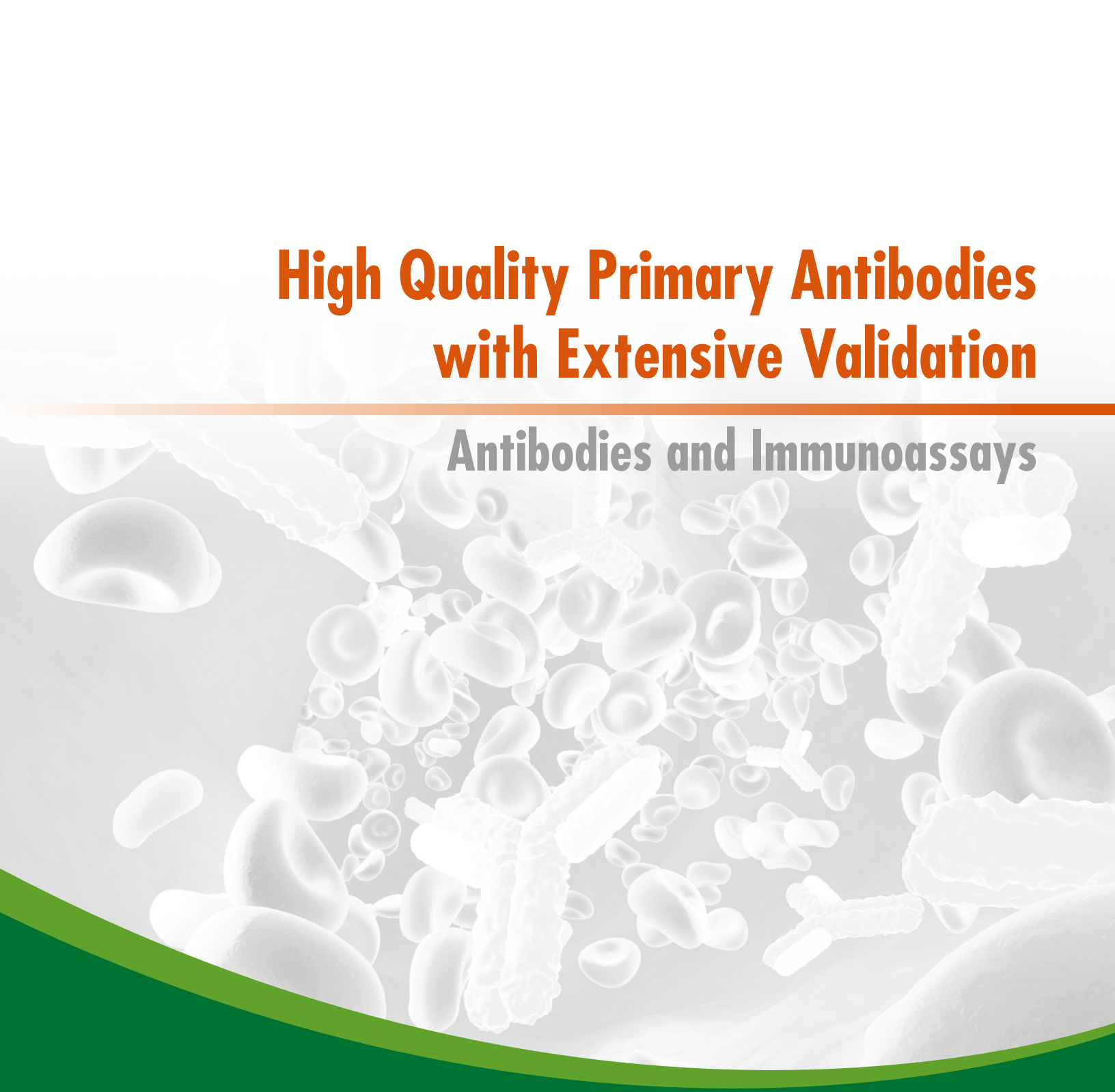
High Quality Primary Antibodies with Extensive Validation

Antibodies and Immunoassays



Monoclonal Antibodies made against Authentic Proteins

Rabbit Monoclonal Antibodies

Immunoassay Kits and Services

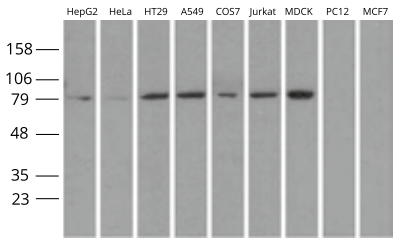
ORIGENE

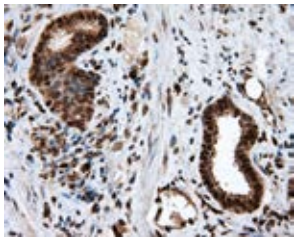
www.origene.com

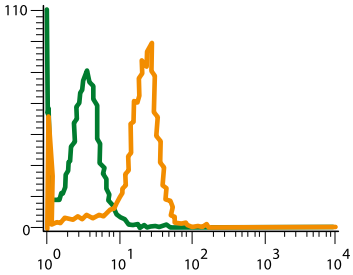
High Quality Primary Antibodies from OriGene

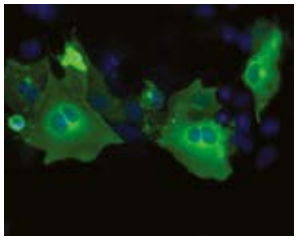
OriGene offers a broad selection of monoclonal and polyclonal antibodies to human proteins for various immuno-detections.

- l00,000 primary antibodies target critical proteins covering various pathways
- 25,000 OriGene branded antibodies: TrueMAB®, UltraMAB®,TrueRAB™ and TrueMAB™ with extensive validation data and large citations
- 500 Knock Out (KO) validated antibodies covering important immune-oncology targets
- Positive controls are available for most antibodies
- Large selection of anti-tag antibodies include common epitope tags and fluorescent protein tags
- Large selection of loading control antibodies against GAPDH, beta-tubulin, beta-actin and HSP90AB for several species
- Money back guarantee for validated applications









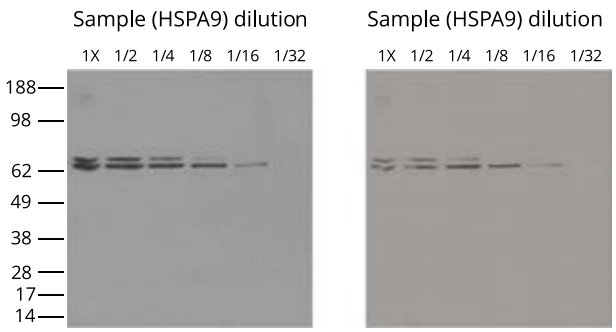
View the complete antibody portfolio at www.origene.com/antibodies

OTI4C5 anti-DDK monoclonal Antibody

OriGene has developed OTI4C5 anti-DDK antibody for the detection of DYKDDDDK epitope (same epitope as FLAG®)* of recombinant proteins.

- Validated for Western blot, immunoprecipitation, immunofluorescence and flow cytometry
- Higher sensitivity and specificity compared to other vendors' anti-FLAG®* antibodies

OTI4C5 anti-DDK monoclonal antibody (TA50011) showed higher sensitivity in the side-by-side comparison with M2 monoclonal antibody from vendor S. Both antibodies were used at 1:2000 dilution against same sample (HSPA9) dilutions.

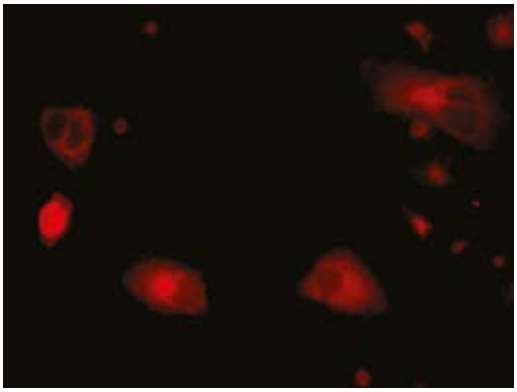


OTI4C5 anti-DDK mAB **Vendor S M2 mAB mAB**

* FLAG® is a trademark of Sigma-Aldrich.

OTI2H8 anti-tGFP monoclonal antibody

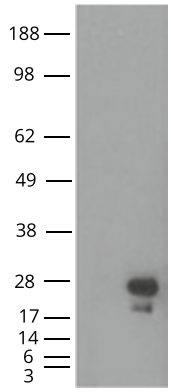
The OTI2H8 anti-tGFP (turbo green fluorescent protein) monoclonal antibody has been developed for the detection of tGFP tag fused to the N- or C-terminus of recombinant proteins. Validated for Western blot and immunofluorescent staining with high specificity and sensitivity. Made against a tGFP tagged recombinant protein expressed in HEK293T cell.



Cos7 cells transiently transfected with turboGFP tagged LAMP1 ORF cDNA clone were immuno-stained with OTI2H8 anti-turboGFP antibody (TA500041 - 1:100) and then stained red with an Alexa-568 conjugated secondary antibody (1:1000).

OTI5A2 anti-eGFP monoclonal antibody

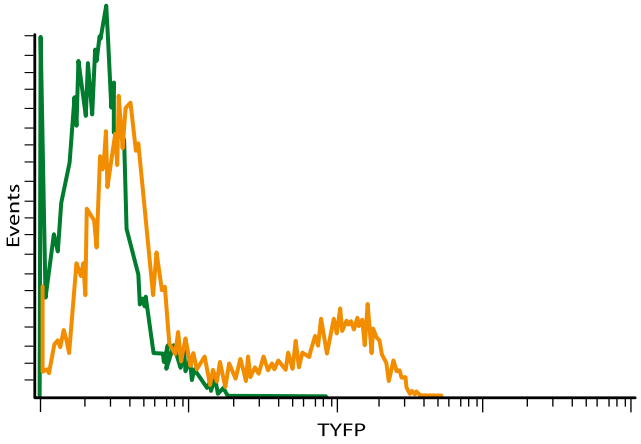
The OTI5A2 anti-eGFP (enhanced green fluorescent protein) monoclonal antibody has been developed for the detection of eGFP tag fused to the N- or C-terminus of recombinant proteins. Validated for Western blot with high specificity and sensitivity. Made against an eGFP tagged recombinant protein expressed in HEK293T cell.



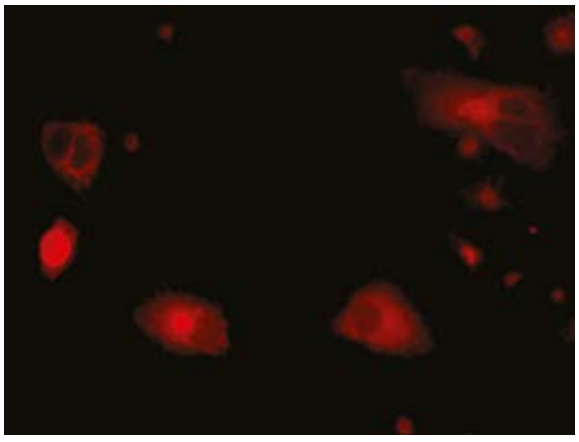
HEK293T cells were transfected with the pCMV6-ENTRY control (left lane) or pCMV6-ENTRY eGFP (right lane) cDNA and lysed, then immunoblotted with OTI5A2 anti-eGFP monoclonal antibody (TA50052).

OTI10F11 & OTI14C4 anti-tYFP monoclonal antibody

The OTI10F11 and 1OTI4C4 anti-tYFP (turbo-yellow fluorescent protein) monoclonal antibody has been developed for the detection of tYFP tag fused to the N- or C-terminus of recombinant proteins. Validated for Western blot, immunofluorescent staining and flow cytometry with high specificity and sensitivity. Made against a full length tYFP protein expressed in HEK293T cell.



HEK293T cells were transfected with either pCMV6-ENTRY tYFP (pcmv6-tYFP) (Orange) or empty vector control plasmid (Green) were immunostained with anti-tYFP mouse monoclonal antibody (TA150028), and then analyzed by flow cytometry.



Anti-tYFP mouse monoclonal antibody (TA150027) immunofluorescent staining of COS7 cells transiently transfected by pCMV6-ENTRY tYFP (pcmv6-tYFP)

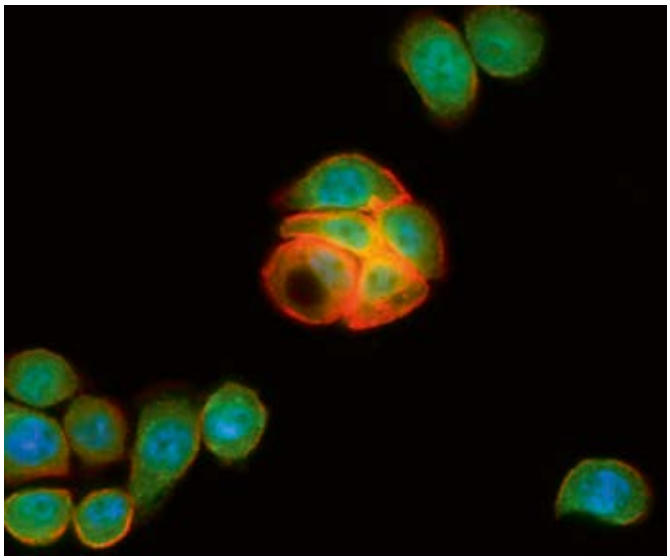
TrueMAB™ Monoclonal Antibodies

Made against authentic protein antigens

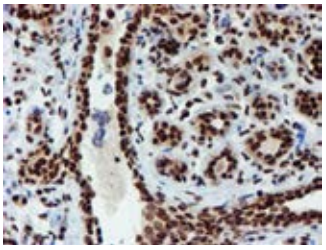
TrueMAB™ antibodies are great tools for immunoassays that are sensitive to proteins' conformations, such as immunofluorescence, immunoprecipitation, flow cytometry, ELISA, immunohistochemistry, high content screening (HCS), antibody arrays and more.

- Superior monoclonal antibodies made to recognize native protein epitopes
- Made against authentic protein antigens
- Extensive validation
  - Western blot on cell lysates (9 cell lines with a positive control)
  - Immunohistochemistry on 24 human normal and tumor FFPE tissues
  - Immunofluorescent staining
  - Flow cytometry
  - Immuno-precipitation
- Positive lysates available
- Multiple TrueMAB™ monoclonal antibodies available for a single protein target for cross-reference validations

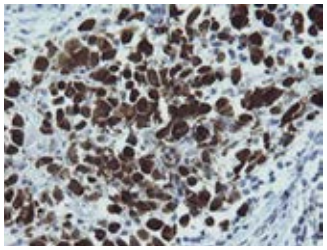
Learn more about our TrueMabs at
www.origene.com/truemab



Immunofluorescent staining of HT29 cells using anti-LGR5 mouse monoclonal antibody (TA503316, green). Actin filaments were labeled with TRITC-phalloidin (red), and nuclear with DAPI (blue)



Immunohistochemical staining of paraffin-embedded Human breast tissue within the normal limits using anti-PADI4 mouse monoclonal antibody. (Heat-induced epitope retrieval by 10mM citric buffer, pH6.0, 100C for 10min, TA504813)



Immunohistochemical staining of paraffin-embedded Carcinoma of Human bladder tissue using anti-MAGEA4 mouse monoclonal antibody. (Heat-induced epitope retrieval by 10mM citric buffer, pH6.0, 120C for 3min, TA505362)

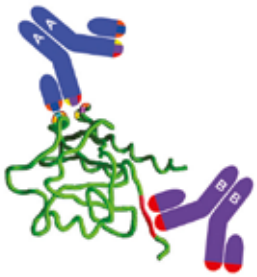
For the recognition of the native protein epitopes

TrueMAB™ monoclonal antibodies were generated using recombinant human proteins as antigens that were affinity purified under native condition to preserve the proteins' conformations. Commonly available commercial antibodies were generated using short peptides. The peptide antigens are inadequate to mimic the protein conformations due to the lack of three-dimensional structures. In particular, peptide-derived antibodies cannot recognize the conformational epitopes which are primarily presented on the surface of native proteins.

In comparison to peptide-derived antibodies, TrueMAB™ monoclonal antibodies provide high sensitivity and specificity for the recognition of native protein epitope's conformational structures.

Native epitopes

Two types of epitopes are presented on the surface of native protein conformations. A. Conformational epitope (discontinuous epitope); B. Linear epitope. Conformational epitopes are abundant on the surfaces of native proteins. The peptide antigens are inadequate to mimic the protein conformations due to the lack of threedimensional structures.



Native Epitope (IF, ELISA, FC, IP, HCS)

Denatatured Proteins (Western Blot)

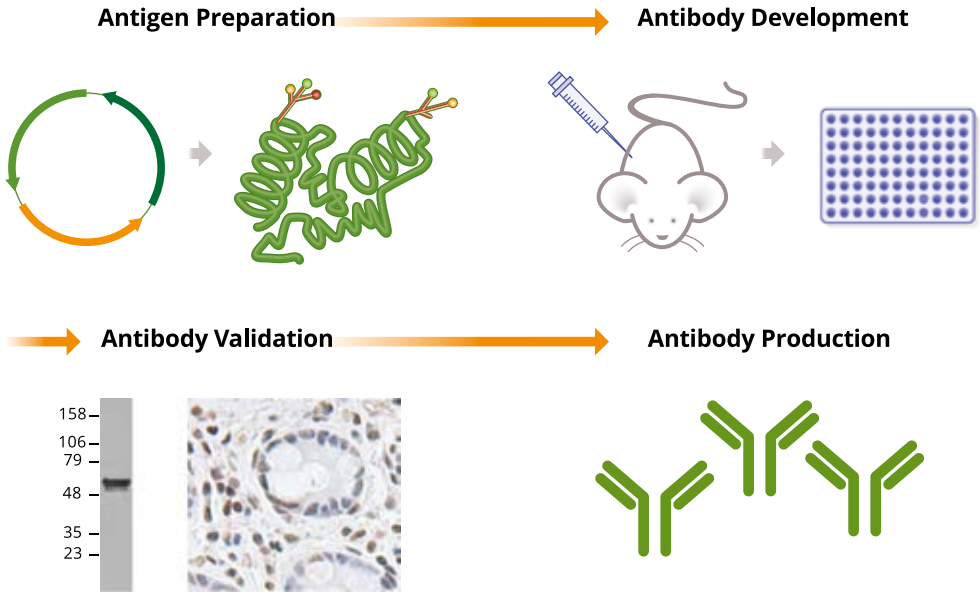
Applicatons	Proteins' Conformations in the Samples	Epitope Recognition
Western Blot	Denatured Proteins	Unfolded Linear Epitopes
Immunofluorescent Staining	Native Folded Proteins	Native Epitopes
Flow Cytometry	Native Folded Proteins	Native Epitopes
Immuno-Precipitation	Native Folded	Proteins Native Epitopes
ELISA	Native Folded Proteins	Native Epitopes
High Content Screening	Native Folded Proteins	Native Epitopes
Antibody Array	Native Folded Proteins	Native Epitopes
Luminex Multiplexing	Native Folded Proteins	Native Epitopes
Immunohistochemistry	Native/Partially Unfolded Proteins (fixed & cross linked)	Conformational & Linear Epitopes

Monoclonal Antibody Development

TrueMAB™ joint-development program for human proteome

OriGene provides joint-development programs to generate mouse monoclonal antibodies using human proteins as antigens. Upon the acceptance of the request after OriGene's evaluation, the participant contributes a portion of the development cost, and OriGene will be responsible for:

- Antigen preparation (purified human proteins expressed in HEK293T cells)
- Mouse monoclonal antibody development
- Antibody validations (WB on a panel of cell lines, IHC on 24 tissues, & IF)
- Antibody production & affinity purification



Benefits of the programs

- Proteins with native conformation will be used as antigens. The protein-derived antibodies recognize native epitopes with high reactivity and specificity compared to peptide-derived antibodies
- Antigens not required, OriGene will prepare the antigens
- OriGene provides extensive characterization data for antibody validation
- OriGene delivers affinity purified antibodies ready for your assays

Program cost: inquire at sales@origene.com

TrueRAB™ Recombinant Rabbit Monoclonal Antibodies

OriGene has developed single B cell cloning technology for recombinant rabbit monoclonal antibody generation. TrueRAB® monoclonal antibodies are a collection of recombinant rabbit monoclonal antibodies developed in house.

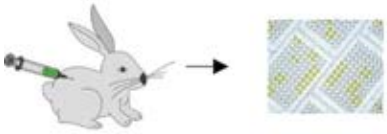
Features:

- Higher affinity and specificity comparing to mouse monoclonal antibodies
- Ideal for the development of antibodies against tough targets
- Ideal for mouse model study
- Ideal for demanding applications like IHC on FFPE tissue

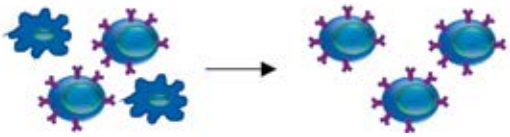
I. Immunization and B cell isolation

Antigen design and production

Immunization and serum validation

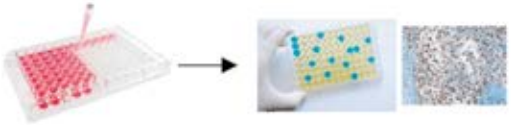


PBMC and Target B cell enrichment

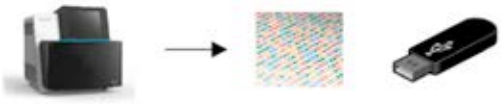


II. Single B cell cloning, sequencing and antibody production

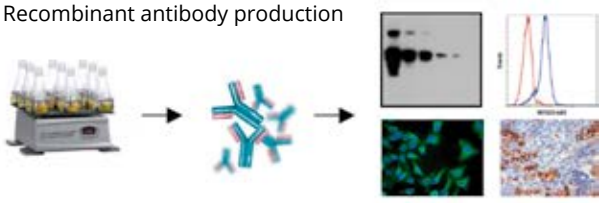
Single B cell cultivation and validation



IgG sequencing and DNA synthesis



Recombinant antibody production



TrueRAB®

View more details on www.origene.com/truerab

OriGene, Your Partner in Research, Diagnostics and Beyond

- cDNA Clones/Lenti Particles
- CRISPR/Cas9/sgRNA
- Recombinant Proteins
- Antibodies
- RNAi
- Normal & Cancer Tissues

ORIGENE

OriGene Headquarter
9620 Medical Center Drive
Suite 200
Rockville, MD, 20850
USA
+1.301.340.3188
www.origene.com

OriGene EU
Schillerstraße 5
32052 Herford
Germany
+49.5221.346060
www.origene.com

OriGene China
HuiLongSen International Science
& Technology Industry Park,
Build 11, No.99 Kechuang 14th Street
Beijing, China 101111
+86.10.59755312
www.origene.com.cn

Expression-ready cDNA clones

When you need a cDNA clone, OriGene is your best choice. Our 100,000 ready-to-ship cDNA clones offer a quick and cost-saving solution.

- **Comprehensive selection: human, mouse, rat and virus ORFs**
- **Expression vector with CMV promotor**
- **10 µg transfection-ready plasmids**

Two major types of cDNA clones offered

TrueClone (non-tagged clones)

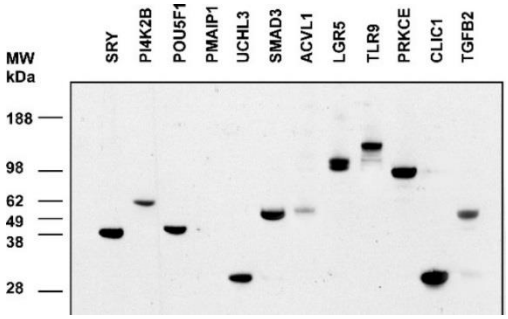
- **Native protein** expressd, no tags
- **Cost effective and time saving**
- Pathway-specific **clone sets**

True ORF (tagged ORF clones)

- **Two tags:** Myc-DDK or GFP for detection or purification
- 20,000 TrueORF Gold: **Expressio valdidated**
- **Flexibility:** easy shuttling into >100 destination vectors (other tags etc)

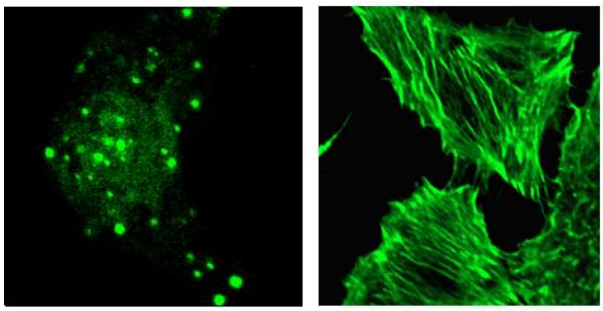
Validation Data

GFP-tagged ORF clones



Myc-DDK tagged ORF clone were transfected into HEK293 cells. WB was performed with an anti-DDK antibody

GFP-tagged ORF clones



GFP tagged ORF clone was transfected into HEK293 cells. GFP tagged ORF clone can be used to track fusion protein cellular localization.

OriGene Technologies, Inc.
9620 Medical Drive. Suite 200
Rockville, MD, 20850
P: +1.301.340.3188

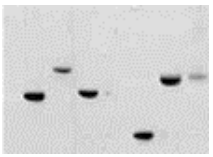
custsupport@origene.com

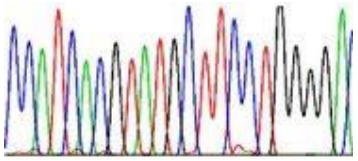
ORIGENE
www.origene.com

Featured cDNA clones

TrueORF Gold
Expression-validated cDNA Clones

- ✓ **Gene expression verified on WB**
- ✓ **Fully sequenced**
- ✓ **Ship next day**

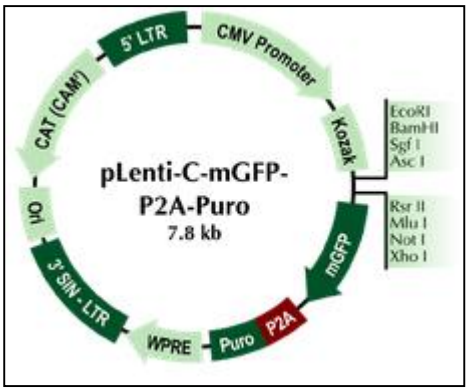


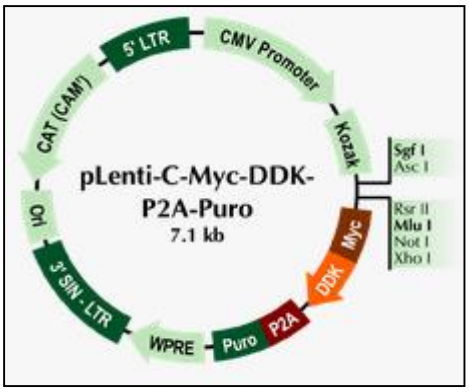


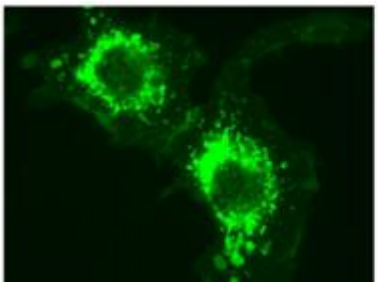
Lenti-ORF Clones

Lentiviral system is a very powerful gene delivery tool.

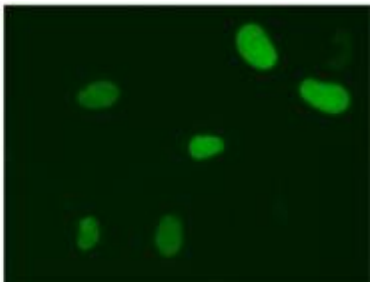
- **Broad Spectrum**: Deliver genes to almost all cells, including non-dividing cells
- **High transduction efficiency**: Easily reach 100%







RC221478L2V
Human F11R



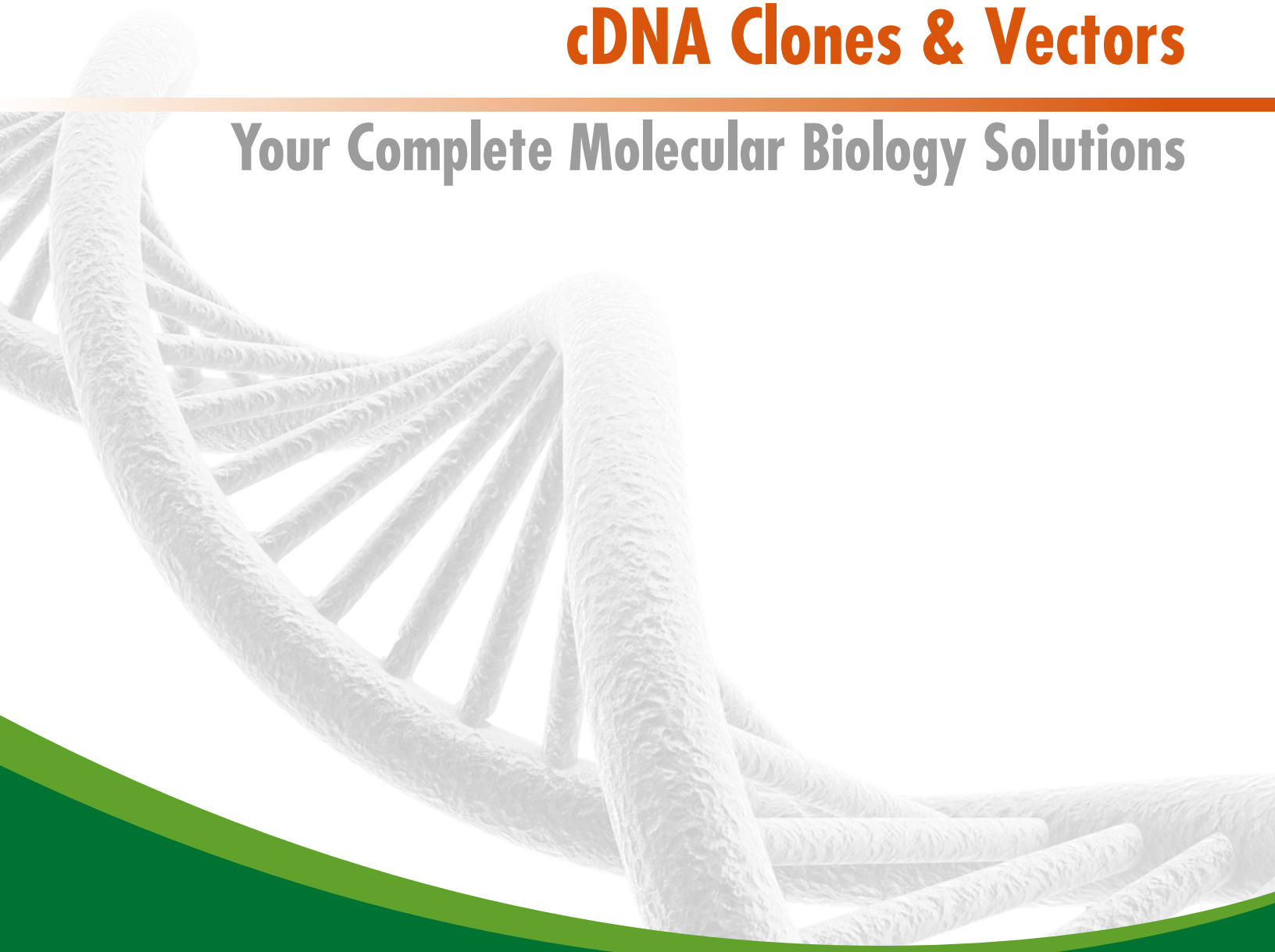
RC229235L2V
Human KLF4

US Headquarter: +1.301.340.318 custsupport@origene.com
EU Office: +49.5221.346.060 info-de@origene.com

ORIGENE
www.origene.com

cDNA Clones & Vectors

Your Complete Molecular Biology Solutions



ORF Clones

Non-protein Coding Clones

>100 Cloning Vectors

ORIGENE

www.origene.com

OriGene Clone Offering Overview

Comprehensive. Quality. Fast Delivery.

When you need a DNA clone, be it a cDNA clone or a clone of non-coding sequence, OriGene is your best choice. Our 100,000 ready-to-ship cDNA clones offer a quick and cost-saving solution.

	cDNA clones for protein expression			Clones with non-coding sequences		
	TrueClone (untagged)	**TrueORF (tagged)**	**Lenti-ORF**	**Gene synthesis**	**miRNA plasmids**	**3'-UTR reporter plasmids**
Main utility	Protein Expression in native form	Tagged protein expression	Tagged protein expression	Customize	miRNA over expression	Target validation for miRNA
Expression host	Mammalian	Mammalian	Mammalian	Customize	Mammalian	Mammalian
Species	Human/Mouse/ Rat	Human/Mouse/ Rat	Human/Mouse/ Rat	Any species, any sequence	Human/Mouse/ Rat	Human

How to find a clone

Search:
A search box is located at the top of every page of the OriGene website and the following terms can be used.

- NCBI Accession Number (eg. NM_000044)
- Gene symbol of the gene (eg. VEGF)
- Gene name (Caspase 8)
- Clone description (eg. androgen receptor, kinase deficient mutant)

Browse:
On the clone collection page, www.origene.com/clone-set, genes can also be browsed by gene family or pathway. A few popular categories are listed below as examples.

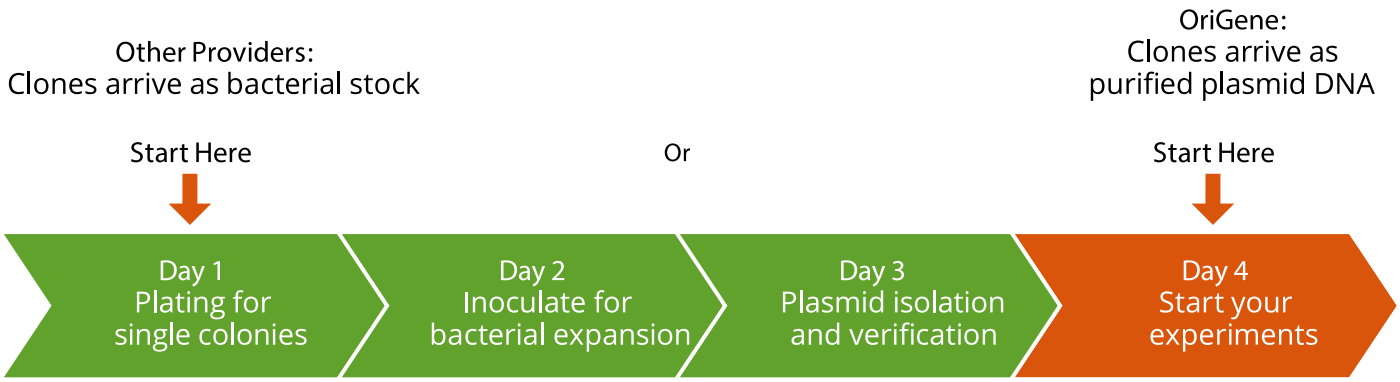
- Protein Kinase
- Wnt Pathway
- Phosphotase
- Angiogenesis
- GPCR
- Notch Pathway
- Secreted
- Tumor Metastasis

Why Should You Choose OriGene's cDNA Clones?

Quality! Selection! Delivery!

Features

- Comprehensive: Genome wide coverage for human and mouse
- Versatile: untagged or tagged clones (>100 vector options)
- Expression validation
- Transfection-ready DNA: Plasmids are purified with ion-exchange columns
- Pathway focused cDNA clone sets



For protein-coding ORF sequences, there are two types of clones

- **TrueClones:** Library-based, full-length cDNA clones that usually contain native 5' and 3' untranslated regions in a CMV mammalian expression vector
- **TrueORF Clones:** Tagged open reading frame (ORF) clones in OriGene's CMV based PrecisionShuttle Entry vector. The ORF insert can be easily shuttled with a simple digestion/ligation reaction into a wide variety of tagged destination vectors.

For non-protein coding sequences, OriGene offers

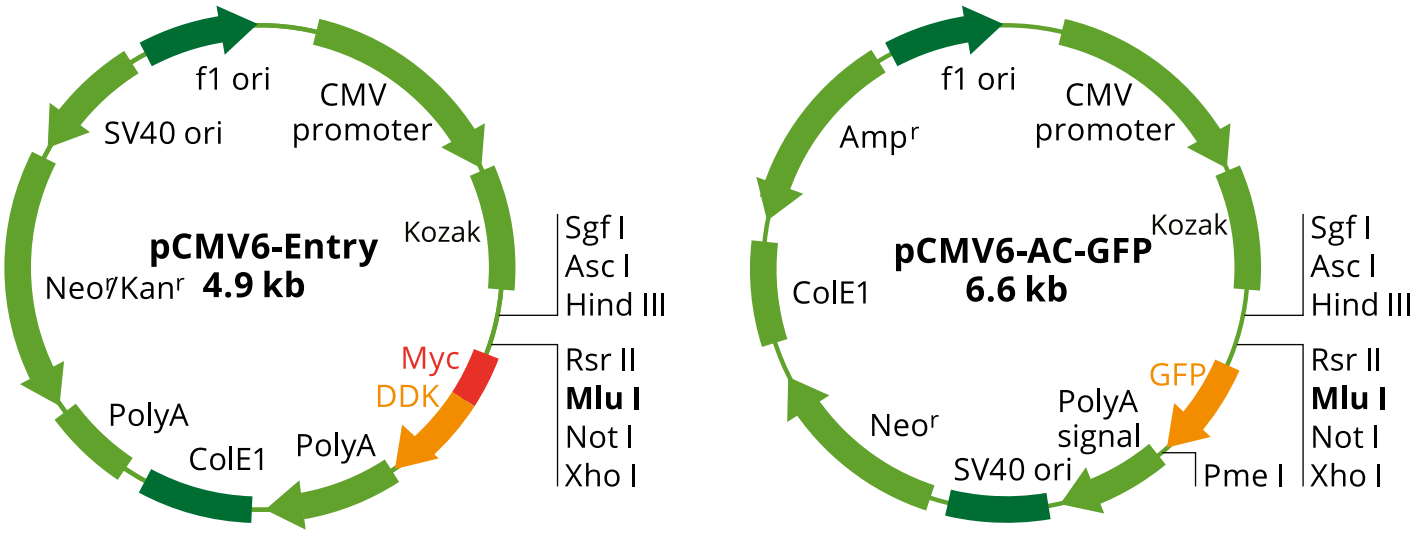
- miRNA expression clones
- shRNA clones (see RNAi brochure or www.origene.com/RNAi)
- 3'-UTR reporter clones

Read more about our cDNA clones at
www.origene.com/cdna-clones

Myc-DDK- or GFP-tagged ORF clones for convenient application

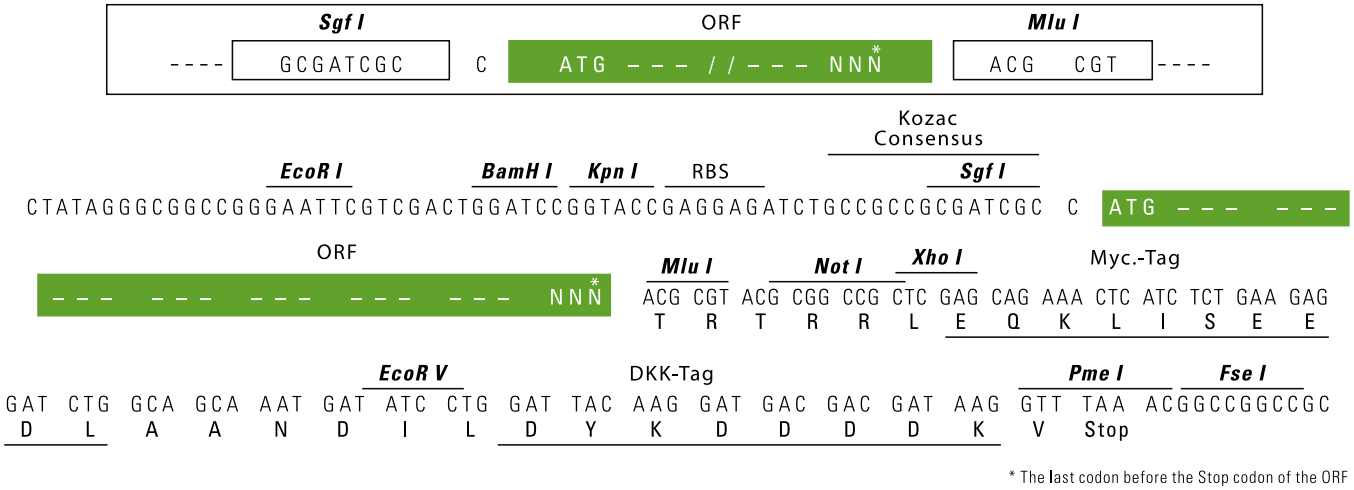
The TrueORF product line is the latest generation of DNA clone products. Unlike TrueClones, TrueORF clones enable expression of the encoded transcript as a tagged protein. This facilitates multiple downstreamapplications that utilize an anti-tag antibody such as: protein detection, protein purification, subcellular localization, etc.

TrueORF Vectors



All TrueORF inserts are housed in either pCMV6-Entry or pCMV6-AC-GFP vector. Both vectors allow for easy shuttling by a simple ‚cut-and-paste' mechanism into any of the PrecisionShuttle destination vectors A TrueORF clone expresses the encoded sequence as a -terminal Myc and DDK-tagged protein or a GFP tagged protein.

DDK is the same as FLAG. FLAG® is a registered trademark of Sigma-Aldrich.

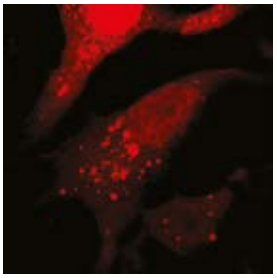


* The last codon before the Stop codon of the ORF

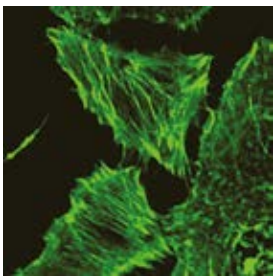
The diagram above is applicable to the majority of human ORFs that do not have internal Sgf I and Mlu I sites. Other rare restriction sites in the MCS are utilized for ORFs with internal sites for the two enzymes.

TrueORFs are excellent for

- Mammalian overexpression of tagged proteins (over 100 different vectors available)
- Purification of the overexpressed protein
- Protein interaction and localization studies (e.g. organelle markers)
- Detection and cellular imaging of the exogenously introduced protein
- Tagged protein expression in a cell-free system (eg. TNT)



Autophagosome RC100005



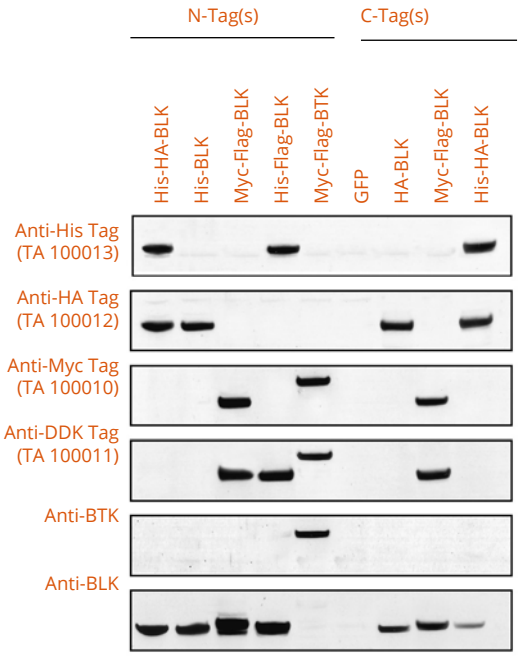
Cytoskeleton RC100002

TrueORF advantages

- **Convenience:** TrueORFs provide an instant solution for tagged protein expression
- **Flexibility:** TrueORF can be shuttled into multiple destination vectors.
- **Accuracy:** TrueORFs have verified and guaranteed insert sequences
- **Proven:** TrueORFs have been rigorously tested for expression of the target proteins and their tags.

Over 15,000 TrueORF ave passed our protein expression validation.

Find our complete portfolio at www.origene.com/trueorf



Western blot analysis of HEK293 cell lysate over-expressing LK and BTK tagged with indicated epitopes.

PrecisionShuttle System

Tagged protein expression made simple

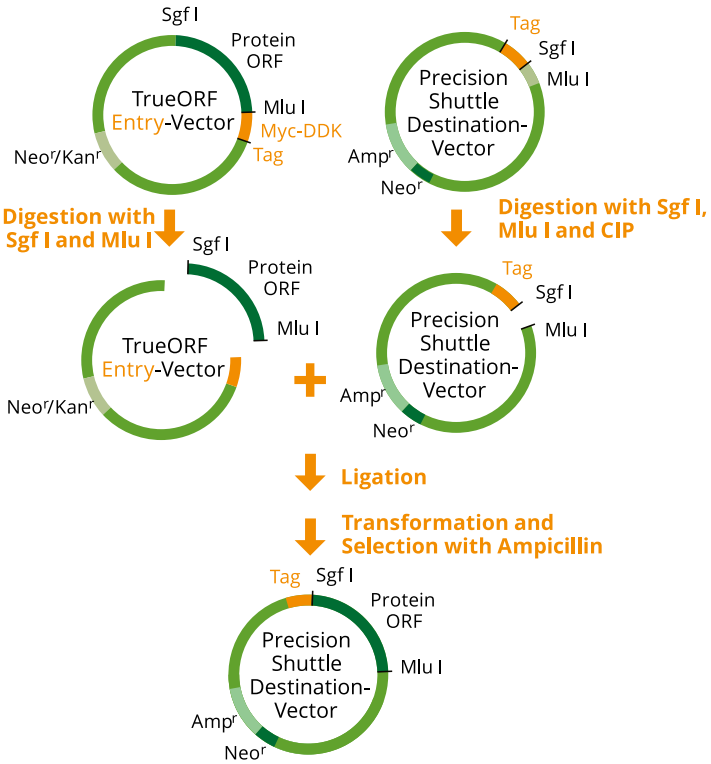
To accommodate diverse tagging needs, OriGene designed the novel PrecisionShuttle™ system to allow easy sub-cloning of an ORF from one tagged vector to another. The TrueORF entry vector contains C-terminal tags of Myc and DDK®. A large panel of destination vectors are available so you can express an ORF with different tags or with tags at different ends of the protein. The key in the PrecisionShuttle system is the utilization of two rare-cutting restriction endonucleases, Sgf I and Mlu I.

PrecisionShuttle vs. Recombination Shuttle System (e.g. Gateway® System):

PrecisionShuttle™	Gateway®
Functional Entry vector	Entry vector NOT for expression
One-step subcloning	Multi-step subcloning
Restriction enzymes-based	Recombination-based
Low cost	Expensive
No IP restriction	Conditional licensing
Inserts>18Kb are readily shuttled	Unstable plasmid when insert>5Kb
2 aa linker appended	>10aa linker appended

Gatway is a registered trademark of Life Technology.

Scheme of the PrecisionShuttle System



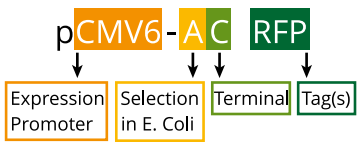
PrecisionShuttle™ Vectors - Entry and Destination

PrecisionShuttle Entry Vector	Cell Selection
pCMV6-Entry (C-terminal Myc and DDK Tagged)	Neomycin

PrecisionShuttle Destination Vector	Mammalian Selection
pCMV6-AC-His	Neomycin
pCMV6-AC-Myc	Neomycin
pCMV6-AC-HA	Neomycin
pCMV6-AC-DDK	Neomycin
pCMV6-AC-Myc-His	Neomycin
pCMV6-AC-Myc-DDK	Neomycin
pCMV6-AC-HA-His	Neomycin
pCMV6-AC-DDK-His	Neomycin
pCMV6-AC-GFP	Neomycin
pCMV6-AN-His	Neomycin
pCMV6-AN-Myc	Neomycin
pCMV6-AN-HA	Neomycin
pCMV6-AN-DDK	Neomycin
pCMV6-AN-His-Myc	Neomycin
pCMV6-AN-Myc-DDK	Neomycin
pCMV6-AN-His-HA	Neomycin
pCMV6-AN-His-DDK	Neomycin
pCMV6-AN-GFP	Neomycin
pCMV6-AC	Neomycin
pTUNE Inducible	Neomycin
pCMV6-A-BSD	Blasticidin
pCMV6-A-EM7-BSD	Blasticidin
pCMV6-A-Hygro	Hygromycin
pCMV6-A-Puro	Puromycin
pCMV6-A-GFP	—
pCMV6-AC-IRES-GFP	Neomycin
pEX-N-His-GST	—
pEX-N-GST	—
pEX-N-His	—
pEX-C-His	—
pEX-1	—
pCMV6-AN-RFP	Neomycin
pCMV6-AC-RFP	Neomycin
pCMV6-AN-YFP	Neomycin
pCMV6-AC-YFP	Neomycin
pCMV6-AC-FP602	Neomycin
pCMV6-AC-FP635	Neomycin
pCMV6-AC-mKate	Neomycin
pCMV6-AC-mGFP	Neomycin
pCMV6-AC-mRFP	Neomycin
pCMV6-AC-mYFP	Neomycin
pCMV6-AC-mBFP	Neomycin
pCMV6-AC-mCFP	Neomycin
pCMV6-AN-FP602	Neomycin
pCMV6-AN-FP635	Neomycin
pCMV6-AN-mKate	Neomycin
pCMV6-AN-mGFP	Neomycin
pCMV6-AN-mRFP	Neomycin
pCMV6-AN-mYFP	Neomycin
pCMV6-AN-mBFP	Neomycin
pCMV6-AN-mCFP	Neomycin
pCMV6-AC-FC	Neomycin
pCMV6-AC-FC-S	Neomycin
pCMV6-AN-FC	Neomycin
pCMV6-AN-FC-S	Neomycin
pCMV6-AC-3DDK	Neomycin
pCMV6-AN-3DDK	Neomycin
pCMV6-AC-IRES-GFP-Puro	Puromycin
pTUNE-GFP	Neomycin
pCMV6-AN-GFP-C-His	Neomycin

Lentiviral and AAV vectors also available at www.origene.com/precisionshuttle-system

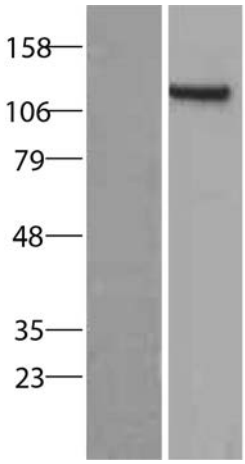
Understand a Vector by its name



TrueORF Gold Clones - Expression-validated cDNA Clones

Tested individually by Western Blot

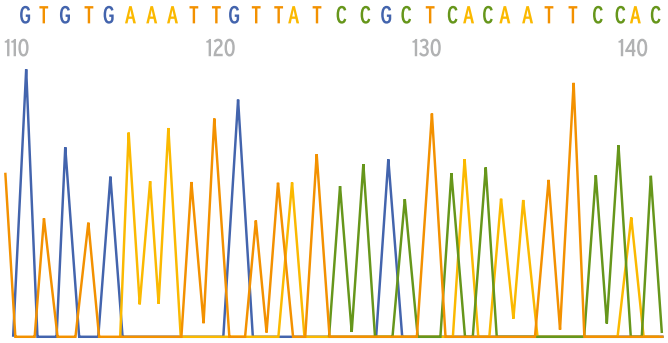
Each TrueORF Gold clone has been used to transfect human cell lines for protein expression. OriGene has produced over 15,000 over-expression lysates from TrueORF transfected HEK293 cells and subsequently purified over 6,000 human proteins.



HEK293 were transfected with empty vector (left) or TrueORF for Myc/DDK-tagged hTERT(Cat# RC217436, right). The lysates were analyzed using anti-DDK antibody to show over-expression of hTERT.

Sequence verified

Each TrueORF Gold clone's sequence information is online, downloadable as chromatogram files. No more worrying about mutations, deletions, or frameshift when using TrueORF Gold.



Transfection ready

No need for subcloning, no need for plasmid preparation; TrueORF Gold clones are expression ready and supplied as 10ug transfection-ready DNA.

Easily shuttled into over 100 vectors

OriGene has prepared over 100 destination vectors with matching cloning sites allowing for easy transfer of the insert using a simple cut and paste procedure.

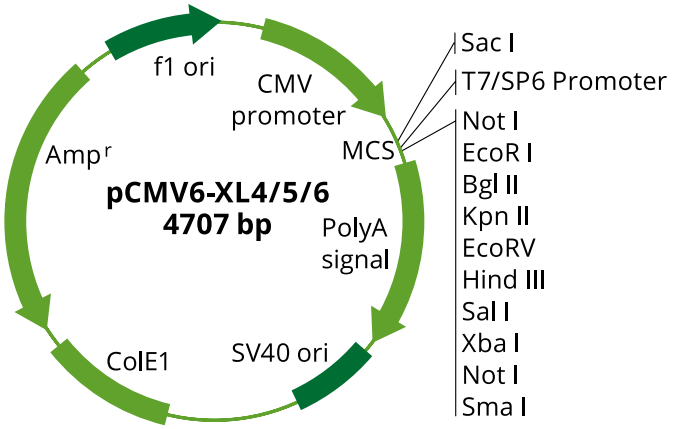
- Fluorescent-protein tagging vectors
- Epitope-tagging vectors
- Bacterial expression vectors
- Selection markers
- Viral vectors

NEXT-DAY SHIPMENT

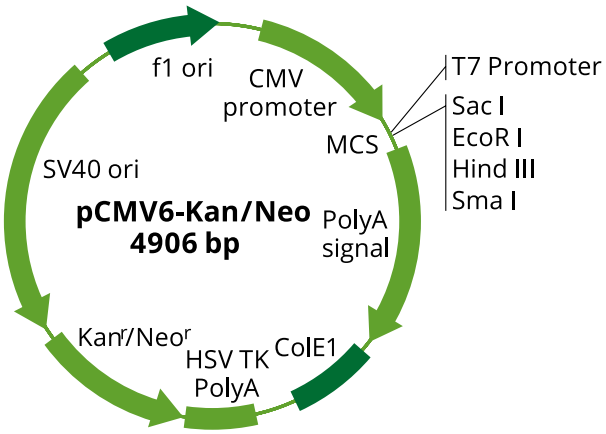
See all available TrueORF Gold clones at www.origene.com/trueorf-gold

Authentic full-length cDNA clones
for expression and functional studies of a native protein

OriGene's TrueClone cover both human and mouse genomes. The vectors for he two species differ lightly.



All TrueClones are unidirectionally cloned in the EcoR I and Sal I restriction sites.
The Sal I site is destroyed during cloning, and cannot be reused. The insert can be liberated by a simple digestion with Not I.



All mouse TrueClones are cloned unidirectionally between two sites in the MCS.
Please contact OriGene's technical support professionals for details.

TrueClones are excellent for

- Overexpression of the native protein in mammalian cells
- Functional studies of native protein
- Quantitative PCR templates
- Hybridization-based detection probes, such as Northern blots or FISH assays
- Protein expression in cell-free systems (eg. TNT)

TrueClone advantages

- Cost-effective and time-saving alternative to de novo cloning
- Expression-ready and transfection-ready
- Authentic cDNAs representing native transcripts
- Consistent vector system facilitates high-throughput screening

Lentivirus is a powerful gene delivery tool, high transduction efficiency. Lentiviral system can be used for both gene overexpression and gene knockdown (shRNA).

- **High efficiency:** Up to 100% transduction
- **Broad spectrum:** Dividing & non-dividing
- **Biosafety:** 3rd generation, safest
- **Coverage:** Genom wide offering

Lentiviral Products:

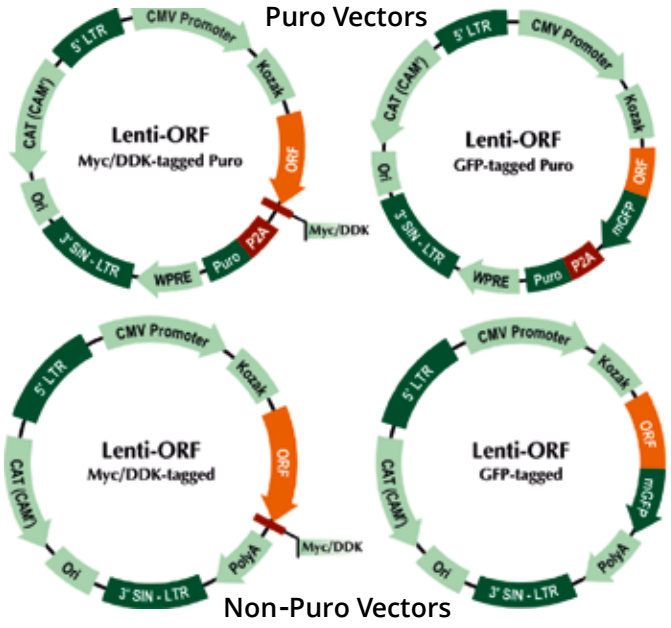
- Lenti-ORF
  - plasmids
  - Lentiviral Particles
- Lenti shRNA
  - plasmids
  - Lentiviral Particles

Lenti accessories:

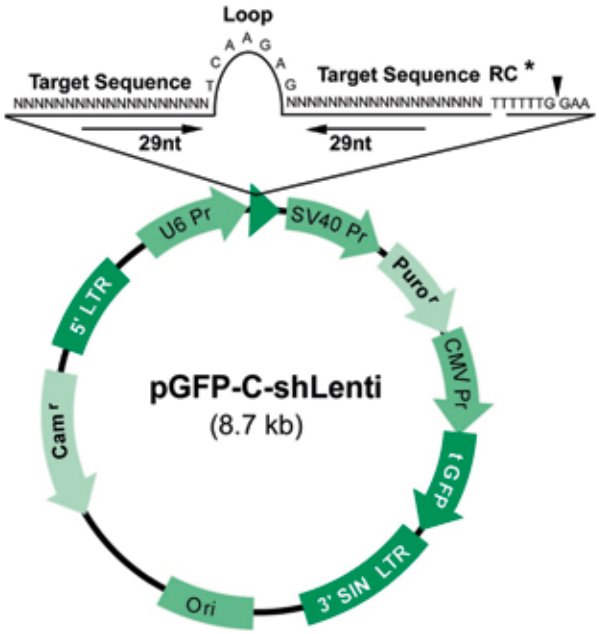
- Packaging kit
- Lenti titer kit
- Control particles
- Concentrator
- Lenti stabilizer

Lenti-ORF clones, 4 vector options

The same ORF is offered in 4 lenti vectors



Lenti shRNAs



Three major functional elements

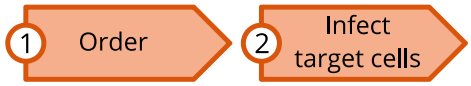
- shRNA under U6 promoter
- Puro selection marker
- GFP as a reporter

More lentiviral destination vectors:
www.origene.com/products/vectors/orf-cloning-vectors

What is special about OriGene's Ready-to-use Lentiviral Particles

- Pre-titered, ready-to-use
- Tranduction units, not physical titer, >10^7 TU/mL
- Longer storage, provided in the proprietary Lentiviral stabilizer solution, >1 year infectivity

Ready-to-use lentiviral particles vs lenti plasmids

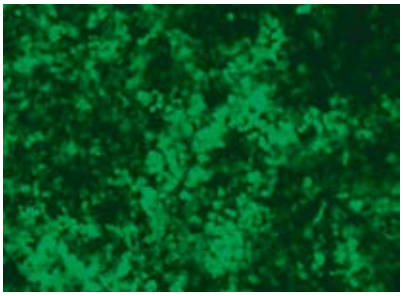


Ready-to-use particles

Lenti plasmids

Highly effective Lenti packaging kit

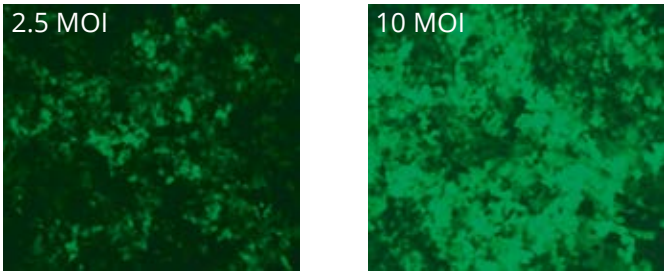
- High efficiency
- Package the 3rd generation lenti vectors
- Transfection reagent included
- Cat # TR30037 & TR30037P5



Transduced HEK293 cells with lenti GFP virus produced with this Lenti-vpak kit

Control Particles (expressing GFP or RFP)

- Quantify transduction efficiency
- The control particles can be used to optimize transduction
- Serve as negative control



HEK293 cells were transduced with GFP control particles at different MOI. Fluorescence pictures taken 72 hrs after infection.

New:
Integration-deficient Lenti-packaging it:
still powerful to deliver genes, but no footprints
Cat # TR30036 & TR30036P5

Pathway-focused cDNA Clone Sets

For researchers who wish to obtain an entire gene familyora athway-focused cDNA clone ollection, OriGene offers pre-made clone sets. Clone sets are ideal for high throughput screening or archiving.OriGene discounts the order considerably according to the number of clones in the set ordered.

Pre-made Human Clone Sets

Each pre-made clone set contains of 90 cDNA clones in mammalian expression vectors

Cat #	Description	Price (subjected to change)
TCTM101	Transmembrane clone set I	$ 995
TCTF101	Transcription factors clone set I	$ 995
TCPK101	Protein kinases clone set I	$ 995
TCGR101	GPCR clone set I	$ 995
TCSP101	Secreted gene clone set I	$ 995

Clone Sets for Customized Assembly

OriGene's website lists over 100 commonly studied pathways, gene families and research focuses so that the customer can assemble their own clone collection of interest with ease. We will work with you to make your own custom set — contact us at sales@origene.com.

Sample collections

Clone Sets	TrueORF (Myc-DDK Tagged)	TrueClone (Untagged)
GPCR	269	376
Kinase-deficient mutant	N/A	337
Protein Kinase	422	973
Secreted	1087	1259
Transmembrane	3309	4372
Angiogenesis	341	534

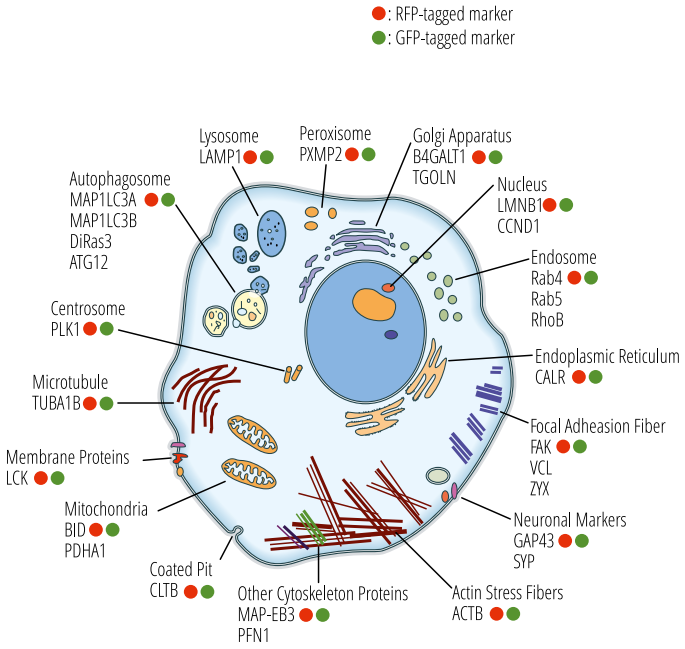
Clone Sets	TrueORF (Myc-DDK Tagged)	TrueClone (Untagged)
Apoptosis	1498	2315
Breast Cancer	319	507
Cytokines	203	241
Human Stem Cell	246	339
Human Tumor Metastasis	94	154
Notch	92	144
Wnt Pathway	287	386

Find more information on our clone sets on
www.origene.com/clone-set

Label subcellular structures with a simple transfection

Product Description

- GFP- or RFP-tagged human cDNA clones for organelle-specific marking
- Individually validated by confocal microscopy for correct labeling
- Enable labeling of live or fixed cells without chemical or antibodies



Applications

- Direct organelle marking
- Monitoring of protein trafficking
- Study organelle morphology and dynamics
- Protein co-localization with organelles
- Fraction tracking during enrichment or purification

$480 each, provided as 10ug purified transfection-ready plasmids

Cat#	Organelle	Symbol
RC100004(G)/RC100036(R)	Autophagosome	ATG12
RC100011(G)/RC100043(R)	Autophagosome	Di-Ras3
RC100020(G)/RC100052(R)	Autophagosome	MAP1LC3A
RC100021(G)/RC100053(R)	Autophagosome	MAP1LC3B
RC100023(G)/RC100055(R)	Centrosome	PLK1
RC100010(G)/RC100042(R)	Coated pit	CLTB
RC100002(G)/RC100034(R)	Cytoskeleton	ACTB
RC100019(G)/RC100051(R)	Cytoskeleton	MAP-EB3
RC100022(G)/RC100054(R)	Cytoskeleton	PFN1
RC100030(G)/RC100062(R)	Cytoskeleton	TUBA1B
RC100008(G)/RC100040(R)	Endoplasmic reticulum	CALR
RC100025(G)/RC100057(R)	Endosome	Rab4
RC100026(G)/RC100058(R)	Endosome	Rab5
RC100027(G)/RC100059(R)	Endosome	RhoB

Cat#	Organelle	Symbol
RC100012(G)/RC100044(R)	Focal adherin fiber	FAK
RC100031(G)/RC100063(R)	Focal adherin fiber	VCL
RC100032(G)/RC100064(R)	Focal adherin fiber	ZYX
RC100005(G)/RC100037(R)	Golgi apparatus	B4GalT1
RC100029(G)/RC100061(R)	Golgi apparatus	TGOLN
RC100016(G)/RC100048(R)	Lysosome	LAMP1
RC100006(G)/RC100038(R)	Mitochondria	PDHA1
RC100007(G)/RC100039(R)	Mitochondria	BID
RC100013(G)/RC100045(R)	Neuronal axis	GAP43
RC100009(G)/RC100041(R)	Nucleus	CCND1
RC100018(G)/RC100050(R)	Nucleus	LMNB1
RC100024(G)/RC100056(R)	Peroxisome	PXMP2
RC100017(G)/RC100049(R)	Plasma membrane	LCK
RC100028(G)/RC100060(R)	Synaptic vesicles	SYP

www.origene.com/organelle-marker

microRNA Expression Plasmids

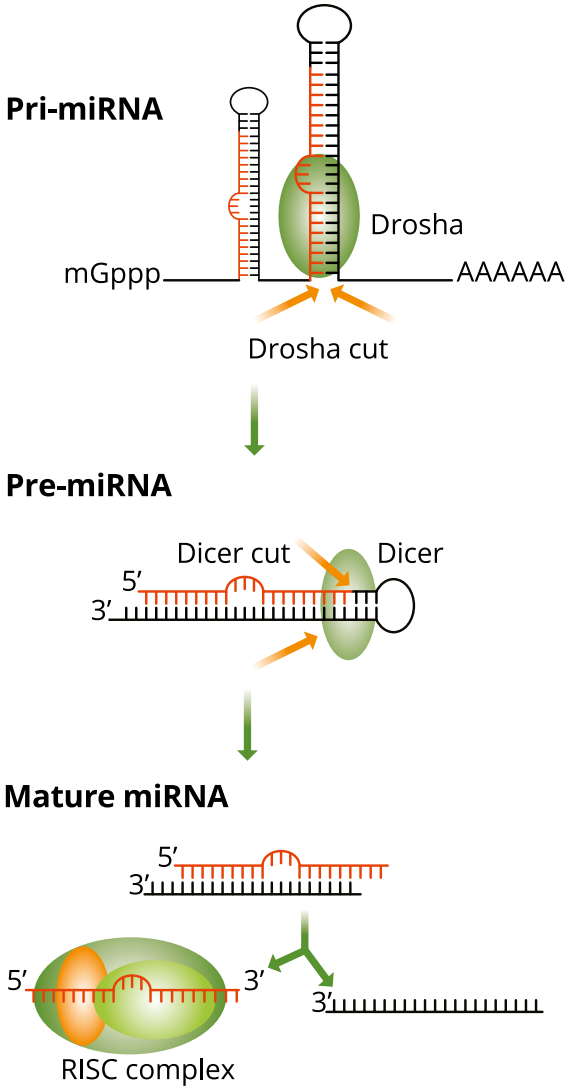
Comprehensive coverage for both human and mouse

OriGene provides clones for over-expression of microRNA (miRNA) of your choice. OriGene's miRNA precursor contains pre-miRNA (60-70nt) with 250-300 nts up- and down-stream of flanking sequence. It was amplified from human genomic DNA and cloned into OriGene's pCMV6-Mir Vector. Upon transfection, the cellular machinery will process the CMV-driven expression of miRNA precursor into mature miRNA and cellular function can be analyzed.

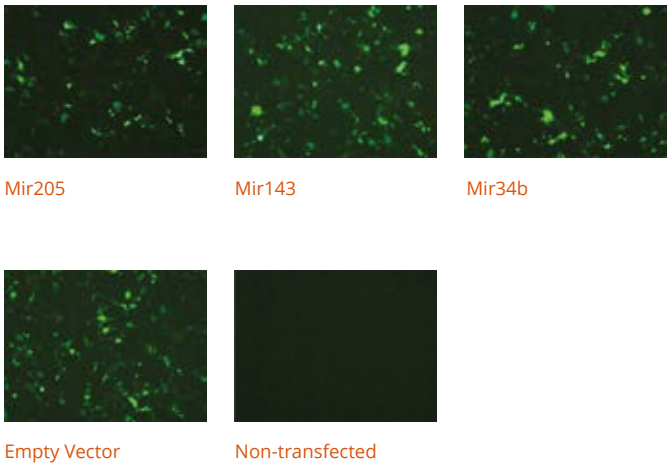
Features & Benefits

- Genome wide miRNA coverage — 652 human and 486 mouse
- Sequence confirmation of the precursor miRNA
- GFP for transfection monitoring
- Neomycin selection for stable cell establishment
GFP transfection of microRNA expression plasmids in HEK293 cells

Read more about miRNA at
www.origene.com/microRNA



GFP transfection of miRNA expression plasmids in HEK293 cells



miRNA expression plasmids

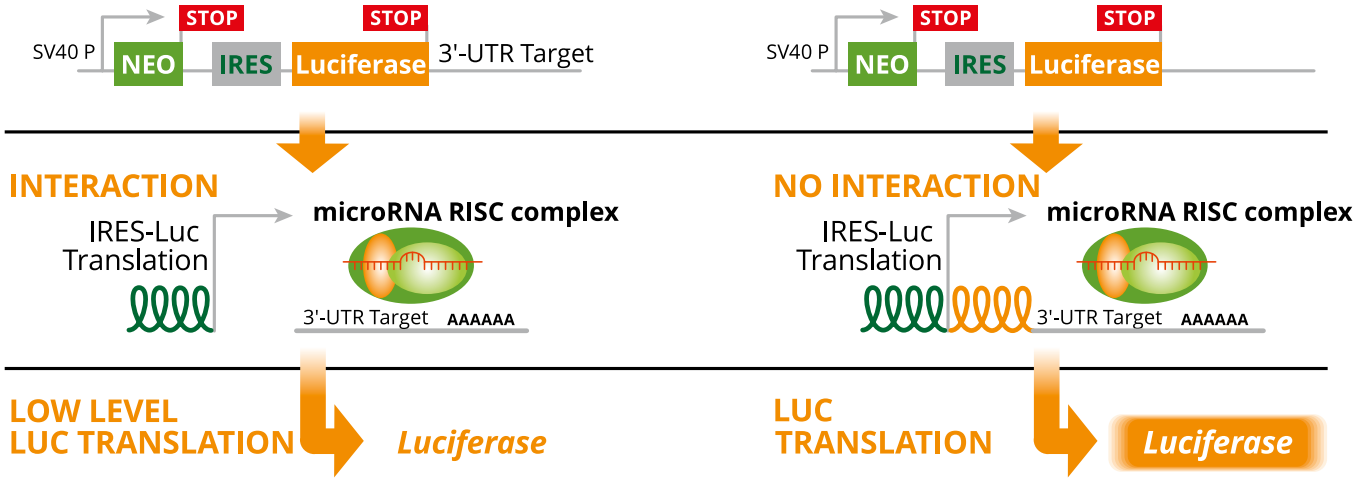
Sold individually as 10ug transfection-ready DNA or can be purchased as following sets

Catalog No.	Description
SC410001	Mouse miRNA expression plasmid set (486 vectors, 10ug each in 2-D bar coded tubes)
SC420001	Human miRNA expression plasmid set (652 vectors, 10ug each in 2-D bar coded tubes)
SC410002	Mouse miRNA expression plasmid set (486 vectors, 2ug each in 96-well plates)
SC420002	Human miRNA expression plasmid set (652 vectors, 2ug each in 96-well plates)

3'-UTR Reporter Clones for miRNA Target Validation

Luciferase reporter assays for the human genome

The 3'-UTR plasmids provide quantitative assessment of the inhibitory effects between miRNAs and their potential target genes. The 3'-UTR sequence of a gene was cloned downstream of the firefly luciferase gene. The chimeric transcript level is regulated by its interaction with miRNA(s), which results in varied luciferase activity quantifiable by a colorometric assay. MiRNAs and their 3'-UTR targets can be assayed for endogenous miRNA activity or for overexpressed miRNA in a co-transfection experiment.



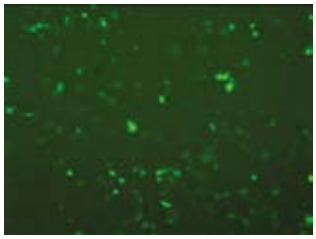
Interaction between miRNA and UTR. Reduced luciferase expression

No interaction between miRNA and UTR. No effect on luciferase expression

Features & Benefits

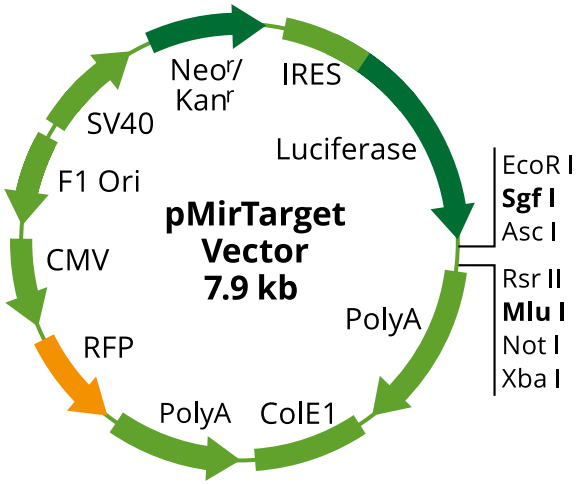
- Genome wide coverage (>20,000 human genes)
- Firefly luciferase as the easy-to-assay reporter
- RFP for transfection monitoring
- High sensitivity from IRES-driven translation of the expression cassette

Find out more at
www.origene.com/3-utr-clones



pCMV - Mir + Mir205 target

pCMV - Mir205 + Mir205 target



OriGene has used a new design adapted from C.P.Petersen et al. 2006, to dramatically increase the sensitivity of detection by decreasing the 3'UTR-luciferase reporter expression to a very low level.

OriGene, Your Partner in Research, Diagnostics and Beyond

- cDNA Clones/Lenti Particles
- CRISPR/Cas9/sgRNA
- Recombinant Proteins
- Antibodies
- RNAi
- Normal & Cancer Tissues

ORIGENE

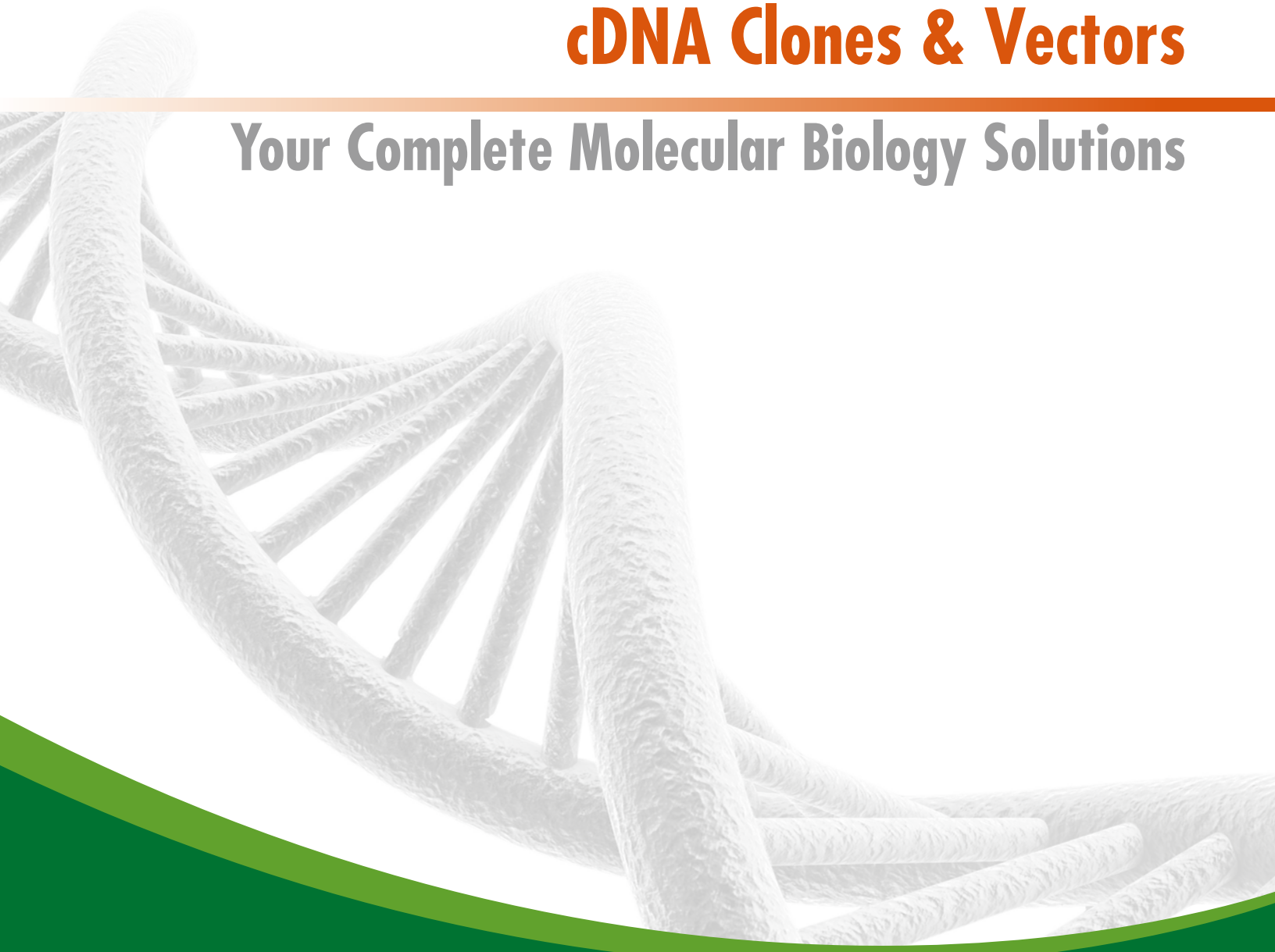
OriGene Headquarter
9620 Medical Center Drive
Suite 200
Rockville, MD, 20850
USA
+1.301.340.3188
www.origene.com

OriGene EU
Schillerstraße 5
32052 Herford
Germany
+49.5221.346060
www.origene.com

OriGene China
HuiLongSen International Science
& Technology Industry Park,
Build 11, No.99 Kechuang 14th Street
Beijing, China 101111
+86.10.59755312
www.origene.com.cn

cDNA Clones & Vectors

Your Complete Molecular Biology Solutions



ORF Clones

Non-protein Coding Clones

>100 Cloning Vectors

ORIGENE

www.origene.com

OriGene Clone Offering Overview

Comprehensive. Quality. Fast Delivery.

When you need a DNA clone, be it a cDNA clone or a clone of non-coding sequence, OriGene is your best choice. Our 100,000 ready-to-ship cDNA clones offer a quick and cost-saving solution.

	cDNA clones for protein expression			Clones with non-coding sequences		
	TrueClone (untagged)	**TrueORF (tagged)**	**Lenti-ORF**	**Gene synthesis**	**miRNA plasmids**	**3'-UTR reporter plasmids**
Main utility	Protein Expression in native form	Tagged protein expression	Tagged protein expression	Customize	miRNA over expression	Target validation for miRNA
Expression host	Mammalian	Mammalian	Mammalian	Customize	Mammalian	Mammalian
Species	Human/Mouse/ Rat	Human/Mouse/ Rat	Human/Mouse/ Rat	Any species, any sequence	Human/Mouse/ Rat	Human

How to find a clone

Search:
A search box is located at the top of every page of the OriGene website and the following terms can be used.

- NCBI Accession Number (eg. NM_000044)
- Gene symbol of the gene (eg. VEGF)
- Gene name (Caspase 8)
- Clone description (eg. androgen receptor, kinase deficient mutant)

Browse:
On the clone collection page, www.origene.com/clone-set, genes can also be browsed by gene family or pathway. A few popular categories are listed below as examples.

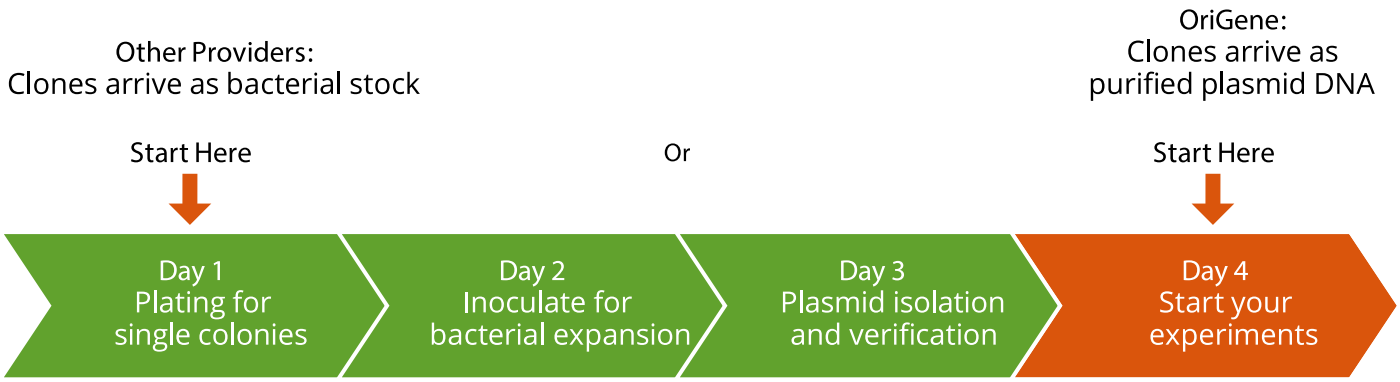
- Protein Kinase
- Wnt Pathway
- Phosphotase
- Angiogenesis
- GPCR
- Notch Pathway
- Secreted
- Tumor Metastasis

Why Should You Choose OriGene's cDNA Clones?

Quality! Selection! Delivery!

Features

- Comprehensive: Genome wide coverage for human and mouse
- Versatile: untagged or tagged clones (>100 vector options)
- Expression validation
- Transfection-ready DNA: Plasmids are purified with ion-exchange columns
- Pathway focused cDNA clone sets



For protein-coding ORF sequences, there are two types of clones

- **TrueClones:** Library-based, full-length cDNA clones that usually contain native 5' and 3' untranslated regions in a CMV mammalian expression vector
- **TrueORF Clones:** Tagged open reading frame (ORF) clones in OriGene's CMV based PrecisionShuttle Entry vector. The ORF insert can be easily shuttled with a simple digestion/ligation reaction into a wide variety of tagged destination vectors.

For non-protein coding sequences, OriGene offers

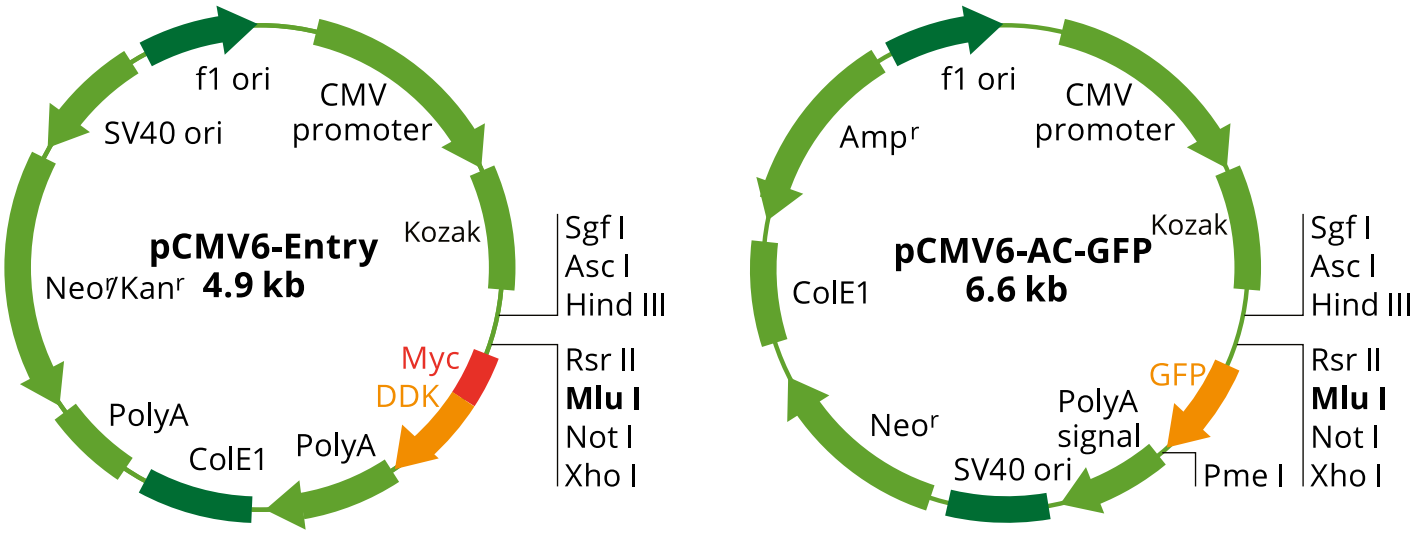
- miRNA expression clones
- shRNA clones (see RNAi brochure or www.origene.com/RNAi)
- 3'-UTR reporter clones

Read more about our cDNA clones at
www.origene.com/cdna-clones

Myc-DDK- or GFP-tagged ORF clones for convenient application

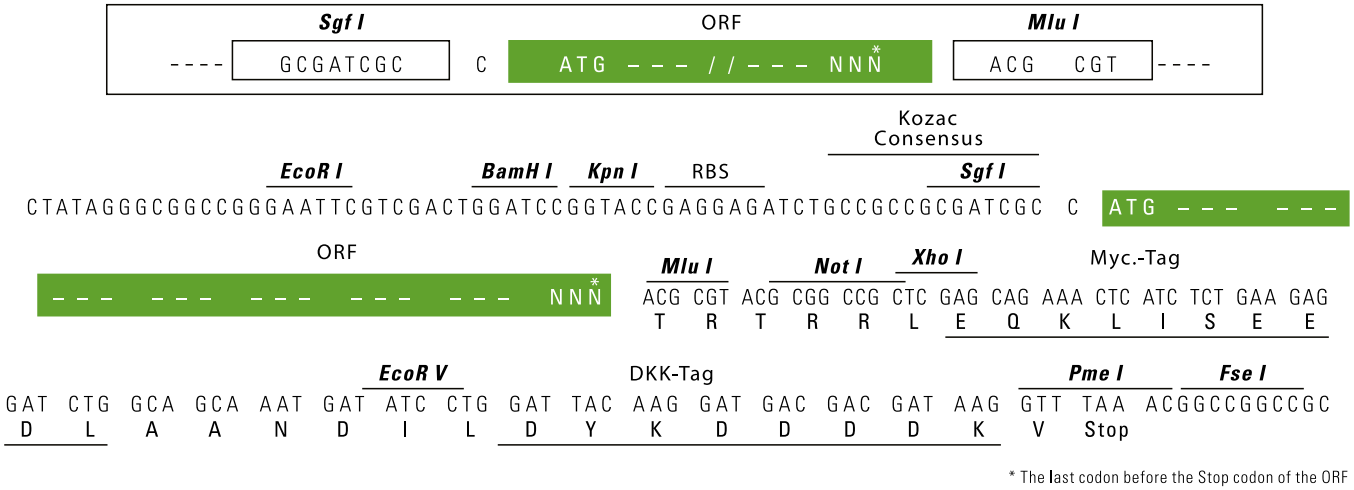
The TrueORF product line is the latest generation of DNA clone products. Unlike TrueClones, TrueORF clones enable expression of the encoded transcript as a tagged protein. This facilitates multiple downstreamapplications that utilize an anti-tag antibody such as: protein detection, protein purification, subcellular localization, etc.

TrueORF Vectors



All TrueORF inserts are housed in either pCMV6-Entry or pCMV6-AC-GFP vector. Both vectors allow for easy shuttling by a simple ‚cut-and-paste' mechanism into any of the PrecisionShuttle destination vectors A TrueORF clone expresses the encoded sequence as a -terminal Myc and DDK-tagged protein or a GFP tagged protein.

DDK is the same as FLAG. FLAG® is a registered trademark of Sigma-Aldrich.

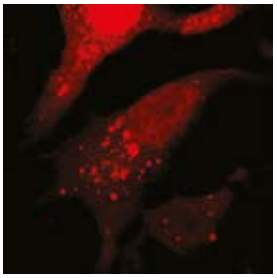


* The last codon before the Stop codon of the ORF

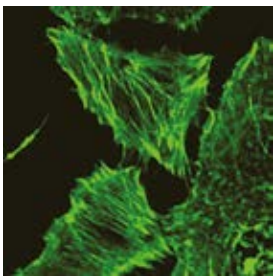
The diagram above is applicable to the majority of human ORFs that do not have internal Sgf I and Mlu I sites. Other rare restriction sites in the MCS are utilized for ORFs with internal sites for the two enzymes.

TrueORFs are excellent for

- Mammalian overexpression of tagged proteins (over 100 different vectors available)
- Purification of the overexpressed protein
- Protein interaction and localization studies (e.g. organelle markers)
- Detection and cellular imaging of the exogenously introduced protein
- Tagged protein expression in a cell-free system (eg. TNT)



Autophagosome RC100005



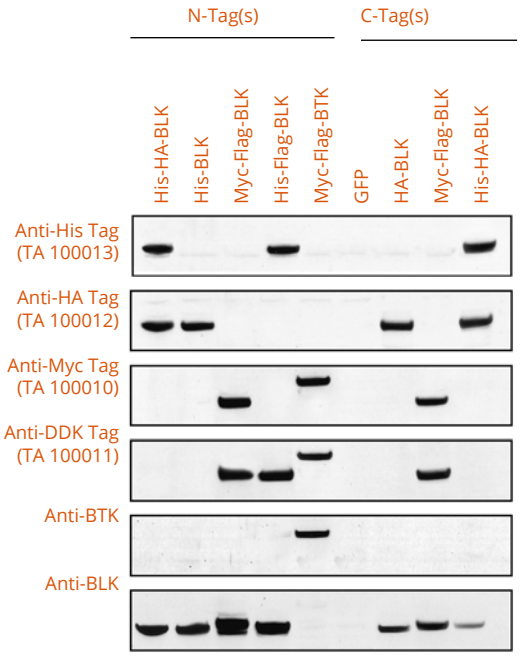
Cytoskeleton RC100002

TrueORF advantages

- **Convenience:** TrueORFs provide an instant solution for tagged protein expression
- **Flexibility:** TrueORF can be shuttled into multiple destination vectors.
- **Accuracy:** TrueORFs have verified and guaranteed insert sequences
- **Proven:** TrueORFs have been rigorously tested for expression of the target proteins and their tags.

Over 15,000 TrueORF ave passed our protein expression validation.

Find our complete portfolio at www.origene.com/trueorf



Western blot analysis of HEK293 cell lysate over-expressing LK and BTK tagged with indicated epitopes.

PrecisionShuttle System

Tagged protein expression made simple

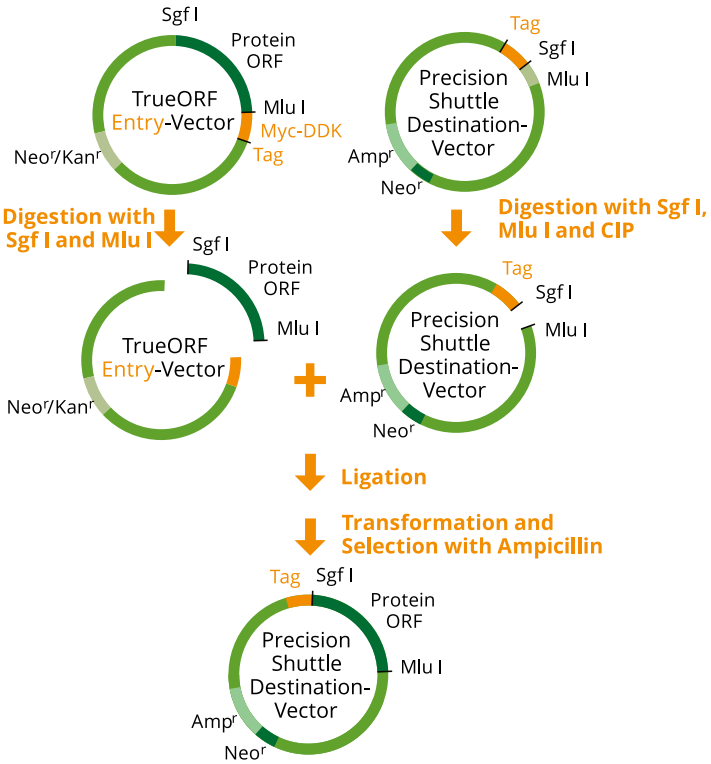
To accommodate diverse tagging needs, OriGene designed the novel PrecisionShuttle™ system to allow easy sub-cloning of an ORF from one tagged vector to another. The TrueORF entry vector contains C-terminal tags of Myc and DDK®. A large panel of destination vectors are available so you can express an ORF with different tags or with tags at different ends of the protein. The key in the PrecisionShuttle system is the utilization of two rare-cutting restriction endonucleases, Sgf I and Mlu I.

PrecisionShuttle vs. Recombination Shuttle System (e.g. Gateway® System):

PrecisionShuttle™	Gateway®
Functional Entry vector	Entry vector NOT for expression
One-step subcloning	Multi-step subcloning
Restriction enzymes-based	Recombination-based
Low cost	Expensive
No IP restriction	Conditional licensing
Inserts>18Kb are readily shuttled	Unstable plasmid when insert>5Kb
2 aa linker appended	>10aa linker appended

Gatway is a registered trademark of Life Technology.

Scheme of the PrecisionShuttle System



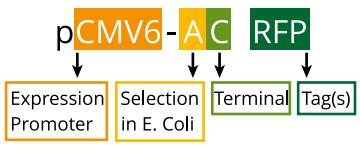
PrecisionShuttle™ Vectors - Entry and Destination

PrecisionShuttle Entry Vector	Cell Selection
pCMV6-Entry (C-terminal Myc and DDK Tagged)	Neomycin

PrecisionShuttle Destination Vector	Mammalian Selection
pCMV6-AC-His	Neomycin
pCMV6-AC-Myc	Neomycin
pCMV6-AC-HA	Neomycin
pCMV6-AC-DDK	Neomycin
pCMV6-AC-Myc-His	Neomycin
pCMV6-AC-Myc-DDK	Neomycin
pCMV6-AC-HA-His	Neomycin
pCMV6-AC-DDK-His	Neomycin
pCMV6-AC-GFP	Neomycin
pCMV6-AN-His	Neomycin
pCMV6-AN-Myc	Neomycin
pCMV6-AN-HA	Neomycin
pCMV6-AN-DDK	Neomycin
pCMV6-AN-His-Myc	Neomycin
pCMV6-AN-Myc-DDK	Neomycin
pCMV6-AN-His-HA	Neomycin
pCMV6-AN-His-DDK	Neomycin
pCMV6-AN-GFP	Neomycin
pCMV6-AC	Neomycin
pTUNE Inducible	Neomycin
pCMV6-A-BSD	Blasticidin
pCMV6-A-EM7-BSD	Blasticidin
pCMV6-A-Hygro	Hygromycin
pCMV6-A-Puro	Puromycin
pCMV6-A-GFP	—
pCMV6-AC-IRES-GFP	Neomycin
pEX-N-His-GST	—
pEX-N-GST	—
pEX-N-His	—
pEX-C-His	—
pEX-1	—
pCMV6-AN-RFP	Neomycin
pCMV6-AC-RFP	Neomycin
pCMV6-AN-YFP	Neomycin
pCMV6-AC-YFP	Neomycin
pCMV6-AC-FP602	Neomycin
pCMV6-AC-FP635	Neomycin
pCMV6-AC-mKate	Neomycin
pCMV6-AC-mGFP	Neomycin
pCMV6-AC-mRFP	Neomycin
pCMV6-AC-mYFP	Neomycin
pCMV6-AC-mBFP	Neomycin
pCMV6-AC-mCFP	Neomycin
pCMV6-AN-FP602	Neomycin
pCMV6-AN-FP635	Neomycin
pCMV6-AN-mKate	Neomycin
pCMV6-AN-mGFP	Neomycin
pCMV6-AN-mRFP	Neomycin
pCMV6-AN-mYFP	Neomycin
pCMV6-AN-mBFP	Neomycin
pCMV6-AN-mCFP	Neomycin
pCMV6-AC-FC	Neomycin
pCMV6-AC-FC-S	Neomycin
pCMV6-AN-FC	Neomycin
pCMV6-AN-FC-S	Neomycin
pCMV6-AC-3DDK	Neomycin
pCMV6-AN-3DDK	Neomycin
pCMV6-AC-IRES-GFP-Puro	Puromycin
pTUNE-GFP	Neomycin
pCMV6-AN-GFP-C-His	Neomycin

Lentiviral and AAV vectors also available at www.origene.com/precisionshuttle-system

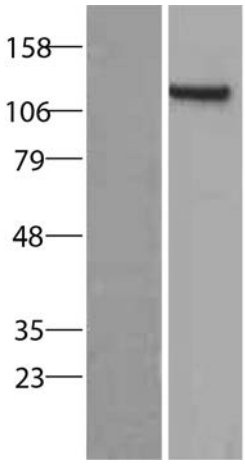
Understand a Vector by its name



TrueORF Gold Clones - Expression-validated cDNA Clones

Tested individually by Western Blot

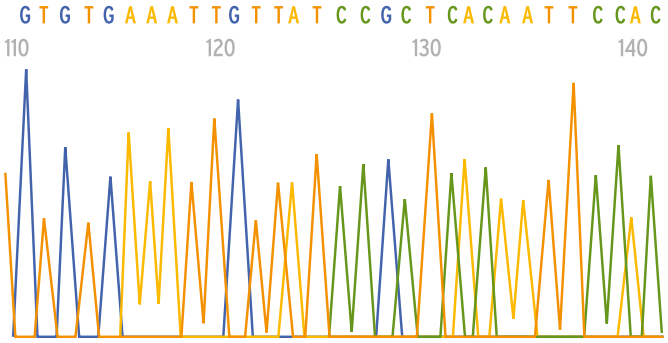
Each TrueORF Gold clone has been used to transfect human cell lines for protein expression. OriGene has produced over 15,000 over-expression lysates from TrueORF transfected HEK293 cells and subsequently purified over 6,000 human proteins.



HEK293 were transfected with empty vector (left) or TrueORF for Myc/DDK-tagged hTERT(Cat# RC217436, right). The lysates were analyzed using anti-DDK antibody to show over-expression of hTERT.

Sequence verified

Each TrueORF Gold clone's sequence information is online, downloadable as chromatogram files. No more worrying about mutations, deletions, or frameshift when using TrueORF Gold.



Transfection ready

No need for subcloning, no need for plasmid preparation; TrueORF Gold clones are expression ready and supplied as 10ug transfection-ready DNA.

Easily shuttled into over 100 vectors

OriGene has prepared over 100 destination vectors with matching cloning sites allowing for easy transfer of the insert using a simple cut and paste procedure.

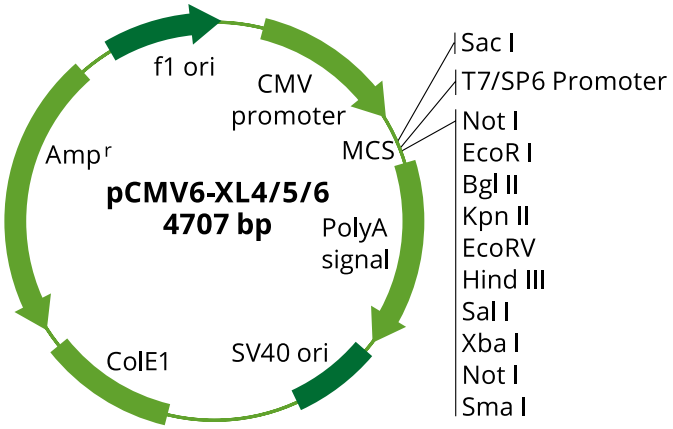
- Fluorescent-protein tagging vectors
- Epitope-tagging vectors
- Bacterial expression vectors
- Selection markers
- Viral vectors

NEXT-DAY SHIPMENT

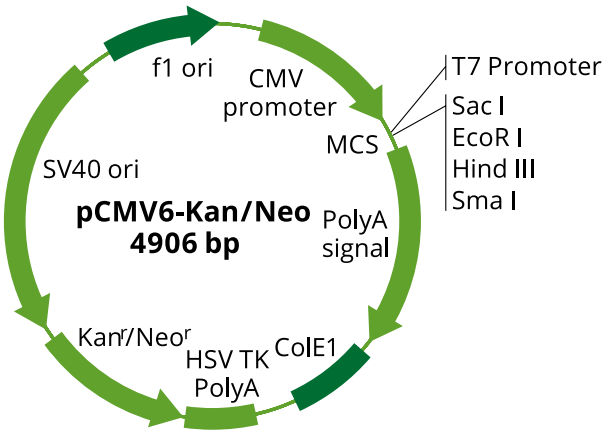
See all available TrueORF Gold clones at www.origene.com/trueorf-gold

Authentic full-length cDNA clones
for expression and functional studies of a native protein

OriGene's TrueClone cover both human and mouse genomes. The vectors for he two species differ lightly.



All TrueClones are unidirectionally cloned in the EcoR I and Sal I restriction sites.
The Sal I site is destroyed during cloning, and cannot be reused. The insert can be liberated by a simple digestion with Not I.



All mouse TrueClones are cloned unidirectionally between two sites in the MCS.
Please contact OriGene's technical support professionals for details.

TrueClones are excellent for

- Overexpression of the native protein in mammalian cells
- Functional studies of native protein
- Quantitative PCR templates
- Hybridization-based detection probes, such as Northern blots or FISH assays
- Protein expression in cell-free systems (eg. TNT)

TrueClone advantages

- Cost-effective and time-saving alternative to de novo cloning
- Expression-ready and transfection-ready
- Authentic cDNAs representing native transcripts
- Consistent vector system facilitates high-throughput screening

Lentivirus is a powerful gene delivery tool, high transduction efficiency. Lentiviral system can be used for both gene overexpression and gene knockdown (shRNA).

- **High efficiency:** Up to 100% transduction
- **Broad spectrum:** Dividing & non-dividing
- **Biosafety:** 3rd generation, safest
- **Coverage:** Genom wide offering

Lentiviral Products:

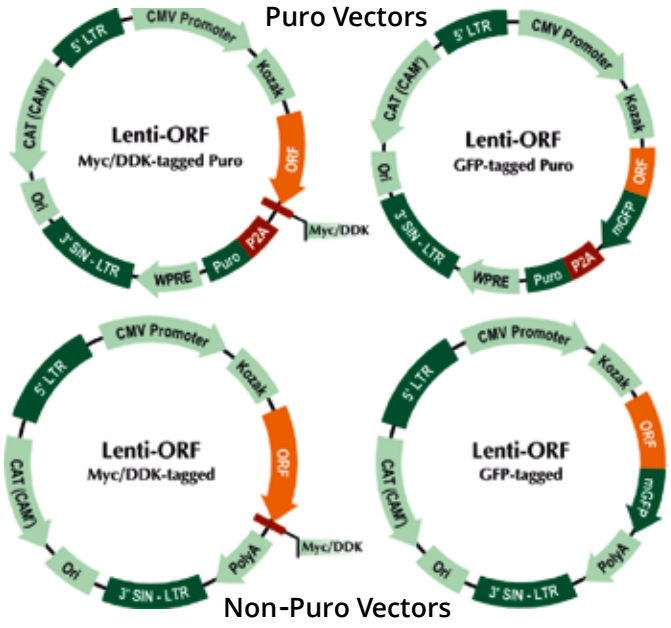
- Lenti-ORF
  - plasmids
  - Lentiviral Particles
- Lenti shRNA
  - plasmids
  - Lentiviral Particles

Lenti accessories:

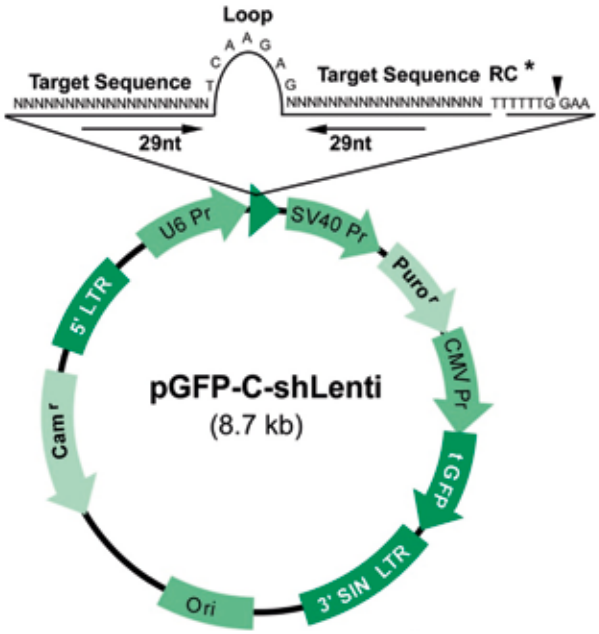
- Packaging kit
- Lenti titer kit
- Control particles
- Concentrator
- Lenti stabilizer

Lenti-ORF clones, 4 vector options

The same ORF is offered in 4 lenti vectors



Lenti shRNAs



Three major functional elements

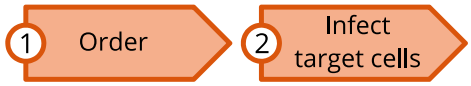
- shRNA under U6 promoter
- Puro selection marker
- GFP as a reporter

More lentiviral destination vectors:
www.origene.com/products/vectors/orf-cloning-vectors

What is special about OriGene's Ready-to-use Lentiviral Particles

- Pre-titered, ready-to-use
- Tranduction units, not physical titer, >10^7 TU/mL
- Longer storage, provided in the proprietary Lentiviral stabilizer solution, >1 year infectivity

Ready-to-use lentiviral particles vs lenti plasmids

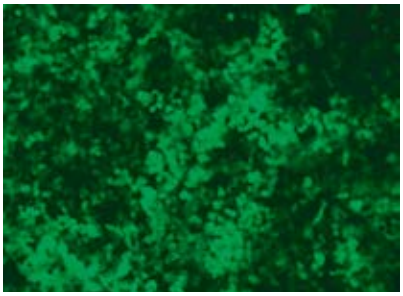


Ready-to-use particles

Lenti plasmids

Highly effective Lenti packaging kit

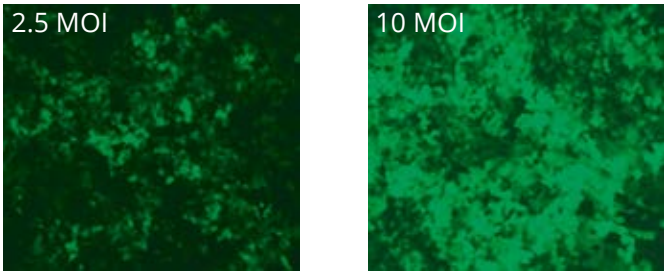
- High efficiency
- Package the 3rd generation lenti vectors
- Transfection reagent included
- Cat # TR30037 & TR30037P5



Transduced HEK293 cells with lenti GFP virus produced with this Lenti-vpak kit

Control Particles (expressing GFP or RFP)

- Quantify transduction efficiency
- The control particles can be used to optimize transduction
- Serve as negative control



HEK293 cells were transduced with GFP control particles at different MOI. Fluorescence pictures taken 72 hrs after infection.

New:
Integration-deficient Lenti-packaging it:
still powerful to deliver genes, but no footprints
Cat # TR30036 & TR30036P5

Pathway-focused cDNA Clone Sets

For researchers who wish to obtain an entire gene familyora athway-focused cDNA clone ollection, OriGene offers pre-made clone sets. Clone sets are ideal for high throughput screening or archiving.OriGene discounts the order considerably according to the number of clones in the set ordered.

Pre-made Human Clone Sets

Each pre-made clone set contains of 90 cDNA clones in mammalian expression vectors

Cat #	Description	Price (subjected to change)
TCTM101	Transmembrane clone set I	$ 995
TCTF101	Transcription factors clone set I	$ 995
TCPK101	Protein kinases clone set I	$ 995
TCGR101	GPCR clone set I	$ 995
TCSP101	Secreted gene clone set I	$ 995

Clone Sets for Customized Assembly

OriGene's website lists over 100 commonly studied pathways, gene families and research focuses so that the customer can assemble their own clone collection of interest with ease. We will work with you to make your own custom set — contact us at sales@origene.com.

Sample collections

Clone Sets	TrueORF (Myc-DDK Tagged)	TrueClone (Untagged)
GPCR	269	376
Kinase-deficient mutant	N/A	337
Protein Kinase	422	973
Secreted	1087	1259
Transmembrane	3309	4372
Angiogenesis	341	534

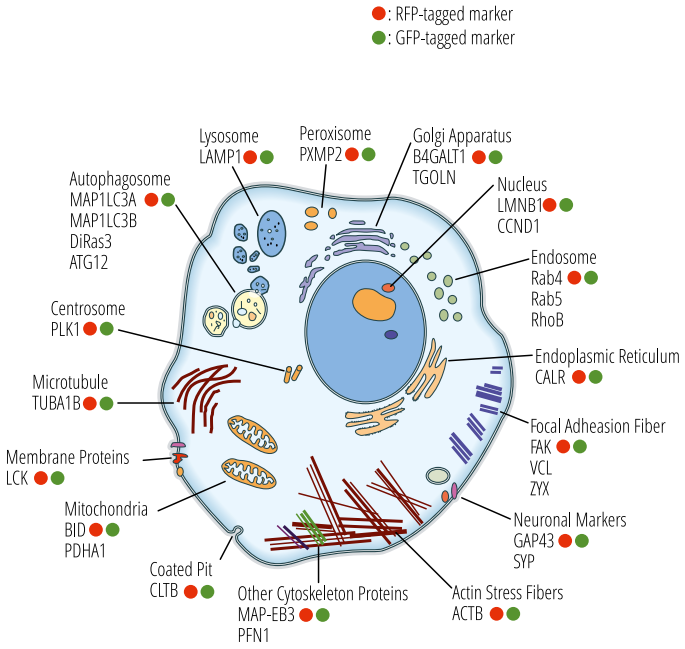
Clone Sets	TrueORF (Myc-DDK Tagged)	TrueClone (Untagged)
Apoptosis	1498	2315
Breast Cancer	319	507
Cytokines	203	241
Human Stem Cell	246	339
Human Tumor Metastasis	94	154
Notch	92	144
Wnt Pathway	287	386

Find more information on our clone sets on
www.origene.com/clone-set

Label subcellular structures with a simple transfection

Product Description

- GFP- or RFP-tagged human cDNA clones for organelle-specific marking
- Individually validated by confocal microscopy for correct labeling
- Enable labeling of live or fixed cells without chemical or antibodies



Applications

- Direct organelle marking
- Monitoring of protein trafficking
- Study organelle morphology and dynamics
- Protein co-localization with organelles
- Fraction tracking during enrichment or purification

$480 each, provided as 10ug purified transfection-ready plasmids

Cat#	Organelle	Symbol
RC100004(G)/RC100036(R)	Autophagosome	ATG12
RC100011(G)/RC100043(R)	Autophagosome	Di-Ras3
RC100020(G)/RC100052(R)	Autophagosome	MAP1LC3A
RC100021(G)/RC100053(R)	Autophagosome	MAP1LC3B
RC100023(G)/RC100055(R)	Centrosome	PLK1
RC100010(G)/RC100042(R)	Coated pit	CLTB
RC100002(G)/RC100034(R)	Cytoskeleton	ACTB
RC100019(G)/RC100051(R)	Cytoskeleton	MAP-EB3
RC100022(G)/RC100054(R)	Cytoskeleton	PFN1
RC100030(G)/RC100062(R)	Cytoskeleton	TUBA1B
RC100008(G)/RC100040(R)	Endoplasmic reticulum	CALR
RC100025(G)/RC100057(R)	Endosome	Rab4
RC100026(G)/RC100058(R)	Endosome	Rab5
RC100027(G)/RC100059(R)	Endosome	RhoB

Cat#	Organelle	Symbol
RC100012(G)/RC100044(R)	Focal adherin fiber	FAK
RC100031(G)/RC100063(R)	Focal adherin fiber	VCL
RC100032(G)/RC100064(R)	Focal adherin fiber	ZYX
RC100005(G)/RC100037(R)	Golgi apparatus	B4GalT1
RC100029(G)/RC100061(R)	Golgi apparatus	TGOLN
RC100016(G)/RC100048(R)	Lysosome	LAMP1
RC100006(G)/RC100038(R)	Mitochondria	PDHA1
RC100007(G)/RC100039(R)	Mitochondria	BID
RC100013(G)/RC100045(R)	Neuronal axis	GAP43
RC100009(G)/RC100041(R)	Nucleus	CCND1
RC100018(G)/RC100050(R)	Nucleus	LMNB1
RC100024(G)/RC100056(R)	Peroxisome	PXMP2
RC100017(G)/RC100049(R)	Plasma membrane	LCK
RC100028(G)/RC100060(R)	Synaptic vesicles	SYP

www.origene.com/organelle-marker

microRNA Expression Plasmids

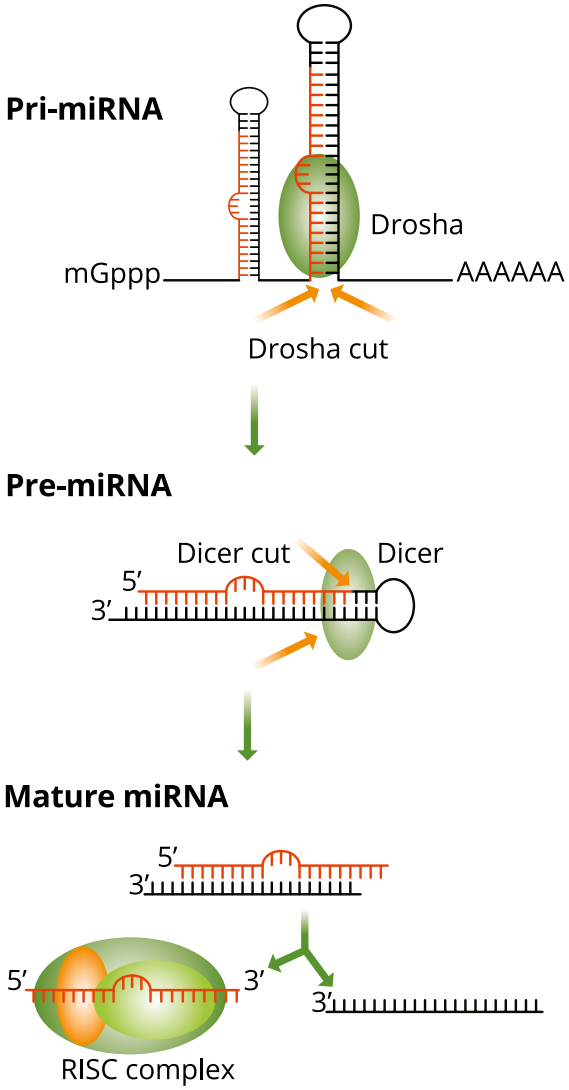
Comprehensive coverage for both human and mouse

OriGene provides clones for over-expression of microRNA (miRNA) of your choice. OriGene's miRNA precursor contains pre-miRNA (60-70nt) with 250-300 nts up- and down-stream of flanking sequence. It was amplified from human genomic DNA and cloned into OriGene's pCMV6-Mir Vector. Upon transfection, the cellular machinery will process the CMV-driven expression of miRNA precursor into mature miRNA and cellular function can be analyzed.

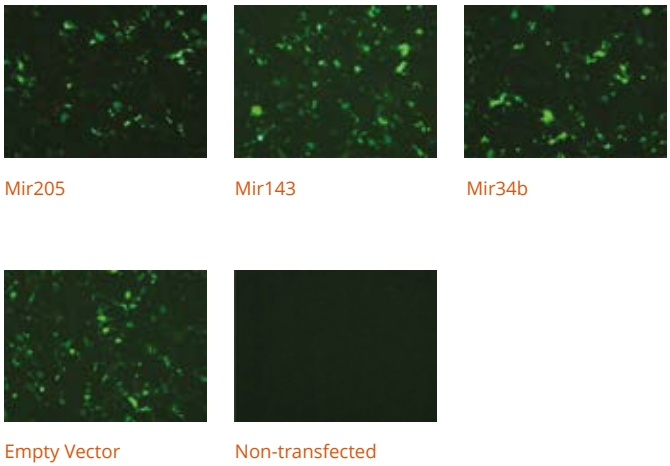
Features & Benefits

- Genome wide miRNA coverage — 652 human and 486 mouse
- Sequence confirmation of the precursor miRNA
- GFP for transfection monitoring
- Neomycin selection for stable cell establishment
GFP transfection of microRNA expression plasmids in HEK293 cells

Read more about miRNA at
www.origene.com/microRNA



GFP transfection of miRNA expression plasmids in HEK293 cells



miRNA expression plasmids

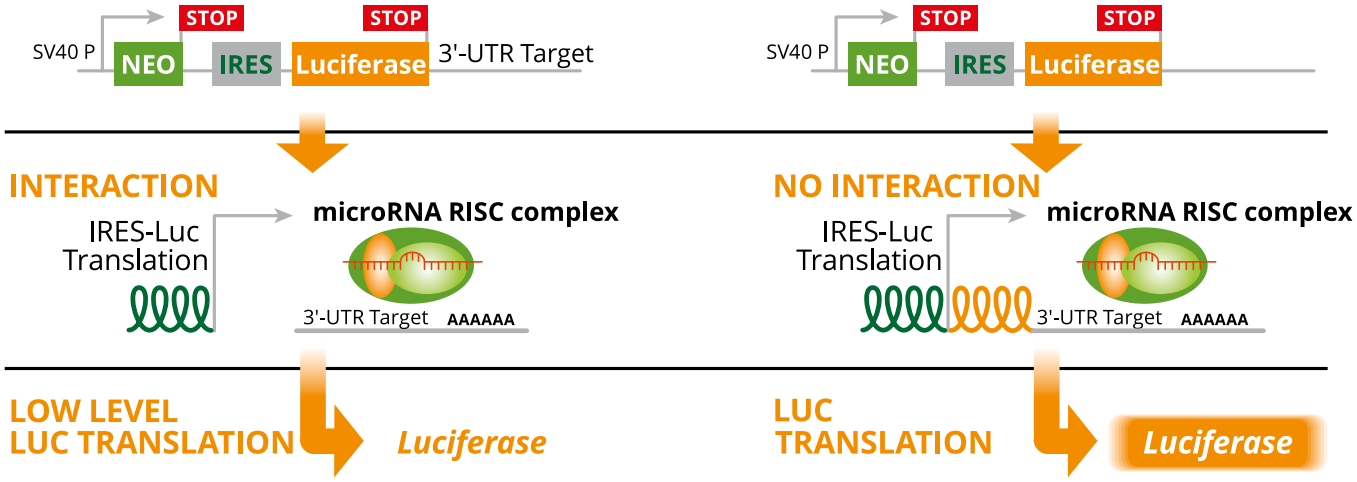
Sold individually as 10ug transfection-ready DNA or can be purchased as following sets

Catalog No.	Description
SC410001	Mouse miRNA expression plasmid set (486 vectors, 10ug each in 2-D bar coded tubes)
SC420001	Human miRNA expression plasmid set (652 vectors, 10ug each in 2-D bar coded tubes)
SC410002	Mouse miRNA expression plasmid set (486 vectors, 2ug each in 96-well plates)
SC420002	Human miRNA expression plasmid set (652 vectors, 2ug each in 96-well plates)

3'-UTR Reporter Clones for miRNA Target Validation

Luciferase reporter assays for the human genome

The 3'-UTR plasmids provide quantitative assessment of the inhibitory effects between miRNAs and their potential target genes. The 3'-UTR sequence of a gene was cloned downstream of the firefly luciferase gene. The chimeric transcript level is regulated by its interaction with miRNA(s), which results in varied luciferase activity quantifiable by a colorometric assay. MiRNAs and their 3'-UTR targets can be assayed for endogenous miRNA activity or for overexpressed miRNA in a co-transfection experiment.



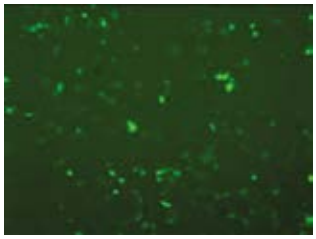
Interaction between miRNA and UTR. Reduced luciferase expression

No interaction between miRNA and UTR. No effect on luciferase expression

Features & Benefits

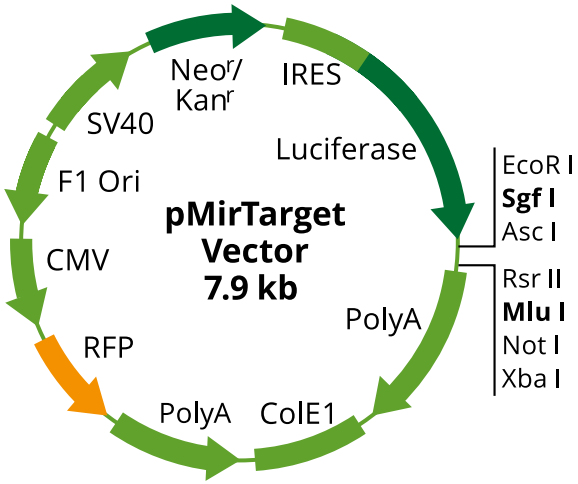
- Genome wide coverage (>20,000 human genes)
- Firefly luciferase as the easy-to-assay reporter
- RFP for transfection monitoring
- High sensitivity from IRES-driven translation of the expression cassette

Find out more at
www.origene.com/3-utr-clones



pCMV - Mir + Mir205 target

pCMV - Mir205 + Mir205 target



OriGene has used a new design adapted from C.P.Petersen et al. 2006, to dramatically increase the sensitivity of detection by decreasing the 3'UTR-luciferase reporter expression to a very low level.

OriGene, Your Partner in Research, Diagnostics and Beyond

- cDNA Clones/Lenti Particles
- CRISPR/Cas9/sgRNA
- Recombinant Proteins
- Antibodies
- RNAi
- Normal & Cancer Tissues

ORIGENE

OriGene Headquarter
9620 Medical Center Drive
Suite 200
Rockville, MD, 20850
USA
+1.301.340.3188
www.origene.com

OriGene EU
Schillerstraße 5
32052 Herford
Germany
+49.5221.346060
www.origene.com

OriGene China
HuiLongSen International Science
& Technology Industry Park,
Build 11, No.99 Kechuang 14th Street
Beijing, China 101111
+86.10.59755312
www.origene.com.cn

Product Overview

The Evolving Product Lines

cDNA Clones
Lenti Vectors and Particles
Proteins
Antibodies
CRISPR/Cas9/sgRNAs
RNAi

ORIGENE
www.origene.com

Comprehensive Collection of cDNA Clones

Choose from 100,000 ready-to-ship cDNA for a quick and cost-saving solution

- Broad coverage: human, mouse, rat and virus
- Expression clones driven by CMV promoter
- 10 μg transfection-ready plasmids
- Lenti vector/particles available

Start here with other vendors or...

Start here with OriGene

Day 1	Day 2	Day 3	Day 4
Plating for single colonies	Inoculate for bacterial expansion	Plasmid isolation and verification	Start your experiments

Other Providers: Clones arrive as bacterial stock

OriGene: Clones arrive as purified plasmid DNA

OriGene cDNA clone offerings

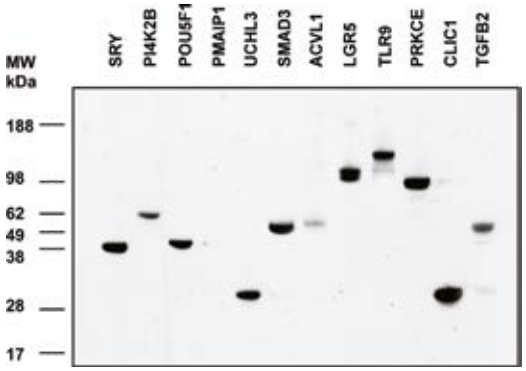
TrueClone

- Native protein expressed; No tags
- Cost-effective and time-saving
- Pathway-specific clone sets available

TrueORF

- Two tags readily available: Myc-DDK or GFP
- 20,000 TrueORF Gold: expression validated by WB
- Flexibility: easily shuttled to 80 destination vectors

- TrueORF clones with Myc-DDK tag
- Cited in > 1,000 publications



Myc-DDK tagged ORF clones were transfected into HEK293 cells; WB was performed with anti-DDK Ab

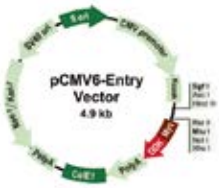
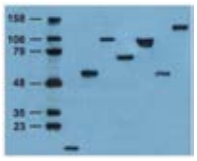
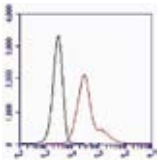
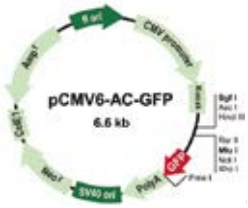
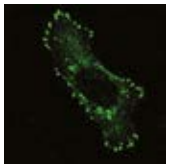
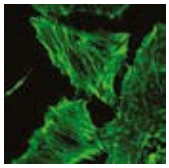
TrueORFGold

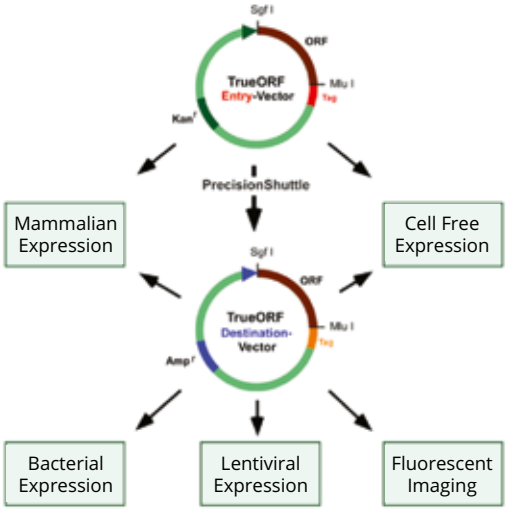
- ✓ Expression Validated
- ✓ Sequence Verified
- ✓ Next-Day Shipment

Scan to watch our video on cDNA clones

Convenient Choices of TrueORF Vectors

Easy Shuttling: The ORF insert can be shuttled to > 80 destination vectors

Vector	Vector SKU	Vector Map	Fusion Tag	Ideal Application	ORF Clone SKUs	Examples
pCMV6-Entry	PS100001		C-terminal Myc-DDK	Detection and purification of over-expressed protein	RC2XXXXX	  Myc-DDK tagged ORF clone can be applied to study protein expression in various applications
pCMV6-AC-GFP	PS100010		C-terminal tGFP	Tracking the over-expressed protein in transfected cells	RG2XXXXX	  GFP tagged ORF clone can be used to track fusion protein cellular localization



Epitope tagging	FP tagging	Selection markers	Lentiviral	Bacterial expression
Myc-DDK	GFP	Puromycin	Myc-DDK	His
HA	RFP	Neomycin	GFP	GST
His	YFP	Blasticidin	RFP	
3xDDK	CFP	Hygromycin	YFP	
FC	mBFP			
	mKate			

All TrueORF inserts housed in a pCMV6-Entry vector can be easily shuttled via PrecisonShuttle, a simple 'cut-and-paste' procedure, into any of the destination vectors (via two rare-cutting restriction endonucleases, Sgf I and Mlu I).

New Product

Lentiviral System for Effective DNA Delivery

Vector Name	pLenti-C-Myc-DDK	pLenti-C-mGFP
Vector SKU	PS100064	PS100071
Fusion Tag	C-terminal Myc-DDK	C-terminal mGFP
Ideal For	In hard-to-transfect cells: Detection and purification of expressed protein	Tracking the over-expressed protein in transfected cells

- 3rd Generation Lentiviral System
- Ideal for delivering DNA into hard-to-transfect cells and animal models
- Genome-wide coverage of human/mouse/rat ORF clones
- C-terminal Myc-DDK or mGFP tag

Lenti Packaging Kit

Lenti-vPAK (Cat# TR30037)

for generating lentivirus

Transfection reagent included!

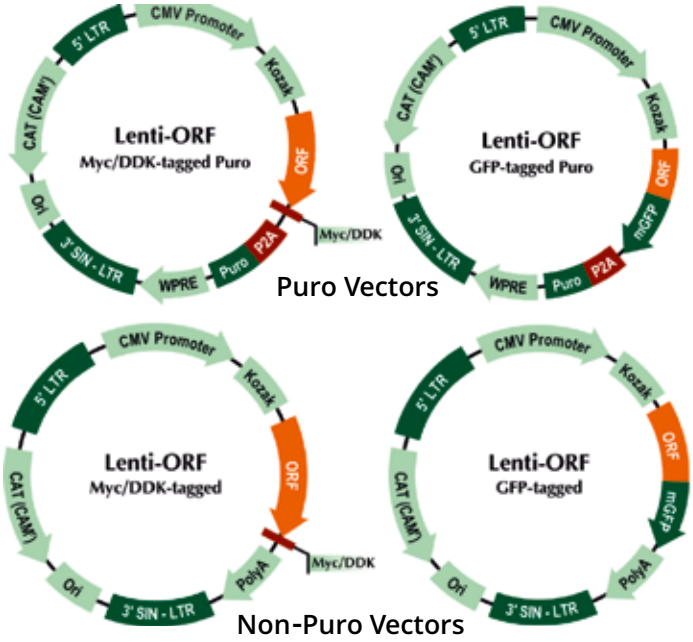
Lentiviral System: Lenti-ORF & Lenti-shRNA

- **Lenti-ORF**
  - plasmids
  - Particles
- **Lenti shRNA**
  - plasmids
  - Particles

- **High efficiency:** Up to 100% transduction
- **Broad spectrum:** Dividing & non-dividing
- **Biosafety:** 3rd generation, safest
- **Coverage:** Genome wide offering

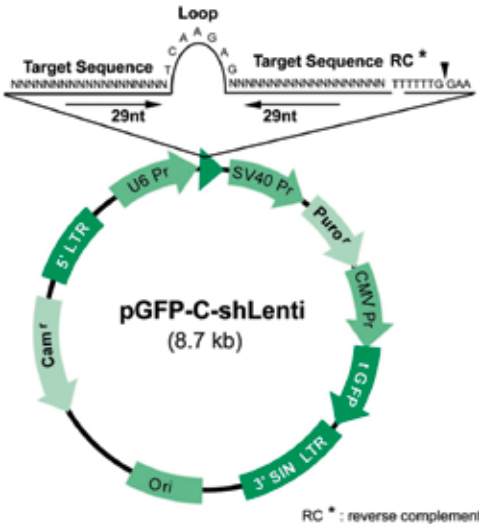
Accessories: Packaging kit | Control particles | LentiTiter Kit

Lenti-ORF clones, 4 vector options



More lentiviral destination vectors:
https://www.origene.com/products/vectors/orf-cloning-vectors

Lenti shRNAs



Three major functional elements

- shRNA under U6 promoter
- Puro selection marker
- GFP as a reporter

Highly effective Lenti-packaging kit Cat# TR30037

- Optimized for high efficiency
- Package 3rd generation vectors
- Transfection reagent included

HEK293 cells transduced with lenti GFP virus

One-Wash™ Lenti Titer kit Cat# TR30038

- Simplified workflow, 1 wash instead of 4
- One temperature incubation, no 37°C
- Shortened sample binding time, 2 hr vs O/N

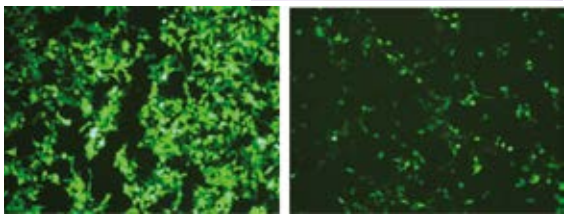
RNA Interference with Guaranteed Knockdown

HuSH-29 shRNA

Comprehensive coverage of human, mouse & rat genes

- 29mer shRNA: higher potency, minimal interferon response
- Multiple vector selection: lentiviral or retroviral
- Guaranteed knockdown (≥70%)
- Lenti particles available
- Each kit contains 4 shRNAs + 1 scrambled control

We recommend the highly effective Lenti-vPAK (Cat# TR30037) for Lenti-shRNA packaging.



tGFP Knockdown using Lenti-shRNA

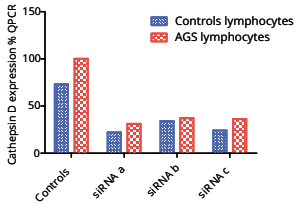
Trilencer-27 siRNA

For human, mouse and rat

- 27mer Dicer-substrate duplex–higher potency & minimal interferon response
- Guaranteed gene knockdown (≥70%)
- Cost effective
- Each kit contains 3 gene-specific siRNAs + 1 negative control

siRNA Transfection Reagent: siTRAN 1.0

- Dual purpose reagent – transfect both siRNA duplex and cDNA
- High transfection efficiency and low cytotoxicity
- Proven effective in multiple cell lines and primary cells



OriGene siRNAs achieved more than 70% knockdown of the expression of cathepsin D in AGS lymphocytes. Data retrieved from *Pulliero et al., 2013*.

microRNA Tools

From miRNA detection, quantification to target identification

Global miRNA profiling	qPCR Master Mix	miRNA expression perturbation	miRNA expression plasmids
	qPCR Primer Panels		Transfection reagents
miRNA detection & quantification	miRNA primer pairs	miRNA target identification	3' UTR reporter clones
	miRNA copy number standards		Expression cDNA clones

Scan to watch our video on shRNA

Real-time PCR & Lab Essentials

Comprehensive Tools for Gene Expression Analysis

- 1st Strand cDNA Synthesis Kit
- qPCR Master Mix
- qPCR Copy Number Standards

RNA Purification → **1st Strand cDNA** → **qPCR Primers** → **qPCR Reagents**

- Total RNA Purification Kit
- miRNA Purification Kit

- Gene-specific Primer Assays for individual genes of Human & Mouse
- Gene-specific Primer Assays for microRNA
- Primer Panels for Gene Families and Pathways
- Primer Panels for microRNA Collections

Molecular Tools for Your Day-to-Day Needs

Transfection Reagents, Tailored for Your Unique Needs

Transfection Reagents

TurboFectin 8.0™
Lipid/histone based transfection

- Wide spectrum: over 100 cell lines or primary cells tested

Viromer®
Virus-like polymer

- Formulated for hard-to-transfect cells

MegaTran 1.0
Polymer based transfection

- Cost effective compared to other commonly used transfection reagents

siTran 1.0
For transfection of siRNA duplex

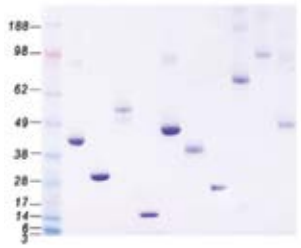
- Successfully applied to many cell lines such as T-cell, lymphocytes and cancer cells

PowerPrep® Plasmid Purification Kits

- High Yield... Low Endotoxins... No Syringes...
- New! Low cost shipping option, cheaper and solution-free!

Better Proteins, Better Assays

Powered by our extensive collection of TrueORF human cDNA clones, OriGene offers full-length purified human proteins expressed in human cells. C-terminal Myc-DDK tagged human ORF clones are transfected into HEK293T cells. The total crude cell lysates are over-expression lysates with the specific gene over-expressed. Recombinant human proteins are obtained with anti-DDK antibody by affinity purification under native conditions.



Features

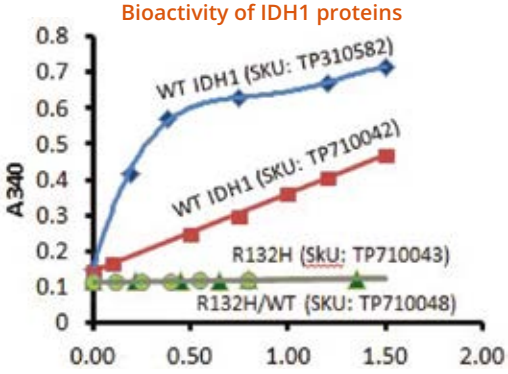
- Expressed in HEK293 cells
- Myc-DDK (FLAG®) tagged
- Optimal preservation of protein structure and post-translational modification

Benefits of Mammalian Expressed Proteins

	Mammalian	Yeast	Insect Cells	E. coli
Protein folding and purification	Optimal	Poor	Low	Poor
Post-translational processing	Yes	Low	Low	No
Authenticity & Bioactivity	Native & Active	Poor	Poor	Very Poor
Time & Efforts required	Time-consuming & Expensive	Low cost	High yield	Low cost & High yield

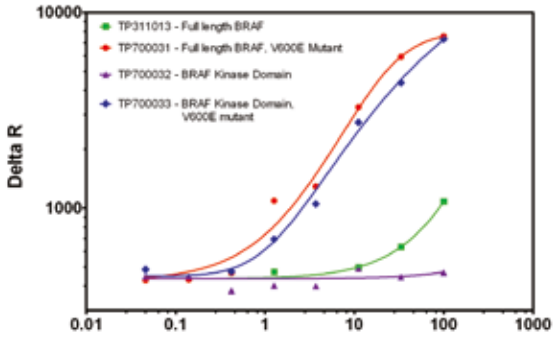
Bioactivity of Purified Proteins in Functional Assays

Bioactivity of IDH1 proteins



Enzymatic activities of wild-type or mutant IDH1 proteins were determined by monitoring NADPH formation based on the absorbance at 345nm.

Bioactivity of BRAF proteins



BRAF kinase activity was measured in an HTRF® assay.

Scan for a video on
Expression Hosts for Recombinant Proteins

Primary Antibodies

Better Antigens, Better Antibodies, Better Assays

Primary Antibodies

- Monoclonal and polyclonal antibodies against targets of various pathways
- Money back guarantee for validated applications

A positive control for WB is available at nominal cost!

While overexpression lysate is available

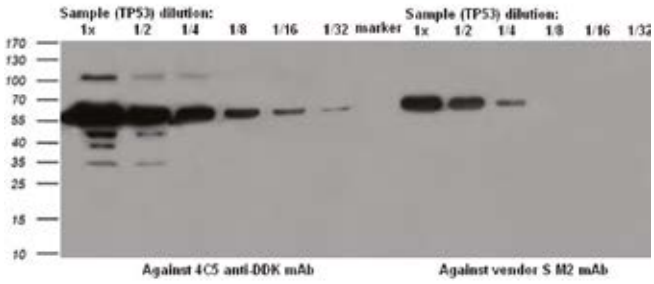
Feature Product

TrueMAB™ Mouse Monoclonal Antibody

- Generated against full-length human proteins produced in human cells
- Recognizes native epitopes
- Extensively validated for WB, IHC, IF/ICC, IP, Flow cytometry, ELISA and Luminex
- **Available in bulk, carrier-free (BSA/glycerol-free) formulation and conjugates**

Antibodies against Epitope Tags and Fluorescent Proteins

- Epitope tags:
  DDK (FLAG® tag), Myc, HA, His, GST, V5



OriGene's DDK (FLAG® tag) antibody (Cat# TA50011) is shown to be more sensitive than anti-FLAG M2 from vendor S.

- A broad selection of antibodies against fluorescent proteins

Cyan	Green	Yellow	Orange	Red		Far Red	Photo-switchable
AmCyan1	AcGFP1	mBanana	mOrange	AsRed2	mCherry	E2-Crimson	Dendra2
eCFP	eGFP	mYFP	mOrange2	DsRed-Express2	mRFP	mKate	PS-CFP2
mBFP	mGFP	tYFP		DsRed-Monomer	mStrawberry	mPlum	
mCFP	tGFP	ZsYellow1		DsRed2	tdTomato	mRaspberry	
	ZsGreen1			KillerRed	tRFP		

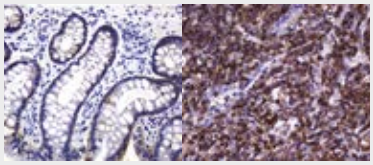
Other Antibody Products

- Secondary antibodies
- Loading control antibodies: GAPDH, Actin, Tubulin, Hsp90
- Western blot reagents

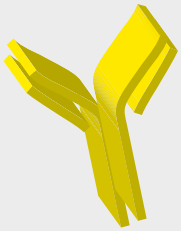
Scan to watch our video on TrueMAB

Whole Product Solution for Anatomic Pathology

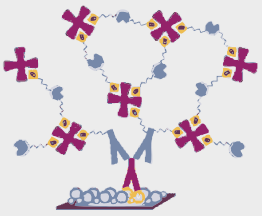
Linking Genes and Proteins to Cancer Biology



Cancer Tissues



IHC Antibodies



Detection Systems

TissueFocus™ Products

Over 140,000 human normal and cancer tissue samples

- FFPE & frozen tissue sections
- Online search available

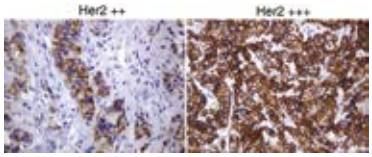
UltraMAB™ The only antibody tested for specificity

Non-specific antibodies would generate incorrect and false-positive diagnosis. OriGene developed a novel technology – the High-density Protein Microarray – to validate antibody specificity, and to ensure every UltraMAB monoclonal antibody is mono-specific to its target. More than 17,000 human proteins are included in the microarray, covering more than 80% of the human genome. UltraMAB is also validated extensively for its performance under clinical conditions.

Antibody specificity tested by High-Density Protein Microarray

Diagram of antibody specificity test with High-density Protein Microarray (results in duplicate)

IHC validated in clinical settings



IHC analysis of human breast carcinoma using HER2 antibody (Cat# UM500036)

Selected UltraMAB Targets

ALK, Beta-Catenin, BMP4, CD2, CD4, CD5, CD20, EGFR, EPCAM, ERCC1, ERG, FOXP1, GFAP, HE4, HER2, Ki67, KRT8, p53, PD1, PDL1, PECAM1, S100P, SERPINB4, SOX5, XPF, XRCC1

Polymer HRP and AP Detection Kits

- For human, mouse, rat and other tissues
- Multiple staining for human and other animal tissues

IHC Accessory Products

- Chromogen kits
- Antigen retrieval buffers
- IHC reagents and more

Featured Product

- **Klear™ Human-on-Human Kit**: detect human primary antibody on human/primate tissue Cat# GB200002
- **Klear™ Mouse-on-Mouse Kit**: detect mouse primary antibody on mouse/rat tissue Cat# GB200006

Video on UltraMAB & Ab Specificity test

Human Tissue Bank

Arrays, Sections, DNA, RNA & Proteins from Normal and Cancer Tissues

OriGene has developed comprehensive human cancer and normal tissue products from its biorepository of over 140,000 high quality human tissues.

Tissues collected from U.S. medical centers under strict ethical requirements and IRB protocols

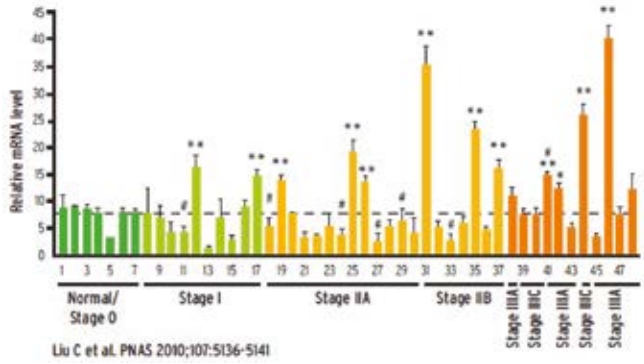
TissueFocus™ Individual Products

- **Tissue total RNA and genomic DNA:** Samples were derived from our high quality frozen tissues after rigorous QC testing. Agilent Bioanalyzer 28S/18S ratio, Electropherogram, A260/A280 ratio and PCR images available upon request.
- **Tissue Protein Lysate:** Protein lysates were generated using a Modified RIPA buffer (no SDS) in the presence of protease and phosphatase inhibitors. Protein quantification is performed using the BCA Protein Assay.
- **Tissue Sections:** Frozen and FFPE tissue sections can be used for applications such as IHC, ISH, LCM and RNA/DNA/Protein extractions. Each section is freshly cut onto a SuperFrost positively charged glass slide, and offered as a set of 5 slides (each 5 micron thickness).

Tips! How to search for a specific tissue sample?
- Use **TissueFocus™** Search Tool on https://www.origene.com/products/tissues to get details including diagnosis, disease stage, race, gender, age, etc.
- Or, let our expert clinical data managers help you: tissue@origene.com

TissueScan™ cDNA Array

qPCR gene expression results of hundreds of tissues in 2 hours



Researchers at Washington University School of Medicine discovered a new cancer biomarker LRP6 that could define a new subtype of breast cancer by using OriGene's TissueScan™ cDNA arrays.

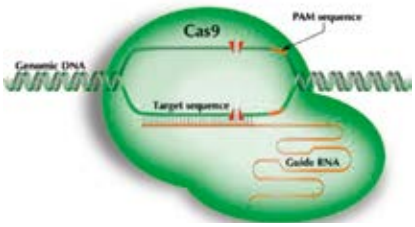
TissueScan™ arrays have been cited in hundreds of publications

TissueScan Offerings		
Cancer Survey Array	96 samples / 8 cancer types	
	384 samples / 22 cancer types	
Cancer Specific Array	Brain Breast Colon Head & Neck Kidney Lymphoma	Melanoma Ovary Pancreas Prostate Sarcoma Thyroid

New to TissueScan™ ?
Scan to watch a video protocol!

Genome Editing with CRISPR/Cas9

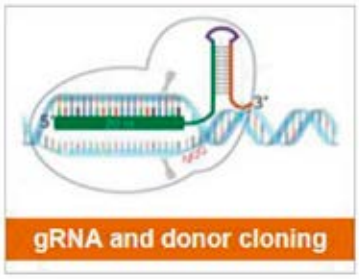
CRISPR/Cas9 is the cutting-edge RNA-guided genome editing tool, which is versatile, simple and affordable. Cas9 in complex with the guide RNA will lead to double-stranded break in a sequence specific manner. Genome editing can be achieved via repair mechanisms.

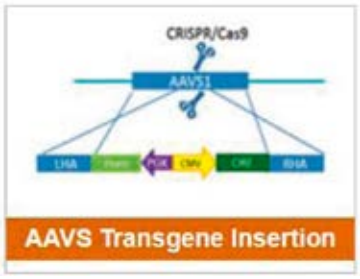


CRISPR Products

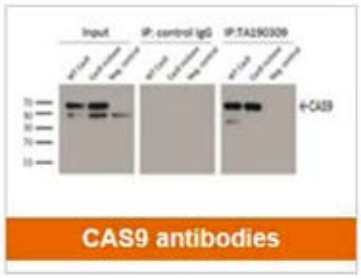

Gene Knockout Kits

CRISPR/CAS9 Vectors


gRNA and donor cloning



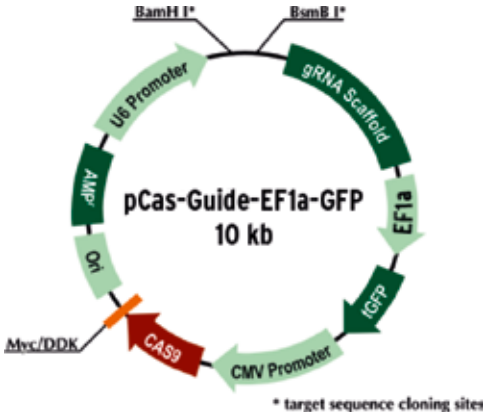
AAVS Transgene Insertion

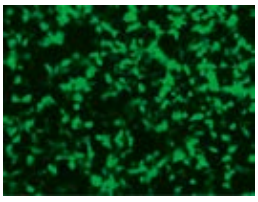


CAS9 antibodies


Knockout Cell Lysate

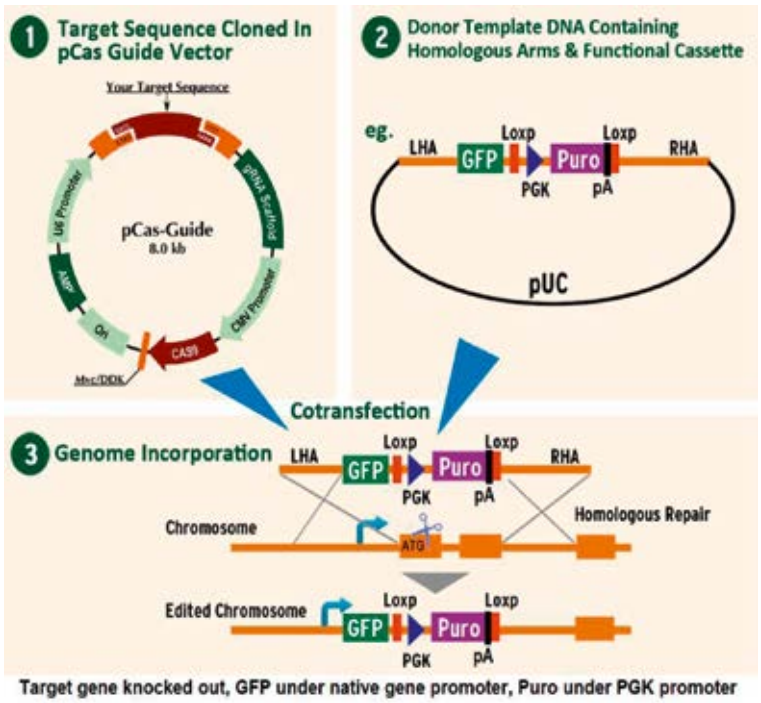
All-In-One-Vector





pCas-Guide-EF1a-GFP was transfected into HEK293 cells. The fluorescence is GFP expression.

Scheme of knockout / knockin kit



Target gene knocked out, GFP under native gene promoter, Puro under PGK promoter

Scan to learn more about CRISPR/Cas9

OriGene, Your Partner in Research, Diagnostics and Beyond

- cDNA Clones/Lenti Particles
- CRISPR/Cas9/sgRNA
- Recombinant Proteins
- Antibodies
- RNAi
- Normal & Cancer Tissues

ORIGENE

OriGene Headquarter
9620 Medical Center Drive
Suite 200
Rockville, MD, 20850
USA
+1.301.340.3188
www.origene.com

OriGene EU
Schillerstraße 5
32052 Herford
Germany
+49.5221.346060
www.origene.com

OriGene China
HuiLongSen International Science
& Technology Industry Park,
Build 11, No.99 Kechuang 14th Street
Beijing, China 101111
+86.10.59755312
www.origene.com.cn

The Most Comprehensive Source of Recombinant Human Proteins

Better Proteins, Better Assays

Over-expressed Cell Lysates

Purified Human Proteins produced in HEK293 Cells

Heavy labeled Proteins as Mass Spec Standards

ORIGENE

www.origene.com

21,000 Human Proteins as Over-expression Lysates

Full Length Human Proteins for Functional Studies and Antibody Validation

Features

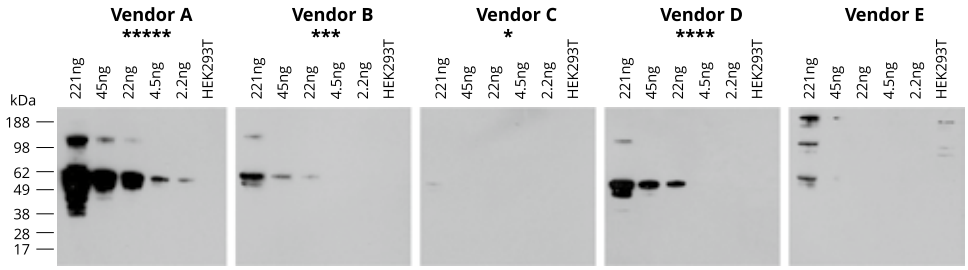
- 21,000 over-expression lysates of full length human proteins
- Expressed in HEK293T cells
- C-terminal Myc-DDK* tag for easy detection and isolation
- In RIPA buffer with no SDS to best preserve protein activity

Applications

- Positive controls in Western, immunoprecipitation, etc.
- Standards in ELISA and other assays
- Protein function study

Find all availalble lysates at
www.origene.com/lysates

Application Data #1: Antibody Validation

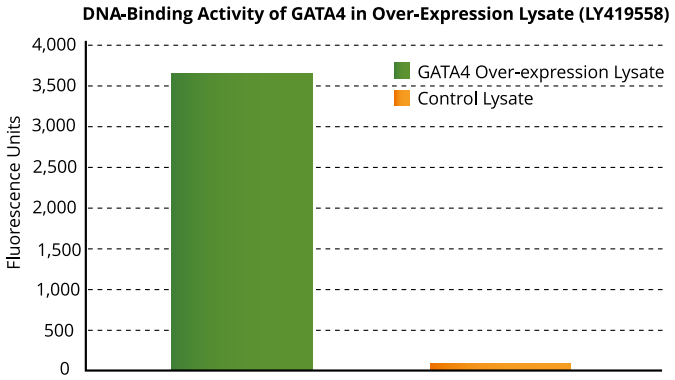


Five commercial antibodies against human P53 were evaluated in Western blot experiments with P53 over-expression cell lysate. P53 protein level in cell lysate was pre-determined using a purified GST-Myc-DDK standard. Lysate was serially diluted before SDS-PAGE and immunoblotting. Antibody quality and star rating is based on P53 protein detection level.

"The Human Protein Atlas project adopted OriGene over-expression lysates and significantly increased our polyclonal antibody Western blot success rate. We are very happy with the results."

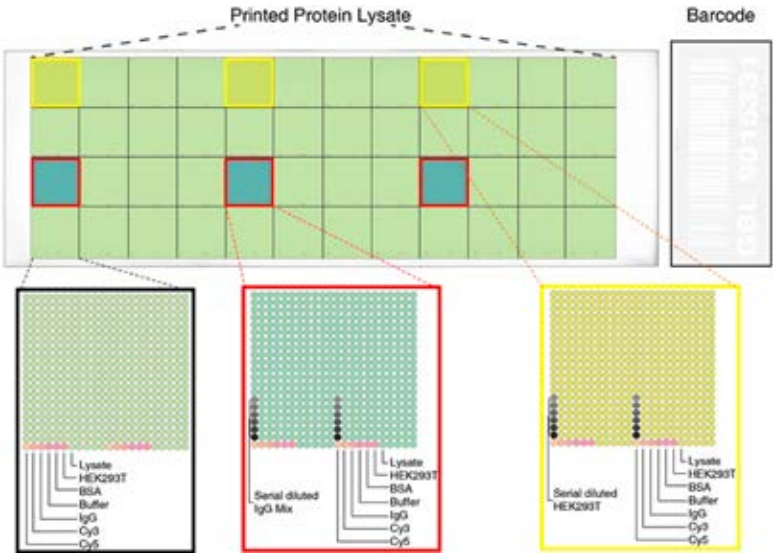
– Prof Mathias Uhlen, Royal Institute of Technology (KTH), Stockholm, Sweden

Application Data #2: Protein Activity Assay – GATA4 (LY419558)



DNA-binding activity of GATA4 was measured in OriGene's over-expression lysate LY419558 and a control lysate. Three microliters of each lysate was tested with a transcription factor binding assay utilizing GATA4-specific DNA sequences. The high level of activity observed in the over-expression lysate compared to the control lysate demonstrates that the expressed GATA4 is biologically active in the lysate.

Application Data #3: Protein Arrays Made from Over-expression Lysates



Using OriGene antigen microarray chip technology to decode antibodies that were generated by whole cell immunization

OriGene's high density protein array made with more than 10,000 unique over-expression lysates, printed in duplicate, with controls. Such protein arrays can be used in antibody specificity validation, protein-protein interaction, and for auto-antibody profiling.

9,000 Mammalian Expressed Purified Human Proteins

Features

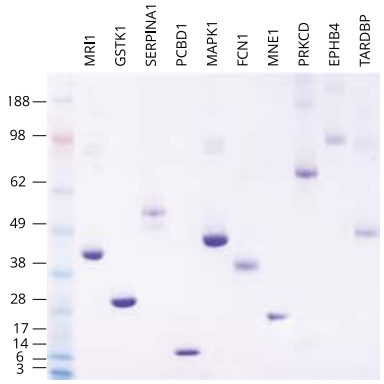
- Produced with TrueORF cDNA clones
- 9,000 full length human proteins
- Expressed in HEK293T cells
- Optimal preservation of protein structure, post-translational modifications and functions
- Large scale production available

Comparison of Different Expression Systems

	Mammalian	Yeast	Insect cells	E. coli
Protein folding and purification	Optimal	Poor	Low	Poor
Post-translational processing	Yes	Low	Low	No
Authenticity & Bioactivity	Native and active	Poor	Poor	Very poor

Applications

- Native antigens for optimized antibody production
- Positive controls in antibody based immunoassays, such as ELISA
- Protein-protein interaction
- In vitro biochemical assays and cell-based functional assays



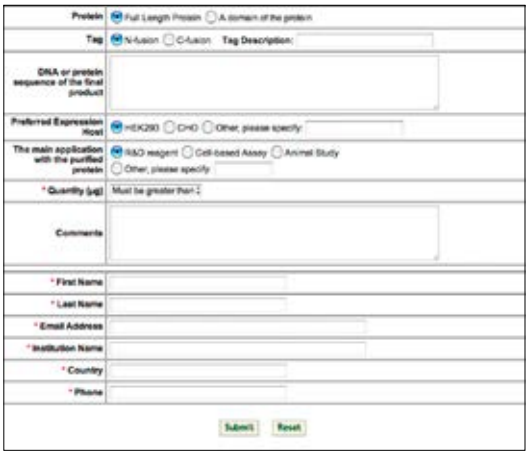
Read more about our mammalian expressed proteins at www.origene.com/proteins

Buffer and Storage: 10% glycerol, 100 mM glycine, 25mM Tris-HCl, pH 7.3. Store at -80°C.
Purification: The over-expressed protein was purified using an anti-DDK affinity column
Tags: C-terminal Myc-DDK
Purity: > 80% as determined by SDS-PAGE
Concentration: > 50 ug/ml
Endotoxin: < 0.1EU/ug of protein

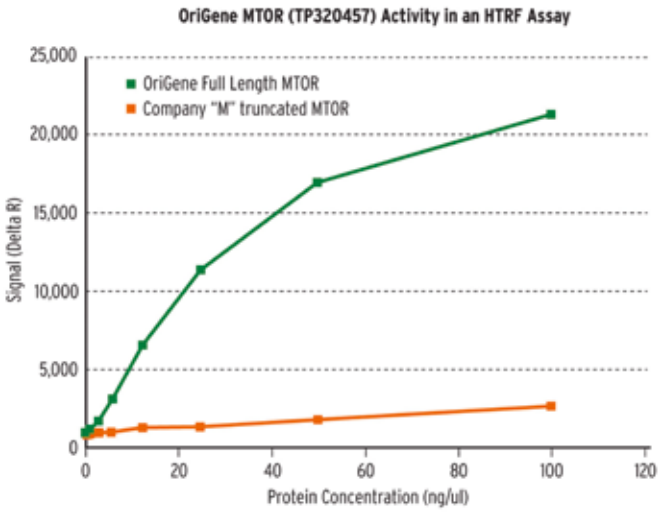
DDK-tag is the same as FLAG tag. Flag® is a registered trademark of Sigma-Aldrich.

Custom Protein Expression and Purification Service

- HEK293 cell transient transfection from 1 liter scale and up
- Custom clone construction and optimization
- Multiple expression hosts
- Your choice of protein tags
- Tag free options available
- Custom buffer formulation, etc.

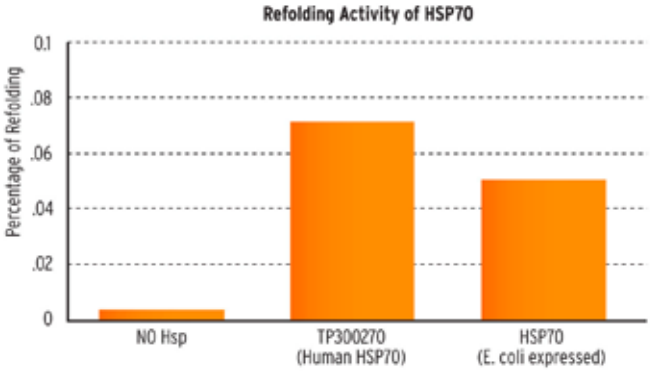


Application Data #1: Purified Protein Bioactivity (MTOR)



MTOR (mechanistic target of rapamycin) (TP320457) activity was measured in a homogeneous time-resolved fluorescent (HTRF©) assay. MTOR is a serine/threonine protein kinase that regulates cell growth, cell survival, protein synthesis, and transcription. Varying concentrations of MTOR were added to a reaction mix containing ATP and a biotinylated kinase substrate and the reaction mixture was incubated to allow the protein to phosphorylate the substrate. HTRF detection reagents were then addet , and fluorescent signal was measured as "Delta R" and is a ratio calculated from the fluorescent emission intensities of the donor and acceptor fluors.

Application Data #2: Human Cell Produced Protein More Potent than E.coli Derived Protein



OriGene human recombinant Hsp70 (Tp300270) was compared side-by-side with E. coli derived Hsp70 ina firefly luciferase refolding assay. Percentage of refolding is relative to an identical load of non-denatured luciferase in the reaction. The human cell produced Hsp70 is approximately 30% more active than the bacterial produced Hsp70.

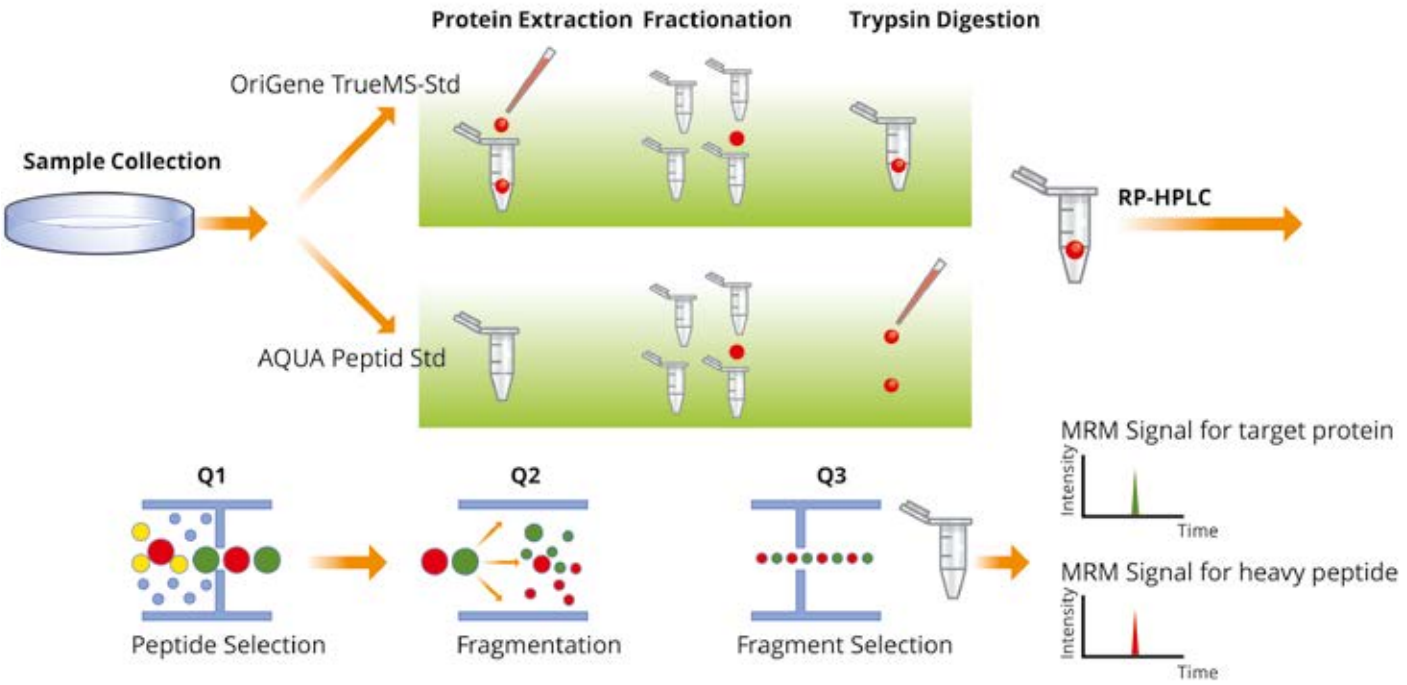
Heavy-labeled Full-length Protein as MS Standards

Accurate Quantification of Human Protein Biomarkers

Quantitative mass spectrometry, especially MRM-MS and SRM-MS, plays a significant role in protein biomarker discovery and validation. OriGene offers the service to generate heavy isotope labeled 9,000 proteins as MS standards.

- Spiking at the early stage of sample process for accurate quantification
- Identify the best SRM and MRM transitions through experimental data
- Authentic post-translational modifications by using HEK293T cells
- Higher data consistency than synthetic peptide internal standard

Heavy Isotope Labeled Full Length Protein Standard – A Better Solution for Quantitative Mass Spectrometry



OriGene and the Institute for Systems Biology work together to create a proteotypic PeptideAtlas and SRM/MRM mass spectrometry standard database for 5,000 human proteins, greatly accelerate quantitative protein biomarker discovery.

OriGene offers comprehensive, high quality recombinant custom protein services from different expression systems, in addition to the standard catalog items. Our proprietary protein expression/purification technology maximizes the purity and yield of target proteins in different systems. Our goal is to provide a flexible service program tailored to your needs every step of the way.

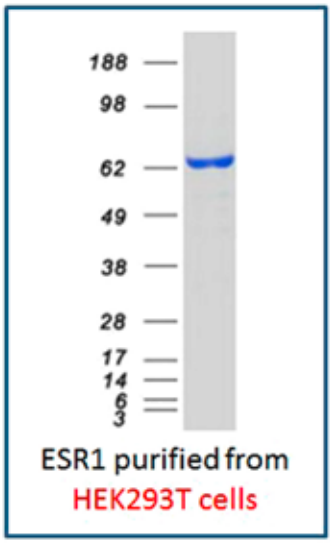
We offer a complete 'start to finish' service from the cDNA (gene) cloning step to the protein purification step, and downstream modifications such as tag addition-removal, endotoxin testing/removal, conjugations, and any other services that you may request. Choose OriGene as your reliable partner for your protein related research and we can help you accelerate your discovery in a timely and cost-effective manner every step of the way, at a very affordable price.

Service Highlights

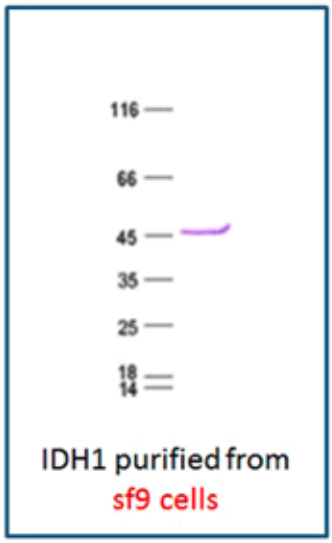
- 4 Different Cell Based Expression Systems
- Complete Service from cDNA cloning to protein purification
- Tag free option is available
- Affordable price

www.origene.com/proteinservice

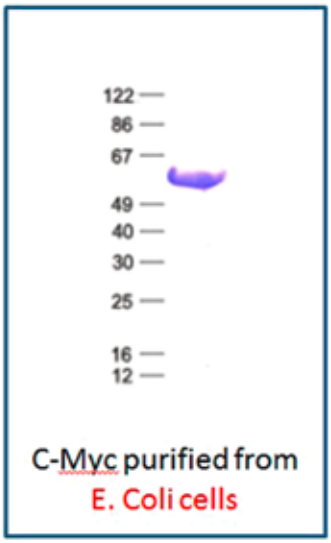
Succesful Examples



ESR1 purified from HEK293T cells



IDH1 purified from sf9 cells



C-Myc purified from E. Coli cells

VEGFA purified from Yeast cells

OriGene, Your Partner in Research, Diagnostics and Beyond

- cDNA Clones/Lenti Particles
- CRISPR/Cas9/sgRNA
- Recombinant Proteins
- Antibodies
- RNAi
- Normal & Cancer Tissues

ORIGENE

OriGene Headquarter
9620 Medical Center Drive
Suite 200
Rockville, MD, 20850
USA
+1.301.340.3188
www.origene.com

OriGene EU
Schillerstraße 5
32052 Herford
Germany
+49.5221.346060
www.origene.com

OriGene China
HuiLongSen International Science
& Technology Industry Park,
Build 11, No.99 Kechuang 14th Street
Beijing, China 101111
+86.10.59755312
www.origene.com.cn

RNA Interference with Guaranteed Knockdown!

shRNA, siRNA & microRNA

shRNA & siRNA mediated Knockdown

microRNA Detection with SYBR-Green qPCR Experiments

microRNA Expression

microRNA Target Validation with 3'-UTR Clones

ORIGENE

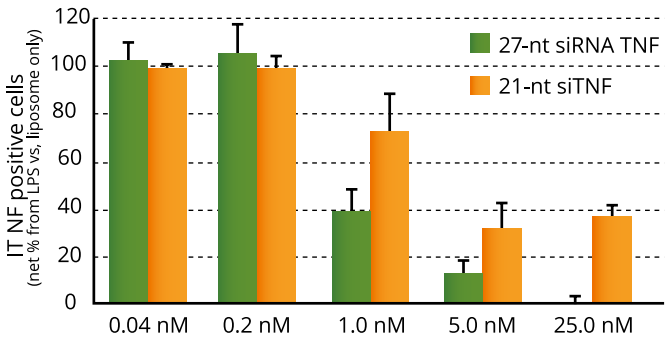
www.origene.com

Dicer-Substrate Technology for shRNA & siRNA

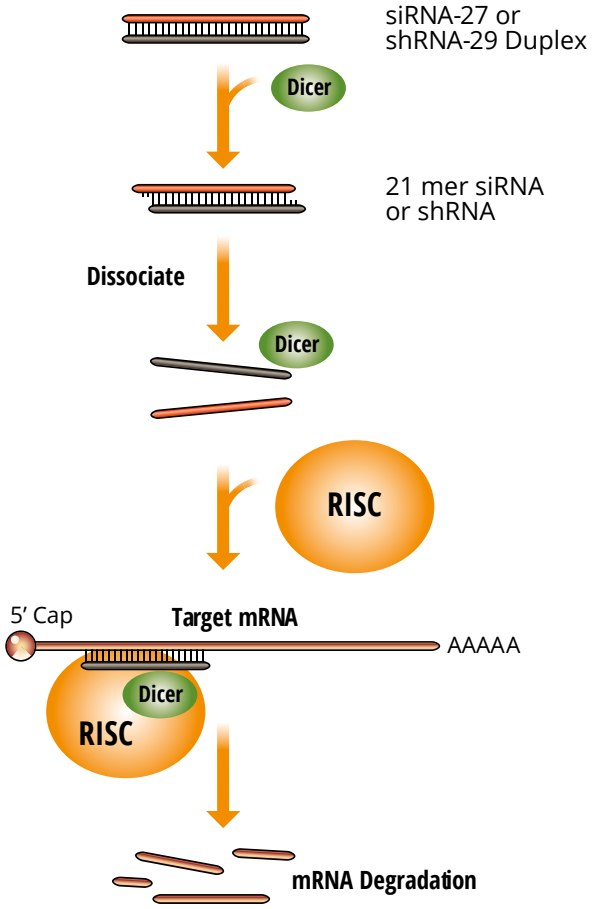
27mer-29mer delivering higher knockdown than traditional 21mer

By its optimal length, HuSH-29 shRNA & Trilencer-27 siRNA have the advantages of improved efficacy and minimal interferon response. The length and design of OriGene's RNAi substrates are important improvements over the use of traditional 21mer designs. Longer shRNA & siRNA constructs appear to enter the RNAi pathway more efficiently and result in much higher potency and specificity than shorter RNAi forms. However, in most mammalian cells, long double-stranded RNA provokes an interferon response as part of an antiviral defense. To overcome this obstacle, OriGene designs shRNAs & siRNA of less than 30 base pairs in length, which evade the mammalian immune system while still initiating strong and specific gene silencing.

A comparative study of different siRNA designs was conducted in a Nature Publication (Reference 1). According to the publication, "short RNAs that are long enough to serve as Dicer substrates (D-siRNA) can often evoke **more potent RNA interference** than the corresponding 21-nt siRNAs; this is probably a consequence of the physical handoff of the Dicer-produced siRNAs to the RNA-induced silencing complex."



Comparison of gene knockdown using dicer-substrate siRNA and 21 mer siRNA



Key publications on dicer-substrate technology

1. Rational design and in vitro and in vivo delivery of Dicer substrate siRNA, Nature Protocols 1, 508 - 517 (2006)
2. Principles of Dicer Substrate (D-siRNA) Design and Function, Methods in Molecular Biology, 442: 3-10

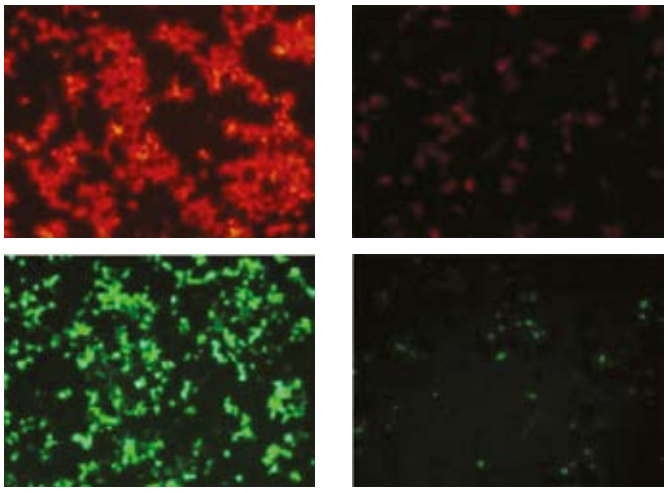
Read more about our siRNA here:
www.origene.com/siran

Comprehensive coverage of human, mouse & rat genes

Features & Benefits

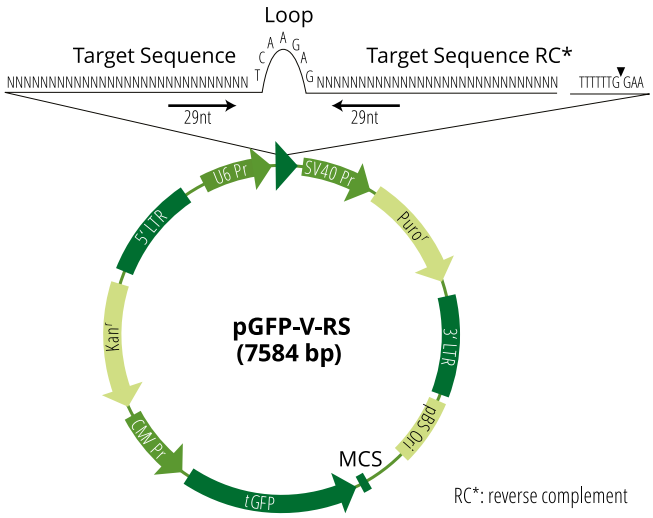
- **29mer shRNA**: igher otency, inimal interferon response
- **Lentiviral particles available** transduce almost all cells
- **Four retroviral vectors**, including GFP & RFP for transfection monitoring and multiple selection markers to carry out double knockdown experiments
- **Transient or stable transfection** or **retroviral infection**
- **shRNA kit**: 4 gene-specific constructs + scrambled control

Double Knockdown Experiment

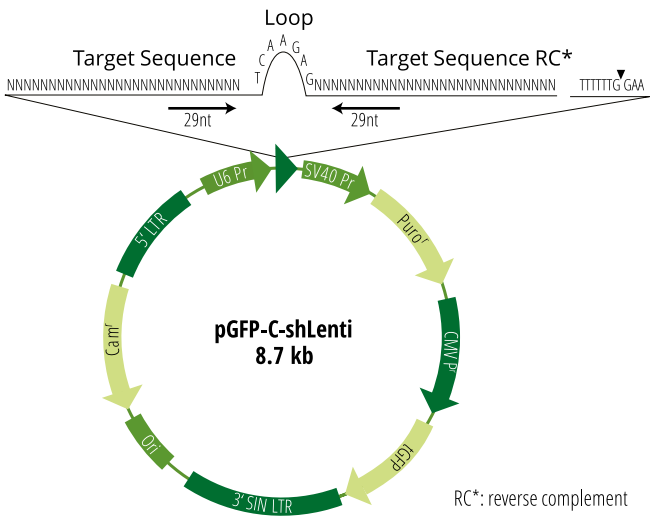


Scrambled shRNA (GFP Vector)
+
Scrambled shRNA (RFP Vector)

shRNA against RFP (GFP Vector)
+
shRNA against GFP (RFP Vector)



RC*: reverse complement



RC*: reverse complement

Schematic diagram of 2 available GFP vectors
Both vectors have been validated through publications.
Cat# TR30007 (left) and Cat# TR30023 (right)

Exact-shRNA Service

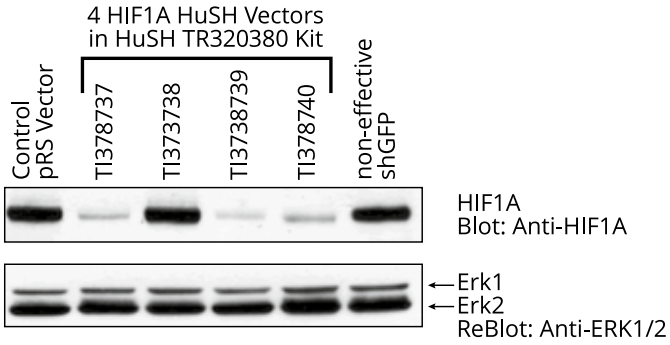
Design any shRNA or miRNA with our custom our synthesis service

The same superior design that is available for our pre-designed HuSH-29 sets is also offered through our **Exact-shRNA** service.

- Self-design or let OriGene design for you
- Target species other than human, mouse or rat possible
- Integrate an effective siRNA sequence into an shRNA vector
- Reproduce the result of a published shRNA sequence

HuSH-29 shRNA & Trilener-27 siRNA

In vitro assessment of shRNA targeting HIF1A



Downregulation of HIF1A Expression by HuSH Constructs

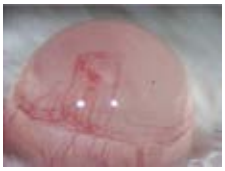
Key publications

1. Suppression of Sproutys Has a Therapeutic Effect for a Mouse Model of Ischemia by Enhancing Angiogenesis, PLoS ONE. 2009; 4(5): e5467 [In vivo application]
2. Androgen-induced TOP2B-mediated double-strand breaks and prostate cancer gene rearrangements, Nature Genetics (4 July 2010) doi:10.1038/ng.613 Article [shRNA targeting TOP2B in GFP vector]
3. EMX2 is epigenetically silenced and suppresses growth in human lung cancer, Oncogene (9 August 2010) doi:10.1038/onc.2010.330 Short Communication [shRNA targeting EMX2 in RFP Vector]

Learn more about our shRNA at www.origene.com/shran

In vivo effects of shRNA targeting Sprouty4

(Cat# TR509780) PLoS ONE. 2009; 4(5): e5467



Control shRNA

Spry2/Spry4 shRNA

WT

Spry 4 KO

Trilencer-27 siRNA
Guaranteed gene silencing for human genes

Similar to HuSH-29 shRNA, OriGene's Trilencer-27 siRNA utilizes a 27mer Dicer-Substrate design that as the advantages over traditional 21mer of improved efficacy and minimal interferon response.

Features & Benefits

- **Genomewide coverage** against human, mouse and rat
- **Higher potency & minimal interferon response**
- **siRNA kit**: 3 gene-specific siRNAs + 1 negative control

siTRAN 1.0 siRNA transfection reagent

- Dual purpose reagent—transfect both siRNA duplex and corresponding cDNA clone
- High transfection efficiency and low cytotoxicity
- Cat # TT300001, TT300002 & TT300003

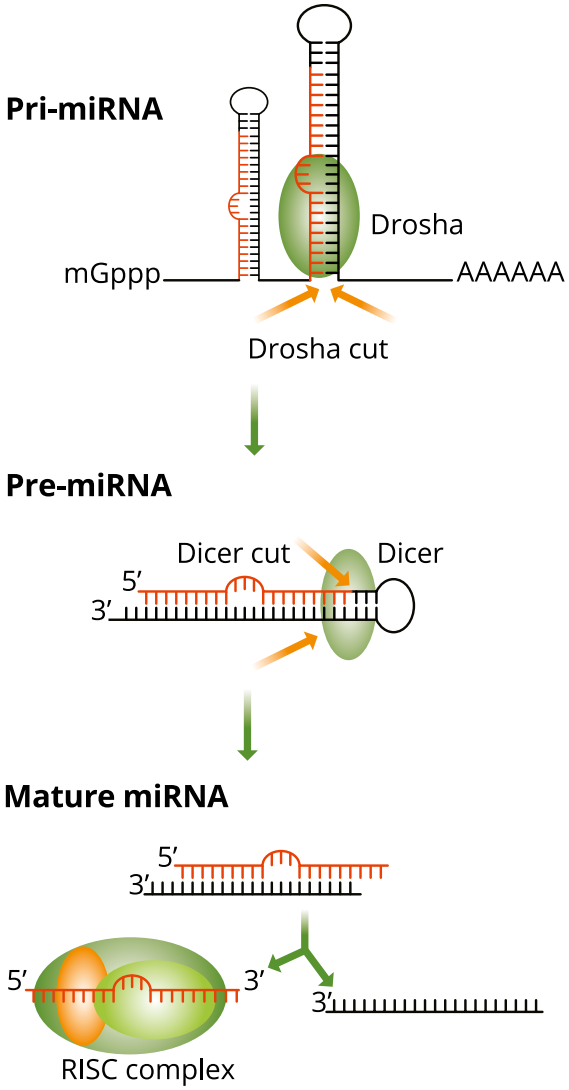
Comprehensive coverage for both human and mouse

OriGene provides clones for over-expression of microRNA (miRNA) of your choice. OriGene's miRNA precursor contains pre-miRNA (60-70nt) with 250-300 nts up- and down-stream of flanking sequence. It was amplified from human genomic DNA and cloned into OriGene's pCMV6-Mir Vector. Upon transfection, the cellular machinery will process the CMV-driven expression of miRNA precursor into mature miRNA and cellular function can be analyzed.

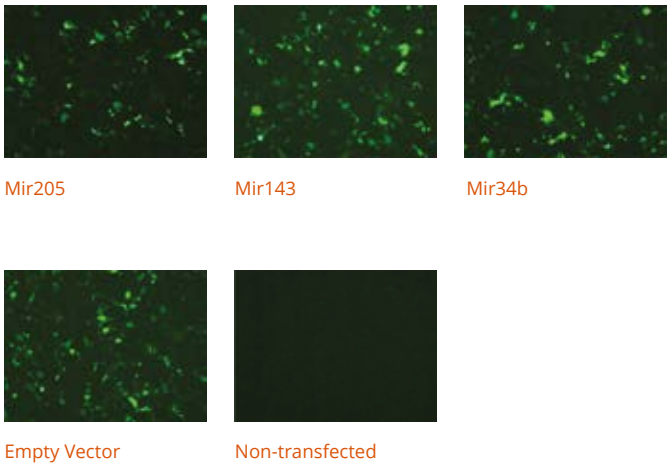
Features & Benefits

- Genome wide miRNA coverage — 652 human and 486 mouse
- Sequence confirmation of the precursor miRNA
- GFP for transfection monitoring
- Neomycin selection for stable cell establishment
GFP transfection of microRNA expression plasmids in HEK293 cells

Read more about miRNA at
www.origene.com/microRNA



GFP transfection of miRNA expression plasmids in HEK293 cells



miRNA expression plasmids

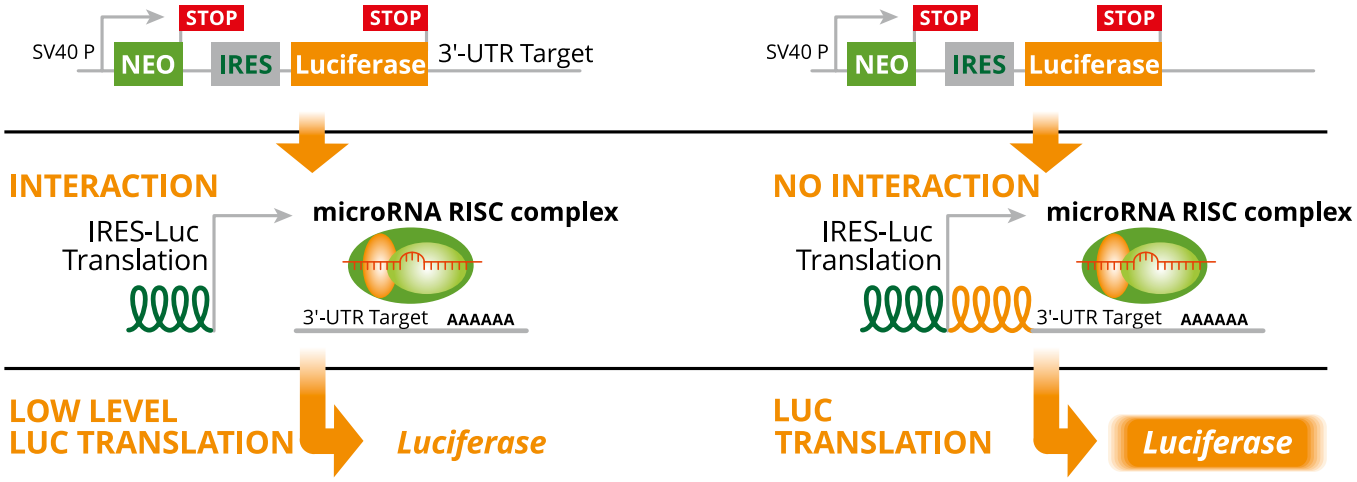
Sold individually as 10ug transfection-ready DNA or can be purchased as following sets

Catalog No.	Description
SC410001	Mouse miRNA expression plasmid set (486 vectors, 10ug each in 2-D bar coded tubes)
SC420001	Human miRNA expression plasmid set (652 vectors, 10ug each in 2-D bar coded tubes)
SC410002	Mouse miRNA expression plasmid set (486 vectors, 2ug each in 96-well plates)
SC420002	Human miRNA expression plasmid set (652 vectors, 2ug each in 96-well plates)

3'-UTR Reporter Clones for miRNA Target Validation

Luciferase reporter assays for the human genome

The 3'-UTR plasmids provide quantitative assessment of the inhibitory effects between miRNAs and their potential target genes. The 3'-UTR sequence of a gene was cloned downstream of the firefly luciferase gene. The chimeric transcript level is regulated by its interaction with miRNA(s), which results in varied luciferase activity quantifiable by a colorometric assay. MiRNAs and their 3'-UTR targets can be assayed for endogenous miRNA activity or for overexpressed miRNA in a co-transfection experiment.



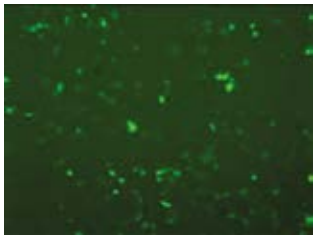
Interaction between miRNA and UTR. Reduced luciferase expression

No interaction between miRNA and UTR. No effect on luciferase expression

Features & Benefits

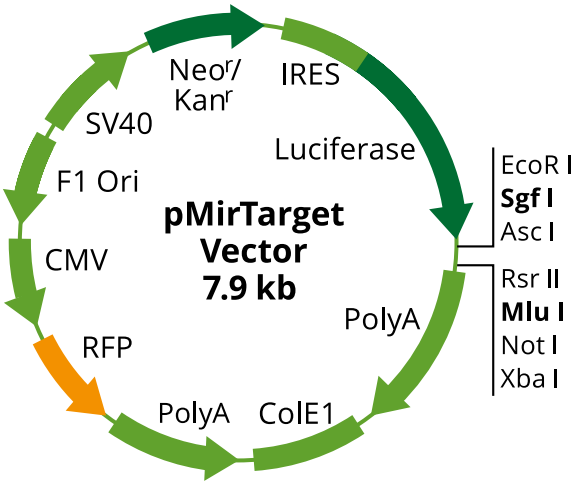
- Genome wide coverage (>20,000 human genes)
- Firefly luciferase as the easy-to-assay reporter
- RFP for transfection monitoring
- High sensitivity from IRES-driven translation of the expression cassette

Find out more at
www.origene.com/3-utr-clones



pCMV - Mir + Mir205 target

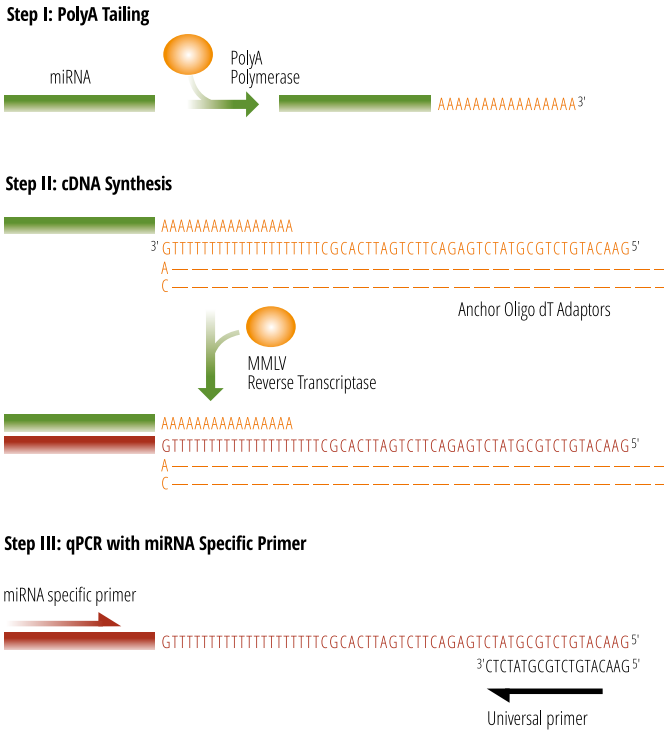
pCMV - Mir205 + Mir205 target



OriGene has used a new design adapted from C.P.Petersen et al. 2006, to dramatically increase the sensitivity of detection by decreasing the 3'UTR-luciferase reporter expression to a very low level.

Quantify your results down to the absolute copy number!

OriGene's unique primer-based, SYBR Green qPCR miRNA detection system not only offers researchers a fast and simple method for profiling miRNA expression levels, but also provides means to quantify the results down to absolute copy number of miRNA.



Features & Benefits

- Genome wide coverage of human and mouse miRNA
- Determine absolute copy number of your miRNA with template standards
- Detect miRNA directly from total RNA samples

Products offered in qPCR miRNA detection system

*Components 2,3 & 4 are unique and should only be used alongside OriGene's qPCR miRNA detection system

First-strand cDNA Synthesis Kit

Two-step protocol

- Addition of poly (A) tail to RNA sample
- Use of anchor linker oligo dT to synthesize first-strand cDNA
- Cat# NP100041 & NP100042

miRNA Primers & Panels

- Offered as individual primers, genome wide panels, & custom-mixed panels
- Pre-validated in an experiment against normal and ovarian cancer samples

miRNA Copy Number Standards

- Unique offering only from OriGene
- Determine the absolute transcript copy number of an experiment sample using the standard curve method

Find more information at
www. origene.com/qpcr-mirna

OriGene, Your Partner in Research, Diagnostics and Beyond

- cDNA Clones/Lenti Particles
- CRISPR/Cas9/sgRNA
- Recombinant Proteins
- Antibodies
- RNAi
- Normal & Cancer Tissues

ORIGENE

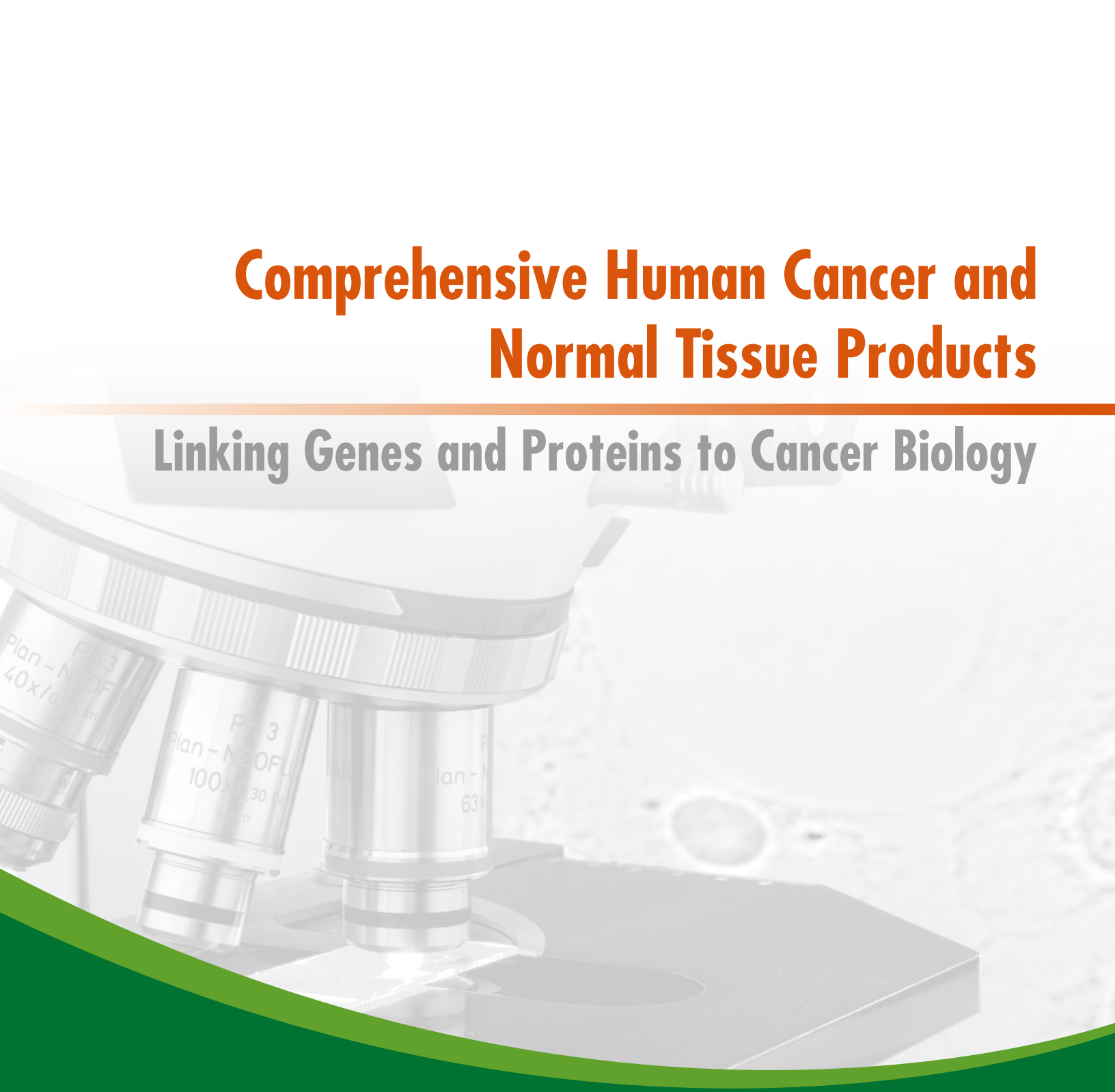
OriGene Headquarter
9620 Medical Center Drive
Suite 200
Rockville, MD, 20850
USA
+1.301.340.3188
www.origene.com

OriGene EU
Schillerstraße 5
32052 Herford
Germany
+49.5221.346060
www.origene.com

OriGene China
HuiLongSen International Science
& Technology Industry Park,
Build 11, No.99 Kechuang 14th Street
Beijing, China 101111
+86.10.59755312
www.origene.com.cn

Comprehensive Human Cancer and Normal Tissue Products

Linking Genes and Proteins to Cancer Biology



Cancer Tissue cDNA Arrays

Cancer Tissue Genomic cDNAs

Cancer Tissue Lysates

Cancer Tissue Microarrays

Cancer Tissue Sections & Blocks

ORIGENE

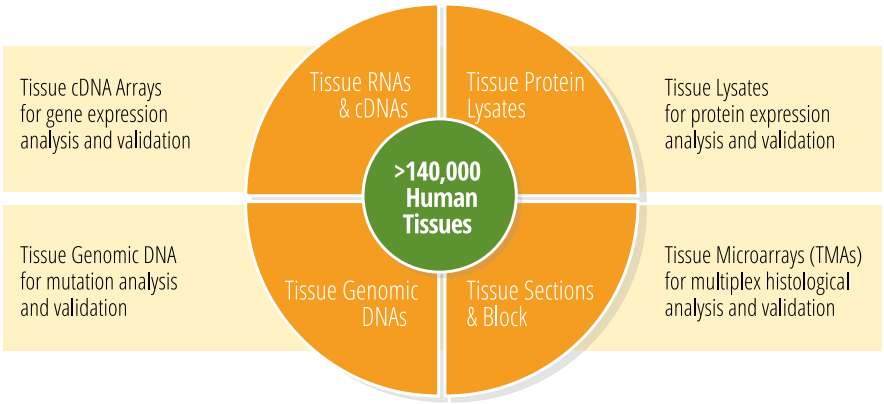
www.origene.com

Human Cancer and Normal Tissue Products

Linking Genes and Proteins to Cancer Biology
Comprehensive Human Tissue Products

OriGene has the comprehensive human cancer and normal tissue products developed from its biorepository of over 140,000 human tissues representing over 12,000 donors.

- TissueScan™ Arrays: cDNA arrays, genomic DNA arrays, protein lysate arrays (RPAs), and tissue microarrays (TMAs)
- TissueFocus™ individual products: total RNAs, genomic DNAs, protein lysates, sections, and blocks
- All products are provided in assay/application ready formats

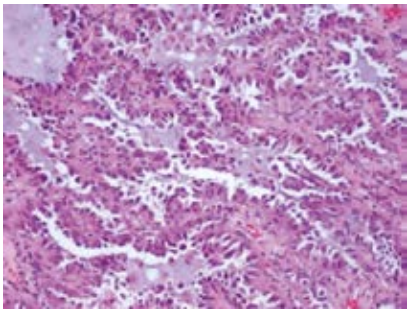


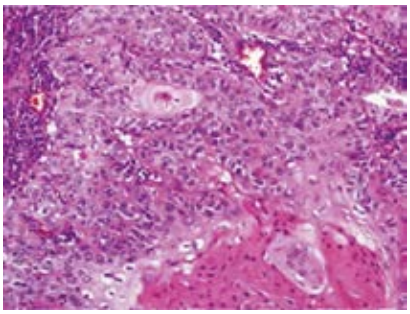
Learn more about our available tissue products at www.origene.com/tissues

Unparalleled Quality of Human Tissue Products

All tissue products are developed from OriGene's high quality tissues, which are banked under strict collection protocols and undergo rigorous quality control to ensure each source block's unparalleled quality.

- Collected from major US institutions under strict IRB and ethical consenting practices
- Maintained in a monitored environment and bar-coded for tracking purposes
- Each tissue source block includes following clinical information
  - Abstracted pathology report
  - Disease staging
  - Digital H&E image
  - Donor's basic demographic information
  - More clinical data available for review through an on-line database



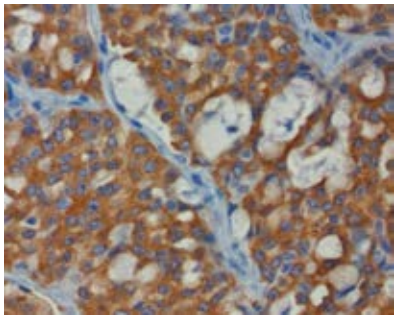


ALK, PD1 & PD-L1 Control Slides

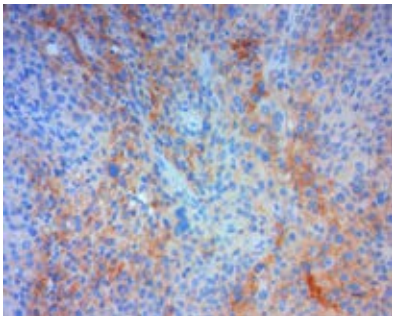
OriGene now offers positive and negative control slides for ALK, PD1 and PDL1 developed specifically for immuno-histochemistry are guaranteed to detect the protein target as listed. Control slides are prepared using human tissue that has been collected from major US institutions under strict IRB and ethical consenting practices tracked, maintained and processed with the highest standards.

Features

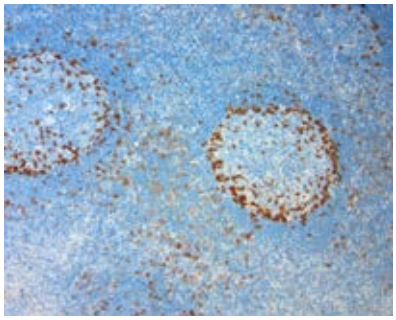
- Both positive and negative tissue 4 um section mounted on unstained slide.
- Available as sets of 2 or 5 slides
- Tissues are placed on SuperFrost® Plus Slides.
- The slides are unbaked. We recommend that you bake the control slides(s) according to your standard laboratory operating protocol.



ALK Positive Control Slide
- Lung Cancer



PD-L1 positive control slide
- Melanoma



PD1 positive control slide
- Tonsil

Description	Cat #
ALK positive tissue 4um section mounted on unstained slide	CS815502
ALK negative tissue 4um section mounted on unstained slide	CS815504
PD1 positive tissue 4um section mounted on unstained slide	CS815506
PD1 negative tissue 4um section mounted on unstained slide	CS815508
PDL1 positive tissue 4um section mounted on unstained slide	CS815510
PDL1 negative tissue 4um section mounted on unstained slide	CS815512

Learn more about our IHC control slides at
www.origene.com/tissue-control-slides-ihc

TissueScan™ Cancer Tissue cDNA Arrays

qPCR Gene Expression Results of Hundreds of Tissues in 2 Hours

TissueScan™ Cancer Tissue cDNA Arrays are developed for differential gene expression analysis and validation among hundreds of different tissues. Tissue cDNAs of each array are synthesized from high quality total RNAs of pathologist-verified tissues, normalized and validated with ß-actin in two sequential qPCR analyses, and provided with QC data.

- Cancer survey arrays contains over 20 different cancer types from 381 donors
- Cancer specific arrays cover almost all major cancers
- Normal tissue arrays include major tissues from human, mouse, rat, and drosophila

qPCR-READY TissueScan™ cDNA Arrays for Immediate Delivery

	Cancer Survey Panels	Cancer Specific Panels	Normal Panels
Coverage	Adrenal gland, Breast, Cervix, Colon, Endometrium, Esophagus, Gastroesophageal, Kidney, Liver, Lung, Lymphoid, Ovary, Pancreas, Prostate, Stomach, Testis, Thyroid gland, Urinary bladder, Uterus, etc.	Bladder, Brain, Breast, Colon, Crohns, Endometrium, Gastroesophageal, Kidney, Liver, Lung, Lymphoma, Melanoma, Ovarian, Pancreas, Prostate, Sarcoma, Thyroid	Human Normal, Human Brain, Mouse Normal, Mouse Development, Rat Normal, Drosophila
Panels	4	40	6
Format	384- or 96-well	96-well	96-well

Key publications

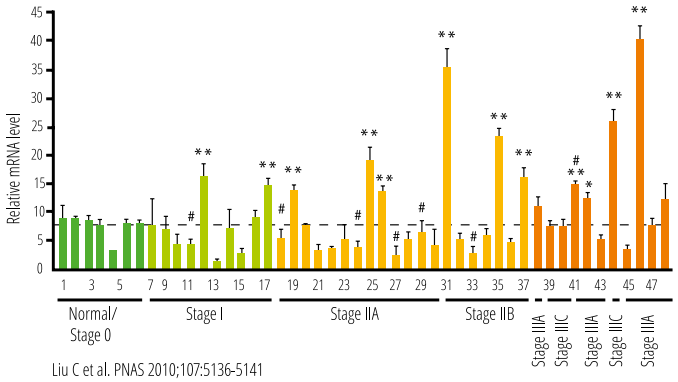
1. Liu Y, et al. (2010). The protein kinase Pak4 disrupts mammary acinar architecture and promotes mammary tumorigenesis. Oncogene doi:10.1038/onc.2010.329 Original Article [Cancer Survey Panel]
2. Trimmer C, et al. (2010). CAV1 Inhibits Metastatic Potential in Melanomas through Suppression of the Integrin/Src/FAK Signaling Pathway. Cancer Res., 70: 7489 - 7499 [Melanoma Panel]
3. Noor A, et al. (2010). Disruption at the PTCHD1 Locus on Xp22.11 in Autism Spectrum Disorder and Intellectual Disability. Science Translational Medicine, 2: 49ra68 [Brain Normal Panel]
4. Beverly LJ and Varmus HE (2009). MYC-induced myeloid leukemogenesis is accelerated by all six members of the antiapoptotic BCL family. Oncogene doi: 10.1038/onc.2008.466

Find more information at
www.origne.com/tissuescan

Discovery of a New Cancer Biomarker for a New Subtype of Breast Cancer

Researchers at Washington University School of Medicine discovered a new cancer biomarker that could define a new subtype of breast cancer as well as offer a potential way to treat it and their work was published in the Proceedings of the National Academy of Sciences.

- LRP6 expression is frequently up-regulated in a subset of human breast cancer tissues and cell lines
- LRP6 was significantly over-expressed in 20-36% of human breast cancer tissue samples
- LRP6 was increased more frequently in triple (ER, HER2 and PR) negative breast tumor samples



Liu C et al. PNAS 2010;107:5136-5141

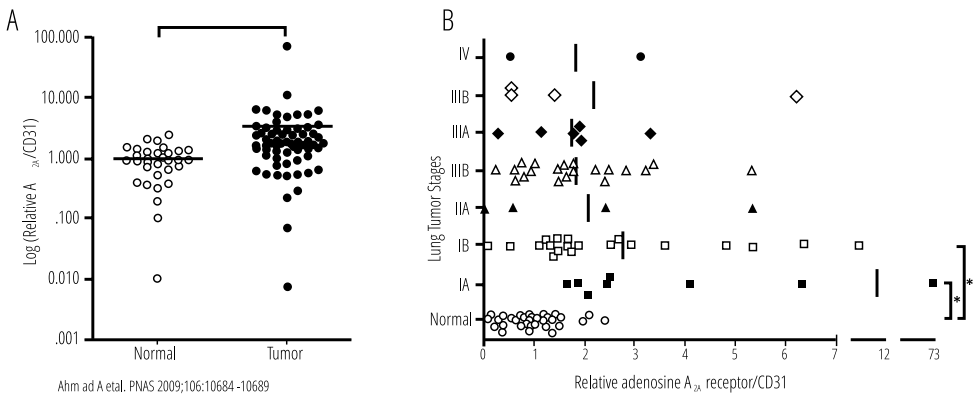
TissueScan™ cDNA Array results clearly indicated LRP6 expression was up-regulated in a subset of human breast cancer tissues.

** P < 0.01.

Discovery of a New Prognosis Biomarker for Lung Cancer

Scientists at National Jewish Health have discovered the Adenosine A2A (ADORA2A) receptor as a prognosis and companion diagnostic marker for lung cancer and their work was published in the Proceedings of the National Academy of Sciences.

- ADORA2A receptor was significantly over-expressed during the early stages of tumor growth
- ADORA2A receptor was expressed only in response to HIF-2alpha activation
- A potential new target for an anti-angiogenic approach to treating lung cancer



Ahm ad A etal. PNAS 2009;106:10684 -10689

TissueScan™ cDNA Array results clearly indicated Adenosine A2A receptor expression was increased in lung tumor samples at different stages.

*Statistically different from the normal lung tissue.

TissueFocus™ Tissue Derivative Products

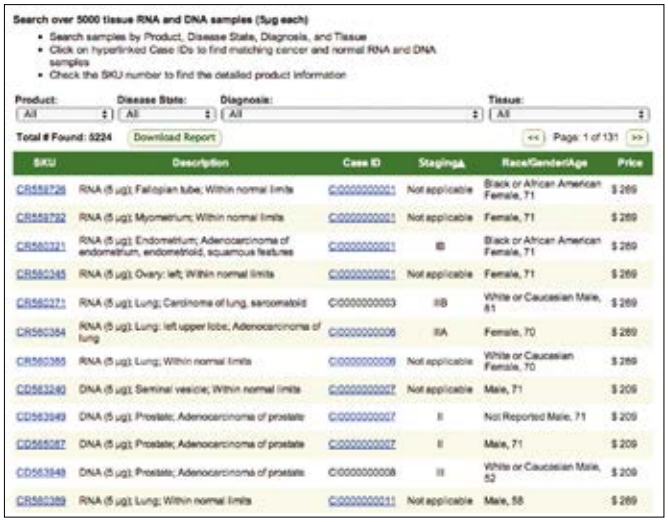
Tissue Total RNAs, Genomic DNAs, and Protein Lysates

OriGene's TissueFocus™ tissue total RNA, genomic DNA, and protein lysate samples are produced from our pathologist-verified high quality tissue blocks and undergo rigorous quality control testing to ensure the sample integrity and preservation.

Tissue Total RNAs and Genomic DNAs

A proprietary set of standard operating procedures is utilized to extract RNA or DNA from tissues to ensure intact total RNA, genomic DNA, free of protein contamination.

- Paired normal and cancer total RNAs and genomic DNAs from same patients
- Over 5,000 searchable tissue RNAs and genomic DNAs available for immediate delivery
- Agilent Bioanalyzer 28S/18S ratio, Electropherogram, A260/A280 ratio and PCR images
- Abstracted pathology report for each sample



Search over 5000 tissue RNA and DNA samples (5µg each)

- Search samples by Product, Disease State, Diagnosis, and Tissue
- Click on hyperlinked Case IDs to find matching cancer and normal RNA and DNA samples
- Check the SKU number to find the detailed product information

Product: All | Disease State: All | Diagnosis: All | Tissue: All

Total # Found: 5224 | Download Report | << Page: 1 of 131 >>

SKU	Description	Case ID	Staging▲	Race/Gender/Age	Price
CR559726	RNA (5 µg); Fallopian tube; Within normal limits	C0000000001	Not applicable	Black or African American Female, 71	$ 269
CR559792	RNA (5 µg); Myometrium; Within normal limits	C0000000001	Not applicable	Female, 71	$ 269
CR560321	RNA (5 µg); Endometrium; Adenocarcinoma of endometrium, endometrioid, squamous features	C0000000001	IB	Black or African American Female, 71	$ 269
CR560345	RNA (5 µg); Ovary: left; Within normal limits	C0000000001	Not applicable	Female, 71	$ 269
CR560271	RNA (5 µg); Lung; Carcinoma of lung, sarcomatoid	C0000000003	IIB	White or Caucasian Male, 61	$ 269
CR560364	RNA (5 µg); Lung: left upper lobe; Adenocarcinoma of lung	C0000000006	IIA	Female, 70	$ 269
CR560365	RNA (5 µg); Lung; Within normal limits	C0000000006	Not applicable	White or Caucasian Female, 70	$ 269
CD563240	DNA (5 µg); Seminal vesicle; Within normal limits	C0000000007	Not applicable	Male, 71	$ 209
CD563049	DNA (5 µg); Prostate; Adenocarcinoma of prostate	C0000000007	II	Not Reported Male, 71	$ 209
CD565087	DNA (5 µg); Prostate; Adenocarcinoma of prostate	C0000000007	II	Male, 71	$ 209
CD563049	DNA (5 µg); Prostate; Adenocarcinoma of prostate	C0000000008	III	White or Caucasian Male, 52	$ 209
CR560389	RNA (5 µg); Lung; Within normal limits	C0000000011	Not applicable	Male, 58	$ 269

Tissue Protein Lysates

OriGene's tissue protein lysates are obtained from frozen OCT-embedded tissue samples in the Biorepository. Lysates are routinely generated using a modified RIPA buffer (no SDS) in the presence of protease and phosphatase inhibitors. Protein quantification is performed using the BCA protein assay.

- Paired normal and cancer tissue protein lysates from same patients
- Qualification data provided
  - A PAGE gel image visualized by SYPRO Ruby
  - A Western Blot image using a beta-Actin monoclonal antibody

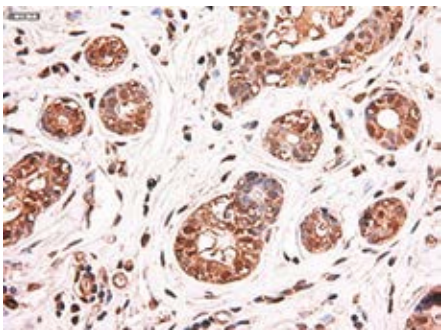
Customized TissueScan™ cDNA, Genomic DNA, and Protein Lysate Arrays

OriGene has built a state-of-the-art facility to quickly turn our issueFocus™ derivative products into customized TissueScan™ cDNA, genomic DNA, protein lysate arrays upon request.

Tissue Sections and Blocks / Cancer Tissue Microarray (TMAs)

Quality Tissues for Your Research Needs

OriGene's high quality tissues are banked under strict and rigorous collection protocols and are available in either formalin-fixed, paraffin embedded (FFPE) or frozen, OCT-embedded formats.

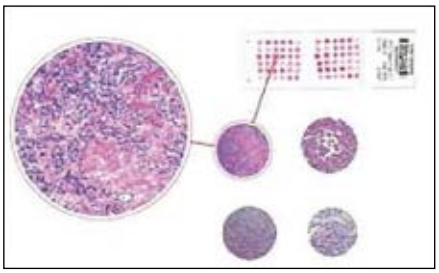


- >140,000 cancer, normal and other diseased tissues available for immediate delivery
- All sections and blocks include pathology verification data, clinical annotation, abstracted pathology reports and digital H&E images of the source block
- Ideal for immunohistochemistry (IHC), in-situ hybridization (ISH), laser capture microscopy (LCM) and RNA/DNA/Protein extractions

www.origene.com/tissue-blocks

Quality Tissue Microarrays for Your High-Throughput Molecular Analysis

Tissue microarrays (TMAs) are developed from formalin-fixed paraffin-embedded (FFPE) tissue samples selected from the OriGene's tissue biorepository of over >140,000 tissue samples, which represent hundreds of pathology diagnoses.



- Sample cores selected by board-certified pathologists
- TMA Datasheet/Map includes H&E images and detailed pathology reports
- Fully qualified for IHC analysis and suitable for in situ hybridization (ISH) analysis
- TMA sections freshly-cut prior to shipment

Available TMAs for Immediate Delivery

Cancer Survey Tissue Microarray: FFPE, 165 x 1 mm cores, 110 tumors and 55 normals, Covering 11 cancer types: Breast, Colon, Lung, Kidney, Ovarian, Endometrial, Stomach, Prostate, Melanoma, Liver, Lymphoma. (5 um section x 1 slide)
Breast Cancer Tissue Microarray: FFPE, 42 x 1 mm cores, 36 tumors and 6 normals. (5 um section x 1 slide)
Ovarian Cancer Tissue Microarray: FFPE, 48 x 1 mm cores, 41 tumors and 7 normals. (5 um section x 1 slide)

OriGene, Your Partner in Research, Diagnostics and Beyond

- cDNA Clones/Lenti Particles
- CRISPR/Cas9/sgRNA
- Recombinant Proteins
- Antibodies
- RNAi
- Normal & Cancer Tissues

ORIGENE

OriGene Headquarter
9620 Medical Center Drive
Suite 200
Rockville, MD, 20850
USA
+1.301.340.3188
www.origene.com

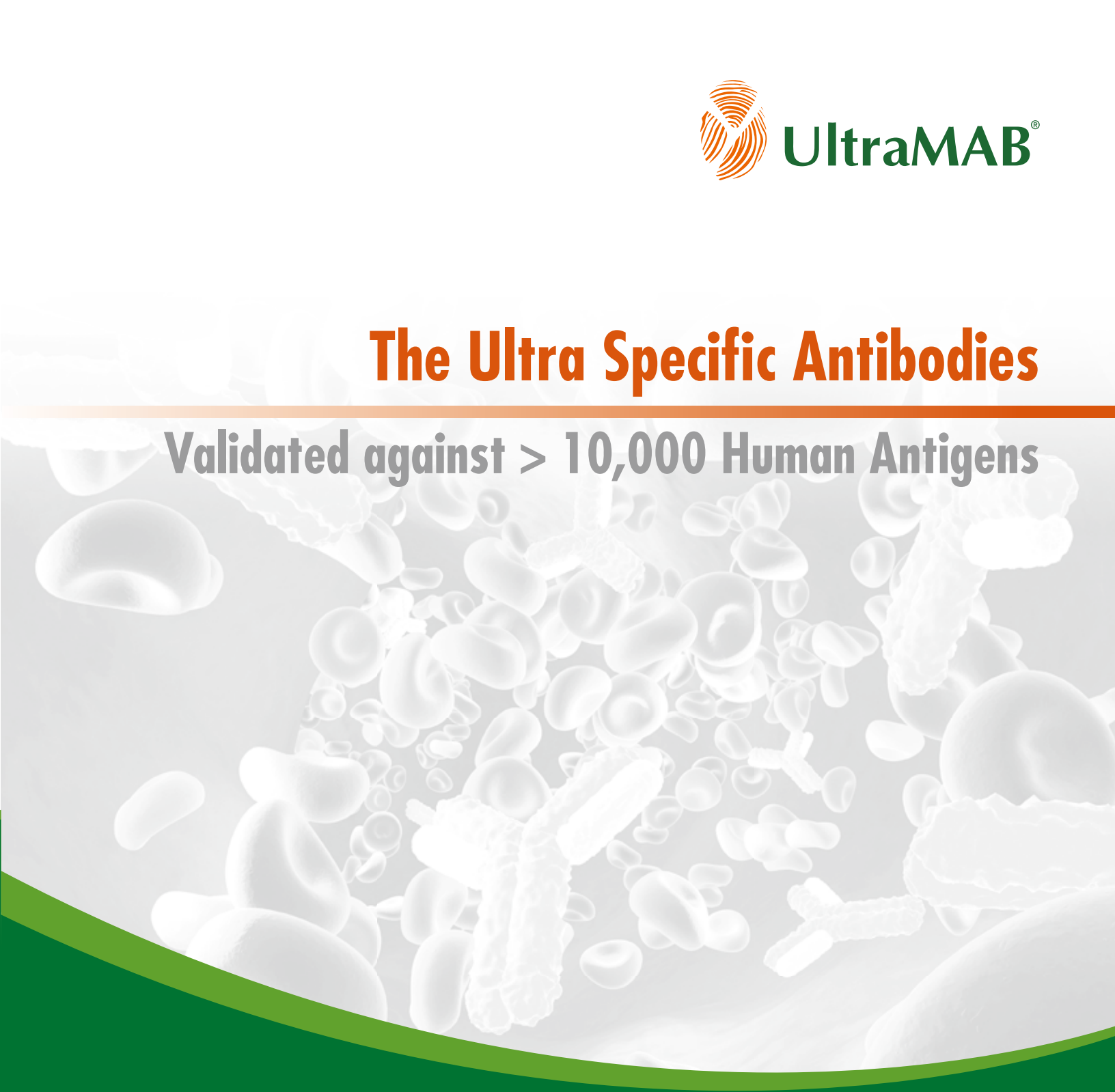
OriGene EU
Schillerstraße 5
32052 Herford
Germany
+49.5221.346060
www.origene.com

OriGene China
HuiLongSen International Science
& Technology Industry Park,
Build 11, No.99 Kechuang 14th Street
Beijing, China 101111
+86.10.59755312
www.origene.com.cn

UltraMAB®

The Ultra Specific Antibodies

Validated against > 10,000 Human Antigens



Confidence in your Antibody

Accuracy in your Results

ORIGENE

www.origene.com

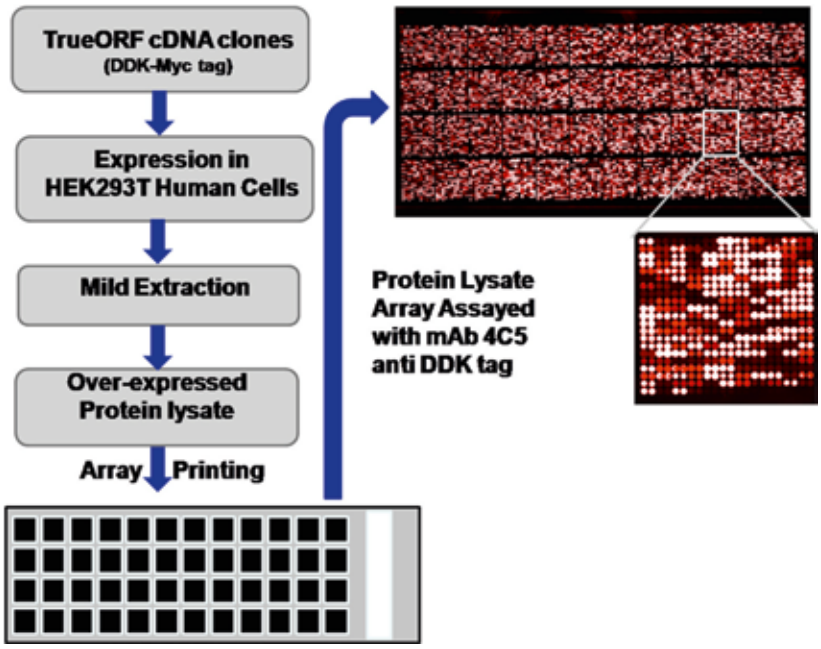
UltraMAB™, the Ultra Specific IHC Antibodies

Trust Your IHC Antibodies

High-specificity is the pre-requisite for any antibody used in diagnostic and therapeutic applications. Antibody cross-reactivity will create unexpected side effects or false diagnostic reports for clinicians. Research data from various groups have shown that some monoclonal antibodies on the market are not mono-specific. Similar epitopes are sometimes found across multiple unrelated proteins.

Antibody Validation Technology

Protein microarray technology can evaluate antibody specificity at the proteome-wide level. With the world's largest collection of overexpression antigen standards, OriGene developed a high density protein microarry chip for antibody validation. This protein chip is spotted with over 10,00 unique overexpression proteins in duplicate on a single nitrocellulose coated glass slide. OriGene's protein microarray technology has been used to validate the specificity of an existing ERCC1 diagnostic monoclonal antibody, and has been applied as a screening method to identify the most specific TrueMAB™ monoclonal antibody for ERCC1.



OriGene's overexpression lysate protein microarray chip comprises of over 22,000 spots. It includes over 10,000 unique protein lysates printed in duplicate and large selections of positive and negative controls. The array was manufactured as indicated and tested with 1:500 dilution of OriGene's anti-DDK (TA500011) tag antibody followed by dylight 649 conjugated goat anti-mouse IgG secondary antibody.

A More Specific ERCC1 Antibody for NSCL

The excision repair cross-complementation group 1 (ERCC1) protein is an important biomarker for clinicians to predict whether certain patient populations with non-small cell lung carcinoma (NSCLC) will respond to cisplatin chemotherapy. As such, it is critical to develop highly-specific immunohistochemistry validated monoclonal antibodies for this diagnostic test. Several publications reveal that 8F1, the most commonly used antibody clone for ERCC1, exhibits cross-reactivity to an unknown protein in ERCC1 deficient cell lines. By using OriGene's protein microarray technology, the corresponding cross-reactive binding protein for the 8F1 antibody was identified (Figure 1a). This technology also enabled OriGene to successfully develop the most specific UltraMAB™ monoclonal antibody for ERCC1 (clone 4F9) (Figure 1b). This data was further confirmed by western blot analysis (Figure 2) and in IHC by testing on an NSCLC tissue section (Figure 3).

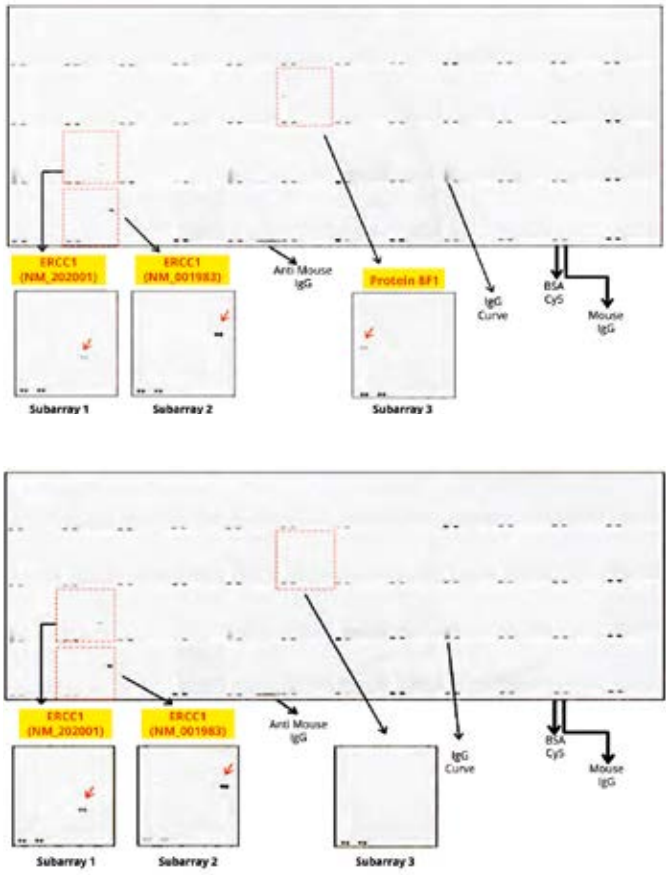


Figure 1. Specificity test results with OriGene's 10K protein microarray chip.
ERCC1 antibodies, 8F1 and UltraMAB 4F9, were used to immunostain a 10K protein microarray chip. 8F1 demonstrates recognition against two ERCC1 variants in subarrays 1 and 2 as well as a third protein in subarray 3, labeled as "Protein 8F1" (a). 4F9 specifically recognizes two ERCC1 variants in subarrays 1 and 2 with no additional proteins in subarray 3 (b)

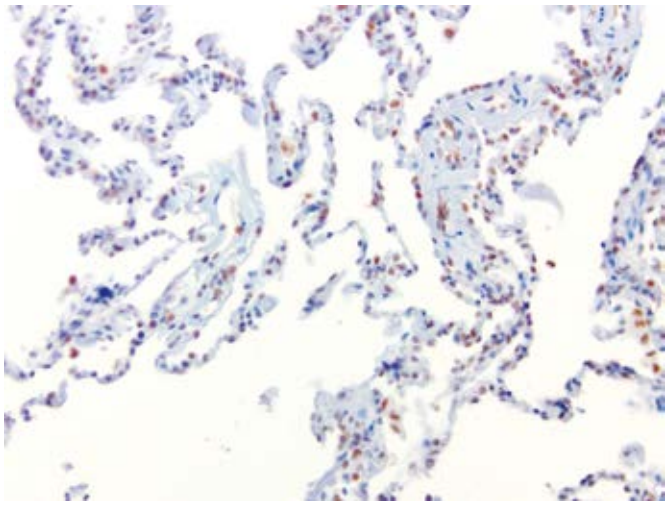


Figure 2. IHC staining of FFPE normal adjacent lung from tumor specimen using ERCC1 UltraMAB (clone 4F9, 1ug/ml).

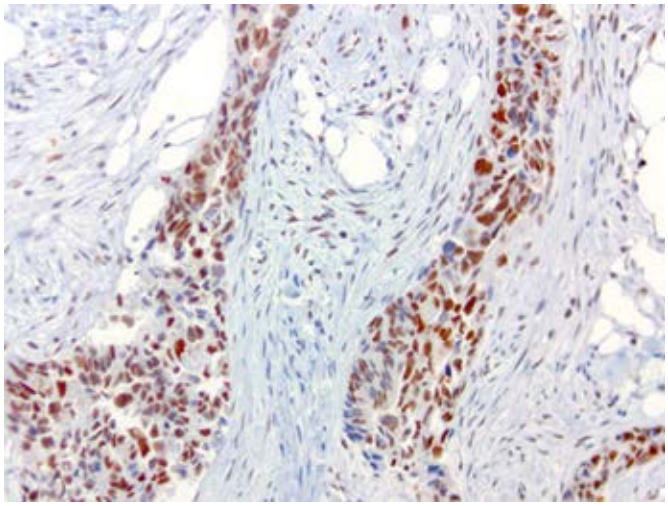


Figure 3. IHC staining of FFPE endometrial carcinoma using ERCC1 UltraMAB (clone 4F9, 1ug/ml).

Reference:

1. D. Ma, et al., Using protein microarray technology to screen anti-ERCC1 monoclonal antibodies for specificity and applications in pathology. BMC Biotechnology. 2012 Nov 21;12(1):88

A Better HER2 Antibody for Breast Cancer Diagnostics

Human epidermal growth factor receptor 2 (HER2, also known as ERBB2, CD340 or p185 is a member of the epidermal growth factor receptor (EGFR/ErbB) family. Amplification or over-expression of this gene has been shown to play an important role in the pathogenesis and progression of certain aggressive types of breast cancer and gastric cancer and it has evolved to become an important biomarker and target of therapy for the disease.

A semi-quantitative immunohistochemical assay using anti-HER2 antibody is applied to determine HER2 protein overexpression in breast cancer tissues. The specificity of the HER2 antibody (e.g. Clone 4B5) is critical because the test results will help oncologist decide a patient should receive Herceptin™ treatment. By using OriGene's highdensity protein microarray, we have revealed that the antibody 4B5 is not specific to HER2 protein. As shown in Figure 1, this antibody also reacts with ZSCAN1B and HER4 (ERBB4). In contrast, HER2 UltraMAB (Clone UMAB36) developed by OriGene only recognizes HER2 protein and is thus specific. The performance of HER2 UltraMAB™ is also validated with IHC staining of breast cancer tissues (Figure 2).

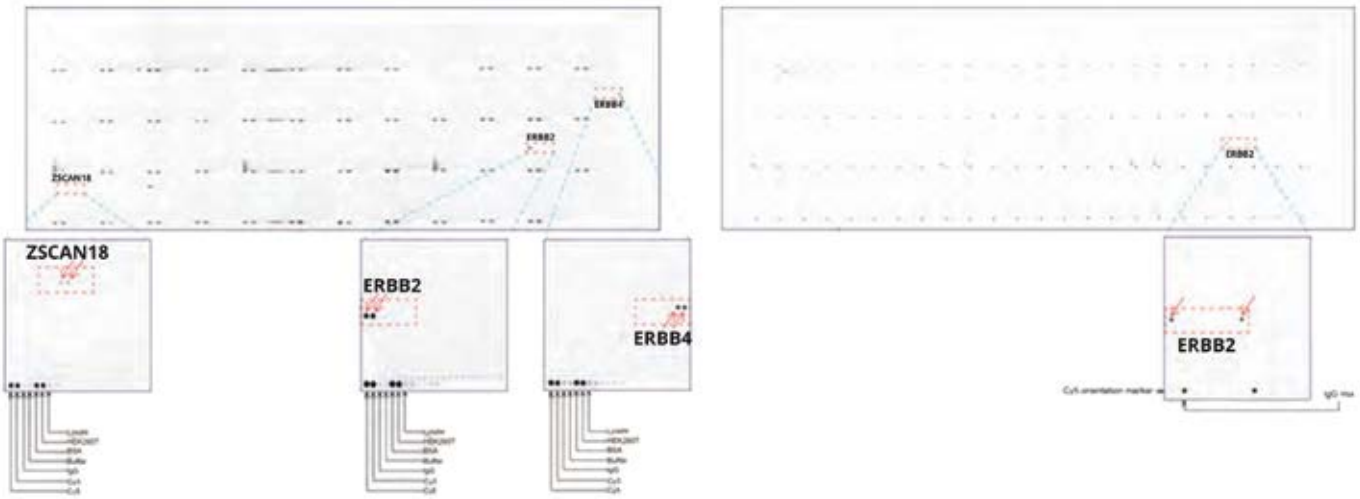


Figure 1. ERBB2 antibody specificity test results with OriGene's 10K protein microarray chip.
Antibody 4B5 (left) and OriGene's HER2 UltraMAB UM500036 (right). The commonly used diagnostic antibody 4B5 recognizes not only HER2 (ERBB2) protein, but also HER4 (ERBB4) and an unrelated protein ZSCAN18. OriGene's anti-HER2 UltraMAB recognizes only HER2 (ERBB2) protein.

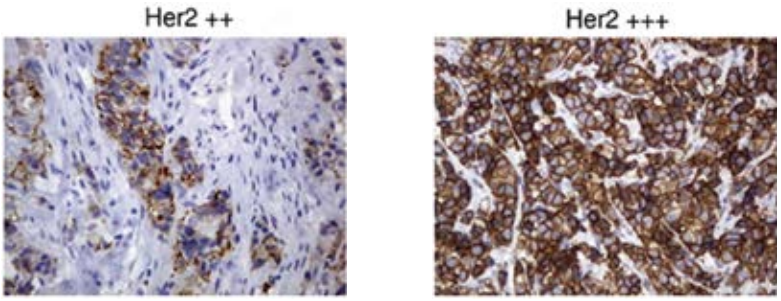
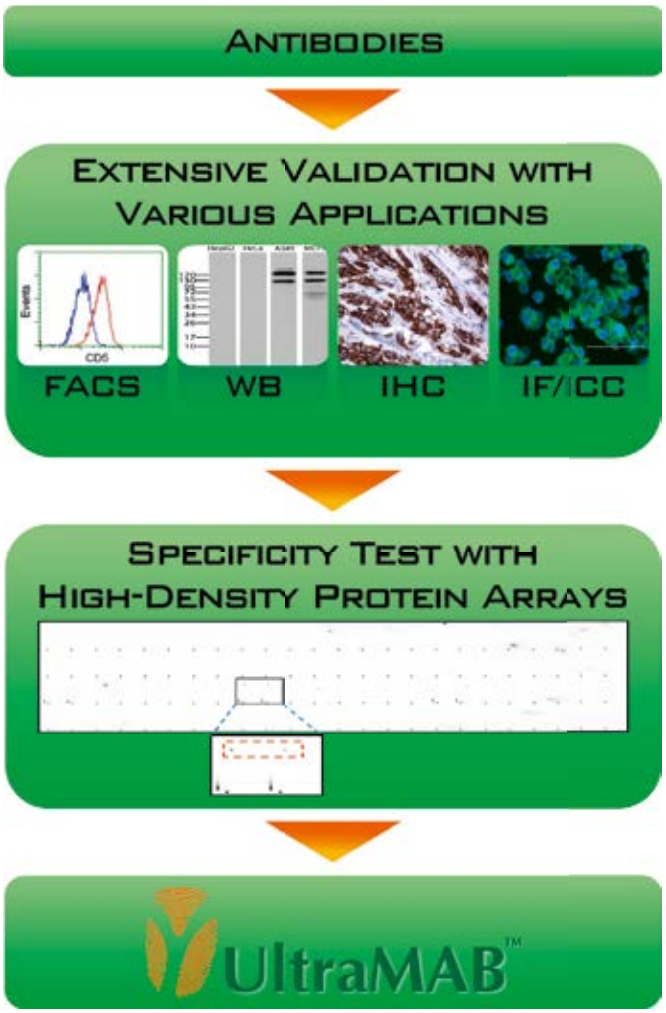


Figure 2. Immunohistochemical staining of paraffin-embedded Carcinoma of breast tissue (HER2+++) using anti-ERBB2 mouse monoclonal antibody. (Clone UMAB36, Dilution 1:100)

The Ultra Specific Antibody with Outstanding Performance

In additional to speficity, performance is also crucial to antibodies used for diagnostic and therapeutic applications. To ensure the superior performance, OriGene validates every UltraMAB™ monoclonal antibody according to the scientific findings and the medical records of related diseases. Major applications of validation include WB, IHC staining with over 25 types of normal and cancer human tissues, IF/ICC, and FACS

UltraMAB™ Development Flowchart



Selected UltraMAB™s Available

ALK	β-Catenin	CD19
CD20	CD68	CD80
Desmin	EGFR	EpCAM
ERCC1	ERG	GATA3
HE4	HER2	IDO1
JUN	Ki67	KRT20/CK20
LGR5	MET	MUC1/EMA
NCAM1/CD56	p53	PD1
PD-L2	TOP2A	Troponin

Interested? Try UltraMAB™ Today

View more targets on
www.origene.com/ultramab

OriGene, Your Partner in Research, Diagnostics and Beyond

- cDNA Clones/Lenti Particles
- CRISPR/Cas9/sgRNA
- Recombinant Proteins
- Antibodies
- RNAi
- Normal & Cancer Tissues

ORIGENE

OriGene Headquarter
9620 Medical Center Drive
Suite 200
Rockville, MD, 20850
USA
+1.301.340.3188
www.origene.com

OriGene EU
Schillerstraße 5
32052 Herford
Germany
+49.5221.346060
www.origene.com

OriGene China
HuiLongSen International Science
& Technology Industry Park,
Build 11, No.99 Kechuang 14th Street
Beijing, China 101111
+86.10.59755312
www.origene.com.cn