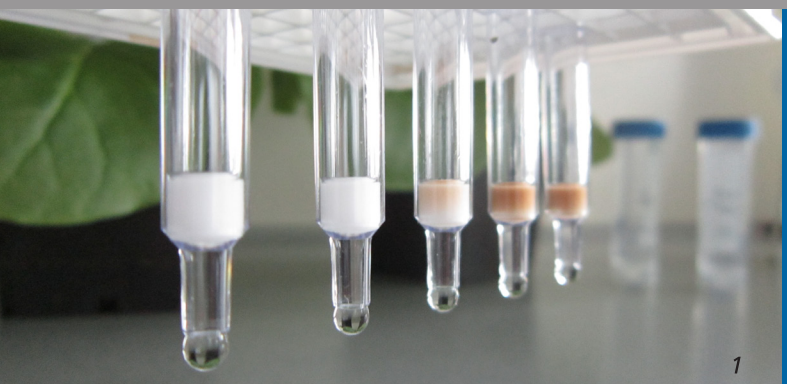
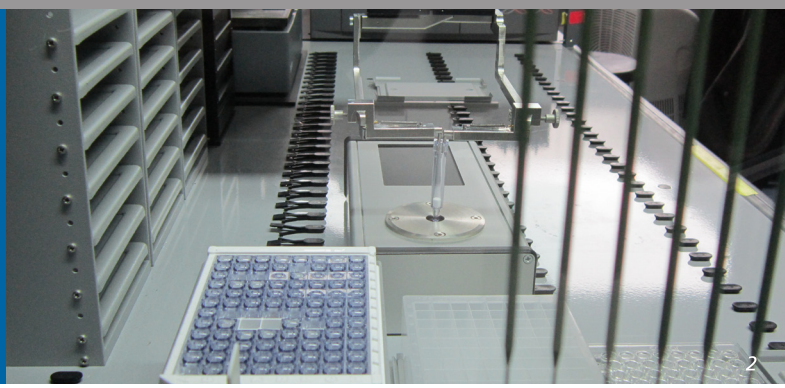
Fraunhofer
IME

FRAUNHOFER-INSTITUTE FOR MOLECULAR BIOLOGY AND APPLIED ECOLOGY IME





1 *Immunofiltration columns used for novel magnetic immunodetection assays*

2 *High throughput magnetic immunodetection with Tecan freedom evo roboter*

INNOVATIVE DETECTION TECHNOLOGIES AND ASSAY DESIGNS

Fraunhofer-Institute for Molecular Biology and Applied Ecology

Forckenbeckstrasse 6
52074 Aachen
Germany

Contact:
Dr. Florian Schröper
Plant Biotechnology
Telephone +49 241 - 6085 13012
florian.schroeper@ime.fraunhofer.de

Prof. Dr. Stefan Schillberg
Head of Plant Biotechnology
Telephone +49 241 - 6085 11050
stefan.schillberg@ime.fraunhofer.de

www.ime.fraunhofer.de

The Fraunhofer IME is an application-oriented research institute focusing on the development of innovative analytical platforms. We develop tailored solutions for specific challenges in close collaboration with partners from academia and industry.

One of the major fields of research at the Fraunhofer IME is the development of customized immunological assays and the production of specific antibodies for this purpose. As well as adapting classical procedures such as the enzyme-linked immunosorbent assay (ELISA) to address specific problems, we also focus on the development of innovative rapid testing platforms.

As an example, we are currently developing assays based on magnetic immunodetection. This analytical platform supports diverse applications in the field of bioanalytics and can be used for the analysis of individual samples and for high-throughput screening. The magnetic immunodetection assay involves the enrichment of the analyte inside an immunofiltration column and subsequent labeling with functionalized magnetic nanoparticles that can be quantified using a specialized detector. The resulting values provide a read-out of the analyte concentration. Magnetic immunodetection has a sensitivity of less than 1 ng/mL and takes less than 30 minutes to complete, which is significantly faster than an ELISA. The read out device has a compact design and is therefore portable.

We are also developing innovative analytical methods based on nucleic acid interactions such as hybridization and PCR, and we are investigating the first high throughput assays based on next-generation sequencing.