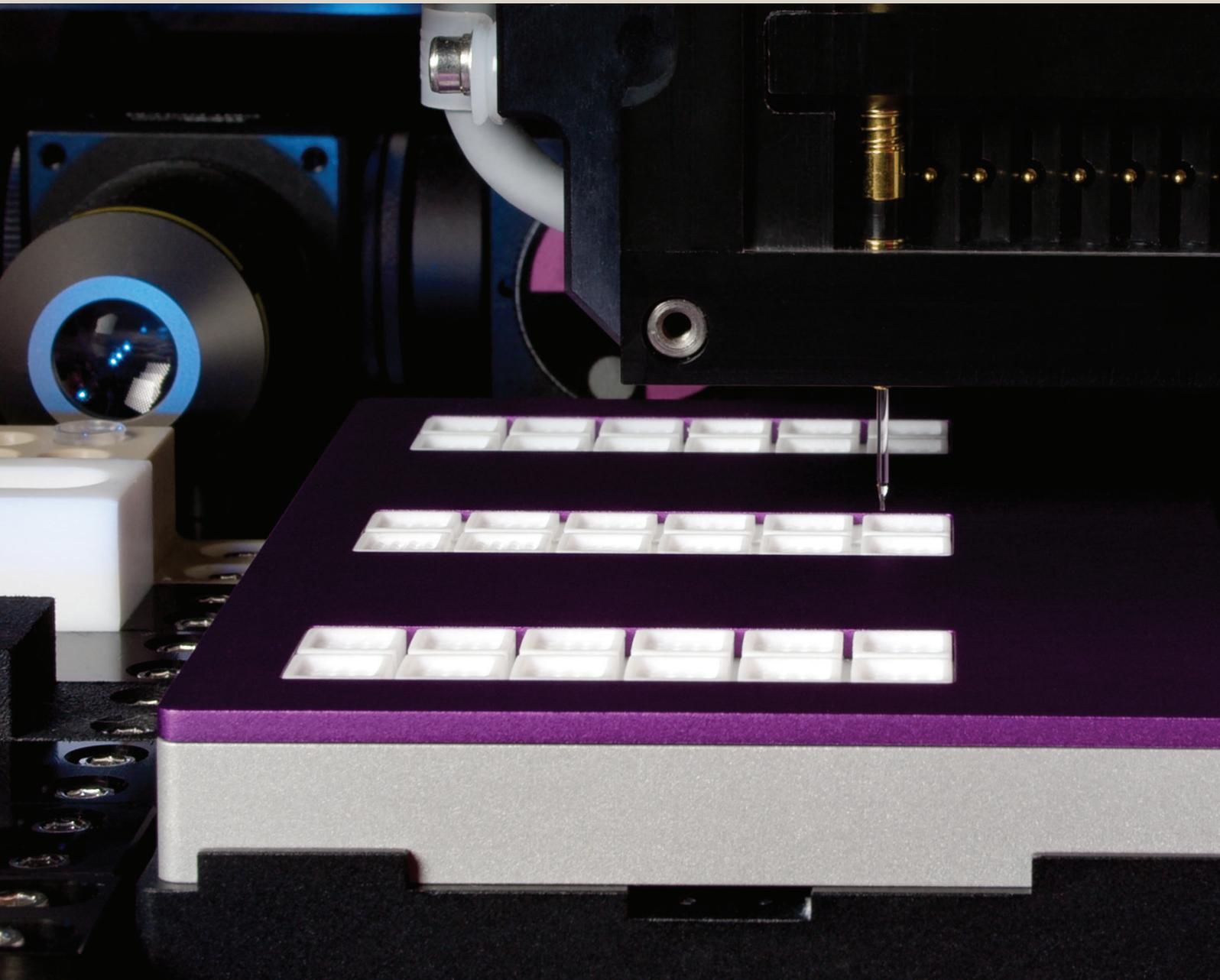


proteoCHIP 12*16

Automated and miniaturized end-to-end sample preparation for multiplexed MS-based single cell proteomics



About proteoCHIP 12*16

The proteoCHIP 12*16 is an innovative platform enabling multiplexed single cell mass spectrometry-based proteomics analysis.

Recent improvements in sample processing and mass spectrometry instrumentation have enabled protein characterization at single cell resolution. Studying the proteome of individual cells enables the dissection of mechanisms concealed through bulk analysis. However, sample preparation workflows still harbor the potential to unleash the full capabilities of single cell proteomics.

With its optimal design and accessories, the proteoCHIP 12*16 further extends the capabilities of cellenONE® technology by facilitating miniaturized sample preparation of individual cells for single cell proteomics workflows.

Product Specifications

With its **microscope slide footprint**, the **proteoCHIP 12*16** allows novel miniaturized single cell proteomics applications in nanoliter-scale volumes



- Each proteoCHIP 12*16 contains 12 arrays or sample sets of 16 wells each (i.e. TMTpro)
- Wells are prefilled with oil to prevent reagent evaporation
- Low reaction volumes of 400 nL per well

The combination of cellenONE + proteoCHIP 12*16 enables:

- Handling of 3 chips per run
- Preparation of up to 576 single cells per run
- Opportunity to work with rare cells
- Massive reduction of manual handling steps and contamination
- Dispensing of exactly the number of single cells required into each well of the chip

Benefits

Standardization: automated dispensing instead of manual pipetting for more reproducibility

Miniaturization: low reaction volumes save reagents costs and increase sensitivity

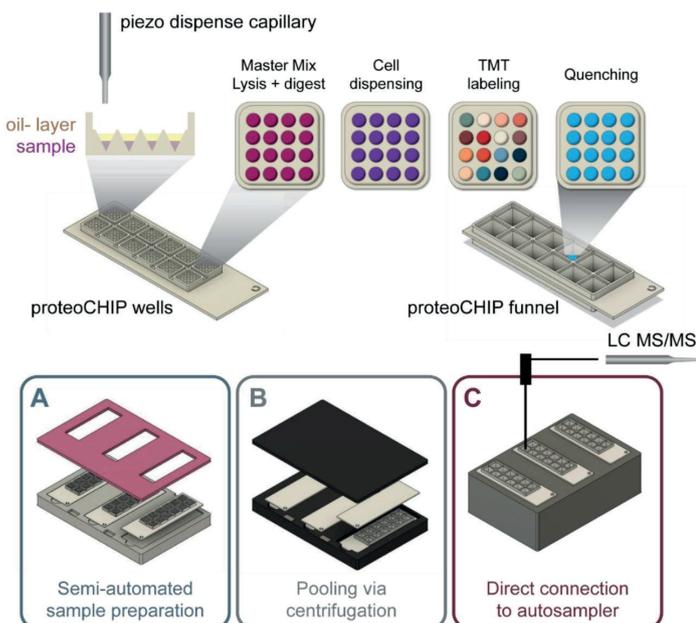
Process safety: unique design and material prevents cross contamination, while prefilling overcomes evaporation

Recovery: direct injection via autosampler leads to maximum liquid recovery and very little peptide loss



Single cell proteomics sample preparation workflow

Watch the workflow in this video:



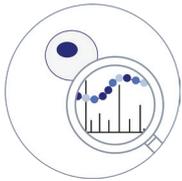
Workflow performance:

- Quantification of up to 2000 proteins per single cell
- Reduced background signal and chemical noise without sample cleanup
- Outstanding signal-to-noise ratio even with low or no carrier proteome

Figure 1: Illustration of the proteoCHIP based TMT-labeling workflow. (a) Up to sixteen nanowells/single cells per TMT set are prepared inside the cellenONE®, (b) are automatically combined via centrifugation and (c) directly interfaced with a standard autosampler for loss-less acquisition. (Figure from Hartlmayr, Ctorteccka et al., 2021)

The **proteoCHIP 12*16 Accessory Kit** contains all necessary hardware (Figure 1 a,b) for dispensing of cells and reagents into the proteoCHIP 12*16 using the cellenONE® platform as well as adaptors for recovery and pooling of samples via centrifugation.

Applications



Single cell proteomics



Drug discovery

Examples:

- Discover new targets for drugs
- Identify potential new drugs for the treatment of diseases
- Identify protein biomarkers to diagnose disease
- Human proteome project
- Complement multi-omics studies such as single cell genomics or transcriptomics

cellenONE®



The **cellenONE®** is a unique platform combining high accuracy single cell isolation and nanoliter reagent dispensing. Image-based cell isolation ensures only single cells of interest are isolated while gentle piezoacoustic droplet generation preserves cell viability and gene expression. The same instrument also performs precision nanoliter dispensing of reagents (both aqueous and organic) allowing miniaturisation of a range of single cell omics workflows.

For more information, visit: <https://www.cellenion.com/products/cellenone/>

Related Products

Catalogue Number

proteoCHIP 12*16 Set

CPS-1216-3

proteoCHIP 12*16 Accessory Kit

CPK-1216

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