# MOLECULAR AND SYNTHETIC BIOLOGY SOLUTIONS

## Empowering the synthetic biology revolution —from molecules to measurement

Agilent Technologies

# THE NEXT-GENERATION OF MOLECULAR BIOLOGY

The foundational techniques of molecular biology are changing. Synthetic biology approaches to engineering biological systems and organisms have driven innovations in both DNA synthesis and assembly. Agilent's products bring these novel tools into the reach of every molecular biology lab, improving the speed and reliability while reducing the cost of next-gen cloning and mutagenesis.

## STRATAGENE LABS. AGILENT-BACKED QUALITY.

**Cutting-edge molecular and synthetic biology solutions to accelerate your research.**

Since 1984, Stratagene products have been used throughout the academic, industry and government research sectors in fields spanning molecular biology, genomics, proteomics, drug discovery and toxicology. In 2007, Agilent Technologies integrated Stratagene's labs, which now form the primary research and development branch of Agilent's genomics division.

Agilent Technologies

STRATAGENE
An Agilent Technologies Company

# MOLECULAR AND SYNTHETIC BIOLOGY SOLUTIONS

Empowering the synthetic biology revolution—from molecules to measurement.

## CONTENTS



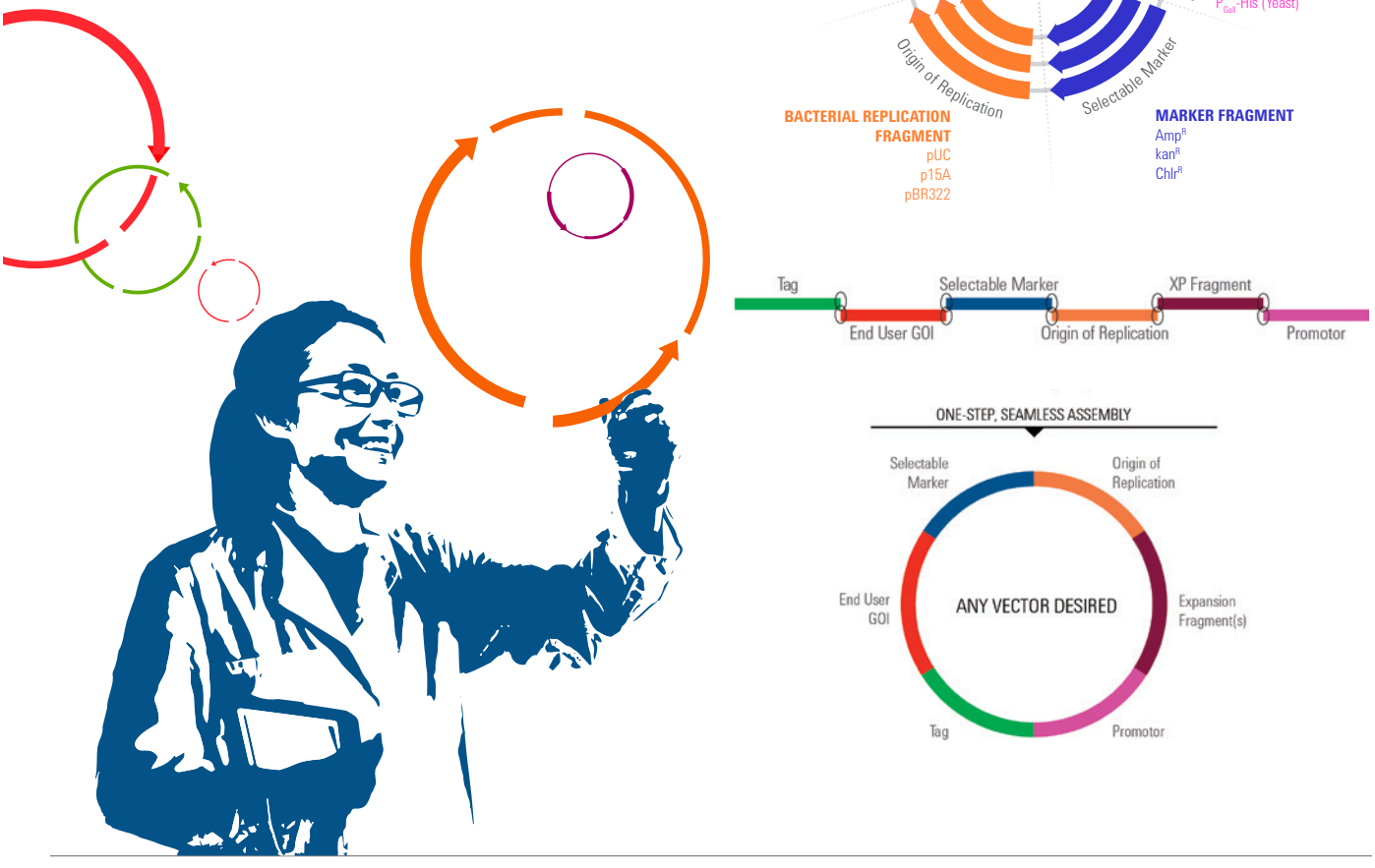
# SUREVECTOR NEXT-GEN CLONING KITS

## Your Vision. Your Vectors.

SureVector, the world's first modular vector system, harnesses the power of synthetic biology to provide quick, user-friendly customization of cloning and expression vectors. In contrast to alternative next-gen cloning technologies, SureVector offers a unique set of standard parts that can be assembled into an endless supply of custom vectors—all with a validated assembly system you can count on.

### How does SureVector work?

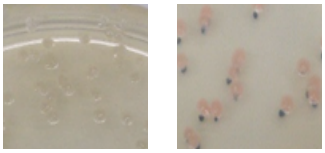
A single SureVector kit contains a set of DNA fragments which are the functional "parts" of most cloning and expression vectors. These parts can be assembled into any combination desired, resulting in customized vectors. The proprietary SureVector enzymes can assemble up to seven fragments into a circularized plasmid in a single, 20-minute reaction.



## Fast, flexible, reliable.

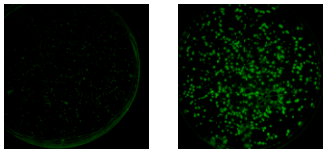
- **Rapid custom vector generation**
  Less than a day from design to vector, compared to four weeks for custom vector services
- **Reliable and precise assembly**
  SureVector is extensively validated to ensure standard parts can be interchanged without loss of functionality
- **More flexible than traditional systems**
  Assemble new vectors in your lab as experimental requirements change, rather than ordering a new one
- **Control your experiments**
  Take control of your experiments by troubleshooting your DNA assembly—not your service provider's

## Multi-organism functionality



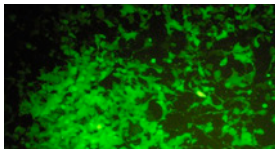
### Bacteria

Bacterial expression using SureVector's T7 promoter. Pink colonies on the right express fluorescent protein when T7 is present, while negative controls (left) do not.



### Yeast

The presence of LEU2 gene in the SureVector expansion slot (right) allows yeast to grow on leucine deficient media.



### Mammalian

Stable mammalian cell lines using the neomycin resistant fragment from the SureVector kit.

| SureVector System Fragments & Kit Numbers | | | |
|---|---|---|---|
| | *E. coli* | Mammalian | Yeast |
| **Promoters** | T7 (G7515A-B, G7518B-E) | CMV (G7516A-B) | GAL1 (G7517A-B) |
| | Tac (G7515A-B, G7518B-C) | SV40 (G7516A-B) | CUP1 (G7517A-B) |
| | Rhamnose (G7515A-B, G7518C) | EF-1α (G7516A-B) | ADH1 (G7517A-B) |
| **Tags** | CBP (G7515A-B, G7518E) | 3xFLAG (G7516A-B) | 3xFLAG (G7517A-B) |
| | DsbA (N-term only) (G7515A) | GFP (G7516A-B) | GFP (G7517A-B) |
| | GST (N-term only) (G7515A, G7518D) | 3xHA (G7516A-B) | 3xHA (G7517A-B) |
| | HA (C-term only) (G7515B) | 6xHis (G7516A-B) | 6xHis (G7517A-B) |
| | 6xHis (G7515A-B, G7518B-C) | c-Myc (G7516A-B) | c-Myc (G7517A-B) |
| | MBP (N-term only) (G7515A, G7518D) | SBP (G7516A-B) | SBP (G7517A-B) |
| | c-Myc (C-term only) (G7515B) | | |
| | SBP (G7515A-B, G7518D-E) | | |
| | Thioredoxin (C-term only) (G7515B, G7518E) | | |
| **Bacterial Selection** | AmpR (G7514A, G7518A-E) | AmpR (G7514A, G7518A-E) | AmpR (G7514A, G7518A-E) |
| | CamR (G7514A, G7518A) | CamR (G7514A, G7518A) | CamR (G7514A, G7518A) |
| | KanR (G7514A, G7518A) | KanR (G7514A, G7518A) | KanR (G7514A, G7518A) |
| **Bacterial Origins of Replication** | pUC (G7514A, G7518A-E) | pUC (G7514A, G7518A-E) | pUC (G7514A, G7518A-E) |
| | p15A (G7514A) | p15A (G7514A) | p15A (G7514A) |
| | pBR322 (G7514A) | pBR322 (G7514A) | pBR322 (G7514A) |
| **XP1 Fragments** | XP1 (G7514A, G7518A-E) | XP1 (G7514A, G7518A-E) | yARS (G7514A) |
| | | | XP1 (G7514A, G7518A-E) |
| **XP2 Fragments** | LacI (G7514A, G7518A-E) | Blasticidin (G7516A-B) | URA3 (G7517A-B) |
| | XP2 (G7514A) | Hygromycin (G7516A-B) | HIS3 (G7517A-B) |
| | | Puromycin (G7516A-B) | Hygromycin (G7517A-B) |
| | | NeoR (G7514A) | LEU2 (G7514A) |
| | | XP2 (G7514A) | XP2 (G7514A) |
| **Promoter-Tag Fusions** | T7-HIS6 (G7514A, G7518A-B, G7518D) | CMV-HIS6 (G7514A) | GAL1-HIS6 (G7514A) |

# MUTAGENESIS PRODUCTS

## Efficiency without compromise

From rational design to random mutations, Agilent offers mutagenesis solutions for any application. Agilent offers the only widely available commercial technology that is not PCR based, so you don't have to sacrifice error rate for efficiency.

## Market-leading QuikChange Mutagenesis

QuikChange kits have provided researchers with a fast, easy and efficient non-PCR method to reliably perform site-directed mutagenesis since 1996. Other commercially-available kits utilize PCR-based techniques, which can propagate errors with each successive round of thermal cycling. The QuikChange method uses a linear amplification strategy with only the parental strand serving as the DNA template. Combining this with our highest fidelity polymerases leads to a significant reduction in unwanted second-site errors. The existence of such errors is likely to complicate and delay downstream screening and analysis.

### QuikChange Lightning Multi

- Fast, reliable and easy QuikChange protocol
- Mutate up to three sites simultaneously using a single QuikChange reaction

### QuikChange Lightning

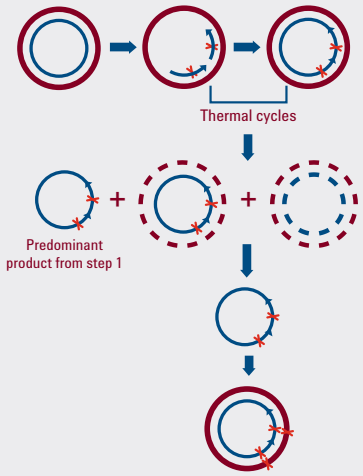
- 75% reduction in thermocycling time compared to original QuikChange enzyme blend
- More efficient with improved colony yields
- >80% mutation efficiency for both short and long templates (up to 14 kb)

### GeneMorph II

- More uniform mutational spectrum when performing error-prone PCR
- GeneMorph II kits utilize Mutazyme II DNA polymerase, a novel error prone PCR enzyme blend, with equivalent mutation rates at As and Ts vs. Gs and Cs

### The 'Lightning Advantage'

The QuikChange Lightning Kit contains specially engineered enzymes that have been designed to shorten the time necessary to complete our signature 3-step protocol. Extension times for the thermal cycling process have been reduced by 75% and digestion of the non-mutated parental template has been decreased to only five minutes.




**QuikChange Lightning Multi**

**1 Mutant Strand Synthesis**
Perform thermal cycling to:
- Denature DNA template
- Anneal mutagenic primers (all primers bind to the same strand)
- Extend primers and ligate nicks with QuikChange Multi enzyme

**2 *Dpn* I Digestion of Template**
- Digest methylated and hemimethylated DNA with *Dpn* I

**3 Transformation**
Transform mutated ssDNA into XL10-Gold ultracompetent cells, which synthesize the complementary strand

# QuikChange HT Protein Engineering System

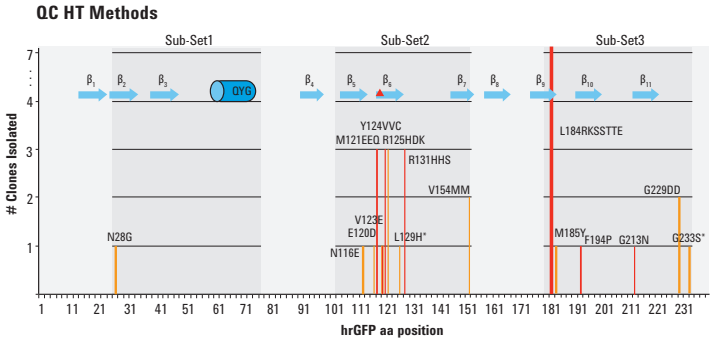
QuikChange technology meets high-throughput DNA synthesis to provide access to rationally-designed oligo libraries for protein engineering applications.

The QuikChange HT Protein Engineering System provides rapid resolution of structural and functional questions by creating libraries of rationally-designed mutants for applications such as single amino acid scanning, site saturations scanning or targeted combinatorial mutagenesis.

## Key Features:

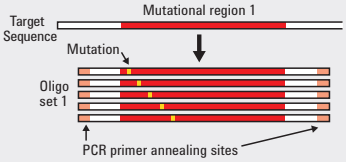
- Rapidly generate a rational design library of protein variants—less than a full day of hands-on time compared to weeks of waiting for a gene variant library
- Reduced cost of library generation—only pennies per mutant compared to $20 or more for gene variant libraries

**An example of the QuikChange HT kit applied to engineering of a GFP variant with enhanced brightness. Using site saturation mutagenesis yielded several beneficial mutations.**

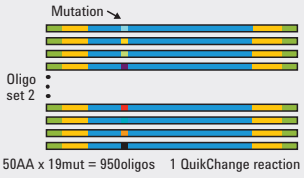



**Three possible mutational strategies using QuikChange HT: Alanine-scanning, site saturation scanning and combinatorial mutagenesis.**

**Use QuikScan1 to determine relevant sites for structure, function and stability:** Separately replaces each amino acid in the wild type mutational region with a particular amino acid. Often used for Alanine scanning to quickly identify key functional or structural amino acids.




**Use QuikScan19 to identify single codon replacements that improve binding, function or stability:** Codon saturation scanning, systematically replaces each amino acid in the wild type mutational region with all 19 other amino acids, resulting in 19 mutagenic oligos for each amino acid position in the mutational region.




**Use QuikCombine to discover a multisite mutant with improved structure, function and stability:** Combine multiple mutants in groups of 1–4 position with defined variation at each site. Make up to $1.2 \times 10^4$ libraries for a single 50AA set or combine a few identified variants and validate functional relevance.


| Product | Uses | Part # |
|---|---|---|
| **QuikChange Mutagenesis** | | |
| QuikChange Lightning Multi | Use for up to 3 mutations simultaneously, 10 or 30 reaction kits | 210514, 210516 |
| QuikChange Lightning | Single site mutagenesis, 10 or 30 reaction kits | 210518, 210519 |
| **QuikChange HT Protein Engineering System** | | |
| QuikChange HT | Use for targeting up to 10 different 50 amino acid long regions in a protein | G5900A |
| QuikChange HT | Use for targeting up to 20 different 50 amino acid long regions in a protein | G5900B |
| QuikChange HT | Use for targeting up to 10 different 67 amino acid long regions in a protein | G5901A |
| QuikChange HT | Use for targeting up to 20 different 67 amino acid long regions in a protein | G5901B |
| **Random Mutagenesis** | | |
| GeneMorph II | Mutagenic polymerase for balanced random mutagenesis | 200550, 200552 |

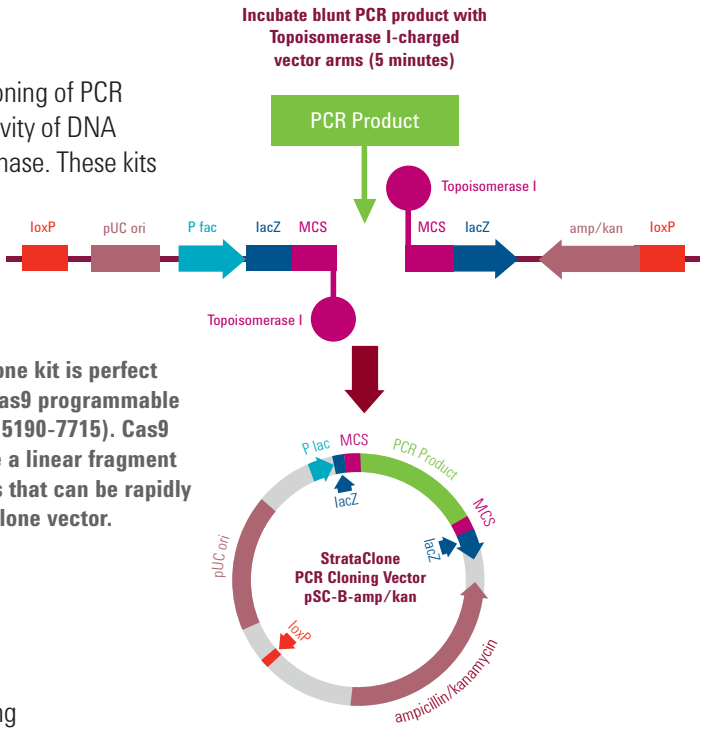
# SPECIALTY CLONING PRODUCTS

## A solution for every situation

When you have a difficult cloning project, Agilent offers everything from a traditional topoisomerase based kit to a huge selection of catalog vectors for any application.

### StrataClone PCR Cloning Kit

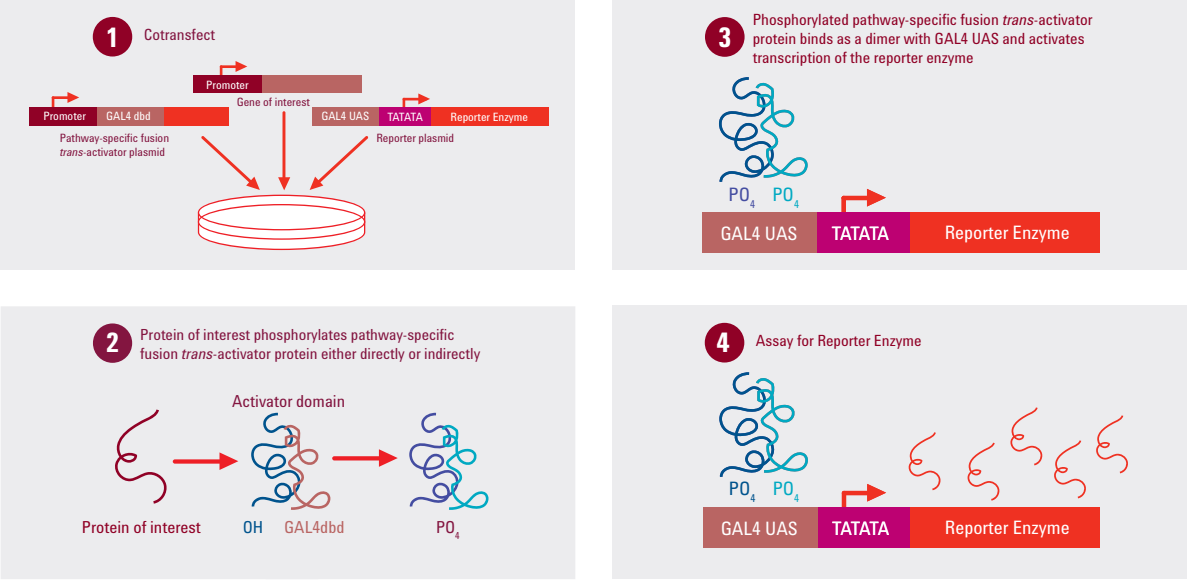
The StrataClone PCR Cloning Kit allows high-efficiency, 5-minute cloning of PCR products at room temperature, using the efficient DNA rejoining activity of DNA topoisomerase I and the DNA recombination activity of Cre recombinase. These kits are available for both blunt-end and UA cloning.




**The blunt end StrataClone kit is perfect for use with our new Cas9 programmable restriction enzyme kit (5190-7715). Cas9 can be used to produce a linear fragment of DNA with blunt ends that can be rapidly cloned into the StrataClone vector.**

### PathDetect *Cis* and *Trans*-Reporting Systems

Determine if a gene product or compound activates pathways leading to specific enhancers with our PathDetect *Cis* and *Trans*-Reporting systems.




**The PathDetect in vivo signal transduction pathway *trans*-reporting system.**

## InterPlay TAP Systems for Protein-Protein Interactions

The InterPlay Mammalian TAP System allows you to recover interacting proteins from mammalian cells. Tandem affinity purification yields your tagged protein and interacting proteins using gentle washing and small molecule elution conditions.

### Two Easy Purification Steps

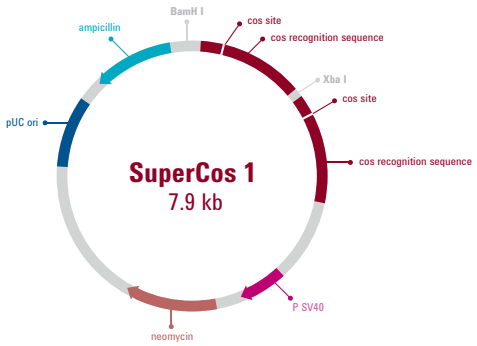
To purify proteins with the TAP protocol, apply the mammalian cell lysate to the streptavidin resin, then elute using biotin, and apply that eluate to a calmodulin resin. Once you elute with EGTA, you will get exceptionally clean proteins.

**Key:** Protein of interest with interacting partner | Streptavidin-binding peptide (SBP) | Calmodulin-binding peptide (SBP) | Contaminants | Streptavidin resin | Calmodulin resin

## Specialty Vectors

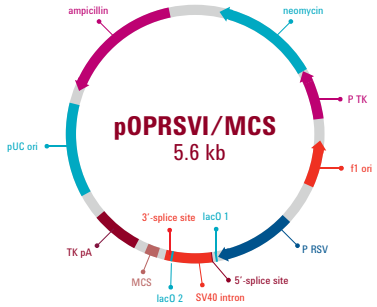
### SuperCos 1

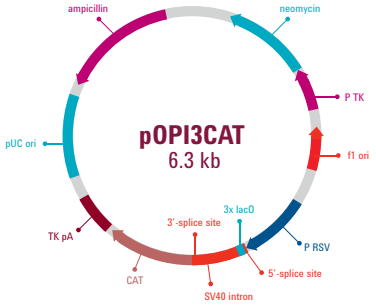
SuperCos 1 is a novel, 7.9 kb cosmid vector that contains bacteriophage promoter sequences flanking a unique cloning site.




### LacSwitch II

The LacSwitch II inducible mammalian expression system utilizes an improved vector system in which several elements of the lac operon have been modified for use in eukaryotic cells for inducible gene expression.




**We have a vector system for any application you could imagine—visit www.genomics.agilent.com**

# SPECIALTY CLONING PRODUCTS (Continued)

| Product | Part # |
|---|---|
| **StrataClone Systems** | |
| StrataClone PCR Cloning Kit | 240205 |
| StrataClone Blunt Cloning Kit | 240207 |
| StrataClone Ultra Blunt Cloning Kit | 240218 |

| Product | Part # |
|---|---|
| ***Trans*-Reporting Systems** | |
| PathDetect c-Jun *trans*-Reporting System | 219000 |
| PathDetect Elk1 *trans*-Reporting System | 219005 |
| PathDetect CREB *trans*-Reporting System | 219010 |
| PathDetect CHOP *trans*-Reporting System | 219015 |
| pFA-ATF2 Plasmid | 219026 |
| pFA-cFos Plasmid | 219031 |
| pFA-CMV Plasmid | 219036 |
| pFR-CAT Plasmid | 219001 |
| pFR-βGal Plasmid | 219002 |
| pFR-SEAP Plasmid | 219004 |
| pFA-CHOP Plasmid | 219054 |
| pFA2-CREB Plasmid | 219068 |
| pFA2-Elk1 Plasmid | 219062 |
| pFA2-cJun Plasmid | 219053 |
| pFR-Luc Plasmid | 219050 |

| Product | Part # |
|---|---|
| **InterPlay TAP Systems for Protein-Protein Interactions** | |
| InterPlay N-Terminal Mammalian TAP System Kit | 240103 |
| InterPlay C-Terminal Mammalian TAP System Kit | 240104 |
| InterPlay N-Terminal Mammalian TAP Vectors, 3 x 20 µg | 240101 |
| InterPlay C-Terminal Mammalian TAP Vectors, 3 x 20 µg | 240102 |
| InterPlay Mammalian TAP Purification Kit | 240107 |
| InterPlay Adenoviral N-terminal TAP | 240213 |
| Interplay Adenoviral C-terminal TAP | 240215 |
| InterPlay N-Terminal Mammalian TAP Vectors, 3 x 20 µg | 240214 |
| InterPlay C-Terminal Mammalian TAP Vectors, 3 x 20 µg | 240216 |

| Product | Part # |
|---|---|
| **Path Detect *Cis*-Reporting Systems** | |
| AP-1 *cis*-Reporting System | 219073 |
| NF-κB *cis*-Reporting System | 219077 |
| SRF *cis*-Reporting System | 219081 |
| ISRE *cis*-Reporting System | 219092 |
| NFAT *cis*-Reporting System | 219094 |
| C/EBP *cis*-Reporting System | 240111 |
| DR3 *cis*-Reporting System | 240115 |
| Egr-1 *cis*-Reporting System | 240129 |
| GRE *cis*-Reporting System | 240133 |
| pAP-1-hrGFP Plasmid | 240049 |
| pNF-κB-hrGFP Plasmid | 240051 |
| pLuc-MCS Plasmid | 219087 |
| CRE *cis*-Reporting System | 219075 |
| SRE *cis*-Reporting System | 219079 |
| p53 *cis*-Reporting System | 219083 |
| GAS *cis*-Reporting System | 219093 |
| TARE *cis*-Reporting System | N/A |
| DR1 *cis*-Reporting System | 240113 |
| DR5 *cis*-Reporting System | 240119 |
| LILRE *cis*-Reporting System | 240131 |
| DR4 *cis*-Reporting System | 240135 |
| pCRE-hrGFP Plasmid | 240050 |
| pNFAT-hrGFP Plasmid | 240053 |

| Product | Part # |
|---|---|
| **Specialty Vectors** | |
| SuperCos (10 rxn kit) | 251301 |
| LacSwitch II system | 217450 |

Additional components for Path Detect *Cis*-Reporting Systems can be found at **www.genomics.agilent.com**

# VIRAL EXPRESSION SYSTEMS

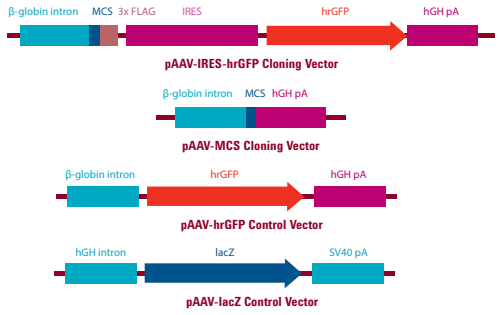
## High-efficiency gene delivery starts here

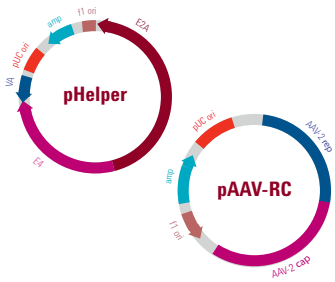
As synthetic biology moves out of the prokaryote and into eukaryotic systems, the need to study gene expression in a native host is becoming increasingly important. Many of these hosts are difficult or impossible to transfect, meaning progress may be limited by hosts that easily accept DNA using traditional transfection methods. To solve this problem, viral-based gene delivery systems have been developed for exceptionally high-efficiency gene delivery to a broader range of hosts.

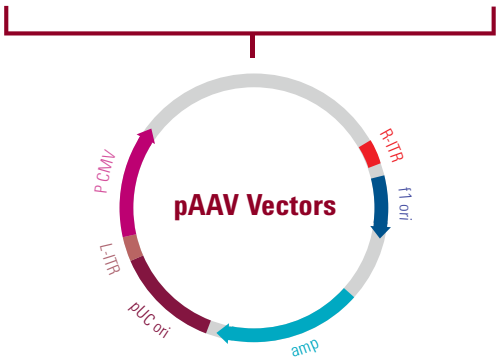
| Application | Long-Term Gene Expression | Transient, High-Level Gene Expression | Functional Cloning Assays |
|---|---|---|---|
| System | AAV Helper-Free System | AdEasy™ Adenoviral Systems | ViraPort Retroviral Expression System |
| Advantages | • Infects both dividing and non-dividing cells<br>• Long-term, stable gene expression<br>• Unparalleled biosafety profile | • High-level protein production<br>• Infects both dividing and non-dividing cells<br>• Homologous recombination in *E. coli* saves weeks of work | • Integrates into host genome for stable expression<br>• Copy number controlled by multiplicity of infection<br>• Functionally screen cDNA libraries in mammalian cells<br>• Pre-made libraries available |

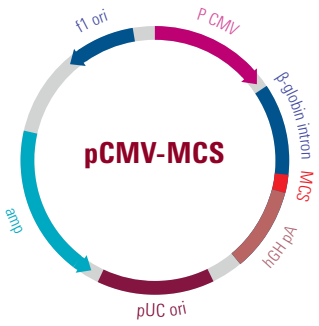
### AAV Helper-Free

The AAV Helper-Free System improves upon recombinant adeno-associated virus-2 (AAV-2) technology by eliminating the need for helper virus. It allows safe, high-efficiency gene delivery and long-term expression in a broad range of hosts.



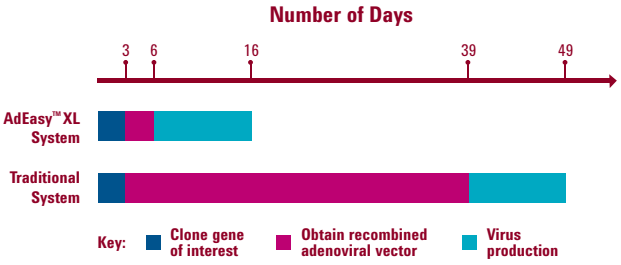



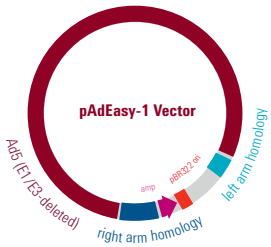



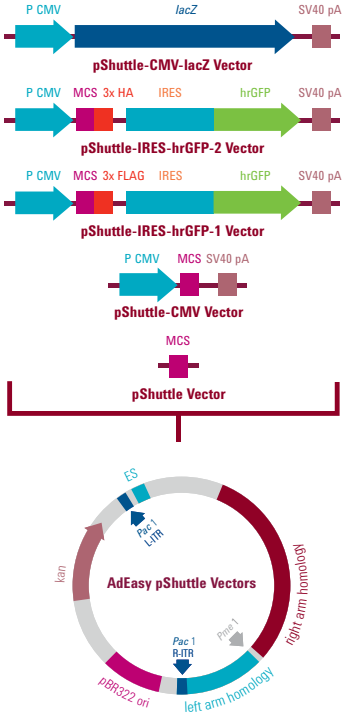
# VIRAL EXPRESSION SYSTEMS (Continued)

## AdEasy™ XL and AdEasy™ Systems

The AdEasy™ XL and AdEasy™ Adenoviral Vector Systems save you a month of work over traditional methods by producing the recombinant adenoviral plasmid by homologous recombination in *E. coli*. Now you can obtain your recombinant plasmid after a simple transformation.




## ViraPort

Our ViraPort retroviral gene expression system is superior to standard transfection technology. High transduction efficiency and large cloning capacity (up to 8 kb) make the system ideal for building and screening complex libraries.

### ViraPack Transfection Kit

| System | AAV | AdEasy™ XL | ViraPort | Transfection |
|---|---|---|---|---|
| Gene delivery efficiency | >90% | >90% | >90% | ~20% |
| Host: Dividing cells | + | + | + | + |
| Host: Non-dividing cells | + | + | - | - |
| Long-term expression | + | - | + | + |
| Transient expression | - | + | - | + |
| High-titer virus | + | + | - | N/A |
| Host immunogenecity | - | + | - | N/A |
| Maximum insert size | 3 kb | 7.5 kb | <8 kb | Variable |
| Selection for stable cells | +/- | N/A | - | + |

| Product | Quantity | Part # |
|---|---|---|
| **AAV Helper-Free System** | | |
| AAV Helper-Free System<br>+ pAAV-MCS vector, 10 µg<br>+ pCMV-MCS vector, 10 µg<br>+ pAAV-lacZ vector, 10 µg<br>+ pAAV-RC vector, 20 µg<br>+ pHelper vector, 20 µg<br>+ AAV-293 cells, 1x10$^6$ cells<br>+ AAV HT1080, 1x10$^6$ cells | 1 kit | 240071 |
| pAAV-hrGFP Vector | 20 µg | 240074 |
| pAAV-IRES-hrGFP Vector | 20 µg | 240075 |
| AAV-293 Cells | 1 x 10$^6$ cells | 240073 |
| AAV-HT1080 Cells | 1 x 10$^6$ cells | 240109 |

| Product | Quantity | Part # |
|---|---|---|
| **ViraPort® Retroviral Gene Expression System** | | |
| pFB Retroviral Vector | 10 µg | 217563 |
| pFB-Neo Retroviral Vector | 10 µg | 217561 |
| pVpack-GP Vector | 20 µg | 217566 |
| pVpack-Eco Vector | 20 µg | 217569 |
| pVpack-Ampho Vector | 20 µg | 217568 |
| pVpack-10A1 Vector | 20 µg | 217570 |
| pVpack-VSV-G Vector | 20 µg | 217567 |
| Vitality® pFB-hrGFP plasmid vector | 10 µg | 240027 |
| pFB-Neo-lacZ plasmid vector | 10 µg | 240029 |
| pFB-Luc plasmid vector | 10 µg | 240030 |

| Product | Quantity | Part # |
|---|---|---|
| **ViraPack Transfection Kit** | | |
| ViraPack Transfection Kit | 1 kit | 200488 |

| Product | Quantity | Part # |
|---|---|---|
| **AdEasy™ and AdEasy™ XL Adenoviral Vector Systems** | | |
| AdEasy™ XL System<br>+ pShuttle vector, 20 µg<br>+ pShuttle-CMV vector, 20 µg<br>+ pShuttle-CMV-lacZ control vector, 10 µg<br>+ BJ5183-AD1 electroporation-competent cells, 5 x 100 µl<br>+ XL10-Gold® ultracompetent cells, 5 x 100 µl<br>+ pUC18 DNA control plasmid, 10 µl<br>+ AD-293 cells, 1 x 10$^6$ cells | 1 kit | 240010 |
| BJ5183-AD1 electroporation-competent cells | 5 x 100 µl | 200157 |
| AdEasy™ Adenoviral Vector System<br>+ pAdEasy-1 vector, 2.5 µg<br>+ pShuttle vector, 20 µg<br>+ pShuttle-CMV vector, 20 µg<br>+ pShuttle-CMV-lacZ vector, 10 µg<br>+ BJ5183 electroporation-competent cells, 5 x 100 µl<br>+ XL10-Gold® ultracompetent cells, 5 x 100 µl<br>+ pUC18 DNA control plasmid, 10 µl | 1 kit | 240009 |
| BJ5183 electroporation-competent cells | 5 x 100 µl | 200154 |
| pAdEasy-1 vector | 2.5 µg | 240005 |
| pShuttle vector | 20 µg | 240006 |
| pShuttle-CMV vector | 20 µg | 240007 |
| pShuttle-CMV-lacZ control vector | 10 µg | 240008 |
| pShuttle-IRES-hrGFP-1 | 20 µg | 240081 |
| pShuttle-IRES-hrGFP-2 | 20 µg | 240082 |

# COMPETENT CELLS

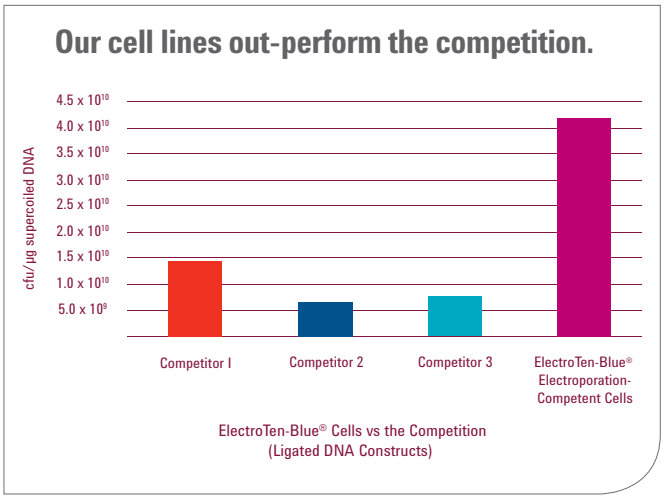
## Explore a wider selection

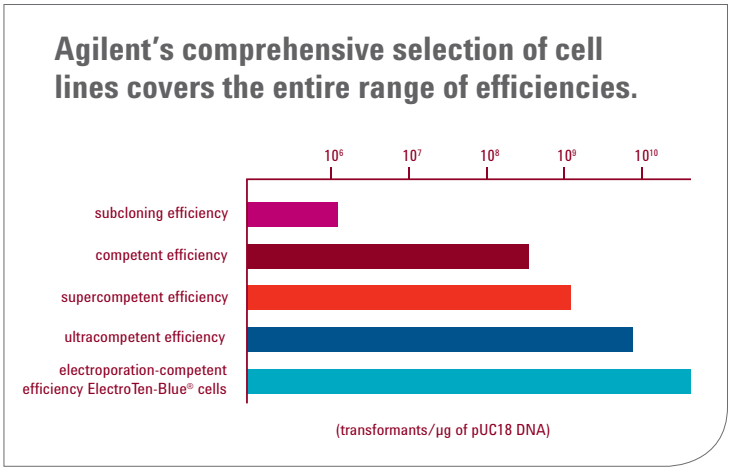
Finding the right competent cells is easy with Agilent—we have a comprehensive selection of strains for all your next-generation cloning needs.

## Cloning Cells

### The Highest Efficiency

Our Ultracompetent Cells provide the highest transformation efficiency in the world, making it easier and faster to obtain an accurate clone. At Agilent Technologies, we understand the less time you spend worrying about cloning, the more time you can spend answering your research questions.

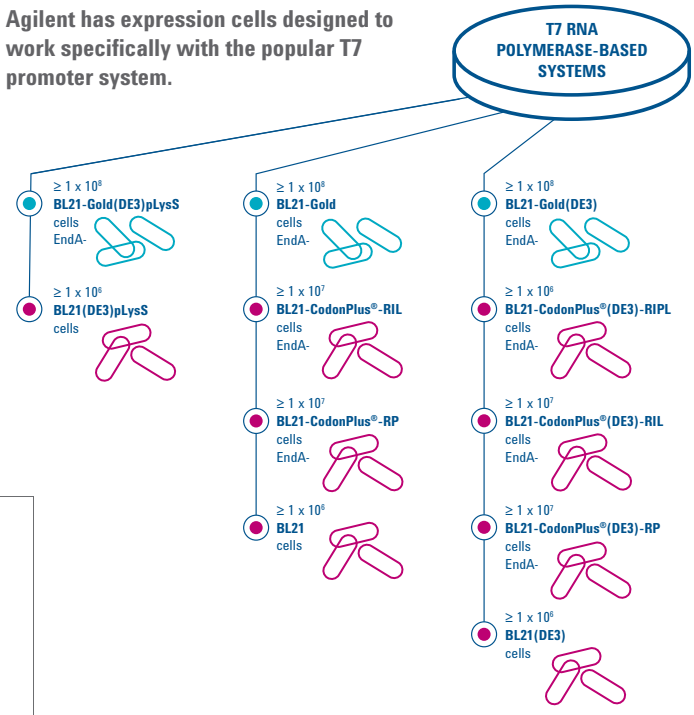



## Expression Cells

### The Widest Selection

We aren't content just to have the best competent cells. Agilent has designed strains for protein expression, plasmid stability, large plasmids and toxic proteins as well as everyday cloning. Our complete line of competent cells includes specialty cells for a huge variety of applications, each backed by Agilent's reputation for the best quality in the field.



| Product | Uses | Transformation Efficiency | Resistance | Part # |
|---|---|---|---|---|
| **Cloning Cells** | | | | |
| SURE 2 Supercompetent Cells | Unstable clones; DNA with secondary structure | >1 x $10^9$ | Tetracycline, Kanamycin, Chloramphenicol | 200152 |
| SURE Electroporation Competent Cells | DNA with secondary structure, difficult | >1 x $10^{10}$ | Tetracycline, Kanamycin, Chloramphenicol | 200227 |
| SURE Competent Cells | DNA with secondary structure, routine | >5 x $10^8$ | Tetracycline, Kanamycin, Chloramphenicol | 200238 |
| ABLE C Electroporation Competent Cells | For toxic clones | >5 x $10^9$ | Tetracycline, Kanamycin | 200161 |
| ABLE K Electroporation Competent Cells | For toxic clones | >5 x $10^9$ | Tetracycline, Kanamycin | 200162 |
| ABLE C Competent Cells | For toxic clones | >5 x $10^6$ | Tetracycline, Kanamycin | 200171 |
| ABLE K Competent Cells | For toxic clones | >5 x $10^6$ | Tetracycline, Kanamycin | 200172 |
| TG1 Competent Cells | For phage libraries; Phage display libraries | 1 x $10^{10}$ | N/A | 200123 |
| XL10-Gold Ultracompetent Cells | Large plasmids, ligated DNA, or plasmid libraries | >5 x $10^9$ | Tetracycline and Chloramphenicol | 200314, 200315 |
| XL10-Gold KanR Ultracompetent Cells | Large plasmids, ligated DNA, or plasmid libraries; plasmids with CamR | >5 x $10^9$ | Tetracycline and Kanamycin | 200317 |
| ElectroTen-Blue® Electroporation Competent Cells | Ligated DNA and generating libraries | >3 x $10^{10}$ | Tetracycline and Kanamycin | 200159 |
| SoloPack Gold Supercompetent Cells | High efficiency, single reaction format | >1 x $10^9$ | Tetracycline and Chloramphenicol | 230350 |
| SoloPack Gold Competent Cells | Routine cloning, single reaction format | >1 x $10^8$ | Tetracycline and Chloramphenicol | 230325 |
| 96Pack Gold Competent Cells | Routine cloning, higher throughput format | >1 x $10^8$ | Tetracycline and Chloramphenicol | 200324 |
| XL1-Blue Electroporation Competent Cells | Electroporation | >1 x $10^{10}$ | Tetracycline | 200228 |
| XL1-Blue MRF Electroporation Competent Cells | Electroporation, Methylated DNA | >1 x $10^{10}$ | Tetracycline | 200158 |
| XL2-Blue Ultracompetent Cells | Highest cloning efficiency | >5 x $10^9$ | Tetracycline and Chloramphenicol | 200150 |
| XL2-Blue MRF Ultracompetent Cells | Highest cloning efficiency for methylated DNA | >5 x $10^9$ | Tetracycline and Chloramphenicol | 200151 |
| XL1-Blue Supercompetent Cells | Highest cloning efficiency | >1 x $10^9$ | Tetracycline | 200236 |
| XL1-Blue MRF Supercompetent Cells | Highest cloning efficiency for methylated DNA | >1 x $10^9$ | Tetracycline | 200230 |
| XL1-Blue MRF Kan Supercompetent Cells | Highest cloning efficiency for methylated DNA and tetracycline resistant plasmids | >1 x $10^9$ | Kanamycin | 200248 |
| XL1-Blue MR Supercompetent Cells | For cloning without the F′episome | >1 x $10^9$ | N/A | 200229 |
| XL1-Blue Competent Cells | For routine cloning | >1 x $10^8$ | Tetracycline | 200249 |
| XL1-Blue Subcloning Grade Competent Cells | Cloning when DNA is not limited | >1 x $10^6$ | Tetracycline | 200130 |
| **Expression Cells** | | | | |
| TKX1 Cells | For phosphoprotein generation | >5 x $10^7$ | Tetracycline, Kanamycin | 200124 |
| TKB1 Cells | For phosphoprotein generation | >5 x $10^5$ | Tetracycline | 200134 |
| ArcticExpress Competent Cells | Enhanced solubility | >5 x $10^6$ | Tetracycline | 230191 |
| ArcticExpress (DE3) Competent Cells | Enhanced solubility | >5 x $10^6$ | Tetracycline | 230192 |
| ArcticExpress (DE3) RIL Competent Cells | Enhanced solubility | >5 x $10^6$ | Tetracycline | 230193 |
| ArcticExpress (DE3) RP Competent Cells | Enhanced solubility | >5 x $10^6$ | Tetracycline | 230194 |
| ArcticExpress RIL Competent Cells | Enhanced solubility | >5 x $10^6$ | Tetracycline | 230195 |
| ArcticExpress RP Competent Cells | Enhanced solubility | >5 x $10^6$ | Tetracycline | 230196 |
| BL21-CodonPlus (De3)RIPL Competent Cells | Eliminate codon bias, use with pET or pCAL | >1 x $10^6$ | Chloramphenicol and Streptomycin/Spectinomycin | 230280 |
| BL21-CodonPlus (De3)RIL Competent Cells | Eliminate codon bias, use with pET or pCAL | >1 x $10^7$ | Tetracycline and Chloramphenicol | 230245 |
| BL21-CodonPlus (De3)RP Competent Cells | Eliminate codon bias, use with pET or pCAL | >1 x $10^7$ | Tetracycline and Chloramphenicol | 230255 |
| BL21-CodonPlus RIL Competent Cells | Eliminate codon bias, for non-T7 expression systems | >1 x $10^7$ | Tetracycline and Chloramphenicol | 230240 |
| BL21-CodonPlus RP Competent Cells | Eliminate codon bias, for non-T7 expression systems | >1 x $10^7$ | Tetracycline and Chloramphenicol | 230250 |
| BL21-CodonPlus (De3)RIL-X Competent Cells | Methionine auxotroph for x-ray crystallography | >1 x $10^7$ | Tetracycline | 230265 |
| BL21-CodonPlus (De3)RP-X Competent Cells | Methionine auxotroph for x-ray crystallography | >1 x $10^7$ | Tetracycline | 230275 |
| BL21-Gold | Increased efficiency and EndA-, use with toxic proteins and non-T7 systems | >1 x $10^8$ | Tetracycline | 230130 |
| BL21-Gold (De3) | Increased efficiency and EndA-, use with non-toxic proteins | >1 x $10^8$ | Tetracycline | 230132 |
| BL21-Gold (De3) pLysS | Increased efficiency and EndA-, use with toxic or non-toxic proteins | >1 x $10^8$ | Tetracycline and Chloramphenicol | 230134 |
| BL21 | Use with non-T7 systems or with lambda-CE6 for toxic proteins | >1 x $10^6$ | Tetracycline | 200133 |
| BL21 (De3) | Use with non-toxic proteins | >1 x $10^6$ | Tetracycline | 200131 |
| BL21 (De3) pLysS | Use with toxic or non-toxic proteins | >1 x $10^6$ | Chloramphenicol | 200132 |
| XL1-Red Cells | For random mutagenesis | N/A | Tetracycline | 200129 |

Trusted Answers. Together.

PR7000-0430

Printed in USA, October 27, 2016
5991-5659EN

Agilent Technologies