Twist Bioscience synthesizes high-quality, NGS-verified custom genes at a cost and scale that are otherwise unavailable. For researchers wanting to replicate their synthetic genes or use them in expression studies, Twist provides the option of delivery in a diverse selection of cloning and expression vectors through a convenient online ordering platform.

**Convenient ordering of cloned genes into a diverse selection of vectors**

1. Upload gene sequences to Twist’s Online Ordering Platform.

2. Genes are synthesized utilizing Twist’s proprietary, highly-scalable technology.

3. Synthetic genes are then cloned into Twist Cloning or Expression Vectors and shipped.

**CLONAL GENES SPECIFICATIONS**

**Product**
Synthetic DNA cloned into a Twist Cloning or Expression Vector

**Insert Size**
0.3–5.0 kb

**Quality Control**
100% NGS-verified gene sequences

**Turnaround Time**
11 to 17 business days

**KEY BENEFITS**

- **Fast Turnaround**
  Save time by using Twist Vectors, which require no onboarding

- **Diverse Selection**
  Select the best vector for specific cloning and protein expression needs

- **Simple Online Ordering**
  Easy-to-use online ordering portal allows vector selection for clonal genes

**READY TO ORDER?**
Contact sales@twistbioscience.com or order online at twistbioscience.com/shop
### pTwist

#### CMV

These human cytomegalovirus (CMV) promoter-driven vectors contain an ampicillin resistance cassette for growth and maintenance in *E. coli* and are designed for high levels of transient expression in mammalian cells. Transcriptional termination is via a SV40 poly-adenylation signal 3' of the multiple cloning site. Select vectors also contain mammalian selectable markers, and others offer options for enhanced levels of expression.

**SPECIFIC VECTORS**

<table>
<thead>
<tr>
<th>CMV BetaGlobin</th>
<th>Beta globin intron enhanced transgene expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMV OriP</td>
<td>OriP for higher levels of protein expression in EBNA-transformed HEK-293 cells</td>
</tr>
<tr>
<td>CMV Hygro</td>
<td>Hygromycin for mammalian selection</td>
</tr>
<tr>
<td>CMV Puro</td>
<td>Puromycin for mammalian selection</td>
</tr>
<tr>
<td>CMV BetaGlobin WPRE Neo</td>
<td>Beta globin intron for enhanced transgene expression</td>
</tr>
<tr>
<td></td>
<td>G418/Neomycin for mammalian selection</td>
</tr>
</tbody>
</table>

#### EF1 Alpha

These vectors offer medium-level transient mammalian expression driven by the human elongation factor alpha (EF1 Alpha) promoter. Ampicillin resistance cassettes allow vector growth and maintenance in *E. coli*. Transcriptional termination is via a SV40 poly-adenylation signal 3' of the multiple cloning site.

**SPECIFIC VECTORS**

<table>
<thead>
<tr>
<th>EF1 Alpha</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EF1 Alpha Puro</td>
<td>Puromycin resistance gene for mammalian selection</td>
</tr>
</tbody>
</table>
## CLONING VECTORS

### pTwist High Copy Vectors
These vectors contain pMB1 origins of replication. Twist forward and reverse primers flank the insertion site for easy amplification, and M13 forward and reverse priming sites are included to enable gene sequencing.

**SPECIFIC VECTORS**

- **Amp High Copy**
  - Ampicillin resistance marker
- **Kan High Copy**
  - Kanamycin resistance marker
- **Chlor High Copy**
  - Chloramphenicol resistance marker

### pTwist Medium Copy Vectors
These vectors feature p15A origins of replication. Twist forward and reverse primers flank the insertion site for easy amplification, and M13 forward and reverse priming sites are included to enable gene sequencing.

**SPECIFIC VECTORS**

- **Amp Medium Copy**
  - Ampicillin resistance marker
- **Kan Medium Copy**
  - Kanamycin resistance marker
- **Chlor Medium Copy**
  - Chloramphenicol resistance marker

### pTwist ENTR
Use these vectors for rapid cloning of one or more genes into virtually any protein expression system using Gateway® Cloning Technology. Once you have an entry clone, you can recombine your gene of interest into a variety of expression vectors adapted for use with Gateway Technology. The gene synthesis product is cloned between the attL1 & attL2 recombination sites. All pTwist ENTR vectors contain a pMB1 origin of replication for high plasmid yields and M13 forward and reverse priming sites to enable gene sequencing.

**SPECIFIC VECTORS**

- **ENTR**
- **ENTR Kozak**
  - For enhanced expression in mammalian systems
  - Cloning site is designed in the appropriate reading frame to work with both N- and C-terminal fusion tags in the most popular Gateway mammalian expression vectors

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*Mammalian and Viral Expression Vectors were created in partnership with Oxford Genetics Ltd. using SnapFast® technology.*

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