

Enabling precision protein profiling with high-performance microarrays

Protein profiling extends far beyond measuring protein presence or abundance. It enables the functional interrogation of the proteome, revealing how proteins interact with each other and how the immune system responds to them. Protein microarrays are uniquely suited for this task, offering a high-throughput, multiplexed platform for analyzing complex biological interactions with precision and efficiency.

1. Protein profiling as a diagnostic powerhouse

Protein microarrays are transforming how scientists and clinicians analyze the functional layer of biology – the proteome.

By allowing the simultaneous detection and quantification of hundreds to thousands of proteins, they play a central role in:

- Disease biomarker discovery
- Immune profiling and vaccine research
- Autoimmune and infectious disease diagnostics
- Personalized medicine and therapeutic response monitoring

However, successful implementation of protein microarrays in commercial and clinical settings requires more than innovative biology, it demands precision engineering, high-quality manufacturing, and scalable throughput to deliver consistent, reliable results.

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2. How protein microarrays enable **advanced** protein profiling

Protein microarrays consist of spatially defined capture molecules such as proteins, peptides, or antibodies immobilized on a solid surface. When exposed to biological samples or interaction partners, binding events are detected using labeled probes or secondary reagents.

Compared to single-analyte assays, protein microarrays provide:

- Parallel analysis of hundreds to thousands of interactions
- Reduced assay time and reagent consumption
- High data density for systems-level insights
- Flexibility for both research and diagnostic workflows

3. Precision engineering & **quality** for reliable protein profiling

Protein microarrays require exceptional control over manufacturing conditions due to the structural complexity and sensitivity of proteins. Variations in deposition volume, surface chemistry, or environmental conditions can directly affect protein bioactivity, signal uniformity, and assay reproducibility.

We apply precision microfabrication techniques that enable picoliter-scale protein immobilization with controlled spot morphology and minimal cross-reactivity. We optimize surface chemistries and use proprietary print buffer preparation methods to help preserve protein orientation and biological function.

To support reproducibility and clinical confidence, our manufacturing is performed within ISO 13485-certified quality systems, incorporating in-process and post-printing quality controls, and validated processes for biologically sensitive materials. Our environmental control during printing, along with protective packaging strategies, helps maintain protein integrity and shelf-life for research, field, or clinical use.

4. High-throughput capability for scalable protein profiling

Rapid production, flexible formats

Our platform supports custom, multiplexed protein arrays in formats ranging from slides to cartridges, supporting:

- Thousands of arrays per manufacturing run
- Multiplexed pannels for autoimmune or infectious disease diagnostics
- Multiplexed panels for autoimmune or infectious disease diagnostics.

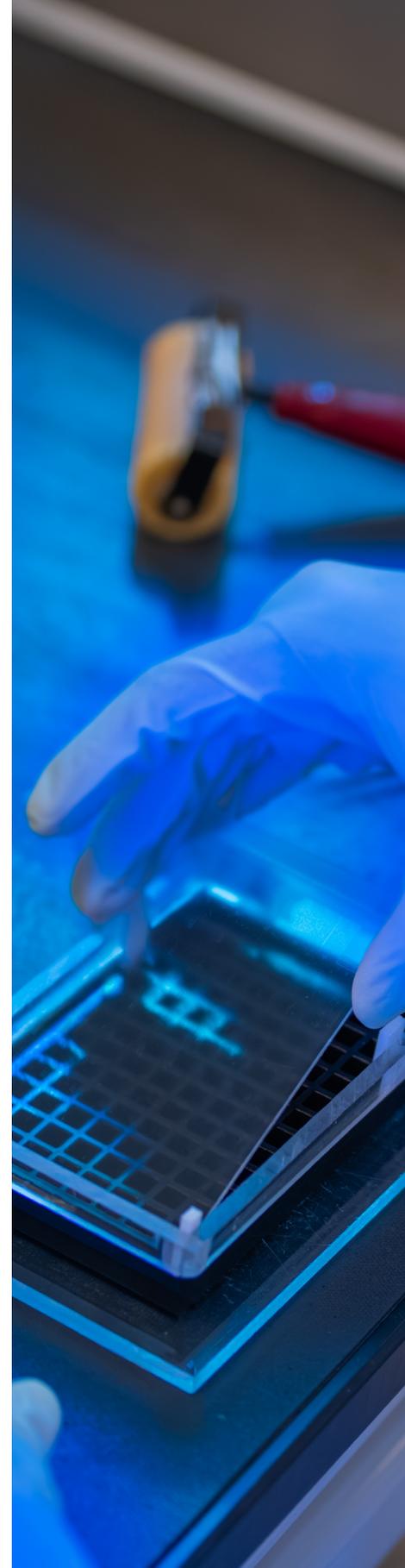
Design-for-manufacture (DFM) strategy

We customize process flows, fine-tune features, and explore material selection with you to ensure that your device not only meets its functional performance outcomes, but can also be efficiently mass-produced with consistent quality, and within your cost targets.

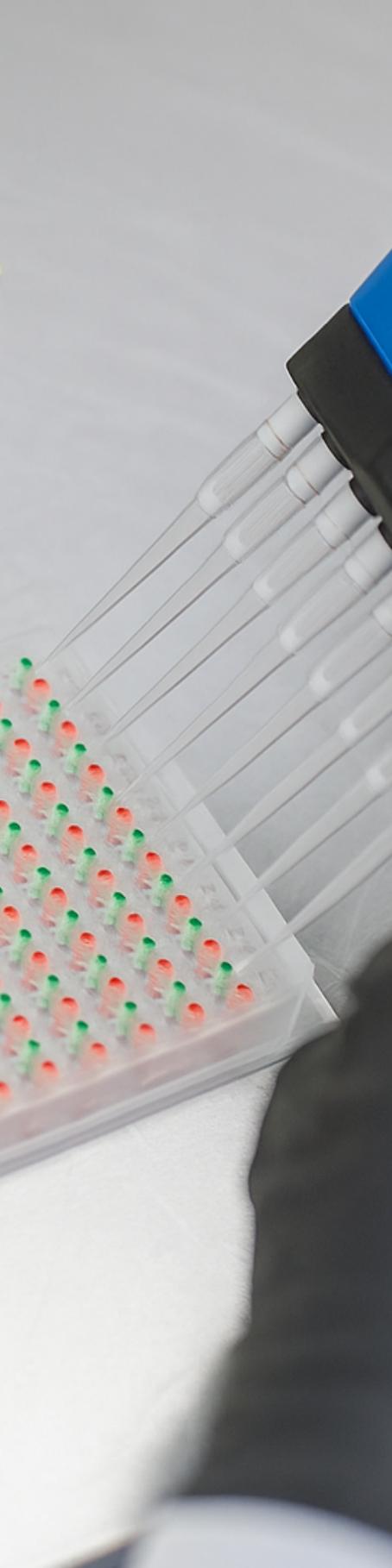
From day one we align design decisions with scalable production.

Early collaboration with our team ensures:

- Assay compatibility with automation
- COGs optimization without sacrificing quality
- Smooth transition from prototype to scale-up



96-well plate microarray



5. Use cases enabled by high-quality protein microarrays

- **Autoimmune diagnostics:** Screening of autoantibody profiles for systemic or organ-specific diseases
- **Oncology:** Tumor antigen profiling and immune checkpoint targeting
- **Allergy testing:** IgE/IgG profiling for personalized allergy diagnostics
- **Infectious disease:** Multiplexed antibody profiling for serological diagnostics and vaccine response

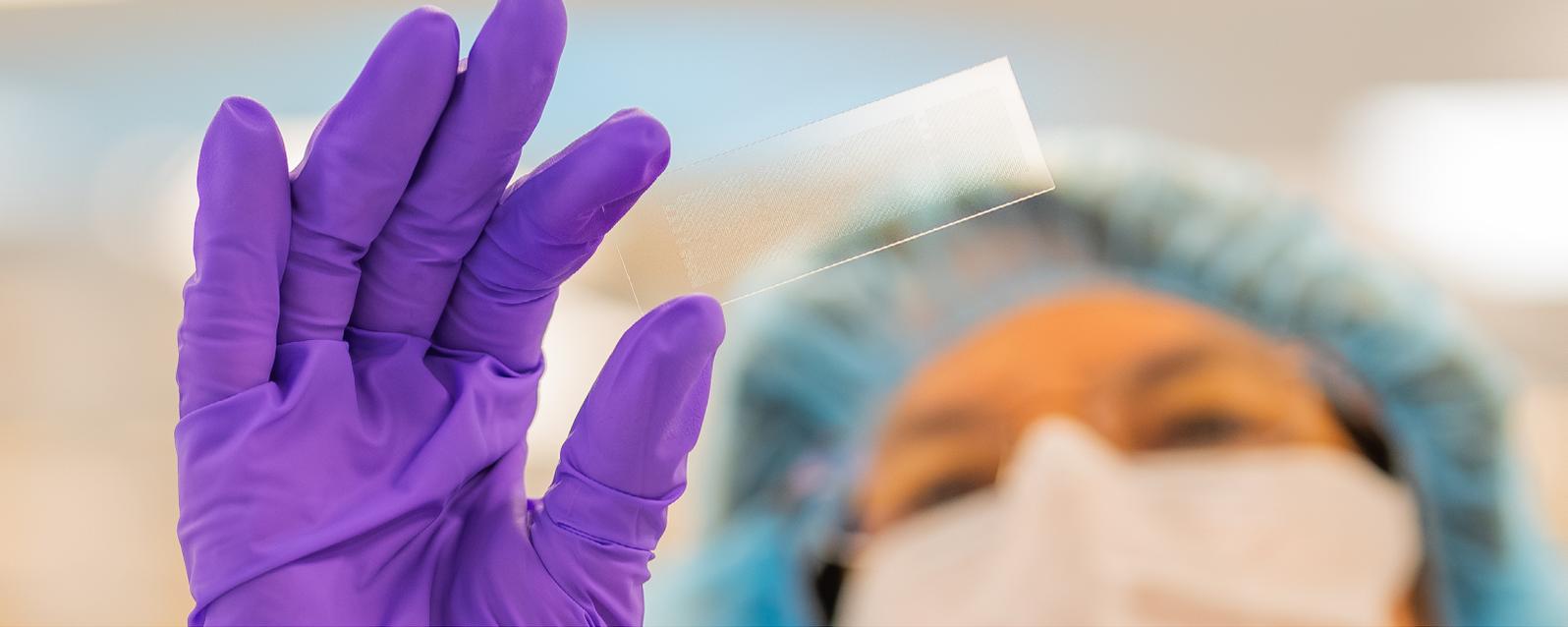
Each of these relies on robust protein immobilization, long-term array stability, and reliable signal performance delivered through engineering excellence and bioscience integration.

Discover more SCHOTT® Microarray applications

No matter your microarray application, we've likely encountered something similar and can assist you on your journey. With our experience and expertise, we will help guide you to success.

Visit [schott.com/minifab](https://www.schott.com/minifab) to explore more applications.

Source plate preparation



SCHOTT® Microarrays printed on NEXTERION® glass substrates

6. Conclusion:

Partnership that brings biology to market

Protein microarrays are a cornerstone technology for modern protein profiling, enabling deep insight into protein–protein interactions and patient-specific immune responses.

Their success depends on preserving biological functions while delivering manufacturable, reproducible platforms.

We partner with innovators around the world to transform complex protein profiling concepts into scalable, high-performance microarray solutions, bridging discovery, diagnostics, and commercial production.

Explore more or get in contact at:
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“Protein profiling is only as good as the platform behind it. We engineer the **precision your biology demands.”**

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