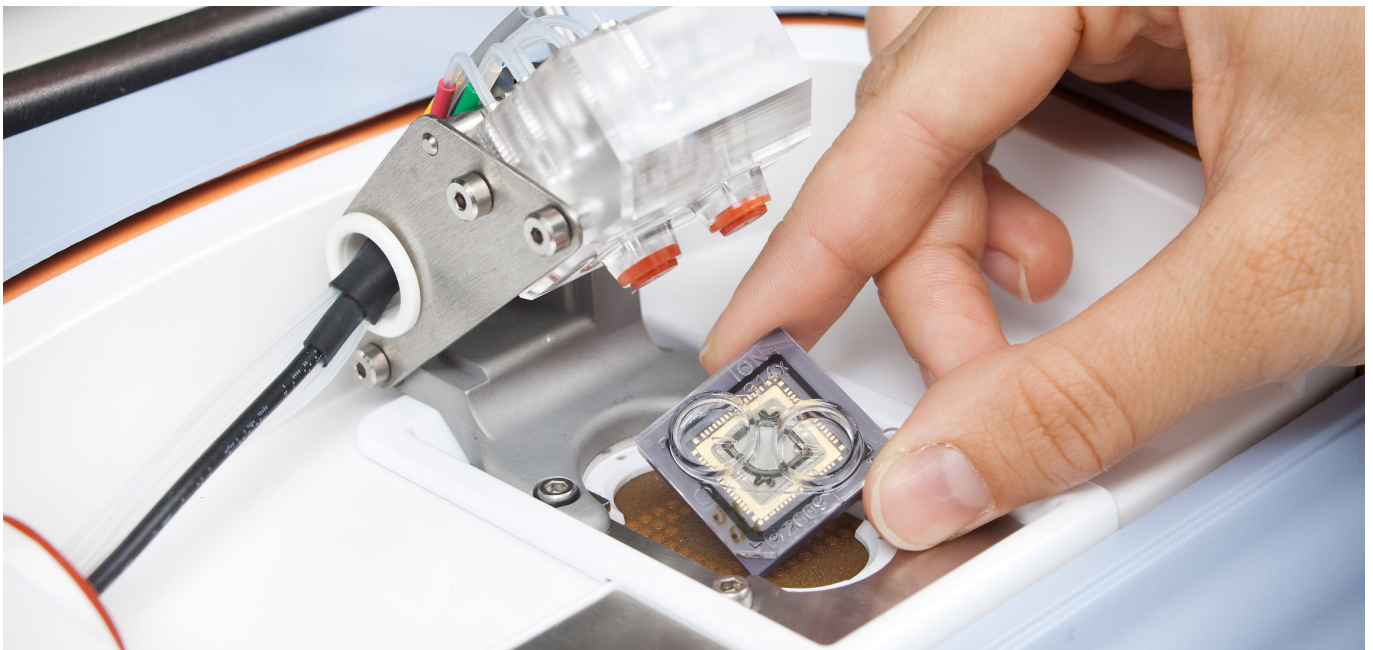# BIOMARKER & ASSAY DEVELOPMENT

We combine innovative high throughput technologies (e.g. next generation sequencing, real-time PCR, microarrays) with our own in-house workflow-based data analysis tools to support our partners and customers in the ultimate goal of defining biomarkers for personalized medicine and early disease detection.

CANCER & COMPLEX DISEASE DIAGNOSTICS

Biomarkers are endogenous molecules specific to certain diseases. They can either be found in the diseased organ or in body fluids such as serum, urine and saliva. Cancer is a disease causing extensive genetic changes which have complex effects on gene regulation, expression and translation. Multivariate analysis of different biomolecules can help us improve the way we diagnose and manage this and other complex age-related diseases.

We specialize in genome-wide screenings to elucidate changes in RNA (mRNA , miRNA ,…), DNA (structural changes and mutations), DNA methylation and serum autoantibodies. Candidate marker sets are identified using bioinformatic analysis from whole genome microarrays and next generation sequencing (NGS on IonTorrent™ and IonProton™ systems). By designing targeted assays based on customized batch-processing software tools we enable fast and reliable marker validation.

We assist clinical and industrial partners in project planning and act as technology providers and developers. Together we set up projects designed to answer disease-relevant questions and meet the challenges of translational research.

TECHNOLOGY USED

- Whole genome screenings using microarrays and NGS, with a special focus on DNA methylation analyses

- Protein chip technology with a special focus on autoantibody-based diagnostics, high throughput protein expression & purification, on-chip ELISA, generation of protein and peptide microarrays and bead arrays

- Assay development: assay design, preanalytics and efficient parallel analyte extraction from clinical samples (tissue, FFPE , serum, blood, sputum, saliva …), analytical validation for clinical research and diagnostics

- Validation: nano-fluidic real-time PCR, targeted microarrays, deep amplicon sequencing

- Assay design: DAME software (for high throughput DNA/RNA/protein sequence management), NGS assay design (e.g. targeted sequence selection)

- Data analysis: multivariate statistics & bioinformatic analyses (RGG: GUI framework for R-based statistical computing, XworX: workflow-based software platform with special focus on data logging and software tool integration)

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