



GENETICALLY ENGINEERED MODELS AND SERVICES

## Transgenic Model Creation Through Colony Expansion and Breeding

### Key Advantages

- Combined expertise of genome editing, embryology, and genetics
- More than 50 CRISPR models and 250 RNAi models generated to date
- Compatible health status to avoid rederivation
- Single point of contact from model creation through breeding
- Data integrity maintained via the Internet Colony Management® (ICM™) digital platform

Charles River helps clients select, customize, create, and maintain the right model for their studies using the latest technologies. In addition to direct injections, breeding and housing, embryology, and genetic testing services, we now offer model design and creation through our strategic alliance with Mirimus Inc., a leader in genomic engineering. This partnership creates a complete, flexible solution for our North American clients to create CRISPR and RNAi models. Together, our combined *in vitro* and *in vivo* expertise provides an optimal environment for creating, characterizing, preserving, and distributing genetically engineered mouse model lines.

### Comprehensive Creation Portfolio

Using CRISPR/Cas9 genome editing, custom RNAi models, and random DNA transgenesis, we can create virtually any model our clients may need for their research. Knockout, knockin, conditional, inducible, structural variants, and overexpression are only some of the model types we offer.

Researchers can also bridge the gap between their *in vitro* and *in vivo* models by using our microinjection services (CRISPR direct, embryonic stem cell (ES), and DNA injections). The injections are prepared and injected into ES cells or genetic material, which are then inserted into blastocysts or mouse one-cell embryos, respectively. To further develop study-ready cohorts, breeding services can be added for initial evaluation and phenotyping.

### Rapid and Precise Model Generation

- Direct injection for simple models: 4-6 months to generate founders (F0)
- Targeted transgenes and RNAi: 6-8 months to F0
- ES cell-mediated for complex projects: 8-10 months to F0
- Microinjection services: 10-12 weeks to F0

EVERY STEP OF THE WAY

## Model Generation and Microinjection Services

CRISPR Model Generation Packages	
Package 1	Package 2
<ul style="list-style-type: none"> <li>• Design and synthesis of CRISPR/Cas9 reagents</li> <li>• Injection into 250 embryos or ES cell transfer into 80 blastocysts</li> <li>• Reimplantation into VAF/Elite® foster females</li> <li>• Husbandry and weaning</li> <li>• Sample collection for genetic testing</li> <li>• VAF/Elite® health report</li> <li>• Delivery of transgenic mice</li> </ul>	<p>Includes Package 1 services and:</p> <ul style="list-style-type: none"> <li>• Breeding to F1 generation</li> <li>• Sample collection and screening of up to 50 mice</li> <li>• Delivery of heterozygous F1 mice</li> </ul>
CRISPR Direct Injection Packages	
Package 1	Package 2
<ul style="list-style-type: none"> <li>• Injection into one-cell embryos</li> <li>• Reimplantation into VAF/Elite® foster females</li> <li>• Husbandry and weaning</li> <li>• Biopsies for genetic testing</li> <li>• VAF/Elite® health report</li> <li>• Delivery of F0 founder mice</li> </ul>	<p>Includes Package 1 services and:</p> <ul style="list-style-type: none"> <li>• Breeding to F1 generation</li> <li>• Delivery of heterozygous F1 mice</li> </ul>