

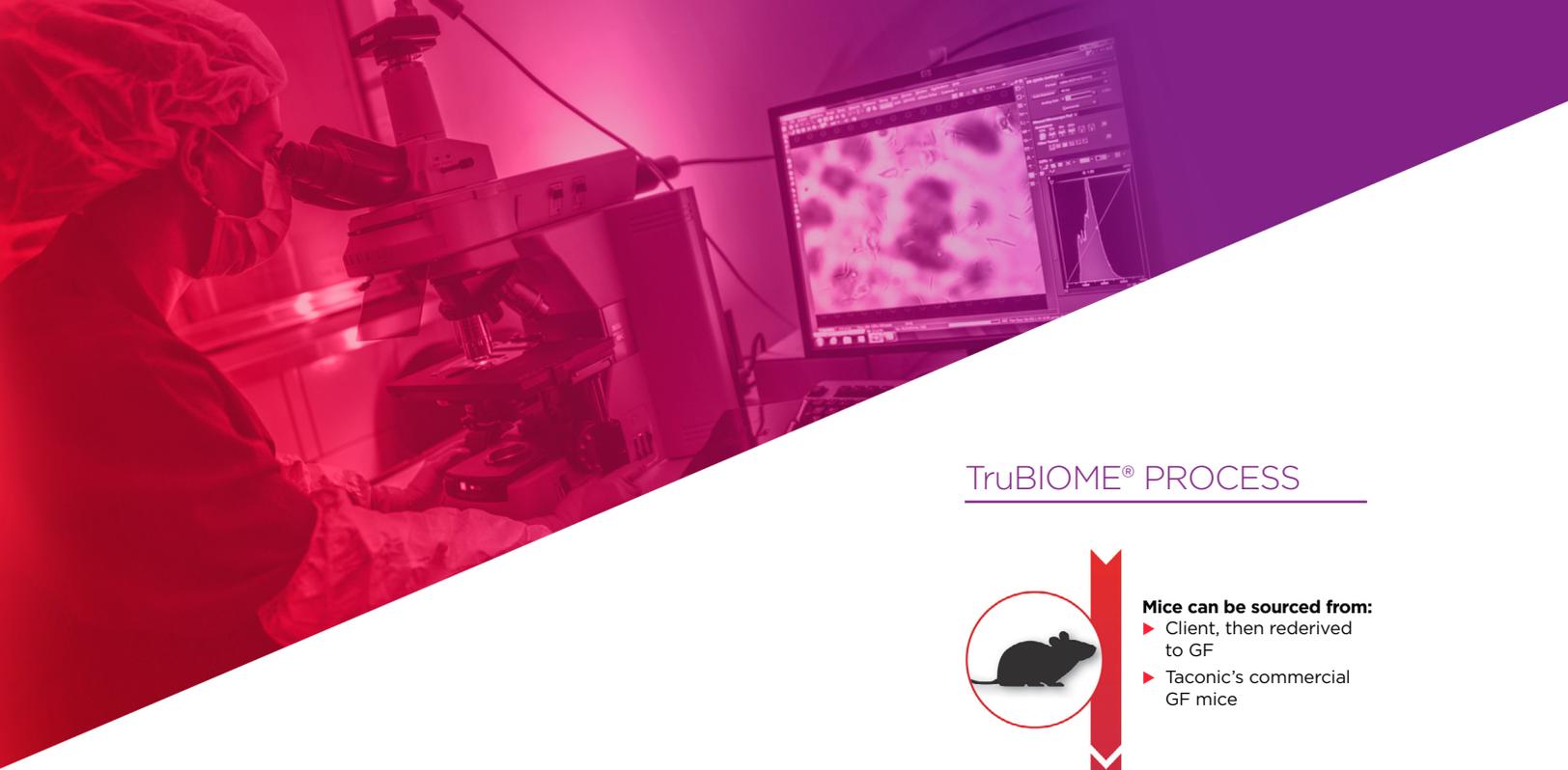
# TruBIOME<sup>®</sup>

## Custom Microbiome Models

TruBIOME<sup>®</sup> is the only platform in the industry to provide a complete microbiome solution, including germ-free mice, germ-free derivation, custom microbiota association, microbiome profiling, and a proprietary microbiome repository. Pioneering the generation of germ-free mice since 1961, Taconic Biosciences continues to provide researchers with the microbiome tools to advance research programs.

Get in touch for more information about our products and services.

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## LEADING THE INDUSTRY IN MICROBIOME SOLUTIONS

The impact of the microbiome on human health continues to dominate biomedical research dialogue. Taconic is leading the animal model industry by providing the only comprehensive portfolio of microbiome products and services to enable scientists to drive critical therapeutic research forward.

### Know More

Elucidation of the microbiome has emerged as an exciting new avenue for pursuing new drug targets. It has become clear that even for researchers not directly investigating the microbiome, alterations in the microbial profile of their models can have significant impact on readouts and should be controlled for within the experiment. TruBIOME®, a first of its kind solution, enables the generation and maintenance of mice with custom microbiome profiles.

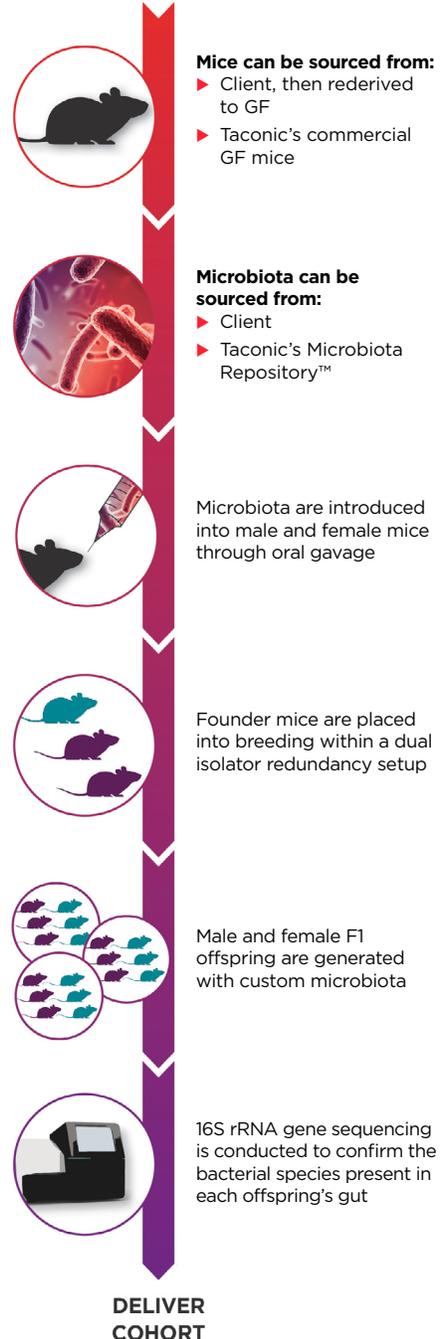
### Control More

The microbiome is consistently cited as a major contributor in driving experimental variability and affecting model performance and predictability. If an experimental model is dependent on either having or lacking certain types of microbiota, it is important to be certain of the animals' microbial profiles before starting key experiments as well as comparing replicates. TruBIOME® is positioned to provide researchers with a platform to evaluate microbiota compositions, and to control for microbiome effects as a confounding factor against reproducibility and predictability. Taconic has demonstrated that models enrolled in TruBIOME® can maintain the desired microbial diversity and provide researchers with the confidence that their microbiome models perform more consistently.

## BENEFITS OF TruBIOME® MOUSE MODELS

- ▶ TruBIOME® maintains a rich, diverse microbial community from breeders to offspring by leveraging principles of vertical and horizontal transmission
- ▶ Next-generation 16S rRNA gene sequencing (or other suitable method) is employed for regular quality checks
- ▶ Ensures that the cohort produced from initial founder animals has the same complexity, preserving species richness and evenness through proper husbandry and isolator practices

## TruBIOME® PROCESS





## GERM-FREE MICE

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Taconic has been producing germ-free mice since 1961. Germ-free mice are devoid of all microorganisms (as determined within the limitations of the detection methods available), including bacteria, fungi, and viruses. They have no microbiome. Strict Taconic husbandry and testing programs ensure that these mice remain germ-free during breeding, cohort expansion, and shipping. Taconic offers germ free C57BL/6NTac, BALB/c, Swiss Webster, and IIT0 knockout (C57BL/6NTac and BALB/c backgrounds) off the shelf.

## GERM-FREE DERIVATION

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Taconic's custom germ-free derivation services begin with donor animals sourced from Taconic, a customer's colony, or other commercially-available mice.

Taconic employs *in vitro* fertilization to generate embryos for transplant into pseudopregnant female recipients. Following embryo transfer, recipient females are transferred into germ-free isolators and give birth to germ-free offspring.

Taconic performs weekly microbial monitoring to ensure isolators are germ-free, with twelve weeks of negative reports required before an isolator holding derived offspring is considered germ-free.

## MICROBIOME PROFILING

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16S rRNA next-generation gene sequencing is conducted on fecal pellets to determine the microbial composition of each animal's gut microbiome.

Breeders are tested through sequencing to determine the initial composition of their gut microbial communities.

## MICROBIOME REPOSITORY

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Taconic has developed the Taconic Microbiota Repository™, a continually expanding resource for investigators to gain access to the important microbiota compositions.

### ▶ Wild Mouse Gut Microbiome

The Wild Mouse gut microbiota was developed by the NIH's National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) to compare the microbiome found in wild *Mus musculus domesticus* when compared to standard laboratory mice. While some research focus has revolved around eradicating microbial species from the intestines, the Wild Mouse gut microbiota provides insight into how the host responds to various diseases and treatments naturally. This microbiota profile does not contain any pathogenic species. However, it does contain *Helicobacter spp.* and common non-pathogenic protozoa commonly found in the Wild Mouse gut microbiota.

During the study conducted by the NIDDK, both germ-free B6 laboratory mice reconstituted with the Wild Mouse gut microbiota and B6 mice with a standard "laboratory microbiome" were exposed to the influenza virus and their physiological responses were recorded. Consistent with the hypothesis of the study, the B6 mice with the Wild Mouse gut microbiota presented less inflammation and increased survival when compared to the control mice.

### ▶ Altered Schaedler Flora (ASF)

The Altered Schaedler Flora is a model community of eight anaerobic bacteria that are essential for proper gastrointestinal and immune function. The colonization of murine intestines with this community of microbiota enables the study of drug interactions, pathogenic effects, immune responses to cancer, and inflammatory bowel diseases. When compared to germ-free mice, mice with ASF microbiomes are better suited for combating pathogenic infections and maintaining normal gastrointestinal health.

## CUSTOM MICROBIOTA ASSOCIATION

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Taconic has successfully introduced custom microbiomes to adult mice to meet various customer needs. These microbiomes can range from a select few organisms to hundreds of different microbes. Isolator breeding will ensure the proper transmission and maintenance of these cohorts of mice.

# THE COMPLETE SOLUTION

## MODELS TO DRIVE DRUG DISCOVERY

Taconic Biosciences is uniquely positioned to enable drug discovery through animal models by being the only company that partners with customers to provide expertise, quality, and availability, along with downstream services:

- ▶ Expertise at every step
- ▶ Highest quality standards in the industry
- ▶ Availability and access to drive global research

## MODEL GENERATION SOLUTIONS

Taconic's Model Generation Solutions empower our customers with a unique combination of capabilities, specifically tailored to each individual discovery program:

- ▶ Most experienced model generation and breeding company
- ▶ Most comprehensive toolkit
- ▶ Exclusive programs
- ▶ Concierge approach to partnering with customers

## COLONY MANAGEMENT SOLUTIONS

Taconic's fully-integrated colony management solutions bring innovative models from design to study-ready cohorts with unprecedented speed and transparency:

- ▶ Most experienced model generation and colony management company
- ▶ The complete toolkit
- ▶ Colony management solution process
- ▶ Partnering with our customers
- ▶ Expanded applications and opportunities

# YOUR PARTNER

## WHAT WE DO

Taconic Biosciences is a fully-licensed, global leader in genetically engineered rodent models and services. Founded in 1952, Taconic provides the best animal solutions so that customers can acquire, custom-generate, breed, precondition, test, and distribute valuable research models worldwide.

## WHO WE ARE

Taconic has created a unique ecosystem of experts to provide our customers with the best animal model solutions. Whether it is choosing the right model for your study, designing a custom model, creating an efficient breeding plan, or providing expertise in critical support functions like veterinary science, genetics, and embryology; Taconic is ready to help you drive your research from idea to cure.

## CONTACT US

To get started, contact one of our customer service team members. Contact us at [info@taconic.com](mailto:info@taconic.com).

## VISIT TACONIC.COM

There is so much more to learn. Visit [taconic.com](http://taconic.com) to see our full breadth of animal model solutions and valuable resources.

## TruBIOME® SEQUENCING DATA

Taconic performed a proof-of-concept study to determine if the species diversity of a microbiome model can be preserved with isolator husbandry. 16S rRNA gene sequencing of Taconic-bred and housed mice with the Wild Mouse gut microbiota reveals that the complexity and richness of a defined gut microbial community is maintained from founders to F2 offspring.

## RELATIVE ABUNDANCE - PHYLA

**Figure 1. Relative Abundance of Bacteria at the Phylum Level.** 16s rRNA gene profiling data comparing the relative abundance of gut microbial bacteria in male and female breeders, in F1 offspring at day 56, and in F2 offspring at day 56.

