

Microarrays

Customizing microarrays: collaborative process, flexible formats, and quality results

Keywords

Custom microarrays, Microarray
Research Services Laboratory (MRSL)

Exceptional service and expertise: turning to Thermo Fisher Scientific for custom microarray solutions

Thermo Fisher Scientific has been a trusted provider of powerful custom microarray solutions for decades. As affordable genotyping tools, custom microarrays can be used to identify, verify, and routinely screen for complex genetic traits across a variety of applications. Whether for large or small studies, custom arrays offer remarkable scale and flexibility for agrigenomics and human applications so researchers across industry and academia can better understand the role genes play in plant, animal, and human health.

At Thermo Fisher, each custom array is supported by an experienced design team dedicated to finding the solution for the customer's unique application needs. Over the years, the team has designed custom microarrays for a wide range of projects for agrigenomics and human genotyping applications. Dedicated to serving science through innovation and experience, Thermo Fisher is committed to finding custom solutions to challenging research problems in an effort to help improve the health and safety of our world.

Creating custom microarray solutions for current and future research needs

Microarrays can be tailored for specific research aims. Working with Thermo Fisher, researchers can create scalable, high-quality array designs that are well-suited to help meet their unique interests. Designing the best genotyping array for your studies doesn't need to be overly challenging or time-consuming. In fact, fully customized arrays can be designed in as few as 2–4 weeks after the final list of single nucleotide polymorphisms (SNPs) of interest is determined, although project timelines depend on the specifics of the custom design.

The customization process is entirely collaborative. To get started, researchers will work closely with Thermo Fisher specialists to discuss project goals and determine their barometer for success in both the short and long term. Once the project goals are set, the research team can expect to work hand in hand with a dedicated team to collaboratively create a design plan and evaluate the design proposal. At any point in the design process, the marker list can be modified to help ensure that the microarray is the best fit for the application needs.

When designing a custom microarray with Thermo Fisher, precision is a priority. Every SNP in the microarray is manufactured using a photolithographic template, resulting in identical SNP content on every microarray. Custom arrays are also available in different formats to accommodate a wide range of applications that support both current and future needs. The arrays also have low minimums—as few as 480 samples—and are manufactured and shipped within 8–10 weeks.

Affordable and efficient genotyping services: the Microarray Research Services Laboratory

In addition to collaborating with Thermo Fisher to create custom microarrays, researchers can turn to the high-throughput Microarray Research Services Laboratory (MRSL) for affordable and efficient genotyping services for large- and small-scale microarray-based studies. The MRSL team will help manage your project from start to finish. They can also help you meet deadlines crucial to your application, as the staff has extensive experience in best practices to process and analyze research samples.

Through strategic relationships with global laboratories, the MRSL has one of the largest microarray capacities in the world and generates high-quality data quickly. With access to the breadth of our innovative analytical tools, knowledge, and experience, the lab can aim to extract maximum value from samples and process catalog and fully or semi-customized genotyping arrays for high-quality data customers can rely on for their research.

The importance of customization for agrigenomics genotyping applications

In agrigenomics applications, customization provides breeders, farmers, seed companies, and researchers with flexible, optimized solutions for their unique research needs so they can leverage the economic value of the herd or plant. This is critically important today, as these solutions help producers develop healthier, more efficient crops and livestock to nourish the world's growing population. For example, organizations that need breeding information for livestock have worked with Thermo Fisher to create custom microarrays with the primary objective of genetic improvement of dairy and beef cattle.

For some applications, creating a custom array that combines multiple species, such as plants and livestock, may be required. Custom multispecies arrays can help increase efficiency and offer additional flexibility, which is especially helpful for smaller groups or farms. Regardless of species, working with the design specialists at Thermo Fisher can help customers create cost-efficient and results-driven custom microarrays that help them better understand the genes or genetic markers associated with desirable traits.

Custom microarrays can also be used to focus on animal or plant species that vary by region. For example, camels and birds vary by geographic location and play a significant role in an area's biodiversity. Many crop varieties, such as wheat, soy, and sugarcane, are also specific to regions and climates, and some research focuses on improving crop strains for higher yields, disease resistance, and climate adaptation. In fact, agricultural scientists have collaborated with Thermo Fisher to create a custom microarray for high-throughput screening of wild and common wheat to understand beneficial traits for wheat and accelerate crop development.

Farmers and seed companies often turn to custom microarray solutions to evaluate genetic diversity and investigate the genetic basis of trait variations. Custom arrays can also be used for conservation efforts, such as genotyping coral reefs, sharks, and eagles, to help protect endangered species as well as for alignment with climate plans that tackle environmental changes.

Conclusion

Microarray technology is a cornerstone of genomics research, helping researchers across different fields to study, in the case of agrigenomics, desirable traits for plants and animals. Working together with Thermo Fisher, individual researchers or consortia can design custom microarrays to create a genotyping panel that is well-suited for their specific study. With the Microarray Research Services Laboratory, customers around the world can access efficient and affordable genotyping services that support their research needs. To begin building your agrigenomics custom array or to inquire about the MRSL, [please fill out the request form](#) so a dedicated representative can answer your questions or provide a quote.

 Learn more at
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